

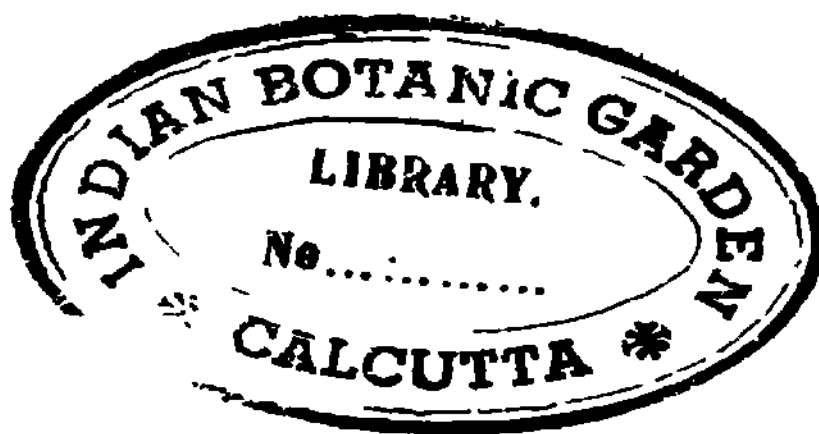
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BOTANICAL SURVEY OF INDIA

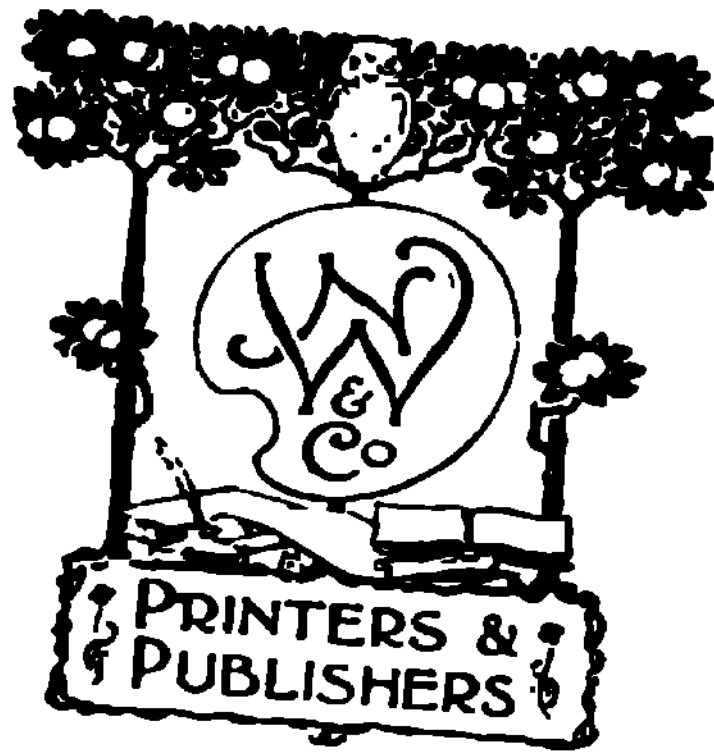
CLASS No. 581.9 (5414).....

BOOK NO...PRA-6 : Vol-2.....

- ACC. NO...B-13858.....

BENGAL PLANTS





BENGAL PLANTS

A LIST OF THE PHANEROGAMS, FERNS
AND FERN-ALLIES INDIGENOUS TO, OR
COMMONLY CULTIVATED IN, THE
LOWER PROVINCES AND CHITTAGONG

WITH DEFINITIONS OF THE
NATURAL ORDERS AND
GENERA, AND KEYS TO
THE GENERA AND SPECIES



BY

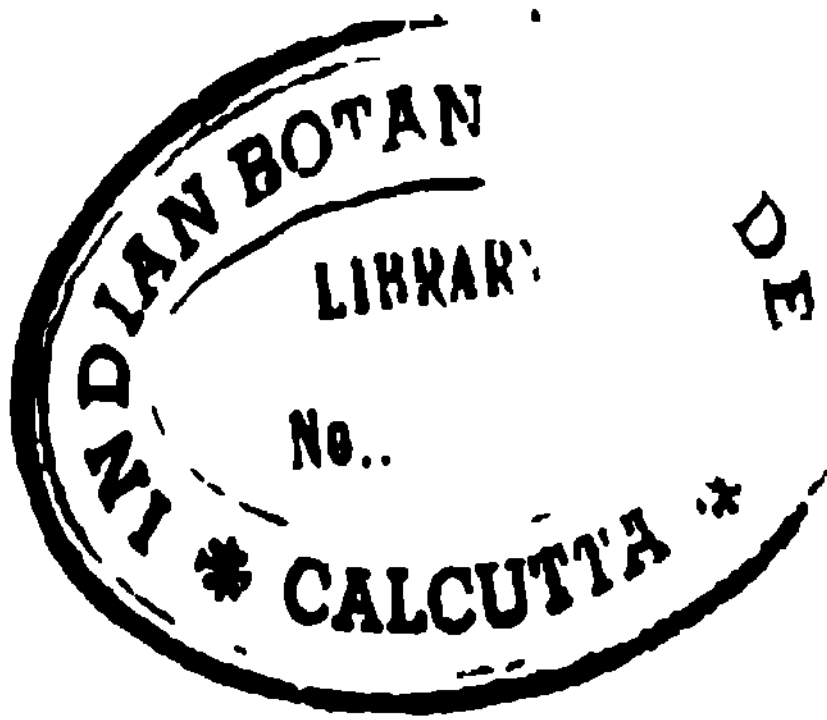
DAVID PKAIN



Calcutta

1903

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* CALCUTTA *

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SLNVTI TYOXCTH

Curator,
Botanic Garden, Calcutta.



IV. BENGAL PLANTS.

A.—PHANBBOGAMIA-

in _COROLLIFLORÆ.

often connate in a usually persistent calyx, more or less
the ovary or free; free sepals or calyx-lobes as many as
by union of adjacent lobes, fewer than petals. *Petals*
always connate in a corolla, the elements of which are
usually 4-5, rarely fewer or 6 or more, very rarely
2-seriate. *Stamens* 1-seriate, as many as petals or
ate and twice as many as petals, very
Styracecs and *Ebenaceæ*) indefinite; filaments usually
corolla-tube, rarely free within the corolla,
petals,

themselves be free the styles « • " * * " in . 2 . or n101.e.
be free the onrp.1. are connate; o «y m ^ . ^ ^
y pistil, usuaUy with as manj odU - b develop ment of
less often with twice " many cells > vu,e(
dissepiments, nents
on the inner a
ance from the inner angle, sometimes with only one cell
with as many 1- or more-ovuled parietal placentas as the
at carpels or with a basal central placenta; ovary in a
bellary pistil usually oblique, with the generally 1-ovuled
Jexeentric.

Order LXXXIII. APOCYNACE^1.

, twining or erect, rarely trees. *Leaves* opposite or
lately alternate, entire; stipules 0. *Flowers* hermaphro-
in terminal or axillary cymes; bracts small, *bepais*

ic
rila or less exserted; corolla i ..
ahard [p. 665]

BEN'CM. PLANTS.

unate in an inferior calyx, imbricate, often
 base within. *Petals* 5, rarely 4, connate in a li
 .. pocrateriform corolla; lobes spreading, contorted, arj
 twisted in bud, rarely valvate. *Stamens* 5, rarely 4, on tj
 throat, or mouth of the corolla ; filaments usually short;
 oblong, linear or sagittate, conniving; connective so
I adnate to stigma; cells 2, sometimes produced downw
 empty spurs; dehiscence longitudinal; pollen granula
 annular, cupular or glandular, sometimes occluding th
 occasionally absent. *Carpels* 2, connate in a 1-celled ov?
 2 parietal^ or a 2-celled ovary with 2 axial placentas, or o,
 tially connate or free; style simple, or styles 2, free at V
 but united above, always thickened at the top ; stigma 2-f
 or obtuse; ovules in each carpel 2 or few or many, a
 2-iany-seriate, very rarely solitary. *Fruit* of a singl
 fleshy drupe, berry or samara ; or of 2 drupes, berries or
Seed polymorphous, often winged or tipped by a tuft of lo
 hairs (coma); albumen hard, fleshy, or scanty or 0;
 straight; cotyledons flat, concave, convolute, or twisted
 usually superior.

•Anthers free from the stigma, always included within corolla, tli
 cells with rounded bases :—[p. 665]

Ovary of two wholly united carpels; fruit large, either ind
 and pulpy, or (rarely) a capsule ; seeds without wings of
 corolla-lobes always overlapping to the left:—

Corolla funnel-shaped; ovary 1-celled; fruit dehiscent, a
 capsule; seeds with fleshy albumen ; flowers large, showy

All

Corolla salver-shaped ; fruit indehiscent, fleshy or pulpy w

Ovary 1-celled, with parietal ovules; seeds without albu^{ik}

Wil

Ovary 2-celled, with axial ovules ; seeds with fleshy allu

Unarmed shrubs, usually climbing; mouth of corol
 ring of lobed scales ; ovules many in each cell of ovary

MK

Armed shrubs, usually erect; mouth of corolla nuke

1-4 in each cell of ovary

Ovary of two carpels, usually united only by the style, but occ
 also united at their base [*Rauwolfia*) or throughout VB"*

united throughout the fruit indehiscent but not pulpy wi3 *:*"*

Leaves alternate ^corollas **large**, showy; lobes overlapping to the

Left:— *

Corolla funnel-shaped ; fruit indehiscent :—

Calyx glandular within ; **fruit** somewhat angular, composed of two' almost completely united ripe carpels with hard, 2-celled endocarp ; seeds in each cell 1-2; flowers yellow.....**Thevetia.**

Calyx not glandular within ; fruit of two separate, or sometimes {by abortion) of a single ellipsoid ripe carpel, with a tough, fibrous, 1-2-seeded endocarp ; flowers white ...**Cerbera.**

Corolla salver-shaped; calyx not glandular within ; fruit of two divaricate, coriaceous, dehiscent follicles; seeds winged; flowers yellowish white or yellowish red.....**Plumeria.**

Leaves opposite or whorled ; corolla in all salver-shaped:—

Calyx not glandular within :—

Fruit indehiscent, drupaceous; seeds few, without wings or

ripe carpels 1-seeded, more or less united below; corolla-lobes overlapping to the left; leaves almost always whorled
Rauwolfia.

ripe carpels 1-2-seeded, free, one carpel sometimes abortive; corolla-lobes overlapping to the **right**; leaves opposite

Kopsia.

fruit dehiscent, of two slender, free, several-3eeded follicles ; **corolla-lobes** overlapping to the left:—

Ovules in each carpel 6 or more in two rows; seeds sub-cylindric, truncate at both ends; leaves opposite; *stigma plumose*.....**Yinca.**

Ovules very many, in several rows in each carpel; seeds ciliate at both ends; leaves whorled.....**Alstonia.**

Calyx glandular within ; fruit follicular :—

* fruit few-seeded, coriaceous, sometimes hardly dehiscent; seeds embedded in pulp, without wings or coma; corolla-lobes overlapping to the left.....**Tabernamiontana.**

fruit follicles many-seeded, slender, woody ; seeds not embedded in pulp, tipped with a deciduous coma; corolla-lobes overlapping to the light.....**Holarrhena.**

Stamens anniving in a cone round the top of the style and attached to the connective, the anther-cells produced downward into a long, empty spur ; ovary of two carpels united only by the style,

(*Conocarpus*, *Vallisneria*, **Vallisneria**) connate throughout in flower; fruit always

seeds always **oomose at one or both ends** :—[p. <14] ...ed ; corolla rotate or salver-shaped; leaves

Mouth of corolla with a ring of scales ; corolla either rotate or salver-shaped ; lobes overlapping to the left ; carpels free except at the styles ; erect shrubs or small trees.....Wrightia.

Mouth of corolla naked ; carpels connate or subconnate **in flower** ; climbing shrubs :—

Corolla rotate ; lobes overlapping to the right ; **connective thickened at the back**.....**Yallaris.**

Corolla salver-shaped ; lobes subvalvate ; connective not thickened
Parsonsia.

fAnthers included ; corolla-lobes overlapping to the right ;—[p. f(15]

Mouth of corolla with a ring of scales ; corolla funnel-shaped :—

Erect shrubs ; lobes of corolla not tailed ; follicles erect ; leff whoried.....N

Spreading or climbing shrubs ; follicles spreading ; let^ site:—

Lobes of corolla tailed.....**Strc**

Lobes of corolla not tailed.....

Mouth of corolla naked ; leaves opposite :—

Corolla funnel-shaped, very large, 3-5 in. long ; calyx segments.....**Be**

Corolla salver-shaped :—

Corolla very large, 2-3 in. wide ; lobes sharply twi left.....**Ghoi**^o

Corolla medium or small, 1 in. wide or less :—

Lobes of medium corolla nearly straight ; ovary ^m or partially hidden in the disk ; seeds not beaked ^o

Lobes small, corolla sharply twisted to the le ^a
seeds beaked:— ^v \

Ovary hidden in the cup-shaped disk ; tips of & * \ not deflected.....**Ai**^{NX}

Ovary free from the 5-lobed disk •, tips of r ^{ul} deflected.....**Ich**^l

540. Allamanda Linn. ol

Glabrous or pubescent shrubs often climbing, or sir ¹¹
leaves whoried or opposite. *Flowers* large, yellow or, few-flowered, lax, terminal racemes. *Sepals* connate in e calyx. *Petals* 5, connate in a runnel-shaped corolla ; tul ^{cc}
below, suddenly enlarged to a campanulate throat, WTJ^--
ciliate scales or long cilise ; lobes wide, contorted , h
! *iamem* 5, adnate to throat of corolla ; filaments

H R lanceolate, acuminate, with shortly sagittate base. Disk
 J fleshy, obscurely 5-lobed. Carpels 2, connate in a 1-ocular
 I with 2 parietal placentas; ovules on each placenta 2- or
 P 2; style filiform; stigma thick, base dilated, annular,
 M 2-lobed. Fruit an ovate, compressed, spinescent cap-
 discing by 2 valves along the placentas. Seeds imbricate,
 feed, with membranous or winged margin; albumen fleshy;
 us broad.

Ar. LAMANDA CAKTHARTICA Linn.; E. D. A. 762.

^ Planted in gardens in most of the **provinces**; occasion-
 ally naturalised in C. and E. Bengal.

Mj A climbing shrub. Beng. Har-kakra.

541. Willughbeia Roxb.

us shrubs, often climbing by peduncles becoming **cir-
 cles** opposite, short-petioled. Flowers in axillary cymes.
 Vate in a short, 5-lobed calyx. Petals 5, connate in a
 ped corolla; tube nearly glabrous within; throat naked
 gshy glands alternating with the lobes; lobes overlapping
 nit, nearly straight in bud. Stamens 5, included in corolla-
 filaments very short; anthers ovate or lanceolate; cells
 I at the base. Disk 0. Carpels 2 connate in a 1-celled
 1 ovules numerous, many-seriate, on 2 parietal placentas;
 hort, with obconic or urceolate apex; stigma curved or
 tar. Fruit a large globose or ovoid, many-seeded **berry j**
 third pericarp. Seeds embedded in pulp, ellipsoid; albumen
 ledons thick.

WILLUGHBEIA KDULIS Roxb.; F. I. ii. 57; F. B. I. iii. 623;
 E. D. W. 88.

Chittagong.

An immense climber with long, branched tendrils.

Beng. Lnti-am.

542. Melodinus Foist.

green shrubs, erect or climbing; leaves opposite. Flower
 c. ni*«" and axillary cymes, white or pale-pink, usually
 us, rarely 4-merous. Sepals connate in a 5-partite calyx,
 lar within. Petals 5, connate in a salver-shaped corolla;
 ith thick, lobed or cleft scales; lobes overlapping to the
 t, l«»tens 5, rarely 4; anthers included subsessile, lanceolate;
 liar

cells rounded at the base. *Disk* 0. *Carpels* 2, connate acute, 2-celled **ovary**; **ovules** numerous in each cell; style stigma thick, 2-fkl. *Fruit* a globose berry, with hard or pericarp. *Seeds* numerous, embedded in pulp; albumen cotyledons thin.

1202. MELODINUS MONOGYNUS Roxb.; F. I. ii. 56; F. B. I. E. D. M. 435.

N. Bengal; Cooch Behar.

A very large climber. *Vernae*. Sandul kon.

543. Carissa Linn.

Much-branched, usually erect, spiny shrubs; *leaves*¹, coriaceous, opposite. *Flowers* in terminal and axillary, in 3-chothomous cymes. *Sepals* connate in a 5-partite calyx; without glands inside; lobes acute. *Petals* 5, connate corolla, with cylindric tube; throat naked; lobes overlies the right. *Stamens* 5, adnate to top of tube, included lanceolate; cells rounded at the base. *Disk* 0. *Carpels* connate in a 2-celled ovary; ovules in each cell 1-4, rarely style filiform; stigma spindle-shaped or columnar, minute. *Fruit* an ellipsoid or globose berry, 2-celled or, by 1-celled. *Seeds* usually 2, peltately attached to the albumen fleshy; cotyledons ovate.

Leaves shining above:—

Tips of leaves always rounded or obtuse; leaves always glabrous on both surfaces; drupe ellipsoid, *5-1 in. long; spines stoutish; *ghnfc* or small tree..... *Ca*

Mps. of leaves almost always acute, mucronate, or **apionla** rarely obtuse; usually finely puberulous or pubescent beneath subglobose, -25 in. **long**; spines slender; small shrubs; —

Leaves glabrous or finely puberulous **beneath**, as are the *l* and cymes..... *ap*

Leaves beneath, branches and cymes pubescent

apitui; *ym* var.

Leaves dull above, glabrous on both surfaces; drupe ellipsoid long; a small shrub..... **jwm!**

1*203. CARISSA CAKANDAS Linn.; F. I. i. 687; F. B. I. E. D. C. 596.

Cultivated in most of the provinces.

A large shrub or small gnarled tree. *Hind.* Karanda ; *Bcng.* Karaincha; *Urii/a* Kendakeri, kerendo kuli.

EISSA SPIKARUM A. DC.; F. B. I. iii. **681.** *C. Mffusa* I. i. 689.

W. Bengal; Behar ; Chota Nagpur.

A small, suberect shrub. *Hind.* Karanda ; *Uriya* Auka kuli.

Var. **HIRSUTA** P. B. I. iii. 631. *C. villosa* F. I. i. **690.**

Chota Nagpur.

A small shrub.

fcossA PAUCINERVIA A. DC.; * \ li L iii. **681,**

Behar.

A small, suberect shrub.

544. *Thevetia* Juss.

limbs or small trees; *leaves* alternate, 1-nerved, or netves spreading from a strong midrib. *Flowers* in few-flowered terminal cymes. *Sepals* connate in (calyx, the base glandular within; lobes acute, **spread-** 5, connate in a funnel-shaped corolla ; tube cylindrical abruptly into a campanilate throat; scales at top se, hiding the anthers ; lobes broad, overlapping to the ?7is 5, adnate to top of tube ; anthers small, lanceolate; : at base. *Disk* 0. *Carpels* 2, connate in a more or less culled ovary; ovules 2 in each cell, placentas prominent; m ; stigma disciform, thick, with a thick, short, **2-lobed** i». *Fruit* a drupe, broader than long, compressed at to septum; endocarp hard, 2-locular; placentas 2-larnellate, dividing each cell into 2 1-seeded chambers broad, with a thin or almost winged margin; testa nibraious; **albumen** 0 ; cotyledons fleshy, suborbicular,

VETU NEEHIM.IJA JUSS. | E, 1 >. T. 410.

»In guldens in all the provinces.

" A large shrub or small tree. *Himl* L'ila kmu'r ; *Beng.* IjKokla-phul, **haldi** korubi; *Santal.* Berenjo.

545. *Gerbera* Linn.

raJabrous trees; *leaves* elongated, alternate, nerves plel, spreading from a strong midrib. *Flowers* large,

[Cerbera

white
 calv or /<(1, in illtli" ^ cymes. *Sepals* connate in a *H*
 5 Conn* . glau"lllll;U> **Within** ; lobe* obtus. *O** ftCUt@, U B * .
 r;w»nate in a funnel-shaped corolla ; tube short, **cylindrio I** ^
 I with ftdnafce, linear, Pubescent ^caJe8;"
 i:l, pi, is to l a « ll - k t ~ 5, included;
 ,, ; , ' ' I » We aiform, top dilated : rtigm. a lobed ; <>«&**

2 - , b^ nose, ovoid or ellipsoid, 1-2-seeded carpels ; pericarp
 thick fibrous and woody. *Seeds* broad, compressed, peltately
 affixed ; albumen 0 cotyledons **thin** ; radiole very short. . . .
 1207. CERBERA ODOLLAM Gaertn. 638.

Sundribuns ; Chittagong, coast.
 A large shrub or small tree. Beng. Dākūr.

546 - Plumeria Linn.

Erect trees with very thick branches ; *leaves* elongated, alter-
 nate ; nerves horizontal, parallel, spreading from a strong midrib.
Flowers large, in terminal, 2-3-chotomous cymes ; bracts many,
 broad, deciduous. *Sepals* connate in a small 5-fid calyx ; tube not
 glandular within ; lobes wide, obtuse. *Petals* 5, connate in a
 salver-shaped corolla ; throat naked ; lobes overlapping to the
 left, or occasionally to the right. *Stamens* 5, adnate near base of
 tube ; anthers obtuse.
 lining calyx-tube. *C* ; ovules many-seriate in
 each ; style **short** ; stigma **Globed**. ;
 eUipsoid follicl.,. . V, /, oMon, or 2 Une^i-obloo? or
 winged ; albumen thin, fl_{es}i, v' lanceol
 cordate. cotyledons °hlon_{Ko} or ovate-

1208, PLUMKKA ACUTIFOLIA Poir. ; F B. I. iii. 641 ; B. D. P. 989.
 nata F. I. ii. 20.

Planted every where in gardens and near temples.
 A **small** tree. **Hind**, (mlachin, gobur-champ ; Beng.
 Go nur-champa ; Uriy & Katchau ; Santal, Champa
 pungar.

547. Rauwolfia Linn.

Small shrubs ; *leaves* 3^-nately **whorled**, rarely opposite ;
 nerves slender, remotely arched ; axUs glan'dui_{at}. *Flowers* in
 \imbtllif(aiit cymes, on peduncles alternate **with** the terminal

leaves, ultimately becoming lateral. *Sepals* connate in a 5-fid or 5-partite calyx; tube not glandular within; lobes obtuse or acute. *Petal* 5, connate in a salver-shaped corolla, with cylindric tube and constricted throat, the latter usually hairy within; lobes broad, overlapping to the left. *Stamens* included, adnate to or above the middle of the tube; anthers small, acute; cells with rounded base. *Disk* large, cupular or annular. *Carpels* 2, distinct or connate; ovules 2 collateral in each carpel; style filiform; stigma with a broad, calyprate base, and a 2-fid tip. *Fruit* of 2 distinct or connate, drupe-like ripe carpels, each usually 1-seeded. *Seeds* ovoid; albumen fleshy; cotyledons flat.

Leaves glabrous..... *serpentina*.
 Leaves pubescent..... *canescens*.

1209. RAUWOLFIA SERPENTINA Benth.; F. B. I. iii. 632. *Ophioxylon serpentinum* F. I. i. 694.

N. Bengal; C. Bengal.

A small, glabrous shrub. *Hind.* Chota-chand; *Beng.* Chandrá.

1210. RAUWOLFIA CANESCENS Linn.

C. Bengal, cultivated and at times naturalised.

A small pubescent shrub; native of West Indies.

548. Kopsia 61.

Glabrous trees or shrubs; *leaves* opposite, narrowed to very short petioles. *Flowers* in terminal cymes. *Sepals* connate in a small, 5-partite calyx; lobes with glandular tips; tube not glandular within. *Petals* 5, connate in a salver-shaped corolla; tube very slender; throat hairy within; lobes overlapping to the right. *Stamens* 5, included, adnate near apex of corolla-tube; anthers acute; cells rounded at the base. *Disk* of 2 glands alternating with the carpels. *Carpels* 2, distinct; ovules 2 in each carpel, one on each side of a thickened placenta; style filiform, thickened at the top; stigma short. *Fruit* of 2 obovoid or obliquely quadrate; coriaceous or rather fleshy carpels, each 1-celled and 1-seeded, or from intrusion of the fleshy placenta 2-celled and 2-seeded. *Seed* oblong; albumen 0; cotyledons rather thin.

1211. KOPSIA FRUTICOSA A. DC.; F. B. I. iii. 639. *Cerbera fruticosa* F. I. i. 691.

• In gardens, frequent.

A large evergreen shrub.

549. *Yinca* Linn.

Erect or procumbent herbs or shrubs; *leaves* opposite. *Flowers* axillary, solitary. *Sepals* connate in a 5-partite calyx; tube glandular within; lobes narrow. *Petals* 5, connate in a salver-shaped corolla; tube cylindric, usually with reflexed hairs below the stamens; throat constricted, thickened or hirsute; lobes broad, overlapping to the left. *Stamens* 5, included, adnate above middle of tube; anthers with obtuse base. *Disk* of 2 large glands. *Carpels* 2, distinct; ovules 6 or more, 2-seriate in each carpel; style filiform, apex thick; stigma annulate, viscid, sometimes with a reflexed membrane, tip minute, penicillate. *PVW* of 2 slender, erect or spreading follicles. *Seeds* subcylindric, truncate at both ends; hilum lateral; albumen fleshy; cotyledons ovate; radicle long.

1212. *VINCA ROSEA* Linn.; F. B. I. iii. 640; E. P. V. 138-
Vinka rosea F. I. ii. 1.

Planted everywhere in gardens and near temples, almost often subspontaneous.

An erect herb, flowers variously rosy or white; native of West Indies. *Uriya* Ains kati.

550. *Alstonia* II. Br.

Trees or erect shrubs; *leaves* 3-4-nately whorled, rarely opposite. *Flowers* in subterminal, corymbose cymes. *Sepals* connate in a short, 5-lobed or 5-partite calyx; lobes short, usually obtuse. *Petals* 5, connate in a salver-shaped corolla; tube cylindric; throat naked, annulate or with reflexed hairs; lobes overlapping, sometimes to the right, sometimes to the left. *Stamens* adnate near apex of tube, included; anthers subacute. *Disk* annular, truncate or lobed, or 0. *Carpels* 2, distinct; ovules numerous, many-seriate in each carpel; style filiform, ovoid or oblong at top; stigma minute or 2-toothed. *Fruit* of 2 linear, slender follicles. *Seeds* oblong or linear, flattened, peltately attached, often ciliate; albumen scanty; cotyledons oblong, flattened.

1213. *ALSTONIA SCHOLARIS* B. Br.; F. B. I. ijjt g ^ • j£. D.
A. 870.

W. Bengal; N. Bengal.

A tall tree. *Beng.* Chhattin; *Hind.* Satiun; *Uriya* and *Santal.* Chatnia.

551. TabernaMontana Linn.

Trees or shrubs; *leaves* opposite. *Flowers* white, in terminal or sometimes sublateral, never truly axillary cymes. *Sepals* connate in a 5-lobed or 5-partite calyx ; tube usually glandular within; corolla; usually slender, inflated in the middle or at apex; throat naked; lobes overlapping to the left. *Stamens* included at or above the middle of the tube; filaments short or 0 ; anthers sagittate or obtuse. *Disk* 0. *Carpels* 2, distinct; ovules usually numerous and many-seriate in each carpel; style short or long, apex urceolate, ovoid, or clavate; stigma short or long, 2-lobed. *Fruit* of 2 ovoid-oblong or reniform, dry or fleshy, smooth or ribbed, 1-many-seeded follicles. Embedded in pulp, ovoid-oblong, subterete or compressed, grooved down one face ; testa smooth, striate, or rugose ; albumen fleshy, equable or ruminant ; cotyledons ovate.

Calyx 5-lobed; lobes broadly ovate, acute; corolla-lobes obliquely ovate, margins curled; follicles 3-ribbed.....*coronaria*.
Calyx 5-partite; segments narrowly lanceolate; corolla-lobes falcately obovate, acute; follicles terete.....*recurva*.

214. TABERNAMONTANA COKONARIA R. Br.; F. I. ii. 23 ; F. B. I. iii. 646; E. D. T. 3.

Cultivated in all the provinces.

A shrub, 6-8 feet high. Vernac. Tagur.

1215 - TABERJUSMONTANA RECURVA Roxb.; F. I. ii. 26; F. B. I. iii- 648.

Chittagong.

A small shrub.

552. Holarrhena R. Br.

Trees or shrubs; *leaves* membranous, opposite. *Flowers* white, subaxillary, many-flowered, corymbose cymes. *Sepals* connate in a 5-lobed or 5-partite calyx, usually glandular within; lobes small, narrow. *Petals* 5, connate in a salver-shaped corolla; tube cylindrical » throat contracted, naked ; lobes oblong, included to the left. *Stamens* adnate near base of tube, the anthers oblong, lanceolate, mucronate; cells rounded at base. *Disk* 0. *Carpels* 2, distinct; ovules in each numerous;

style short, filiform; stigma oblong-fusiform, tip entire or 2-toothed. *Fruit* of 2 terete, elongated, spreading and incurved follicles. *Seeds* linear or oblong, compressed, tipped with a deciduous coma, concave with the funicle in the concavity! albumen scanty; cotyledons broad, complicate.

1216. HOLARRHENA ANTIDYSENTERICA Wall.; F. B. I. iii. 614; E. D. H. 294.

In all the provinces except C. Bengal.

A small, deciduous tree. *Hind*, and *Bcng*. Kurchū *Santal*. and *Kol*. Hat.

553. Wrightia K. Br.

Shrubs or small trees, often with slender, cord-like branches; *leaves* opposite. *Flowers* white, yellow, or red, in terminal or subaxillary, sessile cymes. *Sepals* connate in a short, 5-partite calyx; tube with glands or scales within; lobes obtuse. *Petals* 5, connate in a salver-shaped corolla; tube usually short, cylindrical; throat with 1-2 series of usually fimbriate scales; lobes overlapping to the left. *Stamens* 5, adnate to top of corolla-tube; filaments short, dilated; anthers exserted, sagittate, connivent around and adnate to the stigma; cells spurred at the base. *Disk* 0. *Carpels* 2, free or connate, each many-ovuled; style filiform; stigma ovoid, with usually a toothed basal ring. *Fruit* of 2 linear, erect, connate or distinct follicles. *Seeds* linear, compressed, tips narrowed, naked, base with a deciduous coma; albumen scanty or 0; cotyledons broad, convolute.

Flowers yellowish, with short orange scales of corona *tomentosa*.

Flowers dark red, with large crimson scales of corona *roccinea*.

1217. WRIGHTIA TOMENTOSA Roem. & Schult.; F. B. I. iii. C53; E. D. W. 131. *Neriuni tomentosum* F. I. ii. 6.

In all the western and northern provinces.

A small, deciduous tree. *Hind*, Dudhi, dharauli, dhaira; *Beng*. Dudh-koraiya; *TJriya* Pal kurwan, harido; *Santal*. Atkura, buru machkunda.

1218. WRIGHTIA COCCINEA Sims; F. li. I. iii. 654. *Ncrium roccincum* F. I. ii. 2.

Chittagong; cultivated in C. and W. Bengal.

A medium tree. *Vernac*. Pállam.

554. *Yallaris* Burm.

Climbing shrubs; *leaves* opposite, minutely dotted. *Flowers* white, in cymes or fascicles, axillary, subaxillary, or supra-axillary. *Sepals* connate in a 5-partite calyx; tube glandular or not within; lobes narrow. *Petal* 5, connate in a salver-shaped corolla, with a short tube and naked throat; lobes broad, overlapping to the right. *Stamens* 5, adnate to top of tube; filaments very short, clavate; anthers exerted, conniving in a cone and adnate to stigma; cells with rigid basal spurs; connective with a large dorsal gland. *Disk* annular or cupshaped, 5-lobed or with 5 scales. *Petals* 2, at first connate, each many-ovuled; style filiform, pubescent; stigma thick, indistinctly annulate. *Fruit* an oblong capsule, or of 2 at length separating follicles, the placentas detached from each other and from the pericarp. *Seeds* 2-seriate, ovate, acuminate or beaked, compressed, apex comose; albumen scanty; cotyledons thin and flat.

leaves elliptic-oblong or linear-oblong, acuminate; petioles less than an inch long; cymes pubescent. *IlrV^{Mi}*

Leaves broadly elliptic-obovate or rounded, shortly acute; petioles an inch long or longer; cymes glabrous or puberulous. *Penjulamt.*

1219. VALLABIS HEYNEI Spreng.; F. B. I. Hi. 650; E. D. V. 12. *tchites dichotoma* F. I. ii. 19-

Tirhut; Behar; Chota Nagpur; W. and C. Bengal: also often cultivated.

A climbing shrub. *Hind.* Rámsar; *Beng.* Hápar, mali.

1220. VALLARIS PERGULANA Burm.; F. B. I. iii. 651. *Eddies hircosa* Y. I. ii. 18.

Occasionally cultivated.

A. climbing shrub, flowers with a goat-like smell.

555. *Parsonsia* R. Br.

Climbing shrubs; *leaves* opposite. *Flowers* small, white, in dichotomous, axillary pedungled cymes, or in terminal thyrsoid cymes. *Sepals* connate in a 5-partite calyx; tube with 5 glands or scales within, or eglandular; lobes narrow. *Petals* 5, connate in a salver-shaped corolla; tube short, cylindrical or globose; throat naked; lobes overlapping to the right. *Stamens* 5, adnate to the corolla-tube; filaments often twisted; anthers half-exserted, con-

nivent above and adnate to the stigma; cells spurred and empty below. *Disk* of 5 lobes or scales. *Carpels* connate in a 2-celled ovary; ovules in each cell numerous; style filiform, apex dilated, truncate; stigma columnar or long^conic. *Fruit* a cylindrical capsule, the carpels at length separating from the two placentas. *Seeds* linear or oblong, tip narrow and penicillate; albumen scanty; cotyledons linear-oblong, flat.

1221. PARSONSIA SPIRALIS Wall.; F. B. I. iii. 650.

Sundribuns.

An evergreen twiner.

556. Nerium Linn.

Erect, glabrous shrubs; *leaves* 3-4-nately whorled, rarely opposite, narrow, coriaceous; nerves slender, close-set. *Flowers* large, in racemose cymes. *Sepals* connate in a 5-partite calyx; tube glandular within; lobes narrow. *Petals* 5, connate in a funnel-shaped corolla; tube cylindrical, widening into a campanulate throat, with 5 broad, toothed scales; lobes overlapping to the right. *Stamens* adnate to top of tube, included; filaments short; anthers sagittate, connivent round and adnate to the stigma; tips filiform; cells long-spurred, beset with twisted hairs, appendages rigid. *Disk* 0. *Carpels* 2, distinct, each many-ovuled; style filiform, or thickened above the middle; stigma with a basal, reflexed, lobed membrane surmounted by 5 tubercles, tip subglobose. *Fruit* of 2 elongated, cylindrical, straight, hard, adpressed follicles. *Seeds* oblong, villous, with terminal, caducous coma; albumen fleshy; cotyledons flat, rather thick.

1222. NERIUM ODORUM Soland.; F. I. ii. 2; F. B. I. Hi. 655; E. D. N. 80.

W. Bengal; Chota Nagpur; Behar; cultivated and as if wild: in other provinces cultivated only.

A large, erect shrub. *Hind.* Kanér; *Beng.* Karabi; *Santal.* Rajbaka.

557. Strophanthus DC.

Shrubs, often climbing, or small trees; *leaves* opposite. *Flowers* usually large, in terminal cymes. *Sepals* connate in a 5-partite calyx; tube glandular within; lobes oblong or lanceolate. *Petals* 5, connate in a funnel-shaped corolla; tube short, widening to a large campanulate throat, with 10 free or connate scales; lobes

overlapping to the right, each produced into a short or long, often
 2-tailed tail. *Stamens* 5, adnate to top of corolla-tube, included ;
 filaments short; anthers sagittate, tips filiform, connivent round
 and adnate to stigma; cells spurred at the base. *Disk* 0. *Carpels*
 2, glabrous, distinct, each many-ovuled; style filiform, rugose
 with cellular papillae, tip dilated; stigma columnar or conic,
 simple or 2-fid. *Fruit* of 2, oblong or elongated, hard, spreading
 follicles. *Seeds* compressed, fusiform, narrowed to a penicillate
 tail. *TM ^ j * ^ a* sessile coma; base with a deciduous tuft of hairs.

J-23. STROPHANTHUS WALLTCHII A. DC; F. R. T. iii. 655.

Nenium caudatum F. I. ii. 9.

Chittagong.

A climber.

558. Roupellia Wall.

Glabrous shrubs, often climbing; leaves opposite. *Flowers*
 2-arranged axillary white or purplish, in terminal, dichotomous cymes.
 Sepals connate in a 5-partite calyx; tube glandular within; lobes
 oblong or lanceolate. *Petals* 5, connate in a funnel-shaped
 corolla; tube short, widening to a large campanulate throat, with
 10 scales usually more or less connate at the base; lobes wide,
 overlapping to the right, without tails. *Stamens* 5, adnate to top
 of tube included; filaments short; anthers linear-sagittate, tips
 acuminate, connivent round and adnate to stigma; bases pro-
 duced as empty appendages. *Disk* 0. *Carpels* 2 connate or
 2-arranged axillary-ovuled style thickish; stigma thickened,
 based dilated in a somewhat reflexed membrane. *Fruit* of 2 long,
 10-angled thickened lobes, connate at base, divaricate above.

24* ROUPELLIA GRATA Wall.

Frequently planted.

A large climber; native of Africa.

559. Beaumontia Wall.

Herbaceous climbing shrubs; leaves opposite, membranous;
 cymes distant, arched. *Flowers* very large, white, in terminal
 glanTia bracts leafy. *Sepal** connate in a 5-partite calyx; tube
 narrow or not within; lobes large, leafy. *Petals* 5, connate in
 narrow funnel-shaped corolla; tube very short; throat much widened,
 right Panulate, naked; lobes broad, overlapping to the
 1 *stamens* 5, adnate to the top of the tube, included in the

throat; filaments thickened at the top; anthers horny, «agittate. connivent above and adnate to stigma; cells spurred at ^{bas} Disk deeply 5-lobed. *Carpels* 2, connate in a 2-celled ovary; cells many-ovuled; style filiform, clavate above; stigma fusiform-*Fruit* long, thick, woody, at length dividing into 2 horizontally spreading follicles. *Seeds* compressed, ovoid or oblong, top contracted, surmounted by a pencil of hairs; albumen scanty; cotyledons thin or thick.

1225. BEAUMONTIA GRANDIFLORA Wall.; F. H. I. iii- 66°; K. P-B. 390. *Echites grandiflora* F. I. ii. 14.

Chittagong: elsewhere cultivated.

A lofty climber.

560. *Chonemorpha* G. Don.

Stout climbing shrubs; *leaves* opposite, broad; nerves distant, arching. *Flowers* large, white, in lax terminal and pseudo-axillary cymes. *Sepals* connate in a 5-cleft or 5-partite calyx; tube with a ring of glands within; lobes rather narrow. *Petals* 5, connate in a salver-shaped corolla; tube very short; throat long, sub-tubular, naked; lobes broad, obliquely cuneate, overlapping to the right and sharply twisted to the left. *Stamens* 5, adnate to top of corolla-tube; filaments short, broad, villous; anthers sagittate, elongate, pungent, connivent above and adnate to stigma; cells shortly spurred below. *Disk* thick, annular or cuplike. *Carpels* 2, distinct, each many-ovuled; style filiform, cleft below, apex globose or hemispheric; stigma conoid or subclavate. *Fruit* of 2 long, straight, hard, parallel, 3-gonous follicles. *Seeds* ovoid or oblong, flat, shortly beaked; coma long; albumen scanty; cotyledons oblong, flat.

1226. CHONEMORPHA MACROPHYLLA G. Don; F. J3. I. iii. 661; E. D. C. 1038. *Echites macrophylla* F. I. ii. 13,

N. Bengal, Duars; elsewhere cultivated.

A lofty climber. *Vernac.* Gar badero.

561. *Aganosma* G. Don.

Evergreen climbing shrubs; *leaves* opposite. *Flowers* medium or large, in terminal, tomentose cymes. *Sepals* 5, slightly connate below or free, narrowly lanceolate-acuminate, rarely oblong-ovate, with subulate glands near the base within. *Petals* 5, connate in a salver-shaped corolla; tube very short; throat long, cylindrical,

with bearded longitudinal bands behind the anthers; lobes lanceolate, linear-oblong, or rounded, overlapping to the right and almost straight in bud. *Stamens* adnate to base of throat, included; anthers sagittate, rigid, connivent above and adnate to stigma; cells spurred at the base. *Disk* 5-lobed, cupular. *Camels* 2, distinct, tips hirsute rarely glabrous, each many-ovuled; style short, apex urceolate, truncate; stigma columnar. *Fruit* of 2 short or long, terete, straight or curved, linear follicles. *Seeds* ovate or linear-oblong, flattened, glabrous; coma deciduous; albumen scanty; cotyledons oblong.

Leaves with strong nerves beneath, interarching within the margin; leafy glabrous, half-sunk in the disk..... *marginata*.
leaves with very oblique nerves (3 pairs), not interarching; ovary pubescent, wholly included in the disk..... *canjophyllata*.

1227. AGANOSMA MARGINATA G. Don; F. B. I. ii. 663; E. D. A. 587. *Ehites marginata* F. I. ii. 15. *E. acinnowata* F. I. ii. 15.

Chittagong.

A stout, scandent or subscandent shrub.

1228. AGANOSMA CARYOPHYLLATA G. Don.; F. B. I. iii. 664; E. D. A. 584.

Behar.

A large climber. *Vernac.* Málati, gandho-raálati.

562. Anodendron A. DC.

Glabrous, climbing shrubs; leaves opposite; nerves distant, axillary. *Flovers* in axillary, or axillary and terminal, slender, paniculate, spreading cymes. *Sepals* connate in a 5-cleft calyx; lobes without glands; lobes obtuse. *Petals* 5, connate in a salver-shaped corolla; throat contracted; lobes overlapping to the right, listed to the left. *Stamens* adnate below the middle of the corolla-tube; anthers sagittate, connivent round and adnate to tube; cells shortly spurred at base. *Disk* cupshaped. *Carpels* 2, distinct, sunk in the disk and dorsally adnate to it at their base, each many-ovuled; style very short, apex cupular; stigma thick, conical. *Fruit* of 2 diverging, acuminate, hard follicles. *Seeds* void, oblong, compressed, beaked, tipped with a long coma.

1229. ANODENDRON PANICULATUM A. DC; F. B. I. ii. 668;

§ D. A. 1141. *Edites paniculata* F. I. ii. 17-

Chittagong.

An immense climber.

563. *Ichnocarpus* B. Br.

Climbing shrubs with slender branches; *leaves* opposite ; *ne* distant. *Sepals* connate in a 5-fid calyx; tube glandular or no within; lobes narrow. *Petals* connate in a salver-shaped corolla, throat contracted or villous; lobes narrowed to an obtuse tip overlapping to the right, upper half deflexed in bud. *Stamens* adnate to the corolla-tube at or below the middle; anthers sagittate, connivent above and adnate to the stigma; cells spinulate at the base. *Disk* free, 5-lobed. *Carpels* 2, distinct, hirsute, exserted from the disk, each many-ovuled; style short, tor obconic; stigma columnar. *Fruit* of 2 spreading or divaricate follicles, slender and subterete or rigid and compressed. *Seed* narrowed at the apex; coma deciduous; albumen copious; cotyledons long, flat.

Corolla-tube glabrous, mouth villous.....*Jnttexcens*.
Corolla-tube pubescent, mouth puberulous.....*ovatifolw*^{8*}

1230. *ICHNOCARPUS FRUTESCENS* R. Br.; F. B. I. iii. 669; E. P. I. 1. *Echites frutescens* F. I. ii. 12.

In all the provinces. •

A climber. *Vernac.* Dudhi, dudhi-lata, siama-lata.

1231. *ICHNOCARPUS OVATIFOLIUS* A. DC.; F. B. I. iii. 670.

Chittagong; Chota Nagpur.

A climber.

Order LXXXIY. ASCLEPIADACEJE.

Herbs or shrubs, usually twining. *Leaves* opposite or occasionally obsolete, very rarely alternate, entire; stipules 0. *Flowers* regular, hermaphrodite ; inflorescence usually an axillary, umbel-like cyme; bracts small or minute, or obsolete. *Sepals* 5, connate in an inferior calyx ; lobes imbricate. *Petals* 5, connate in a gamopetalous corolla; lobes valvate or overlapping to the right, very rarely to the left; throat or tube of corolla with an outer corona of hairs, scales or processes disposed in a ring. *Stamens* 5, at the base of the corolla; filaments in a few genera free, with or without interposed glands, in the majority connate in a generally very short, fleshy column, which usually bears an inner corona of scales or processes disposed in a simple or compound ring, and

attached to the filaments or to the backs of the anthers or to both; anthers crowning the column, free or connate, adnate by the connective to the stigma, 2-celled, the tips often produced into inflexed membranes; pollen aggregated into one or two granular or waxy masses (pollinia) in each cell, the masses united in pairs or fours to a gland (corpuscle) on the stigma. *Carpels* 2, superior, distinct, enclosed within the staminal column; styles 2, short, free almost throughout, but connate at the stigma, which is short, Wangled, and included between the anthers, or longer and produced beyond as a simple or 2-fid column; ovules many, rarely few, 2-seriate in each carpel. *Fruit* of 2 follicles. *Seeds* compressed, usually flat, ovoid, winged or tipped by a tuft of long, silky hairs (coma), which is rarely absent; albumen dense, copious; embryo large; cotyledons flat; radicle inferior.

Filaments free; anthers acuminate or with a terminal appendage; pollen masses granular, in pairs in each cell:—

Corona of 5 short, thick scales attached to the centre of the corolla from the filaments; seeds with coma :—

Corolla large, funnel-shaped, the lobes overlapping ...**Cryptostegia.**

Corolla small, rotate :—

Lobes of corolla overlapping.....**Cryptolepis.**

Lobes of corolla valvate.....**Hemidesmus.**

Corona of 5 filiform or subulate scales closely adjacent or adnate to the filaments :—

Filaments without interposed glands; seeds without coma

Finlaysonia.

Filaments with interposed teeth or glands; seeds with coma :—

Cymes short, sessile; corolla-lobes short, ovate; follicles smooth

Streptocaulon.

Cymes loosely panicled; corolla-lobes lanceolate; follicles with many longitudinal, membranous wings.....**Myriopterion.**

Filaments connate ; pollen-masses waxy:—

Pollen-masses in pairs in each cell (20 in all), sessile in fours (2 pairs) on the corpuscle; anthers with membranous, inflexed tip; corolla rotate; lobes valvate.....**Genianthus.**

Pollen-masses solitary in each cell (10 in all); sessile or peduncled in pairs on the corpuscle:—

Pollen-masses pendulous from the tip or side of the corpuscle below the edge of the stigma; anthers with a membranous, inflexed apex, seeds with coma:—[p. 682 J

Corona, double, the outer annular attached to the corolla, Vxe

limei of 5 free lunate scales adnate to the back of the stained
 corolla wide, lobate campanulate, angularly 5 lobed, ^{stems}
 twining **Oxystelma.**

Corolla single, or, if double, the outer as well as the inner attached
 to the stamens —

Stems leafy, erect or climbing, not jointed —

benifia erect, corolla lobes valvate, corolla single, of 5 processes
 cresses, adnate to the back of the stamens —

Corolla wide campanulate, corollary processes radiating
 from the staminal column, laterally compressed, spurred
 on the back **Calotropis.**

Corolla lobate, corollary processes erect, spoon shaped, ^{1:10^{an}}
 late on the face **Asclepias.**

Stems twining, corolla lobes overlapping —

Corolla single, annular, fleshy, truncate, attached to
 base of 10 nerved staminal tube **Holostemma.***

Corolla double, outer annular, membranous, lobed, inner of
 <5 processes, or, if single (*IlapJu^tma* and sometimes ^{1:1}
Pintatiopsis) not annular —

Processes of inner corolla free from smooth staminal
 tube, outer corona with 5 distinct lobes opposite the
 anthers, and with a scale or scale (inner corolla) adnate
 to face of each lobe, corolla campanulate or subrotate

Cynanchum.

Processes of inner or only corolla adnate to staminal
 tube —

Processes of only corolla lobulate, corolla campanulate
Raphistemma.

Processes of inner or only corolla compressed, often
 spurred on the back, corolla lobate or funnel
 shaped —

Outer corolla minute or absent, if present 5 10
 lobed, with the longer or only lobes opposite the
 anthers **Pentatropis.**

Outer corolla conspicuous, always present, 5 10
 lobed, with the larger or only lobes alternate with
 the anthers **Daemia.**

Stems leafless, jointed, hairy, corolla subrotate, lobes over-
 lapping, corolla double, outer annular, membranous, 10 lobed,
 inner of 3 processes, joining the outer to the back of the
 stamens **Sarcostemma.**

*Pollen masses erect, parallel with or using above the edge of the

stigma, if horizontal or pendulous (laxly in *lylojjhouf*) still with an erect pedicel —[p 681]

Anthesis with a membranous, inflexed apex, if obtuse (laxly in *Hoya a*) then with large, stellate, single corolla, lobate corolla, and free petal tips —[p 684]

Corolla absent, fruits globose, seeds large, without coma, corolla lobes overlapping to the throat **Sarcobolus.**

Corolla present, or if (sometimes in *Stejj/muoftN*, laxly in *Muib duito*) absent, then fruit not globose and seeds provided with a coma —

Corolla adnate to corolla tube, lobes of corolla overlapping to the throat **Gymnema.**

Corolla adnate to staminal tube or to the anthesis —

Corolla lobes overlapping to the throat, or, if subvalvate (*lylophoia* sometimes) then with stamens inserted in the throat or tube of the corolla —[p 684]

Stamens arising from base of corolla -

Scales of corolla minute, attached to the base of the staminal tube, flowers small, uiceolate or wide campanulate **Gongronema.**

Scales of corolla conspicuous, attached above the base of the staminal tube, laxly absent —

Corolla large, 1 in long or longer, white, salve shaped or funnel shaped, scales of corolla erect, attached to back of anthesis, sometimes absent

Stephanotis.

Corolla medium (5 in long or less) —

Scales of corolla erect —

Corolla scales attached to staminal tube and back of anthesis, laxly absent, flowers purple or greenish, campanulate or uiceolate

Marsdenia.

Corolla scales attached only to staminal tube, free above, flowers yellow or orange, salve shaped **Pergulana.**

Scales of corolla stellately spiculate, thick, fleshy, attached to staminal tube, low, lotite **Dregea**

Stamens arising from throat or tube of corolla, scales of corolla laterally compressed, fleshy, attached to staminal tube, more or less spreading, flowers small, subrotate, sometimes almost valvate **Tylophora.**

J Corolla-lobes absolutely valvate, the stamens arising at the base of the corolla; coronal scales attached to staminal tube:—[p. 683]

Scales of corona erect, membranous; corolla urceolate.

Dischidia-

Scales of corona stellately spreading, thick and fleshy; corolla rotate; anthers rarely without a membranous tip

Hoya.

Anthers without a membranous, inflexed tip; corona double, outer annular, 5-10-lobed, attached to staminal tube, inner of outer scales opposite the anthers, attached to face of outer; stamens attached to base of corolla; corolla tubular with subglobose limb and valvate, lantern-shaped limb, the lobes cohering at their apices; stems twining; seeds with a coma [p. 083] ...Oeropegia.

564. Cryptostegia B. Br.

Large climbers; *leaves* opposite. *Flowers* large, in terminal, 3-chotomous cymes. *Sepals* 5, slightly connate below, lanceolate. *Petals* 5, connate in a funnel-shaped corolla; tube short, widened into a campanulate throat; lobes wide, overlapping and twisted to the right: coronal scales 5 at the base of corolla-throat, subulate, entire or 2-cleft. *Stamens* 5, adnate to base of corolla-tube; filaments short, filiform; anthers connate around and adnate to stigma, tips acute, comiivent; pollen-masses in pairs in each cell, granular, appendages of corpuscles subspathulate. *Carpels* 2, each many-ovuled; styles distinct; stigma convex. *Fruit* of 2 thick, divaricate, hard, 2-winged follicles, furrowed between the wings. *Seeds* comose.

1232. CRYPTOSTEGIA GRANDIFLORA R. 13r.; F. 13.1. iv. 6; E. 1).

C. 2253. *Nerium grandiflorum* F. I. ii. 10.

In gardens in most of the provinces.

A large, stout climber; native of Africa or of Madagascar.

565. Cryptolepis 11. Br.

Glabrous, climbing shrubs; *leaves* opposite. *Flowers* in very lax, slender, dichotomous, few-flowered, peduncled, terminal or axillary cymes. *Sepals* connate in a 5-fid calyx; tube with 5 scales near base within. *Petals* 5, connate in a hypocrateriform or subrotate corolla; tube short, cylindrical or campanulate; lobes linear, overlapping and twisted to the right: coronal scales 5, near or

above the middle of the tube, linear or clavate, connivent. *f. tamens*
5, adnate below middle of corolla-tube; filaments wide-based,
somewhat united below, free and narrow above; anthers short,
adnate to stigma by their bases; their tips acuminate, connivent,
pollen-masses in more or less coherent pairs in each cell, granular,
appendages of corpuscles oblong. *Carpels* 2, many-ovuled, and
styles distinct; stigma wide-conic. *Fruit* of 2 divaricate, terete,
smooth follicles. *Seeds* comose.

Cymes many-flowered, shortly peduncled ; branchlets short, divaricate ;
sepals acute; follicles not exceeding 4 in. in length; flower under an
... .. *Buchanani*
inch across.....,

Cymes few-flowered, long-peduncled ; branchlets longer, slender; sepals
obtuse ; follicles 5 in. long or longer ; flower an inch or more across
elegant.

- 1233. CRYPTOLEPIS BUCHANANI Boem. & Schult.; F. B. I. iv. 5;
E. D. C. 2247. *Nerium reticulatum* F. I. ii. 8.

In all the provinces.
A glabrous, twining shrub. *Hind.* Karanta; *Santal*.
Utri dudhi.

- 1234. CRYPTOLEPIS ELEGANS Wall.; F. B. I. iv. 6.

Orissa; N. Bengal, Duars; Chittagong.
A slender, glabrous climber.

566. Hemidesmus B. Br.

Twining shrubs; *leaves* opposite, hoary or pubescent beneath.
owers small, in opposite, crowded, subsessile cymes, greenish-
Purple. *Sepals* 5, somewhat connate below, acuminate, each
glandular within at the base. *Petals* 5, connate in a rotate
corolla; lobes thick, valvate ; coronal scales 5 on the corolla-
throat, alternate with its lobes, short, thick. *Stamens* 5 ; fila-
ments adnate to base of corolla-tube, faintly connate at base, free
above; anthers with connate, inflexed, membranous tips ; pollen-
masses cohering in pairs in each cell, granular; appendages of
corpuscles dilated or hoodlike. *Carpels* 2, many-ovuled, and
styles distinct; stigma 5-cornered, with flattened crown. *Fruit*
of 2 long, slender, divaricate, terete, smooth follicles, *becas*
comose.

Qt ..indicus.
Stem and leaves above glabrous

Stem and leaves beneath and sometimes above pubescent
*indica** var. *Juhe***cen**.
turf if MI

1235. HEMIDESMUS INDICUS R. Br.; F. B. I. iv. 5; E. 1> H. I¹⁹,
Asclepios pseudo-sarsa F. I. ii. 39.

Orissa; Chota Nagpur; Behar; C. Bengal; Sundribuns.
 A twining shrub. Vernac. Ananta-mal.

- 1235/2. Var. PUBESCENS F. B. I. iv. 5.

Behar.

A twining shrub.

567. *Finlaysonia* Wall.

A large, glabrous climber; leaves opposite. Flowers in 2-J' chotomous, axillary cymes, yellow and purple. Sepals connate in a short, 5-partite calyx; lobes rounded. Petals 5, connate in a rotate corolla; lobes ovate, overlapping to the right; coronal scales 5, close to the stamens, filiform. Stamens 5, adnate to throat of corolla; filaments slender, free; anthers adnate to the middle of the stigma, tips membranous, inflexed, acute; pollen-masses in pairs in each cell, granular; tips of the corpuscles slightly dilated. Carpels 2, many-ovuled, and styles distinct; stigma 5-angled, the crown flat. Fruit of 2 divaricate, turgid follicles, narrowed at both ends, 1-3-winged, with a re-volute beak. Seeds with a few long, soft, retrorse hairs at the tip.

1236. FINLAYSONIA OBOVATA Wall.; F. B. I. iv. 7.

Sundribuns.

A large climber. Beng. Dudhi-lata.

568. *Streptocaulon* W. & A.

Twining or prostrate, tomentose herbs or shrubs; leaves opposite. Flowers small or very small, in lax, sessile or peduncled, trichotomous, paniced cymes. Sepals connate in a minute, 5-partite calyx, glandular within. Petals 5, connate in a rotate corolla; lobes ovate, overlapping to the right; buds shortly conical; coronal scales 5, filiform, adnate to the back of the filaments. Stamens 5, adnate to base of corolla; filaments very short, with alternating, minute teeth; anthers connivent above and adnate to stigma, tips triangular, membranous, obtuse; pollen-masses in pairs in each cell, granular; appendages of minute corpuscles dilated. Carpels 2, many-ovuled, and styles distinct; stigma convex, 2-lobed. Fruit of 2 divaricate, terete, smooth follicles." Seeds comose.

1237. STREPTOCAULON SYLVESTRE Wight; F. B. I. iv. 10.

N. Bengal.

A prostrate, herbaceous species.

569. Myriopteron Griff.

A glabrous or pubescent, slender, twining shrub; *leaves* opposite, long-petioled. *Flowers* small, in lax, paniculate cymes from opposite axils. *Sepals* connate in a 5-partite calyx; base minutely glandular within. *Petals* 5, connate in a rotate corolla; lobes narrow, overlapping to the right, twisted to the left, wide-conic in ²fid: coronal scales 5, on the back of the filaments, filiform from a wide base. *Stamens* adnate to base of corolla-tube; filaments connate in a ring below, above free, with alternating teeth; anthers connivent above and adnate to stigma, tips membranous; pollen-inasses in pairs in each cell; appendages of the corpuscles ²-fid. *Carpels* 2, many-ovuled, and styles distinct; stigma convex, 2-fid. *Fruit* of 2 short, turgid, straight follicles, with many longitudinal, membranous wings. *Seeds* comose.

1238. MYRIOPTERON PANICULATUM Griff.; F. B. I. iv. 11.

Chittagong.

A slender, twining shrub.

570. Genianthus Hook, f.

Twining shrubs; *leaves* opposite. *Flowers* small, in axillary, ¹ ^simple, or dichotomously branched cymes. *Sepals* connate in a ^a small, 5-partite calyx, minutely glandular within; lobes oblong, obtuse. *Petals* 5, connate in a rotate corolla; tube short; lobes narrow, spreading and recurved, villous on the inner face, valvate: coronal scales 5, adnate to staminal column. *Stamens* 5; filaments connate in a minute column; anthers small, retuse; pollen-masses in each cell 2, minute, waxy, attached in fours to the ^{co}rpuscle. *Carpels* 2, distinct; stigma sessile, capitate. *Fruit* of ² slender, terete follicles. *Seeds* comose.

1239. GKNIANTHUS LAURIFOLIUS Hook, f.; F. B. I. iv. 16.

Aschpias laurifolia F. I. ii. 49.

Chittagong.

A glabrous twiner, with pustular stems.

571. Oxystelma B. Br.

^{Gl}abrous, twining herbs or undershrubs; *leaves* opposite, ^{na}rrrow. *Flowers* large, in loose, racemose or umbellate cymes, ^{Or} ^{8o}htary; pedicels filiform. *Sepals* connate in a small, 5-fid ^{cal}y*. with 5 or more glands at the base within; lobes acute. *Petal*ah connate in a wide, urceolate or campanulate or rotate,

5-angled corolla; lobes ciliate and subvalvate below, tips overlapping to the right: corona double; corolline annular at the base of the corolla, papillose within, its margin membranous, truncate, staminal of 5 scales adnate to the bases of the staminal tube, with cordate or dilated bases, 2-keeled within. *Stamens* 5, adnate near base of corolla; filaments connate in a short tube; anthers with membranous, inflexed tips; pollen-masses solitary in each cell, oblong, compressed, pendulous from slender tips, waxy*. *Carpels* 2, distinct; stigma depressed or subconvex. *Fruit* of 2 thick, oblique or curved, smooth or narrowly 2-winged follicles. *Seeds* comose.

1240. OXYSTELMA ESCULBNTUM R. Br.; F. B. I. iv. 17; E. O. 600. *Asclepias rosea* F. I. ii. 40.

N. Bengal; E. Bengal.

A slender, glabrous, climbing perennial herb. *Vernac.* Kirni, dudhia lata.

572. *Calotropis* R. Br.

Erect herbs, shrubs, or small trees, glabrous or hoary; *leaves* opposite, broad, sessile or short-petioled. *Flowers* medium, in umbelliform or subracemose cymes. *Sepals* connate in a 5-partite calyx, glandular at the base within; lobes lanceolate. *Petals* 5, connate in a wide-campanulate corolla; lobes broad, naked, valvate: coronal scales 5, fleshy, laterally compressed, adnate to and radiating from the large staminal column, dorsally spurred. *Stamens* 5, adnate near base of corolla-tube; filaments connate in a tube; anthers with membranous, inflexed tips; pollen-masses in each cell solitary, flattened, pendulous, waxy. *Carpels* 2, distinct; stigma depressed, 5-angled or 5-lobed. *Fruit* of 2 short, thick, acuminate follicles. *Seeds* comose.

Leaves sessile:—

Corolla-lobes spreading; scales of corona truncate, hairy; large shrubs or small trees.....*gigantea*.

Corolla-lobes erect; scales of corona acute, glabrous or pubescent; small or medium shrubs.....*proeera*.

Leaves petioled; corolla-lobes erect; scales of corona 2-lobed; erect herbs.....*Aciu*.

1241. CALOTROPIS GIGANTEA R. Br.; F. B. I. iv. 17; E. D. c. 170. *Asclepias gigantea* F. I. ii. 30.

In all the provinces, common.

A large shrub or small tree. *Hind.* Madár, ák, ákond ; *Beng.* Ákanda, gurtákand ; *Santal* Ahauna.

1242. CALOTROPIS PROCKRA II. Br.; F. B. I. iv. 18; E. 1). C. 191.

In the western provinces, occasional.

A shrub, 6-15 feet high. *Hind.* Safed-ák, úkadú, madár.

1243. CALOTROPIS ACIA Ham.; F. B. I. iv. 18; E. D. C. 169.

Asclepias herbacea F. I. ii. 50.

Tirhut; N. Bengal, Duars; E. Bengal, Mymensingh.

A herb, with erect stems.

573. *Asclepias* Linn.

Erect, perennial herbs; *leaves* opposite, alternate, or whorled. *Flowers* medium or small, in umbellate cymes. *Sepals* connate below in a 5-partite calyx; tube 5-10-glandular within. *Petals* 5, connate in a rotate corolla; lobes often reflexed, naked, valvate; coronal scales 5, erect, adnate to staminal column, spoon-shaped. *Stamens* 5, adnate near base of corolla; filaments connate in a short tube; anthers with membranous, indexed tips; pollen-masses in each cell solitary, pendulous, compressed, waxy. *Carpels* 2, distinct; stigma depressed, 5-angled. *Fruit* of 2 turgid, beaked, smooth follicles. *Seeds* coinosc.

*244. ASCLEPIAS CURASSAVICA Linn.; F. B. I. iv. 18; E. D. A. 1558.

In waste places near villages in all the provinces.

An erect, perennial herb; native of America.

574. *Holostemma* II. Br.

Wabrous, twining shrubs; *leaves* opposite, membranous, cordate. *Flowers* large, purple, in axillary, few-flowered cymes. *Sepals* connate in a 5-partite calyx; segments ovate. *Petals* 5, connate in a subrotate corolla; lobes thick, ovate, overlapping to the throat: corona adnate to the base of the staminal tube, annular, 10-lobed, fleshy. *Stamens* adnate to base of corolla-tube; filaments connate in a 10-winged column; anthers very large, oblong, shining; tips small, membranous, inflexed; pollen-masses in each cell solitary, elongate, falcate, compressed, pendulous from long black pedicels, waxy. *Carpels* 2, distinct; stigma 5-winged, included. *Fruit* of 2 short, thick, smooth, acute follicles. *Seeds* comose.

1245. HOLOSTEMMA RHEEDEI Wall.; F. B. I. iv. 21 ; E. D. H. 328.

Asclepias annularis F. I. ii. 37.

Chota Nagpur; N. Bengal, Duars.

An extensive climber. *Kol.* Apiing; *Santal.* Apung' mouron arak'.

575. *Cynanchum* Linn.

Erect or twining herbs or shrubs; *leaves* opposite, rarely whorled. *Flowers* small, greenish or purplish, in axillary umbelliform, racemose, or subpaniculate cymes. *Sepals* connate in a 5-partite calyx, usually 5-10-glandular at base within; lobes acute. *Petals* 5, connate in a rotate corolla; lobes overlapping to the right or occasionally valvate: corona membranous, adnate to base of stamina! column, 5-partite or campanulate or cupular, variously lobed or toothed, with or without scales or tubercles on the inner face opposite the lobes. *Stamens* 5, adnate to base of corolla-tube; filaments connate in a short column; anthers sessile or stipitate, tips membranous, inflexed; pollen-masses solitary in each cell, not compressed, pendulous, waxy. *Carpels* 2, distinct; stigma flat or umbonate or apiculate. *Fruit* of 2 terete or shortly 2-alate, elongated, somewhat ventricose, usually smooth follicles. *Seeds* comose.

1246. CYNANCHUM CALLIALATA Hani.; F. B. I. iv. 24.

Chota Nagpur; C. Bengal; E. Bengal; Chittagong.

A glabrous or sparingly hirsute, twining shrub. There is a very distinct form with linear leaves (*C. angustifolium* Wight) which has been collected in N. Bengal, Duars. *Beng.* Chagul-bati; *Hind.* Kalia-lata.

576. *Raphistemma* Wall.

Twining, glabrous shrubs; *leaves* opposite, membranous, deep-cordate, with wide sinus. *Flowers* large, white, long-pedicelled, in umbelliform, axillary, long-peduncled cymes. *Sepals* connate in a 5-lobed corolla, 5-glandular within. *Petals* 5, connate in a campanulate, 5-lobed corolla; lobes spreading, overlapping to the right and twisted to the left: corona of 5 membranous scales, adnate to the column, produced into long, slender, linear ligules. *Stamens* 5, adnate to corolla-tube; filaments connate in a large column; anthers with membranous, inflexed tips; pollen-masses in each cell solitary, pendulous, not compressed, waxy. *Carpels* 2, dis-

tinct; stigma depressed, flat, 2-lobed in centre. *Fruit* of 2 turgid, thick, acute, smooth follicles. *Seeds* comose.

1247. KAPHISTEMMA PULCHELLUM Wall.; F. 13.1. iv. 19. *Asclepias pulchella* F. I. ii. 54.

Chota Nagpur.

A glabrous twiner.

577. Pentatropis R. Br.

Slender, twining herbs or undershrubs; *leaves* opposite, small. *Flowers* small, purplish, on slender pedicels, in umbellate, axillary cymes. *Sepals* connate in a small, 5-partite calyx, hardly glandular within; lobes acute. *Petals* 5, connate in a rotate corolla; lobes narrow, long, overlapping to the right and twisted to the left: corona of 5 laterally compressed scales with free tips and spurred bases, adnate vertically to the backs of the anthers, with sometimes a small, annular, outer corona. *Stamens* 5, adnate to corolla-tube; filaments connate in a short column; anthers with membranous, inflexed tips; pollen-masses in each cell solitary, not compressed, waxy. *Carpels* 2, distinct; stigma almost flat. *Fruit* of 2 thickish, smooth follicles. *Seeds* comose.

1248. PENTATROPIS MICROPHYLLA W. & A.; F. B. I. iv. 20; E. D. P. 396. *Asclepias microphylla* F. I. ii. 35.

C. Bengal; Sundribuns.

A slender, twining herb.

578. Daemia K. Br.

Twining, pubescent or tomentose undershrubs; *leaves* opposite, cordate. *Flowers* greenish-white, on slender pedicels, in axillary, racemose or corymbose cymes. *Sepals* connate in a 5-partite calyx, 5-glandular within; lobes acute. *Petals* 5, connate in a partly funnel-shaped corolla; lobes large, wide-ovate, overlapping to the right: corona double; outer membranous, annular, 5-10-toothed or crenate; inner of 5 laterally compressed scales, spurred behind, vertically adnate to the anthers, with long, free, subulate tips. *Stamens* 5, adnate to corolla-tube; filaments connate in a column; anthers with membranous, inflexed tips; pollen-masses solitary in each cell, not compressed, pendulous, waxy. *Carpels* 2, distinct; stigma with depressed or concave top. *Fruit* of 2 thickish, rigid, acuminate, setosely echinate follicles. *Seeds* comose.

1249. DJEMIA EXTENSA R. Br.; F. B. I. iv. 20; E. D. 19*
Asclejrias echinata F. I. ii. 44.

In all the provinces except Chittagong.

A foetid, tomentose, climbing undershrub. #*^ml,

. Sagauni, juttak ; Beng. Chagul-bati; Uriya Utturun.

579. Sarcostemma It. Br.

Shrubs with trailing, leafless, jointed stems and pendulous branches. *Flowers* small, on clavate peduncles, in umbellate cymes, terminal or along the nodes. *Sepals* slightly connate below in a small 5-fid calyx, glandular or not within; lobes rather acute. *Petals* 5, connate in a rotate corolla; lobes broad overlapping to the right: corona usually double; outer cupular membranous, adnate to base of staminal column, 10-lobed or 10-crenate, 5 lobes opposite the stamens, with large, fleshy processes joining the corona to the backs of the anthers; inner of 5 erect scales, adnate to the backs of the anthers, shortly produced and free upwards, sometimes absent. *Stamens* 5, adnate to base of corolla-tube; filaments connate in a short column \ anthers with membranous, inflexed tips; pollen-masses in each cell solitary, slender, pendulous, waxy. *Cartels* 2, distinct; stigma conic or shortly spindle-shaped. *Fruit* of 2 stoutish or slender, smooth follicles. *Seeds* comose.

1250. SARCOSTEMMA BREVISTIGMA Wight; F. B. I. iv. 26; E. D. S. 882. *Asdepias acida* F. I. ii. 31.

Chota Nagpur, Singbhum.

A leafless shrub with green, jointed, trailing or pendent branches. *Vernac.* Soma-lata.

580. Sarcolobus II. Br.

Twining, glabrous shrubs; *leaves* opposite. *Flowers* small, crowded in axillary, corymbose cymes. *Sepals* connate in a 5-partite calyx, minutely 5-glandular within; lobes ovate, obtuse. *Petals* 5, connate in a campanulate or subrotate corolla; lobes ovate, overlapping to the right: corona 0. *Stamens* 5, adnate to corolla-tube; filaments connate in a very short column; anthers wide, with membranous, inflexed tips; pollen-masses solitary in each cell, erect, with long, twisted pedicels, subcompressed, waxy. *Carpels* 2, distinct; stigma flat above. *Fruit* of 2 thick, fleshy.

globose and smooth or oblong and 2-keeled follicles. *Seeds* very large; coma 0.

Corolla purplish ; lobes pubescent within ; fruit brown, large, globose ; leaves 3-4 in. long, oblong or ovate, acuminate or obtuse-apiculate

plobosus.

Corolla yellow with brown clots, nearly glabrous within; fruit yellow, small, ellipsoid; leaves 1-2 in., rarely 3 in., long, elliptic, obovate-lanceolate or linear-oblong, obtuse or acute..... *carinatus.*

!251. SARCOLOBUS GLOBOSUS Wall.; F. B. I. iv. 27.

Sundribuns.

A twining, stout-branched, glabrous shrub. *Beng.*

Baoli-lata.

!252. SARCOLOBUS CARINATUS Wall.; F. B. I. iv. 28.

Sundribuns.

A twining, glabrous shrub, with slender branches.

Beng. Baoli-lata.

581. *Gymnema* K. Br.

Twining shrubs or undershrubs; *leaves* opposite. *Flowers* small, in crowded, umbellate cymes. *Sepals* connate below in a 5-lobed calyx; base usually 5-10-glandular within; segments ovate, obtuse. *Petals* 5, connate in a subrotate, campanulate, or urceolate corolla; lobes thick, twisted, subvalvate, or slightly overlapping to the right: corona 0, or of 5 fleshy processes, adnate either to the corolla-throat or to the staminal tube. *Stamens* 5, adnate to base of corolla-tube ; filaments connate in a short column; anthers erect, with small, membranous tips; pollen-tubes solitary in each cell, ovoid-oblong, erect, long-pedicelled, usually small waxy; *carpels* 2, distinct; stigma large, conic or clavate or capitate, exserted. *Fruit* of 2 slender or turgid, terete, smooth, acuminate follicles. *Seeds* comose.

*Corolla-tube with the free points of the fleshy coronal processes protruding above the sinuses ; processes produced downwards on the tube as follows: We villous ridges :- [p. 694]

Leaves under 3 in. long, softly pubescent on both sides, as are the branches, petioles, and cymes; corolla 1-2 in. wide; lobes ciliate; Nerves slender..... *himmtum.*

Leaves 3-6 in. long, almost glabrous, shining above, densely tomentose beneath, as are the branches, petioles, and cymes ; corolla 1-2 in. wide; lobes not ciliate ; follicles turgid, ovoid, beaked .. *acumwatum.*

*Corolla-tube with double villous ridges below the sinuses, but not produced into fleshy points beyond them; leaves 1-0 in. long, glabrous nearly so, as are the branches, petioles, and cymes; corolla $\frac{3}{8}$ in. wide lobes glabrous; follicles ovate-lanceolate [p. G93]..... *t.in<j<*.^{lls},

1253. GYMNEMA HIRSUTUM W. & A.; F. 13.1. iv. 29.

Behar; Chota Nagpur.

A large, stout, woody climber.

1254. GYMNEMA ACUMINATUM Wall.; F. 13. I. iv. 30. *Asclepias acuminata* F. I. ii. 55.

E. Bengal; Chittagong.

A large climber, bark of old wood split and spongy.'

1255. GYMNEMA TINGENS W. & A.; F. B. I. iv. 31; E. D. G- 751-
Asclepias tingens F. I. ii. 53.

Behar.

An extensive climber.

582. Gongronema Dene.

Glabrous, twining shrubs or undershrubs; *leaves* opposite. *Flowers* small, in dense sessile, and umbellate peduncled, axillary cymes. *Sepals* connate in a 5-partite calyx, glandular or not within; lobes ovate. *Petals* 5, connate in an urceolate, subrotate, or wide-campanulate corolla; lobes twisted, subvalvate or slightly overlapping to the right: corona of 5 short scales adnate to bases of anthers, or 0. *Stamens* 5, adnate to base of corolla-tube; filaments connate in a short column; anthers erect, with membranous, inflexed tips concealing the stigma; pollen-masses in each cell solitary, ovoid, erect, waxy. *Carpels* 2, distinct; stigma convex, clavate, or conic. *Fruit* of 2 slender or stoutish acuminate follicles. *Seeds* comose.

1256. GONGRONEMA NEPALENSE Dene. var. SAGITTATUM F. B. I. iv. 33.

Chittagong.

An extensive climber.

583. Stephanotis Thouars.

Very large, glabrous, climbing shrubs; *leaves* opposite, coriaceous. *Flowers* large, white, showy, in umbellate, peduncled cymes, or solitary or paired, axillary. *Sepals* connate in a 5-partite calyx, not glandular within; lobes lanceolate, leafy. *Petals*

5, corolla tube cylindrical, rather wider at the base, throat more or less dilated; lobes twisted, overlapping the right: Corona of 5 scales, adnate to back of anthers, usually with filices tips, sometimes wholly adnate, occasionally 0. Stamens 5, adnate to the very base of the corolla-tube; filaments connate in a short column; anthers erect, with erect or inflexed membranous tips; pollen-masses solitary in each cell, erect, waxy. Carpels 2 distinct; stigma conic, or beaked. Fruit of 2 stout, obtuse or acuminate follicles. *W. s. comose.*

57. STEPHANOTIS FLORIBUNDA Thour.

In gardens.

A large climber, with handsome, white, fragrant flowers; native of Madagascar.

584. Marsdenia It. Iir.

Climber or shrub; leaves opposite. Flowers axillary, in simple or branched, umbellate, terminal or cymose. Sepals connate in a 5-partite calyx, glands or scales; lobes usually obtuse. Petals 5, connate in a campanulate, urceolate, or salver-shaped corolla; lobes usually annulate or villous, rarely naked; lobes narrow or broad, usually with filices tips to the right: corona of 5 erect scales, usually flattened, agnate to back of anthers, very rarely 0. Stamens 5, adnate near base of corolla-tube; filaments connate in a short column; anthers with inflexed, membranous tips; pollen-masses solitary in each cell, oblong or ovoid, pedicelled, erect, waxy. Carpels 2 distinct; stigma flat, convex, or beaked, sometimes flattened. Fruit of 2 or 3 (abortion) frequently only follicles. Pedicels acuminate, pubescent or glabrous. *Seeds comose.*

Branches pubescent beneath and cymes velvety or tomentose; calyx lobes 5, pubescent without, glabrous within; corolla lobes 5, longer than anther-tips; corolla subcampanulate, lobes 5, pubescent beneath nearly glabrous; cymes puberulous; corolla lobes 5, wide; lobes smooth; tube with dellexed hairs within; coronal scales subulate, longer and narrower than the anther-tips [p.M.....H.....5.....>.....U. tinctor 1.

•Corolla urceolate, glabrous both without and within; cordial scales minute or absent [p. 695].....*thyrsiflora*

1258. MARSDENIA TENACISSIMA W. & A.; F. B. I. iv. 35; E. ¹i

M. 299. *Asclepias tenacissima* F. I. ii. 31.

Behar; Chittagong.

A stout, twining shrub. *Hind.* Tongus; *Bcny.* Jitti.

1259. MARSDENIA TINCTORIA K. Br.; F. B. I. iv. 34; E. D. M. ¹o²<

Asclepias tinctoria F. I. ii. 43.

Chittagong.

A tall climber.

1260. MARSDENIA THYRSIFLORA Hook. f.; F. 13. I. iv. 37. :

E. Bengal.

An extensive, twining shrub.

585. Pergularia Linn.

Twining, nearly glabrous undershrubs; *leaves* opposite, membranous, ovate-cordate. *Flowers* yellow or greenish, rather large, in subumbellate cymes. *Sepals* connate in a 5-partite calyx, minutely 5-glandular within; lobes lanceolate. *Petals* 5, connate in a salver-shaped corolla; tube swollen at the base! lobes oblong or linear, overlapping to the right: corona of 5 large membranous scales, adnate to the back of the stamens, erect, flattened dorsally or laterally, acute, entire or transversely 2-lamellate above the middle. *Stamens* 5, adnate to base of corolla-tube; filaments connate in a column; anthers with inflexed, membranous tips; pollen-masses in each cell solitary? subcylindric, clavate or globosely obovoid, erect, waxy. *Carpels* % distinct; stigma umbonate or capitate, rather longer than the anther-cells. *Fruits* of 2 lanceolate, terete, rather turgid follicles. *Seeds* ovate, concave, comose.

Corolla pale yellow, almost scentless ; lobes linear, longer than tube; corolla-tube glabrous within ; coronal scales with broad points, simple

pallida.

Corolla dark greenish-yellow, very fragrant; lobes oblong, not exceeding tube; corolla-tube pubescent within; coronal scales double, inner with sharp points.....*minor.*

1261. PERGULARIA PALLIDA W. & A.; F. B. I. iv. 33. *Asclepias*

pallida F. I. ii. 48.

Behar.

An almost glabrous, twining undershrub. '

1262. PERGULARIA MINOR Andr.; F. B. I. iv. 38; E. D. P. 410.

Asclepias odoratissima F. I. ii. 46.

In gardens in all the provinces.

An almost glabrous, twining undershmb. Beng. Kanjalata.

586. Dregea E. Mey.

Glabrous or hoary twining shrubs, rarely suberect; leaves opposite, usually ovate or cordate, acuminate. Flowers green, at base of umbels or cymes. Sepals 5, small, somewhat connate within, ovate. Petals 5, connate in a rotate corona of 5 lobes broad, twisted, overlapping to the right: column below inner angle cuspidate, with the tip incumbent on the anthers. Stamens 5, adnate near base of corolla-tube; filament flexed tips in a short, fleshy column; anthers with short, oblong pollen-masses in each cell solitary, erect, cylindrical. Conical shortly pedicelled, waxy. Carpels 2, distinct; stigma foliaceous or dome-shaped. Fruit of 2 thick, hard, winged or ribbed pieces. Seech comose.

Branches green, glabrous; leaves ovate, suborbicular or cordate. Climbing..... *volubilis*.

Leaves and branches hoary or mealy :-

ovate » suborbicular or cordate, acuminate; climbing

volubilis var. *Lacuna*.

» leaves lanceolate or ovate-lanceolate; small, suberect

volubilis var. *amjmtifolia*.

1263. DREGA VOLUBILIS Benth.; F. B. I. iv. 46. *Asclepias volubilis* F. I. ii. 36.

In most of the provinces.

A stout, tall climber. Hind Nak-chikni; Beng. Titakunga; SantaL Marang-kongat.

1263/2.

Var. LACUNA; F. B. I. iv. 47.

Tirhut; Behar.

1263 r. A Stout climber.

Var. ANGUSTIFOLIA; F. B. I. iv. 47.

N. Bengal.

Ai suberect undershrub.

587. *Tylophora* R. Br.

Twining, rarely erect herbs or undershrubs; *leaves* opp^osite.
Flowers small or minute, in umbellate or racemose cymes. ^ovals
 5, slightly connate below, glandular within, ovate or lanceo^{late}.
Petals 5, connate in a rotate corolla; lobes broad, slightly o^{er}.
 lapping to the right: corona of 5 fleshy processes, adnate to ^{the}
 staminal column. *Stamens* 5, adnate to throat or tube of coro^{lla};
 filaments connate in a very short column; anthers very sin^{all},
 with inflexed tips; pollen-masses in each cell minute, globose ^{or}
 ovoid, erect or ascending, very rarely transverse or pendulous fr^{om}
 an erect or ascending pedicel, waxy. *Carpels* 2, distinct; stig^{ma}
 discoid, 5-angled, included. *Fruit* of 2 slender, acuminate, snioth
 follicles. *Seeds* ovoid, flat, winged, comose.

Sepals glabrous, ovate ; cymes glabrous ; pedicels long, capillary ; coroi^{al}
 processes without free tips.....ten^{111'''}

Sepals hispid ; cymes more or less villous or pubescent:—

Sepals ovate; peduncles long, slender; pedicels very short; corona^l
 processes without free tips.....exwst

Sepals long, lanceolate ; peduncles shorter than leaves, hispid at base
 of umbels; pedicels long, capillary; coronal processes adnate to
 column only below, and with the tips free.....a*thnuttii'it-

1264. TYLOPHORA TENUIS Bl.; F. ft. I. i. v. 42. *Asclejn*^zt^s
tenuissima F. I. ii. 41.

C. Bengal; Sundribuns; E. Bengal.

A slender, prostrate or twining herb.

1265. TYLOPHORA EXILIS Colebr.; F. B. I. iv. 44.

Chittagong.

A slender, prostrate or twining herb.

1266. TYLOPHORA ASTHMATICA W. & A.; F. B. I. iv. 45; E. P.
 T. 855. *Asclepias asthmatica* F. I. ii. 33.

Orissa; C. Bengal; N. Bengal; E. Bengal; Ghittagong.

A slender, twining herb. *Vriya* Mendi; *Beng.* Antomul; *Hind.* Anta-mul, jangli-pikvân.

588. *Dischidia* R. Br.

Herbs or undershrubs, usually epiphytic, rooting and climbing
 or pendulous ; *leavrs* usually opposite, fleshy, sometimes formed
 into pitchers. *Flowers* small or minute, white or red, in axillary
 fascicles, umbels, or racemes. *Sepals* 5, slightly connate below,

ovate, membranous, glandular within. *Petals* 5, connate in an urceolate corolla; mouth contracted; lobes very short, thick, valvate : corona of 5 membranous, erect scales, adnate to back of staminal column, with entire, notched, or 2-fid tips, or with recurved arms. *Stamens* 5, adnate to base of corolla-tube, filaments connate in a very short column; anthers erect, with membranous tips; pollen-masses in each cell solitary, compressed, erect, waxy. *Carpels* % distinct; stigma flat or conic. *Fruit* of ² small, thick or slender, smooth, acuminate follicles. *Seeds* minute; coma long.

1267.; DISCHIDIA NUMMULARIA R. Br.; F. B. I. iv. 49.

Sundribuns; Chittagong.

A slender herb, rooting on the bark of trees.

589. Hoya B. Br.

Twining pendulous, or rambling and rooting, rarely erect, often ^ePiphytic shrubs; *leaves* opposite, firmly fleshy or thickly coriaceous. *Flowers* in axillary or terminal umbels. *Sepals* connate ⁱⁿ a small, 5-partite calyx, 5-glandular at the base within; lobes ^ovate or lanceolate. *Petals* 5, connate in a rotate, fleshy or waxy ^{co}rolla; lobes often convex or spreading and reflexed, valvate in ^lud: corona of 5 large, membranous, fleshy or horny scales, ^{at}linate to the staminal column, stellately spreading or ascending, ^{tur}gid, or laterally or vertically compressed, often concave on the ^ulper surface, margins usually recurved so as to enclose a cavity, the inner angle often produced in a tooth or spur erect or incurved ^le»t on the corresponding anther. *Stamens* 5, adnate to base of ^{co}rolla-tube; filaments connate in a short column; anthers ^sent above the stigma, with membranous, inflexed or erect tips, ^{rar}ely with tips obsolete; pollen-masses solitary in each cell, ^{erec}t, pedicelled, waxy. *Carpels* % distinct; stigma included, flat ^{or} *ith an apiculate centre. *Fruit* of % usually slender acuminate thin-walled, rarely turgid and very thick-walled follicles. ^{eds} very small, ovate or linear-oblong; coma long.

*Le*ves, branchlets, and umbels quite glabrous; sepals ovate; corolla { ^ly white, -3 in. wide; lobes glabrous within; coronal processes ^{lon}ger than corolla-tube; peduncles short or long; leaves 3-5 m. long, ^{ov}ate, elliptic, or lanceolate, acute or acuminate, margins flat; petiole ¹⁷ ^1 in. [p. 00].....*parasitica*.

"Leaves, branchlets, and umbels more or less hirsute :—[p. 699]

Sepals rounded; corolla creamy-yellow, -5 in. wide; lobes near^{ly} glabrous within; coronal processes shorter than corolla-tube; peduncles long; pedicels villous; leaves 5-7 in. long, elliptic or oblong, cuspidate or acuminate, margins flat; petiole 5-1 in.

globulosa^d.

Sepals lanceolate; corolla white, -6 in. wide; lobes silkily villos^s; coronal processes as long as corolla-tube; peduncles short; pedicels sparingly hairy: leaves 1*5-3 in., elliptic, ovate, or lanceolate, acute. • margins recurved; petiole-25-*5 in.....*pewUw*^l-

1268. HOYA PARASITICA Wall.; F. B. I. iv. 57. *Asclepiasparasitica* F. I. ii. 42.

Sundribuna; E. Bengal; Tippera; Chittagong.

A large climber.

1269. HOYA GLOBULOSA Hook. f.; F. B. I. iv. 60.

Chittagong.

A stout climber.

1270. HOYA PENDULA Wight; F. B. I. iv. 61; E. P. H. 442.

Asclepias pendula F. I. ii. 36.

Orissa; Chota Nagpur.

A rather slender climber.

590. *Geropegia* Linn.

Twining, less often erect herbs, usually with a tuberous root-stock; *leaves* opposite, sometimes minute or 0. *Flowers* often showy, white or greenish or purplish, in axillary, peduncled, umbellate cymes, rarely solitary. *Sepals* very shortly connate below in a 5-partite calyx, 5-glandular within; lobes very narrow. *Petals* 5, connate in an elongated tube, straight or curved, usually swollen at the base; throat dilated or not; lobes various, broad or narrow, erect or incurved, with cohering tip's, often ultimately recurved or reflexed, valvate in bud: corona adnate to the staminal column, annular or cupular, 5-10-lobed, and with 5 long or short inner ligulate processes that are free or adnate to the anthers. *Stamens* 5, adnate to base of corolla-tube; filaments connate in a short column; anthers short, obtuse; pollen-masses solitary in each cell, erect, sessile, with one pellucid margin, waxy. *Carpels* 2, distinct; stigma depressed or shortly 2-lobed, included. *Fruit* of two terete, smooth, usually slender follicles. *Seed*[^] comose.

- Corolla nearly straight; Tube longer than the calicite lobes; leaves and branchlets hirsute..... *himita*.
- Corolla distinctly curved; tube not longer than the glabrous lobes; leaves and branchlets nearly glabrous..... *macrantha*.

1271. CEROPEGIA HIRSUTA W. & A.; F. B. I. iv. 71.
Behar; Chota Nagpur.

A coarse, subhispidly hairy climber.
1272 > C. KROPEGIA MACRANTHA Wight; F. B. I. iv. 74.
N. Bengal, Duars.
A stoutish, extensive, almost glabrous climber.

Order LXXXV. LOGANIACEÆ.

Trees, shrubs, or herbs. *Leaves* opposite, rarely ternate, undivided; stipules various or 0. *Flowers* hermaphrodite or, by abortion, unisexual; calycious, in terminal or axillary, simple or compound flowers. *Sepals* connate in a small, inferior calyx; limb imbricately toothed or lobed. *Petals* connate in a 4-5-lobed or 4-partite corolla; lobes imbricate, valvate, or contorted. *Stamens* inserted on the corolla-tube, alternate with the lobes; 2-celled; dehiscence introrse, longitudinal; rarely 1-celled, imbricate, with confluent tips. *Carpels* 2, connate in a free, 2-celled ovary; ovules 1 or more in each cell, placentas on the septum or basal at the inner angle; style simple; stigma capitate, seeded. *Fruit* a septicidal capsule or a berry, 1-many-seeded. *Seeds* various; albumen fleshy or cartilaginous; embryo straight.

lower: "i cymes, 2-3-chotomously branched; corolla 5-lobed

Flowers on solitary or cymose panicles; corolla 4-lobed
Mitreola.

Shrubs: **Hni»«*acme.**

Fruit a 2-valved capsule; corolla imbricate..... **Buddleia.**

•Fruit indehiscent :—
Cotyledons cotyledons..... **Fagraea.**
Corolla vacate..... **Strychnos.**

591. *Mitreola* Linn?

Herbs; *leaves* opposite; stipules membranous or small. *Flowers* small, white, in 2-3-chotomous, terminal or axillary, peduncled cymes, often unilateral on the cyme-branches. *Sepals* connate in a 5-partite calyx; lobes lanceolate. *Petals* 5, connate in urceolate corolla; lobes small, valvate. *Stamens* 5, including filaments short; anthers ovate, cordate at base; cells parallel. *Carpels* connate in a 2-locular ovary; ovules in each cell many, on peltate placentas; styles 2, short, connate under one small pistil stigma, at length divergent. *Fruit* an obovoid, laterally compressed, truncate or 2-homed capsule, dehiscing by separation from above downwards of the carpels from the septum on each side. *Seeds* very many, minute, globose or elongated; albumen fleshy; embryo linear.

1273. MITREOLA OLDENLANDIODES Wall.; F. B. I. iv. 79.

Behar; Chota Nagpur.

A small, erect annual.

592. *Mitrasacme* Labill.

Small herbs; *leaves* opposite; stipules forming a minute sheath. *Flowers* small, white, terminal or axillary, solitary, clustered, or in irregular umbels. *Sepals* connate in a campanulate, 4-fid calyx. *Petals* 4, connate in an urceolate corolla; lobes valvate or reduplicate, sometimes spreading. *Stamens* 4, adnate to corolla-tube; filaments rather short; anthers ovate, base cordate; connectives often produced; cells parallel. *Carpels* connate in a 2-locular ovary; ovules in each cell many, on peltate placentas; styles 2, connate, separating from below upwards, usually finally divergent! stigma capitate or 2-lobed. *Fruit* a subglobose capsule, laterally subcompressed, top truncate or almost 2-horned, dehiscing by separation from above downwards of the carpels from the septum on each side. *Seeds* many, minute, subglobose; testa smooth; albumen fleshy; embryo straight.

1274. MITRASACME ALSINOIDES R. Br.; F. B. I. iv. 80.

Chota Nagpur; W. Bengal.

A small, weak annual.

593. *Buddleia* Linn.

Trees, shrubs, or herbs; *leaves* opposite, entire or crenate, united by a stipular line. *Flowers* densely cymose; cymes'

^obose or corymbose Axillary or in a thyrsoid, terminal panicle.
^{-e}P^{aU} connate in a campanulate, 4-toothed, or 4-fid calyx. *Petals*
^{4,} connate in an urceolate corolla; lobes imbricate in bud.
[^]men, 4? adnate to corolk-tube. anthers subsessile, ovate or
^{obl}ong, base cordate or 2-lobed; cells parallel. *Carpels* connate
^ma 2-celled ovary; ovules many in each loculus; style simple,
^{1^}of*en curved, clavate; stigma terminal or decurrent on two
^{**<<•} *Fruit* a septicidally 2-valved capsule, the valves entire or
^{2,rad}- *Seeds* many, oblong or fusiform; testa usually lax or
^{ex}Expanded in a wing or tail; albumen fleshy; embryo straight.

^75.; BUDDLEIA ASIATICA Lour.; F. B. I. iv. 82; E. D. B. 929.

ChotaNagpnr; N.Bengal; Chittagong.

A shrub, 6-15 feet high. *Bcng.* Neemda, bad-bhota.

594. Fagraea Thunb.

Trees or shrubs, often epiphytic, sometimes scandent; *leaves*
^oPPosite, entire; petioles dilated at the base or united by a stipular
^{sh}ath. *Mowers* large or small, white or yellowish, rarely pink, in
^terminal or axillary cymes, grouped in corymbs, racemes, or elon-
^{f^}Panicles; bracts small. *Sepals* connate in a deeply 5-fid or
^u•P^te calyx; lobes thick, broad, obtuse, much imbricate.
^Petal^s 5, connate in a narrow, tubular or funnel-shaped corolla;
^lobe^s broad, twisted, overlapping to the left. *Stamens* 5, adnate
^to^{ro}Ha-tube, exserted; filaments filiform; anthers oblong or
^ovate; base 2-fid or cordate; cells parallel. *Carpels* connate in a
^ocular ovary or, from incomplete intrusion of carpellaiy margins,
^eupper portion partly 1-locular; ovules numerous in each com-
^lle^{or} incomplete cell; style filiform; stigma capitate. *Fruit* a
^{j^}-celled berry, many-seeded. *Seeds* embedded in pulp; testa
[^]taceous; albumen horny; embryo small, straight.

^{12?}6. FAGR^EA OBOVATA Wall.; F. B. I. iv. 83; E. D. F. 27.

Chittagong.

A small tree or large shrub.

595. Strychnos Linn.

Scandent shrubs with short tendrils, or trees; *leaves* opposite,
^tsu % 3-5-nerved; in scandent species short, axillary tendrils are
^{pr}oduced in some of the axils, the adjacent leaf being then often
^ses^ed; in the subterminal axils often both tendrils developed,
^W usually, both adjacent leaves and apex of branch are sup-

pressed. *Flowers* white or yellowish, in terminal or lateral cymes; bracts small. *Sepals* connate in a small 5-lobed or 4-lobed calyx. *Petals* 5 or 4, connate in a short or long tube; lobes valvate. *Stamens* 5 or 4, adnate to corolla-tube; filaments short; anthers ovate, dorsifixed; cells parallel. *Carpels* connate in a completely, rarely partially, 2-celled ovary; ovules many in each cell, style simple, long or short or almost obsolete; stigma capitate, or terminal, or somewhat 2-lobed. *Fruit* a globose or oblong berry, with usually a crustaceous pericarp, many- or few- (sometimes or 1-) seeded. *Seeds* globose, oblong or discoid; albumen in embryo small.

Climber with tendrils; leaves 3-nerved, oblong, caudate; cymes terminal short-peduncled, many-flowered. *Wallichiana*

Erect trees:—

- Leaves ovate, 5-nerved; cymes terminal short-peduncled, many-flowered; fruit 1-5 in. across, many-seeded. *Nux-vomica*
- Leaves elliptic, 3-nerved; cymes axillary, almost sessile; fruit 3-4 in. across, 1-2-seeded. *potatorum*

1277. STRYCHNOS WALLICHIANA Benth.; F. B. I. iv. 90.

Chittagong.

A tendril-bearing climber.

1278. STRYCHNOS NUX-VOMICA Linn.; F. I. i. 575; F. B. I. iv. 90; E. D. S. 2943.

Chota Nagpur; Orissa.

A tree, 30-40 feet high. Vernac. Kuchila.

1279. STRYCHNOS POTATORUM Linn. f.; F. I. i. 576; F. B. I. iv. 00; E. D. S. 2960.

Western Behar; Chota Nagpur; Orissa.

A tree, 40-50 feet high. Beng. and Hind. NinnaUi Santal. Kuchila; Uriija Kotaki.

Order LXXXVI. GENTIANACEAE.

Herbs. *Leaves* opposite, rarely alternate, entire; very rarely alternate, 3-foliolate. *Flowers* regular or occasionally irregular hermaphrodite, or very rarely by abortion polygamous, cynioscapitate or umbellate, rarely solitary; bracts scale-like or 0; bracteoles very rare. *Sepals* connate in an inferior calyx; lobes 4 or 5 imbricate in bud. *Petals* connate in a funnel-shaped or rotate

, i or 5, rarely 6-12, contorted, overlapping to the left, very induplicate-valvate. Stamens 4-12, as many as the corolla-lobes and alternate with them, all perfect and equal, or some stamens abortive or suppressed; filaments linear, sometimes below; anthers oblong; dehiscence longitudinal, introrse, dilafexse. DM of 5 glands at base of ovary, or annular, or 0. rarely extra in a superior, 1-celled ovary, or rarely almost Carpels 2, connate; placentas meeting; ovules numerous; 2-celled from the inner side. Stigmas 2, small. Fruit 4-angled style short or linear, shiny berry. Seeds small, many, membranous capsule, rarely 8-angled embryo small.

sometimes winged; albumen copious. -herb; terrestrial or marine

Leaves opposite; corolla-lobes twisted to the right. Exacum.

Ovary completely 2-celled; style filiform.

Ovary 1-celled:—

Style filiform:—

Pl. Erythrsea.

Flowers regular

Flowers irregular:—

Stigmas hardly divided; small herbs. Can. Ho. Bea.

Style 2-angled; wanting stigmas; petals with shallow pits at their base. Fertia.

Leaves alternate; corolla-lobes induplicate-valvate in buoyant floating herbs. Limnanthemum.

596. Exacum Linn.

H<*bs, usually branched; leaves opposite, ovate or lanceolate, usually 3-5-nerved. Flowers rather showy, in terminal and axillary cymes; sepals connate in a deeply 4-5-lobed calyx; lobes keeled or winged or flat. Petals 4 or 5, connate in a rotate corolla, with short, globose tube; lobes contorted, ovate or oblong, JK Purplish, or white. Stamens 4 or 5, adnate to corolla-throat; anthers short; anthers large, oblong, obtuse, erect, base shortly 2-angled, 2-locular throughout, with 2 apical pores that at length slightly extend to the base. Carpels connate in a more or less completely 2-celled ovary; ovules many, on large, fleshy placentas, adnate to septum; style long; stigma small, subcapitate. Fruit globose, septicidally 2-valved capsule. Seeds many, minute, Cuboid; testa granular.

Stems rather stout, hardly branching, usually considerably taller than the leaves; leaves sessile, broad, lanceolate, 5-nerved; anthers 25 linearly oblong; calyx-lobes keeled but hardly winged; corolla-lobes blue... lobes distinctly winged; corolla-lobes white in flower. Stems very slender, usually 3-7 inches high; calyx-lobes blue; leaves sessile, 3-nerved; corolla-lobes white or pale blue; leaves petioled, petiole?*

5

Stems very slender, usually 3-7 inches high

Calyx-wings distinct; corolla-lobes blue

Calyx-wings broad; 5-nerved

corolla-lobes white or pale blue; leaves petioled, petiole?*

1280

EXACUM TETRAGYLLUM

E. D. E. 589

EXACUM Roxb.; F. I. i. 398; F. B. I. iv. 95;

In all the provinces.

Yamunapour, 4 feet high. Hissar, Ava-charayatab; Beng. Knehuri.

&81. EXACUM BICOLOE Roxb.; p. I. i, 397. P. B. I. iv. 98. E. 585.

Orissa,

An erect annual, 1-4 feet high. Kernoc. Baracharayatah.

1282. EXACUM PEDUNCULATUM Linn.; p. B. I. iv. 97- E. D. t. o. ii. aulcatum P. I. i. 400.

Behar; Chota Nagpur.

Slender. Mai, 3-12 in. high.

1233. EXACUM PETIOLAHE Griseb.; P. B. I. iv. 98.

Chota Nagpur.

A slender annual, 2-12 in. high.

597. Erythraea L. C. Bich.

Annual or perennial, erect, branching herb, leaves opposite, sessile. Flowers white or rose, in dense cymes. Sepals connate in a tubular, lanceolate or linear, keeled. Petals 5, rarely 4, tubed subrotate, or long-tubed spreading, contorted, filaments short, linear; anthers narrowly oblong, and usually at length spirally twisted, sometimes connate in a 1-ovelled ovary, with 2 far internal ovules many; style linear; ifemas semicircular or oblong.

The oblong, capsule, nearly as long as calyx, almost 2-celled, septidally 2-valved. *Seeds* very small, reticulated.

284. ERYTHRA ROXBURGHII G. Don; F. B. I. iv. 102; E. D.

E. 338. *Chironia centaurioides* F. I. i. 584.

N. Bengal; C. Bengal; E. Bengal.

A small, erect annual, 2-8 in. high. *Hind.* Charayatah; *Santal.* Gada-sigrik'; *Ben<j.* Gima, girmi.

598. Hoppea Willd.

Small, much-branched, glabrous herbs; *leaves* small, sessile, ovate or elliptic. *Flowers* sessile or short-pedicelled, in 2-3-cotomous cymes. *Sepals* connate in a campanulate, 4-ribbed calyx; lobes 4, ovate, acuminate. *Petals* 4, connate in a subglobose or elongated corolla; lobes short or long, more or less unequal. *Stamens* only 1 perfect, with 3 rudimentary, attached to corolla-throat; filament linear, short; anther ovate, dehiscing transversely by 2 longitudinal slits; barren anthers similar but smaller, or absent. *Carpels* connate in a 1-celled ovary; placentas intruded; ovules many; style short; stigma subentire. *Fruit* a globose or ellipsoid capsule, dehiscing by separation of the carpels. *Seeds* very many, minute, nearly black, obscurely reticulated.

1285. HOPPEA DICHOTOMA Willd.; F. B. I. iv. 100. *Pladera purul* F. I. i. 403.

Behar; Chota Nagpur; C. Bengal; Chittagong.

A small, much-branched, glabrous herb, 1-5 in. high.

599. Canscora Lamk.

Annual > dichotomously branched herbs; *leaves* opposite, petioled, sessile, or perfoliate. *Flowers* in terminal or central cymes, or axillary, or densely spicate on scapes. *Sepals* connate in 4-lobed, terete, striate, keeled, or winged, tubular calyx. *Petals* connate in a cylindrical corolla; tube about as long as calyx; lobes more or less unequal > imbricate. *Stamens* 4, adnate high up the corolla-tube, 1 or 2 with longer filaments and fertile, ovate anthers; 3 or 2 with shorter filaments, often adnate down and with smaller barren anthers, sometimes almost obsolete. *Carpels* connate in a 1-celled ovary; placentas little intruded; ovules many; style linear; stigmas 2, short, heralobed. *Fruit* a 2-valved capsule, the 2 carpels separating, or

[Canscora.

often very thin-walled and breaking up irregularly. *Seem* & *inute*,
many-angled, dark-brown, reticulated.

Calyx striate or keeled, not winged; stem quadrangular; flowers *row-*
coloured..... *diffusa*.

Calyx winged; stem 4-winged; flowers white..... *decussata*.

1286. CANSCORA DIFFUSA R Br.; F. B. I. iv. 103; E. D. C. 384.

***Pladera virgata* F. I. i. 401.**

In all the provinces.

An erect, branching annual.

1287. CANSCOEIA DECUSSATA Roem. & Schult.; F. B. I. iv. 104;
E. D. C. 382. *Pladera decussata* F. I. i. 402.

In all the provinces.

An erect, branching annual. *Hind.* Sankha kuli; *Beng.*
Dankuni.

600. Swertia Linn.

Annual or perennial herbs; *leaves* opposite. *Flowers* blue,
lurid, or whitish, sometimes with yellow glands; cymes in thyrsoid
or corymbose panicles. *Sepals* connate in a 4-5-partite calyx*
lobes linear or lanceolate, rarely ovate, 1-3-nerved. *Petals* 4 or 5
connate in a rotate corolla; lobes twisted to the right, each, or the
corolla-tube below each with 1 or 2 pits, depressions, or glands
naked or partially occluded by a basal scale; margins of pits
fimbriate throughout or at the apex only; scales naked or with
fimbriate tips. *Stamens* 4 or 5 (in our species 4), adnate near
base of corolla, free or rarely monadelphous; filaments linear,
complanate, often more or less widened downwards; anthers
oblong-ovate or hastate, versatile. *Carpels* connate in a 1-celled
ovary; placenta's little intruded, many-ovuled; style 0, or short,
rarely linear-cylindric; stigmas 2. *Fruit* a sessile, ovate or
oblong capsule, dehiscing by separation of the 2 carpels. *Seeds*
many, rarely few, small or very small; testa close or lax or
winged, reticulate.

1288. SWERTIA AFFINIS Clarke; F. B. I. iv. 126; E. D. C. 3012.

Chota Nagpur.

An erect annual, 1-3 feet high. *Vernac.* Chiretta.

601. Limnanthemum S. P. Gin el.

Aquatic herbs; *leaves* deeply cordate, entire or sinuate, alternate
or subopposite. *Flowers* peduncled, white or yellow; peduncle

scicled at the nodes.¹ *Sejxrf*s slightly connate in a 4-5-partite
 I»if^x lobes ol)long- *Petals* 4 or 5, connate in a rotate corolla;
 often with glands opposite the lobes, sometimes with hirsute
 thro^at lobes valvate in bud, ciliate, fimbriate, or with an oblong,
 longi^uuinal fold down the middle. *Stamens* 4 or 5, adnate to
 corolla-tube; filaments linear, short; anthers hastate-oblong,
 versatile. *Carpels* connate in a 1-celled ovary; placentas not
 intruded, many-ovuled; style short; stigma of 2 lamellae. *Fruit*
 an ovoid c^r oblong, irregularly opening or almost indehiscent cap-
 sule. *Seeds* many, compressed, orbicular, slightly marginate or
 almost flat, discoid; testa close, somewhat spongy, finely reticu-
 lated >» occasionally covered with papillose glands.

Stems float^{ing}, rooting at the nodes; leaves orbicular, deeply cordate;
 flower white y^{el}ow towards base of corolla within:—

Corolla-lobes entire, with a longitudinal fold down the middle; seeds
 scabrous.....*cr̄tatum*.

Corolla-lobes fimbriate, densely papillose, without a fold down the
 middle; ^{er̄s} almost or quite smooth.....*indicum*.

Stems float^{ing} & not rooting at the nodes; corolla-lobes fimbriate, without
 a fold down the middle:~

Leaves all orbicular, deeply cordate; corolla yellow; seeds minutely
 reticulate, glabrous.....*aurantiacum*.

Leaves radical spatulate-orbicular, cauline orbicular, deeply cor-
 date, corolla white; seeds minutely puberulous.....*parrifolium*.

1289. LIMNANTHEMUM CRISTATUM Griseb. J. F. B. I. iv. 131.

Menyanthes cristata F. I. i. 459.

In ponds in all the provinces.

An aquatic herb. *Beng.* Pan-chúli, chand-malla; *Hind.*

Tagar mul.

1290. LIMNANTHEMUM INDICUM Thw.; F. B. I. iv. 181. *Men-*
yanthes indica F. I. i. 460.

*ⁿ ponds in all the provinces.

An aquatic herb. *Beng.* Pan-chúli, chand-malla; *Hind.*

1291. LIMNANTHEMUM AURANTIACUM Dalz. \ F. B. I. iv. 132.

Tagar mul -
 Bengal.

An aquatic herb. *Beng.* Haldi chand-malla.

1292. LIMNANTHEMUM PARVIFOLIUM Griseb.; F. B. I. iv. 132.

Chittagong.

An aquatic herb.

Order LXXXVII. POLEMONIACEJE.

Herbs, rarely shrubs, erect or climbing. *Leaves* alternate ^{or} opposite, entire or lobed or dissected; stipules 0. *Flow^{ers}* regular, hermaphrodite, showy, solitary fascicled or panicle ^{d.} *Sepals* 5, connate in an inferior calyx; lobes slightly imbricate ^{or} valvate. *Petals* connate in a gamopetalous corolla; lobes ⁵ twisted to the right. *Stamens* 5, inserted on the corolla-tube; alternate with the lobes; anthers versatile; dehiscence longitudinal, introrse. *Carpels* 3, connate in a superior, 3-celle ^d ovary; ovules very many, on the inner angle; style simple ^{ci} stigma shortly 3-fid. *Fruit* a septicidal, 3-valved capsule. *Sect^ls* many; albumen fleshy or cartilaginous; embryo straight.

602. Phlox Linn.

Herbs, erect or diffuse, usually perennial, sometimes annualⁱ? *leaves* opposite or the uppermost alternate. *Flowers* usually showy, solitary or in terminal cymes. *Sepals* connate in a narrowly campanulate, 5-ribbed, deeply 5-fid calyx; lobes acute, -often wit^{*1} scarious edges. *Petals* 5, connate in a salver-shaped corolla, wit^{*1} slender tube and contracted throat; lobes equal, obovate, orbicular, or obcordate. *Stamens* 5, included, unevenly adnate to corolla-tube. *Carpels* connate in a 3-locular, oblong or ovoid ovary I ovules in each cell 1 or 2, rarely more; style simple, with shortly 3-fid apex, the lobes stigmatic within. *Fruit* an ovoid, 3-valved capsule. *Seeds* ovoid, with narrow wings or wingless.

1293. PHLOX DRUMMONDI Hook.

In gardens in the cold season; occasionally spontaneous on rubbish heaps in C. Bengal, but only the white-flowered form.

An annual herb; native of N. America.

Order LXXXVIII. HYDROPHYLLACEJE.

Annual or perennial herbs. *Leaves* radical or alternate, very rarely opposite, entire or toothed; stipules 0. *Flowers* regular, hermaphrodite, usually in unilateral or dichotomous cymes, sometimes spicate or racemed. *Sepals* 5, connate in an inferior calyx; lobes imbricate. *Petals* 5, connate in a gamopetalous corolla; lobes imbricate, rarely contorted. *Stamens* 5, adnate to corolla-

tube, alternate with corolla-lobes; filaments filiform, often dilated at the base; anthers oblong, versatile; dehiscence longitudinal, introrse. DM hypogynous, small, or 0. Cavpeh 2, connate in a superior, 1-locular, or imperfectly or perfectly 2-locular ovary, ovules «sua iiy many; styles usually 2, distinct; stigmas capitate. fruit a globose or ovoid, loculicidally or septicidally 2-valved or Regularly 4-valved capsule. Seeds minute; albumen fleshy, eml»yo small.

603. Hydrolea Linn.

Herbs; leaves alternate, entire. Flowers blue, in short, ter-g a l racemes or cymes, regular. Sepals connate in a deep, y 5-Partite calyx ; lobes lanceolate. Petals 5, connate in a widely c^ panulate, subrotate coroua; lobes imbricate. Stamensj, •J**e to corolla-tube, alternate with its lobes; filaments filiform, oft<* dilated at the base; anthers oblong, sagittate. Carpels 2, 0oiWate b a com lptei y-celled ovary ; ovules in eachi œU *«**»*; styles 2 distinct; stigmas capitate. Frmt a globose Or "void, septicidal or irregularly 4-valved capsule. Seeds mmute.

!294. HVDBOLKA M Y J L Vahl; F. B. I. iv. 133; E. D. H. .04.

Nama zeylanica F. I. ii. 73.

In all the provinces.

An annual marsh weed. Beng. Kasschra, isha-kngulia.

Order LXXXIX. BOBAGIHE*.

B «b_s, shrubs or t rees, often hispid or scabrous . Lemci.alter- Jt6- rarely opposite> mostl y entire; stipules 0. Flown regular- ^aphrodite, or rarely by abortion polygamous, usually in sco^r- g^d «cymes, rareiy solitary, axi.lary; bracts various^ ***& * * * connate in an inferior calyx; lobes 5 rarely 6-8, usually Ierf ent, intricate or open in bud. Petals connate in a gamo^ £***• corolla; lobes 5, rarely 4 or 6, imbricate, rarely twi^sted m el n ^ a " ^ s 4-6, adnate to corolla-tube, and alternate with u a g lobes; anthers ovate, oblong, or linear; dehiscence long. S n t lateral or in<TM. c n n h connate in a s s p e T I S

*2_euch2.ovuled?or4 each 1-ovuled; style terminal or ^ R ^between the bbes of the ovary, long or short .^arely twice inl = Stiglnas capitate or 2-lobed; ovules suberect.from ^ • -4 •ner a;igle of each cell. Fmit drupe-like or dividing mto 2

nutlets. *Seeds* erect or oblique; testa membranous; & fleshy, copious or scanty, or 0; embryo straight or curved, superior.

Leaves all alternate : -

Styles terminal on the entire or only faintly lobed ovary; drupe, often dry, so that the included pyrenes simulate nutlets:

Styles twice 2-partite ; drupe including one 4-1-seeded stone or shrubs; calyx enlarging in fruit

Styles simple or only once 2-partite, rarely (*Coltclma*) two less distinct, simple styles; drupe including two 2-seeded

1-seeded pyrenes ; calyx not or scarcely enlarging in fruit:— Styles depressed-conical at the apex or with a horizontal

below or at the stigmas:— Styles short, shortly 2-lobed; pyrenes two, 2-seeded; usually more or less scandent.....**Tournefortia**

Styles elongated, dilated at apex; stigma above the variously none, or elongate-lanceolate simple, or linear double pyrenes four, 1-seeded, much resembling nutlets ; herbs

Heliotrope*

Styles elongated, not dilated or annular at the apex:—

Styles simple ; stigma capitate; pyrenes four, 1-seeded ; shrubs.....**Rhabdi***

Styles more or less 2-partite:—

Styles 2-fid at the apex*; pyrenes two, 2-seeded, or 1-seeded; trees or shrubs.....**Ehreti***

Styles more or less separate, distinct at base and at united but readily separable in the middle; pyrenes 1-seeded, much resembling nutlets; prostrate herbs

Coldenia

Styles rising from between the lobes of the 4-lobed ovary ; fruit rarely by suppression 3-1, indehiscent, 1-seeded nutlets, attached to a carpophore; anthers ovate-obtuse, not exserted ; herbs:—

Scar of attachment of granular-scabrid nutlets to the oblong carpophore near middle of their inner face; flowers all pedicelled

Bothriospermum*

Scar of attachment of glochidiate nutlets to the conical carpophore extending to the top of the nutlet; flowers all sessile or only the very lowest pedicelled.....**Cynoglossum***

Leaves opposite below, alternate above; herbs ; fruit ellipsoid, of 4 nutlets, closely adnate by their whole inner face to the carpophore under the subterminal style; fruiting calyx enlarged; anthers conniving in ft cone, lanceolate, somewhat exserted.....**Trichodesm***

604. CordiaLinn.

Trees or shrubs, sometimes subscandent; leaves alternate, Kwely subopposite, petioled. Flowers polygamous, in dichotomous <*ymb_s or clusters, hermaphrodite corymbs much fewer-floweredth an the male inflorescence; bracts 0. Sepals connate in a ^bular or campanulate calyx; teeth very short, often ^regulai, ^o crescent in fruit. Petals 4-8, connate in a funnel-shaped ^olla; lobes white or orange, spreading or recurved. Stamen⁸ f-8. evenly or unevenly adnate to corolla-tube; filaments often ^ate; at base; anthers oblong or linear, sagittate or hastate, "Wtly exserted. Carpels connate in a 4-celled ovary; ovules, in ** cell solitary; style terminal, simple below, long, 2"P ar*lte, *e branches again 2-partite, linear or subspathulate. IW an ^void or ellipsoid drupe, with a bony, 1-4-celled putamen, usually on'y 1 eel] with a fertile seed. Seech ascending; albuineu u.

^rolla small, white; tube hardly longer than calyx:-

*• << scabrous ateTM with white data; calyx tomentose; hurtB^{ize} ^
?f^a cherry; leaves beneath glabrescent.....^{monoi}

Leaves above smooth or rugose, not scabrous :—

leaves beneath densely tomentose:—

Leaves white-dotted above; calyx densely tomentose, hurt<<^{ze} ^
of a pea^{Clark}

We s not white-dotted above; fruit size: of a chenj^{tomento} ^
Leaves rugose, impressed above; calyx densely ^ ^ ^
throughout, ribbed upwards.....^{but}

Leaves smooth above; calyx glabrescent beneath, vUlous Ju.
T not ribbed upwards.....^{M fl ^ "£ * not}

L^ves beneath pubescent or puberulous when young^but
densely tomentose, glabrescent or glabrous when mature. of ^ ^a
^aves white-dotted above ; calyx pubescent; fruit size ^ ^

leaves not white-dotted above; fruit size of a cherry; calyx
, eUbrous or slightly pubescent:—^{Iyza.}

Young shoots silver-grey^{av^bnmnea.}
Cor n i You ng shoots brown tawny-pubescent *J-^{Sebetcna.}
Ua Urge, orange ; tube much longer than calyx.....

¹²⁹3. CORDIA MONOICA Roxb.; F. L i. 592; A B. I- '»'•^{ia7,}

Orissa.

A^{small} tree.

1296. *CORDIA CLARKEI* Brace. *C. fragrantissima* F. B. I. v. partly.
E. Bengal; Chittagong.
A large tree.
1297. *CORDIA MACLEODII* Hook. f. & Thorns.; F. B. I. v. m. 109;
E. D. O. 1927.
Chota Nagpur.
A tree, 40 feet high. *Hind.* Dhengan; *Sanuil Jugia*;
Kol. Eeuta, porponda.
1298. *CORDIA OBLIQUA* Willd. var. *WALLICHII*; F. B. I. v. m. 107;
E. D. C. 1940.
Chota Nagpur.
A tree, 40 feet high. *Hind.* Chhota-lasura; *Benj.* *
Chhoto lashora, chhoto-bohnari.
1299. *CORDIA GRANDIS* Roxb.; F. I. i. 593; F. B. I. iv. 137.
Chittagong.
A large tree.
1300. *CORDIA MYXA* Linn.; F. I. i. 590; F. B. I. iv. 136; &
C. 1931.
In all the provinces. *Benj.*
A tree or shrub. *Hind.* Lasura; *Beng.* Lashora,
nari; *Uriya* Gondi; *Santal.* Buch; *KoL* Sinbruin.
- 1300/2. Var. *BRUNNEA* Kurz; F. B. I. iv. 136.
Chittagong.
A tree or shrub.
1301. *CORDIA SEBESTKNA* Linn.
Planted in gardens.
A small tree.

605. *Tournefortia* Linn.

Trees or shrubs, often rambling or subscandent; *leaves* alternate, entire. *Flowers* in dichotomous, scorpioid, terminal, rarely lateral or extra-axillary cymes, white or greenish-yellow, sessile or very shortly pedicelled; bracts 0. *Sepals* connate in a 5-partite, rarely 4-partite calyx; lobes linear-lanceolate or oblong. *Petals* 0, rarely 4, connate in a cylindric corolla, with long, rarely short tube; throat naked; lobes spreading. *Stamens* 5, rarely 4, included, adnate to corolla-tube; filaments short; anthers oblong. *Carpels* connate in a 4-celled ovary; ovules solitary in each cell; style terminal, short, slightly 2-lobed. *Fruit* a small, ovoid,

almost dry drupe, not dearily separating into 2 distinct pyrenes; pyrenes each 2-celled, 2-seeded. Seed straight or curved ; albumen fleshy.

Corolla-tube nearly thrice as long as calyx-teeth Raxburtjhii.

Corolla-tube hardly exceeding the calyx-teeth.....viridiflora.

1802- TOURNBPORTIA ROXBURGHII Clarke; F. B. I. iv. 146. ReUotropiitm paniclatum F. I. i. 455. H. Boxhurghee P- B. I. iv. 153.

Chittagong.

A small, rambling shrub.

130d- TOURNBPORTIA VIRIDIFLORA Wall.; F. B. I. iv. 146. Lithospermum viridiflorum F. I. i. 455.

Chittagong.

A small shrub ; not so common as the preceding.

606. Heliotropium Linn.

Heliotropium Linn. Annual or perennial, villous or scabrid herbs, rarely under- shrubs; leaves alternate. Flowers small, white or pale purple. Inflorescence usually terminal, dichotomous cymes, with often long, branched; bracts small or 0, sometimes bracts leafy and axillary. Sepals lanceolate or linear, rarely short. Petals 5, connate in a tubular corolla; throat naked; lobes spreading in bud. Stamens 5, adnate to filament, included; filaments very short; anthers ovate or oblong. Carpelles connate in a more or less perfectly 4-celled ovary in each cell; style terminal, short or long, with a conical apical disk; stigma on the disk 0, or short or lanceolate, entire, rarely 2-armed. Fruit dry, indehiscent, or of more or less free nutlets. Seeds straight or curved; albumen scanty or 0, rarely copious.

Developing the fruit; lobes short, subvalvate; leaves petioled, elliptic-ovate; spikes short, woolly m>i>mm,

Fruit developing the fruit; lobes narrow, long:— Leaves 4-nerved, ovate, obtuse, mucronate or not; spikes persistent, bracteate..... ovalifolium. Leaves lanceolate or linear-lanceolate, acute:—

Spikes not conspicuously bracteate towards the upper part:--

W e s lanceolate, over-5 in. long **imposum*.
Leaves narrow-lanceolate, under -5 in. long

Q .. *MIJOHUM* var. *brevifolia*

Spikes conspicuously bracteate throughout :-

stems ngul, not intricately branched *marifolium*.
stems decumbent, intricately branched

•W n: f : raji into tW o nut Uke > 2 aeced P7 «n«; leav es petioled,
Ovate, substrate fp. 715] *manfolium* var. *Wallichii*.
..... *indicum*.

1304. **H** *moTROPIUM SDIWUM* Linn.; F. B. I. iv. 149.
Western Behar, rare.
A prostrate annual.

1305. *HELIOTROPIUM OVAUFOLIUM* Forsk.; F. B. I. iv. 150. &
coromcndelianum F« I, i. 454.
N. Bengal; C. Bengal; Behar; Tirhut.
A herb with rigid, woody stems and ascending brandies-
Beng. Naga-phuli.

1306. **T** *TROPIUM STRIGOS* **TM** **Wh*** **1 B L *** **151, EPK**
In all the western provinces,
..... ga, chiti-phul. **h-bran** herb. HW. Sated.

1306/2. Var. *BREVIFOLIA* F. B. I. iv. 151.
In all the provinces.
Ajtt. preceding, but with shorter, narrowly lanceolate
leaves.

1307. **H** *HELIOTROPIUM MARIFOLIUM* Retz; F. B. I. iv. 152.
Behar; Chota Nagpur.
A small, rigid herb.

1307/2. Var. *WALLICHII* p. B. j. iv. K o ^
folium F. I. i. 457. Cynoglossium mut t-
In the northern and eastern provinces.
A s , diffuse annual.

i m **H** L m n _ ; F, L < 454 ! P. B. I. iv. 152;
E. D. H. 102.
In all the provinces.
A e, branching annual weed of waste places.
Ve **Itatisura**.

1311. EHRKTIA UEVIS Roxb.; F. I. i. 597, F. B. I. iv. 141; B- »'
E. 25.

Orissa; ChotaNagpur; Behar.

A tree, 30-40 feet high.

- 1311/2. Var. FLORIBUNDA Brand.; F. B. I. iv. 142.

Western Behar.

A tree, 30-40 feet high.

609. Coldenia Linn.

Prostrate, scabrid herbs; *leaves* alternate, crisped. *Flowers* white, axillary, sessile or subsessile, sometimes the upper in a unilateral raceme or spike, with leafy bracts. *Sepals* connate in a 4-5-partite calyx; lobes narrow. *Petals* 4 or 5, connate in a short, tubular corolla; throat naked or with 4-5 scales; lobes spreading, imbricate. *Stamens* 4 or 5, adnate to corolla-tube, included; filaments short; anthers ovate. *Carpels* connate in an ovoid ovarj, 2-celled or imperfectly 4-celled; ovules 4, 2 in each cell or solita in each imperfect chamber; style terminal, 2-fid. *Fruit* an almost dry drupe of 4 subconnate, 1-seeded pyrenes, sometimes one or more abortive. *Seeds* with thin testa; albumen 0 or very scanty > cotyledons flat.

1312. COLDENIA PROCUMBENS Linn.; F. I. i. 448; F. B. I. iv. 141; E. D. C. 1707.

In most of the provinces.

A flatly prostrate, scabrous annual. *Vernac.* Tripunkhi-

610. Bothriospermum Bunge.

Annual or biennial, weak, strigose or hirsute herbs; *leaves* alternate, ovate or lanceolate. *Flowers* small, blue or white, axillary, pedicelled, the uppermost passing into a bracteate raceme. *Sepal** connate in a 5-partite calyx; lobes narrow, hardly accrescent. *Petals* 5, connate in a short-tubed corolla; throat with 5 scales; lobes obtuse, spreading, in bud imbricate. *Stamens* 5, included, adnate to corolla-tube; filaments very short; anthers ovate, obtuse. *Carpels* connate in deeply 4-lobed corolla; lobes distinct, lateral, on a prominent gynobase; ovules 1 in each lobe; style short, rising between the lobes; stigma capitate. *Fruit* of 4 ellipsoid, granular, scabrid nutlets; scar near the middle of the inner face large, hollow, and smooth, with an inflexed margin; carpophore oblong. *Seeds* somewhat incurved; cotyledons flat.

1313. BOTHRIOSPERMUH TEIELLUM Fisch. & Mey.;

iv. 167. *Cijnoglossum diffusutn* F. I. i. 457.

Behar; Tirhut; N.Bengal; E.Bengal.

A prostrate or diffuse weak herb.

611. *Cynoglossum* Linn.

fennial or perennial, erect, hairy herbs; leaves alternate
petioled, cauline sessile. Flowers in elongated racemes,
laterally distant, sessile or the lower pedicelled, purple
; bracts 0. Sepals connate in a deeply 5-lobed calyx,
lobes spreading, hardly accrescent. Petals 5, ?*?*?*?
tubed corolla; throat with 5 obtuse or emarginate scales;
obtusely imbricate in bud. Stamens 5, adnate to
filaments short; anthers 1; 0
; style hardly above the corolla-throat. Carpel connate
ovary; style short or long, from between the bases of the
lobes; stigma small. Fruit of 4 nutlets, forming together
depressed and produced downwards, the outer faces
their bases rounded and produced downwards, the
convex or flattened, glochidiate, margined or not; carpophore
linear, a shortly conic base, slightly
curved; cotyledons large, flat.

Hispidly hairy; flowers of lower and middle thirds of inflorescence
distinctly pedicelled; nutlets very obscurely or not at all margined,
glochidiate on all sides lanceolatum.
Softly hirsute or strigose; flowers of the lower fourth of inflorescence
distinctly pedicelled; nutlets very prominently margined, ££Z
the faces

1314 n . -r, i T? "R I iv". 156.

C. racemosum F. I. i. 456.

Behar; Tirhut; N.Bengal; C.Bengal; E.Bengal.

An erect, annual herb.

1315 10. CYNOGLOSSUM DENTIOULATUM A. DC; F. B. I. iv. ><-

Chota Nagpur.

An erect, annual herb.

612. *Trichodesma* B. Br.

Coarse, hispid herbs; leaves opposite, or the upper alternate,
entirely solitary, on axillary pedicels, but passing into

terminal racemes by gradual reduction of the floral leaves. *Sepals** connate below in a deeply 5-lobed calyx; lobes triangular, lanceolate, accrescent. *Petals* 5, connate in a campanulate-cylindrical^{rlk} corolla; throat naked; lobes twisted to the left, each with a basal or subbasal pit or gland. *Stamens* 5, adnate to corolla-tube; filaments^{la*} short; anthers elongate, lanceolate, connivent in a cone, the connective more or less dorsally hirsute, the tips excurrent, «^t length twisted. *Carpels* connate in a 4-lobed ovary; lobes distinct, but slightly prominent; ovules in each lobe solitary, subhorizontal; placentas on inner angles of each lobe; style terminal filiform; stigma small. *Fruit* ellipsoid, 4-ridged, composed of 4 ovoid-oblong nutlets, with shining backs and scabrid, more or less margined inner faces, which are at first wholly adnate to the carpophore below the style, at length separating. *Seed* suborbicular or obovate, subhorizontal or pendulous; cotyledons plano-convex.

Calyx-lobes in fruit cordate or hastate at base.....*indicum*.
 Calyx-lobes in fruit ovate or rounded at base.....*zeylanicum*.

1316. TRICHODESMA INDICUM R. Br.; F. B. I. iv. 153; E. D-T. 562. *Borago inclica* F. I. i. 458. *B. spinulosa* F. I. i. 459.

In all the western and northern provinces.

An erect or diffuse annual. *B. spinulosa* is described from a stray cold-weather seedling in Central Bengal (where the species very rarely occurs), with the accidental peculiarity of all the leaves being alternate. *Hind*, and *Beng*. Chota-kulpha; *Santal*. Hetmudia.

1317. TRICHODESMA ZEYLANICUM R. Br.; F. B. I. iv. 154; E. D-T. 565. *Borago zeylanica* F. I. i. 458.

Chota Nagpur; Orissa.

As the preceding. This species is very rare in our area, only crossing its south-western borders. *Hind*, Hetenuria.

Order XC. CONYOLYULACEJE.

Herbs or shrubs, usually twining, rarely erect, very rarely trees; sometimes parasitic. *Leaves* alternate or in parasitic species 0; stipules 0. *Flowers* regular, hermaphrodite, cymose, rarely soli-

W; bracts at base of cymes or under solitary flowers opposite ;
 b*acteoles under pedicels'small, scale-like. *Sepals* 5, imbricate,
 occasionally slightly connate at base, often persistent, sometimes
 ac<*escent. *Petals* 5, connate in a campanulate or funnel-shaped,
 *ar% subtrotate corolla; lobes of limb short or long, often plicate
 ihud, after flowering the limb either incurled or reverting to the
 yiginal estivation. *Stamens* 5, adnate to corolla-tube; anthers
 oblong; dehiscence longitudinal, introrse or lateral. *Carpels* 2,
 ve*y rarely 3 or more, connate in a superior ovary, the base often
 ^circled by an annular or lobed disk, the cells as many or by
 sPurioua dissepiments twice as many as carpels; ovules in each
 Ca?nel 2, sessile, erect, anatropous; styles 1, rarely 2; stigma capi-
 *<<. 2-lobed, or 2-fid. *Fruit* an indehiscent berry, or a 2-4-valved,
 or circumscissile, or irregularly rupturing capsule. *Seeds* 4-2,
 rare% 1, erect; albumen 0 or scanty; cotyledons generally plaited,
 rare.y uav.

*C
 on?iollaantube UsuftUv uniformly enlarged from base to apex, the 5 bands
 nt*e lobes rarely clearly defined from the intervening spaces; pollen
 no^pinescent :- [p. 722]
 *e^l K parasitic, twining herbs without leaves; lobes of corolla
 ^bricate; mouth scaly; embryo spiral, without cotyledons

Cuscuta.

G_r*en> non-parasitic, leafy herbs or shrubs, usually twining :—
 Fr^it indehiscent, woody or fleshy, rather large; style short or
 none; stigma 5-10-rayed; corolla-lobes 2-fid, induplicate-contorted

Erycibe.

^H dehiscent, or if indehiscent, small, with thin, fragile walls :-
 Flowers in racemes or panicles; corolla-lobes induplicate-con-
 torted; ovary Mocular 2-ovuled, rarely 4-ovuled 1-2-locular;
 Capsule 1-seeded, indehiscent, or rarely 2-valved; outer 3 or all
 the sepals enlarged in fruit; style entire or shortly 2-lobed

Porana.

Flowers in cymes or solitary; capsule valvate or opercular, rarely
 dehiscinly irregularly :—
 †Style B 2, free or partly united below; sepals not or slightly
 enlarging in fruit:—[p. 722]

Corolla-lobes imbricate; flowers axillary, solitary; stamens
 everted; styles quite free; stigmas globose; TM ^ £ ^
 lft, 4-valved, 1-seeded....., nTlpn'

Corolla-lobes induplicate-contorted; flowers cymose ; stamens
 aotexserted:—

- Capsule 4-valved, 2-1-locular, 4- or 2- or 1-seeded: style ¹& of quite free, each 2-branched; stigmas along inner face style-arms; cymes few-flowered or flowers **one...Evolvulus**^s
 Capsule irregularly dehiscent, splitting into many ^ver^tica^l segments; styles usually partly united below, undivided above; stigmas 2, capitate; cymes subcapitate...**Bonania**^a
- I Style entire ; stigmas usually 2 :—[p. 721]
 Ovary 1-locular; capsule 4-valved, 3-seeded; stigmas show^t, oblong ; calyx-lobes not enlarged:—
 Bract enveloping the calyx; pollen spherical ...**Calystegia**^a
 Bract not enveloping the calyx ; pollen polyhedral
Hewittia.
- Ovary 2-locular, sometimes 4-locular :—
 Outer 3 sepals much larger than the 2 inner and decurrent^t on the peduncle ; stigmas capitate.....**Aniseia**^a
 Outer 3 sepals not larger than the 2 inner, nor decurrent^t on the peduncle:—
 Stigmas elongated:—
 Stigmas filiform; ovary 2-locular, 4-ovuled; capsule 4-valved or indehiscent; hairs simple or rarely 2-branched.....**Convolvulus.**
 Stigmas elliptic, short or long; ovary 2-locular^r 4-ovuled; capsule 8-valved, rarely 4-valved; hairs^s 3-many-branched.....**Jacquemontia**^{*}
- Stigmas globose:—
 Capsule 4-valved; ovary 2-locular or often 4-locular in fruiting sepals not enlarged; bands of corolla usually with 5 purple lines; stems not winged **Merremia**
 Capsule with circumscissile dehiscence ; ovary 2-locular; fruiting sepals considerably enlarged; bands of corolla without lines; stems winged **Operculina**[']
- Corolla-tube not uniformly enlarged from base to apex, the 5 bands on the lobes clearly defined by 2 prominent lines; pollen spinescent:—
tP- 721J
 {Fruit dehiscent, or if indehiscent, then with thin, fragile walls:—
 [p. 728]
 gStamens arising directly from the corolla-tube:—[p. 723]
 Corolla more or less campanulate; calyx-lobes never aristate, inflorescence never scorpioid ; stamens not exserted **Ipomoea.**
 Corolla more or less hypocrateriform; calyx-lobes aristate, or if obtuse the inflorescence scorpioid ; stamens exserted :—
 Flowers rather small, pink, slightly irregular ...*.....**Quamoclit**^{*}

Flowers large, white or purple, never pink, quite regular

§Sta Calonyction.

tube ^m ^{ns} ^{arisi} «g from the backs of 5 scales attached to the corolla-
1 flowers small, urceolate, fasciculate; fruit 4-valved [p. 722]

}prujt • - Lepistemon.

fW woody; stigmas elliptic-oblong; (oorolia it) !»»*»»'''-^^

Fruit mealy or fleshy; stigmas globose; corolla, not or very rarely

hypocateriform :—

^pals large, orbicular, accrescent, mucilaginous, ^ W * ". *

* W enveloping the fruit... the... fruit... f... f P w J *

^pals small, ovate or narrow-oblong, leathery, ultimately suyt

^t enlarging so as to envelop the fruit:—

Ovary 1-celled..... ..Argyreia.

Ovary 2-celled..... ..Lettsonia.

613. Cuscuta Linn.

Leafless + ... parasitic herbs. Flowers
small, white or rose-coloured, fascicled, sessile or r ^ J,
celled; acts small or 0. Sepals 5 or 4, subequal, free or shortlj
connate at the base. Petals 5 or 4, connate in an ovoid « «**
panul <<> corolla, usually with a ring of fimbriate or lobed scales
near the base or below the stamens; lobes short, imbricate. Stamen;
- " 4 - adnate near throat of corolla; filaments short, linear,
fibers oblong, partially exserted. Carp* connate in a more or
7^s completely 2-celled ovary ; ovules 4; styles 1 or 2. stigmas 2.
*T «wt a globose or ovoid, dry or succulent, circumscissile or irregu-
larly rupturing 4-2-seeded capsule. Seeds glabrous; albumen
a e % ; embryo slender, spiral; cotyledons 0 or obscure .

<<<a. CHSCUT, KEFLEXA Eoxb.; F. I. i. 446; F. B. L iv-225;
E. D. c. 2508.

In all the provinces.

TTI.II :

A yellow, leafless, fleshy parasite. Beng. HaM» algusi,
algusi-lata.

6H. Erycibe Boxb.

Scandent or diffuse shrubs, rarely trees; leaves Mernate, entire,
coriaceous, elliptic. Flowers small; cymes in axillary or terminal
racemes or panicles; bracts small, lanceolate, ff ^{Zs}/> ~
subequal, orbicular, coriaceous, adpressed to base of fruit. Petal,

5, connate in a small, subtovate corolla, white or yellowish; outside hirsute; lobes obcordate, induplicate, contorted in bud, with thicker centre hirsute without, and submembranous, semi-cordate, glabrous margins. *Stamens* 5, subincluded, adnate to corolla-throat; filaments short; anthers ovate-lanceolate. *Carpels* connate in a globose, 1-celled ovary; ovules 4; style 0, stigma large, subglobose or conic, 5- or 10-ridged. *Fruit* a fleshy or woody berry, ovoid or ellipsoid. *Seed* solitary, glabrous, albumen scanty, intruded between folds of fleshy, plicate cotyledons.

Flowers yellowish..... *p. paniculata*.
 Flowers white..... *peguensis*¹⁸.

1319. *ERYCIBE PANICULATA* Roxb.; F. I. i. 585; F. B. I. iv. 180;
 E. D. E. 333.

Chota Nagpur; Orissa.

A small tree with spreading branches or a diffuse shrub.
Kol. Uranim; *Sanial.* Kari.

1320. *EUYCIBE PEGUENSIS* Prain. *E. paniculata* var. *peguensis*
 F. B. I. iv. 181.

Chittagong.

A diffuse, scandent shrub.

615. Porana Burni.

Large climbers; *leaves* petioled, ovate, entire. *Flowers* white, blue, or purple; cymes often in large panicles; bracts persistent; bracteoles subulate or 0. *Sepals* 5, in flower small, narrow; *fruit* 3, outer or all much enlarged, membranous, spreading, usually spatulate. *Petals* 5, connate in a usually small, campanulate or funnel-shaped corolla; mouth wide or narrow; limb plicate, subentire or lobed. *Stamens* 5, subincluded; filaments filiform or linear. *Carpels* connate in a 2-celled or 1-celled ovary; ovules 2 or 4; style long or short, entire or 2-fid, with a single 2-lobed or with 2 capitate stigmas. *Fruit* a globose, oblong or obconic, membranous, 1-seeded capsule, indehiscent or 2-valved. *Seed* glabrous; cotyledons plicate.

1321. *PORANA PANICULATA* Roxb.; F. I. i. 466; F. B. I. iv. 222.

Chota Nagpur; liehar; N. Bengal; E. Bengal.

A large, handsome climber. Bridal Creeper.

Evolvulus.]

CONVOLVULACEAE.

616. *Cressa* Linn. rey·pu bescent;

Small, branching undershrubs, erect or diffuse, Je in the upper
 »««« small, sessile, ovate. *Flowers* «*»^{es} bracts 2, small,
 ^s or passing into terminal spikes or heads, al. prf<Jf 5)
 Sepals 5, small, not enlarging, thin, <*»[?] J^ short; lobes
 connate in a small, funnel-shaped corolla; Stamens g)exserted;
 ovate, distinct, hirsute externally, imbricate. ^ ^ ^ & 2·ceUed
 filaments slightly connate below. *Carpe*l's con 1. gti(nnag capitate-
 ovary; ovules 4; styles 2, free, entire, equa- 1-se ^ Seed
 Vruu aSM-valved capsule, usually Mocular and
 glabrous; cotyledons linear, plicate. 22g; E. p, 0. 2057.

!322. *CRESSA CRETICA* Linn.; V. B. I. «.

C. indica P. I. ii- 72.

C. Bengal.

A small, erect, branching annual.

617. *Evolvulus*Linn. ^ ^ ^

Small herbs or undershrubs, prostrate or erect, ^ ^ ^ or
 fe««e. small, entire, often distichous. *lowers subsessae cymes.
 bluish, in axillary, few-flowered, peduncled or Petals 5, connate
 & wh 5, small, subequal, not enlarged in ^ ^ ^ ^ ^ gub.
 in a small funnel-shaped or subrotate corolla; filaments slender.
 e»t«e. *stamens* 5, included or exserted oyary; ovules 4;
 C^ei8 connate in a 2-celled, or rarely 1-ed linear ^ subclavate
 %les 2, free from the base, each cleft if *o \ 4-valved, less often
 *U Pnas, papulose on the inner face. *»^{utl} or 2, rarely solitary',
 2-valved, 2- or 4-celled capsule. *Seeds* *

Serous; cotyledons twice folded. ^ ^ ^ ^ ^ . ^ ;

^»ves oblong or linear-lanceolate, all parts ^ ^ ^ u t e ; c^orolla
 7< white, tany, or rusty; flowers blue o . at the nodes:-
 * * « transparent; branches diffuse, not rooting. uUwuU.

W sobiong....."ddnoi&e* var. »»i/«'»^{is};

leaves linear-lanceolate.....7'''rc-m very sparingly na<; .

^ves al mostorWouial)Sub cordate, all Part¹⁸f¹¹ ostrate, rooting at the
 aow<*s pure white; corolla opaque; branches pios ..nu ^ ^ rntt.

»<les.

..... r ,, rj J jy. 220.

¹³23. *EVOLVULUS ALSINOIDKS* Linn.; F. I. «• Woi * * " ,

•*B. hirsutus* F. I. ii. 106.

In all the western provinces, common; C. Bengal, ? & ^{ther} rare.

A small, diffuse perennial. *Santal*. Tandi-kodebah*^{→ ^}.
1323/2. Var. LINIFOLIUS F. B. I. iv. 221. *E. angustifolius* I^A-
ii. 107.

In most of the western provinces.

A small, diffuse perennial.

1324. EVOLVULUS NUMMULARIUS Linn.

C. Bengal.

A small, prostrate perennial; a native of the ^{West} Indies, now completely naturalised and rapidly ^{sprca} ^{du} ^{ig.}

618. *Bonamia* Thouars.

Large climbing shrubs; *leaves* large, elliptic, entire, ^{firm.}
Flowers medium, in axillary, peduncled cymes; bracts ^{srl} ^{all.}
Sepals 5, subequal, firm, ovate, not enlarged. *Petals* 5, connate ^{te}
in a funnel-shaped corolla, hairy externally except opposite ^{the}
sepals; limb plicate. *Stamens* 5, included, adnate to corolla-tube; ^{de}
filaments filiform, at least above. *Carpels* connate in a 2-celled ^d
ovary; ovules 4; style 2-fid to the middle; stigmas ^{capita} ^{*6*}
Fruit a globose or ovoid capsule, with thin valves irregularly
splitting at their apices. *Seeds* normally 4, glabrous or nearly so*

1325. BONAMIA SEMIDIGYNA Hallier f. *Convolvulus semidigy* ^{nlls}
F. I. i. 468. *Breweria cordata* F. B. I. iv. 223.

Chittagong; E. Bengal; Tippera.

A powerful climber.

619. *Calystegia* 11. Ur.

Climbing or prostrate perennial herbs; *leaves* entire or lobed
glabrous or nearly so. *Flowers* axillary, solitary, rarely in ^{few} ^{*}
flowered cymes; bracts 2, large, leafy, persistent, enclosing the
calyx. *Sepals* 5, ovate or oblong, the 2 inner rather smaller.
Petals 5, connate in a funnel-shaped or campanulate, glabrous
corolla; tube with bands in centre of petals each with 5 pellucid
lines at the base; limb subentire, plicate. *Stamens* 5, included;
filaments subequal. *Carpels* connate in a 1-celled or imperfectly
2-celled ovary; ovules 4; style filiform; stigma of 2 oblong lobes.
Fruit a globose, 1-celled, 4-valved, 4-seeded capsule. *Seeds* black
glabrous or verrucose.

1326* CALYSTEGIA HEDERACEA Wall.; F. B. I. iv. 217.

Tirliut; N. Bengal; E. Bengal.

In fields and hedges, prostrate or climbing.

620. Hewittia W. & A.

A pubescent twining herb; leaves cordate, entire, angled or lobed; axillary, solitary, or in few-flowered cymes; bracts lanceolate below the calyx. Sepals 5, acute, the 3 outer wider; enlarging in fruit, the 2 inner narrow-lanceolate, connate in a medium, yellow or white corolla, with 5 distinct lobes. Stamens 5, included; filaments or joined at the base. Carpels connate in a hirsute, 1-celled, 2-ovary; 2-celled ovary; 5 ovules; 4-styled filiform stigma of 4-seeded oblong lobes. Fruit a globose, 4-valved, 1-celled, normal capsule. Seeds black, glabrous.

1327. HEWITTIA BICOLOR Wight; F. B. I. iv. 216. Convolvulus bicolor F. I. i. 475.

N- Bengal; E. Bengal; Chittagong.

A perennial, twining herb. Hind. Jarad-kalmi.

621. Aniseia Choisy.

A woody herb; leaves elliptic, mucronulate or lanceolate, solitary, or in few-flowered cymes. Sepals 5, acuminate, the 3 outer larger, ovate, decurrent on the petiole, enlarged in fruit, the 2 inner lanceolate, unaltered. Petals 5, connate in a wide-tubular corolla; hirsute externally except on spaces opposite the sepals, with 5 distinct, vertical bands. Stamens 5, included; filaments filiform, connate in a glabrous, 2-celled ovary; ovules 4; style or stigma 2-globose. Fruit a 2-locular, 4-valved capsule.

1328* large, black, smooth.

• ANISEIA MARTINICENSIS Choisy. Ijwmwa uniflora F. B. I. iv. 201.

Chota Nagpur; E. Bengal.

A prostrate herb.

622. Convolvulus Linn.

Herbs or undershrubs, erect, prostrate, or twining, sometimes with spines; leaves entire, toothed, or lobed. Flowers solitary, or in few-flowered cymes; bracts usually narrow.

Sepals 5, usually subequal. *Petals* 5, connate in a campanu^{mil&tG} or funnel-shaped corolla; limb plicate, subentire. *Stamens* 5, included; filaments usually unequal. *Carpels* connate in a 2-celled ovary; ovules 4; style filiform; stigmas 2, oblong linear, distinct. *Fruit* a 4-valved 2-locular, or irregularly * ^U turning capsule. *Seeds* normally 4, glabrous, black, verrucose.

1329. CONVOLVULUS PLURICAULIS Choisy; F. B. I. iv. 218; E. D.

C. 1781. *Evolvulus pilosus* F. I. ii. 106.

Tirhut; Behar; Chota Nagpur.

A diffuse, hairy perennial.

623. Jacquemontia Choisy.

Climbing herbs or undershrubs, usually pubescent; *leaves* usually cordate or elliptic, entire or rarely toothed or lobed. *Flowers* in axillary, compound, umbellate or capitate cyme rarely solitary; bracts small, rarely leafy. *Sepals* 5, equal or unequal. *Petals* 5, connate in a usually small, funnel-shaped corolla; throat wide or narrow; limb plicate, vertical bands ending in 2 distinct nerves. *Stamens* 5, included. *Carpels* connate in a glabrous, 2-celled ovary; ovules 4; style filiform; stigmas 2, linear or elliptic-oblong. *Fruit* a globose, 8-valved, rarely 4-valved 2-locular capsule. *Seeds* normally 4, usually glabrous, often slightly marginally winged.

Flowers pink or white; mouth of corolla narrow..... *pankulatd'*

Flowers blue; mouth of corolla wide..... *coerulea*.

1330. JACQUEMONTIA PANICULATA Hallier f. *Convolvulus parviflorus* F. I. i. 471; F. B. I. iv. 220; E. D. C. 1780.

Behar; W. Bengal; Chittagong.

A slender, matted twiner.

1331. JACQUEMONTIA COERULEA Choisy; F. B. I. iv. 220.

In gardens, general.

A slender twiner.

624. Merremia Dennst.

Climbing, rarely prostrate or erect shrubs or herbs; stems rarely winged; *leaves* alternate, entire, lobed or divided. *Flowers* axillary? usually long-peduncled, solitary or in few-flowered, rarely many-flowered cymes; bracts small. *Sepals* 5, subequal, elliptic or lanceolate-acuminate, rarely rounded or truncate, convex, usually

Merremia.]

CONVOLVULACE&-

%htly enlarged and thickened in fruit. ^{fetaU f^t} the 5
 campanulate corolla, white, less often yellow ^{Umb}
 vertical bands each usually marked by 5 darK ^{violet}
 PKcate, margin slightly lobed. ^{Stamens} 5, ^{uneq;} ^{twis}; ^{includ}ed or
 ^sei-^{ted}; filaments filiform; anthers usually ^{Carv}els ^{connate}
 usually with longitudinal folds, never spinulose. ^{i fili&onn;}
 * a 2-celled or sometimes 4-celled ovary; ^{o v. u}les * ^{^ ^ ^}
 stigma 2-globose. ^{Frri}* a 4-valved capsule ⁱ ^{Seeds} ^{^ ^ ^}
 tunes the style separating with a small stoppie.

fewer, dull, glabrous, rarely puberulous.

Corolla-tube with badly defined interspaces ^{the ^ ^ the} ^{boti} " " ^{jj} ^ _

spaces never marked with dark purple lines; sees ^{Brolla} g ^{ftbr} QUS ^{exte} r-

Seeds with spreading hairs; capsules globose; ^{e. e-me} ^ ^{compre} sSed,

nally except for a few hairs near the apex in ^{bu}a, ^{J.} ^{umbellata}.

subumbellate; leaves cordate..... ^{ins} capsules ovoid;

Seeds minutely velvety with almost villous ^{^ l g} ins; ^{ftcemose}; leaves

corolla shaggy externally; cymes ^{elongat} ^ ^{date} ^{er} i * > ^{patula}.

ovate-acute, base cuneate or truncate, rarely coi ⁿ ^ ^{bands} > the

Corolla-tube with clearly defined interspaces, ^{betwe} ^ ^{lines} :--

^sPaces usually marked with 5 dark purple or violet

Buds long, conical, acute:—

Leaves palmately 5-lobed; an extensive ^{climoer}..... ^{vitifolia}.

Leaves narrowly oblong; small herbs:— [^] .flowered; sepals

Prostrate but never twining; ^{ped} ^ ^{nc} ^ ^{gubqua} drate, obtuse,

acuminate; leaves sessile, hastate, oblong. ^{t' u} ^{lentata}.

truncate or 3-toothed.....

Twining; leaves acute:— ^{^ jnnte} • leaves sessile,

Peduncles 1-3-flowered; sepals ^ ^ ^ ^ g

hastate-oblong or hastate-linear, apex ^{gia} y ^{juiatata}.

htuse* leaves petioled,

Peduncles 3-many-flowered; sepals ^{OM} . . . ^u ^ ^{fthvay8}

narrow-oblong, base of lower often subcordate, ^{oi} ^ ^W ^ ^

- cuneate, apex abruptly acute.....

^B ^ s short, globose, obtuse:- . . . t or long, many-

Leaves acute, ovate-cordate; peduncles ^{dibtmt}

flowered:— Q 1 bed * ^{v-o} corolla funnel-

Leaves glabrous, some usually toothed or [»] ^{jir} y ^{se} icles.

^{*h&} ^:.....;:;i: ^{subcamp} ft n ^ te

leaves sparingly pubescent, all entire; coioua

^{jiedera} cea.

Leaves obtuse, small, reniform or ovate-cordate, ^{toothed}; ^{peduncles}

^{emarginata}.

short or none, few-flowered.....

1332. MBRRBMIA UMBELIATA Hallier f. *Convolvulus bland*^{l**}
F. I. i. 470. *Ipomoea cymosa* F. B. I. iv. 211; E. »•
I. 375.
Chota Nagpur; Chittagong.
A large climber. *Santal*. Karmbi arak'.
1333. MERREMIA CRISPATULA Prain. *Ipomoea petaloidea* F. B. I. iv. 212. I.
Behar; Chota Nagpur ; Orissa.
A large climber.
1334. MERREMIA VITIFOLIA Hallier f. *Convolvulus vitifolov**
F. I. i. 476. *Ipomoea vitifolia* F. B. I. iv. 213; E. Dt
I. 421.
In most of the provinces.
A large climber.
1335. MERREMIA TRIDENTATA Hallier f. *Convolvulus tridentatu*\$
F. I. i. 475. *Ipomoea tridentata* F. B. I. iv. 205.
Behar; Chota Nagpur.
A small, much-branched, closely prostrate herb. -
1336. MERREMIA HVSTVTA Hallier f. *Convolvulus met!'ins* F. I. i. 474. *Ipomoea angustifolia* F. B. I. iv. 206.
Orissa. A diffuse, twining biennial herb.
1337. MERREMIA CJESPITOSA Hallier f. *Convolvulus ccespitosus*
F. I. i. 483. *Ipomoea linifolia* F. B. I. iv. 205.
N. Bengal; E. Bengal.
A small, twining or creeping, annual or biennial herb.
1338. MERREMIA CHRYSSEIDES Hallier f. *Ipomoea chryseides*
F. B. I. iv. 206. *Convolvulus dentatus* F. I. i. 477.
Tirhut; Behar; C. Bengal; N. Bengal; Chota Nagpur*
A twining herb.
1339. MERREMIA HEDERACEA Hallier f. *Ipomoea polyantha*
F. B. I. iv. 206.
E. Bengal; Sundribuns; Chittagong.
A twining herb.
1340. MERREMIA EMARGINATA Hallier f. *Convolvulus reniformis*
F. I. i. 481. *Ipomoea reniformis* F. B. I. iv. 206; E. T>-
I. 407.
Behar; Chota Nagpur; W. Bengal; C/Bengal.
A prostrate, creeping herb, rooting at the nodes.

625. Operculina Manso.

..*> climbing herbs; stems and peduncles and petioles
 " «; *Uaves* large, entire or lobed, rarely peltate. *Flowers*
 7*y- large, axillary, solitary, or often in few-flowered cymes.
 * * * 5, large, ovoid, glabrous, increasing and thickening in fruit,
 J^{len}8*h splitting irregularly from the tip. *Petals* 5, connate in a
 ^-shaped, rarely campanulate corolla; tube with 5 vertical,
 ,^{lno}oth bands. *Stamens* 5; filaments filiform; anthers large, at
 J*.* contorted; pollen not spinulose. *Carpels* connate ma
 * <<<<, 2-cel]ea ovary, ovules 4. style filiform; stigma 2-glo-
 b^{ose} - *Fruit* a valveless capsule, the epicarp circumscissile abo^e
 7 Middle, the cap in dehiscing, carrying away the style; endocarp
 ; ^{te}ngth irregu^{ly} rupturing. *Seeds* 1, rarely more, black,
 ;^{n10ot}n, usually large.

¹³ «. OPERCULINA TURPETHUM Manso. *Convolvulus Turpethum*
 P - 1 - i. 47C. *Ipomoea Turpethum* F. B. I. »v. 212; Ji. ^»-
 I-415.

In all the provinces.

A stout climber, with winged stems. *Beng.* lo&n.
 dudh kahni; *Hind.* Nuk-patar, pitohri; Sa»to«- »ana
 uukil.

626. Ipomoea Linn.

Herbs. " ^ s^l > ^ «- twining or prostrate, less often suberect or
 erect; ^{looa} alternate, entire, lobed or divided. *Flowers* axillary;
 solita.*y> « cyruose; cymes rarely paniculate or in terminal spikes;
 bracts various. *Sepals* 6, ovate or linear, equal or unequal. *Petal*
 5, connate; ^{b a c ^ P ^}ulate or funnel-shaped corolla; *Involucre*
 very slightly lobed. *Stamens* 5, included or rarely exerted; fila-
 ments filiform or ^{Uf0rm} Elated below, often somewhat unequal; anthers
st or ^{Ported}; pollen spinulose. *Carpels* connate ma^l 3-
 rarely 4-celled. *Ovules* 4, rarely 6. *Style* ? ^S
 • ^a capitate, entire or 2-3-globose, rarely stigmas J-tn-J.
 C * ⁴⁻⁶ ^ lved capsule, rarely indehiscent. *Seed*, 4 or 6,
 v !. glabrous, bearded or uniformly velvety or woovy.

5 K¹ •* << * > or cordate at the base; corolla white or rose; seeds
Sepals ^s ; ^{milv} Bins with long hairs ^{calycina}
 ; ⁿ »t cordate at the base:—

Seeds not shaggy along the angles :— *

Sepals markedly enlarging in fruit; seeds villous or pubescent, margins somewhat hirsute; flowers purple or whitish, solitary
barterioides.

Sepals not, or only slightly, altered in fruit; flowers in cymes:--

Capsules hispid with spreading hairs; flowers pink, sessile or nearly so; seeds puberulous.....*mida.*

Capsules not hispid ; flowers peduncled :—

* Sepals hirsute, lanceolate, acute or subacute; corollas pink or purple:—[p. 733]

Flowers in usually dense, long-peduncled heads, surrounded by prominent, persistent outer bracts; corolla under an inch and a half long :—

Leaves deeply, palmately 5-9-lobed; lobes spatulate, acuminate; outer bracts several, ovate-oblong, an inch long, much exceeding the inner; corolla 1-1.25 in. long
Pest. dist.

Leaves ovate-cordate, acute; corolla 1.75 in. long :—

Leaves white, woolly beneath, often deeply 3-lobed; outer bracts several, .25 in. long, linear-lanceolate, not much exceeding the inner.....*piU)*a'*

Leaves sparsely hairy, green beneath, always entire; outer bracts solitary, large, boat-shaped, enclosing the flower-head.....*involucrata.*

Flowers in usually lax, rarely congested, mostly subumbellate cymes, not surrounded by prominent, persistent bracts; corolla over an inch and a half long ; leaves ovate-cordate :—

Flowers large, 2-5-3 in. long, in congested cymes, with often one large, leafy bract on the peduncle ; leaves entire or slightly 3-lobed; peduncles exceeding petioles; corolla glabrous externally.....*Learii-*

Flowers 1.5-2 in. long, the bracts always small:—

Sepals with very long, ligulate tips; peduncles rarely longer than pedicels; pedicels .25 in. long; corolla glabrous externally:—

Leaves deeply 3-lobed.....*Nil-*
Leaves entire.....*Nil var. civrulscens.*

Sepals without ligulate tips; peduncles almost always exceeding pedicels; leaves entire:—

Pedicels 1 in. long, deflexed in fruit; sepals narrow-lanceolate ; corolla glabrous externally. . . .*pitrpnea.*

Pedicels under 1 in. long, not deflexed; sepals ovate-

lanceolate, subacute ; corolla silky on the plaits externally..... *ribbens*,

*Sepals glabrous:—[p. 732]

Seeds shaggy along the angles with long hairs; sepals obtuse:—

Flowers white; leaves ovate-cordate, entire or slightly 3-lobed ; stems more or less muricate :—

Corolla hypocrateriform ; leaves entire..... *longiflora*.

Corolla funnel-shaped ; leaves often more or less lobed or toothed..... *aspera*.

Flowers pink-purple, wide-campanulate; stems smooth :—

Leaves ovate-cordate, entire..... *illustns*.

Leaves palmately 5-7-lobed..... *paniculata*.

Seeds not shaggy with long hairs along the angles :—

tSeeds not crested at the apex :—[p. 734]

ifLeaves not palmate :—[p. 734]

JFlowers wide-campanulate, purple throughout, or white or yellowish-white with a purple eye:—[p. 734]

Sepals all, or at least the outer, with more or less pronounced herbaceous, mucronate tips :—

Sepals acute, all with a long, herbaceous mucro; leaves ovate-cordate, acute, angular or more or less lobed; seeds glabrous; root tuberous. . . . *Batatas*.

Sepals obtuse, the outer with a short, herbaceous mucro; seeds more or less hirsute :—

Leaves orbicular, obtuse emarginate or 2-lobed; seeds villous..... *Pes-cq)ra*.

Leaves elliptic-oblong, cordate or hastate, entire or angularly sublobed; seeds minutely silky, aquatic..... *reptans*.

Sepals not tipped with a herbaceous mucro; leaves ovate-cordate:—

Sepals obtuse; pedicel subumbellate, in fruit clavate; corolla-limb pale-purple or sometimes white; throat with dark-purple eye; seeds furred :—

Leaves entire..... *sepiana*.

Leaves more or less lobed

sepiana v. *stipulacea* ;

Sepals acute:—

Sepals wide-ovate, not ridged with dark-purple eye; throat with dark-purple eye; seeds velvety [p. 734]

- §Sepals narrow-lanceolate, ridged along middle; corolla purple, turning red fading; seeds glabrous [p. 733].
- JFlowers narrow-hypocrateriform, pure white; narrow-lanceolate or oblong; sepals obtuse; closely, shortly hairy [p. 733].
- H Leaves palmate; flowers narrow-campanulate, purple; sepals acute; seeds hairy [p. 733].
- f Seeds crested at apex; leaves palmate; flowers purplish; sepals obtuse [p. 733].
1342. IPOMCEA CALYCINA Clarke; F. B. I. iv. 201. *Convolvulus calycinus* F. I. i. 471.
Behar; Chota Nagpur.
A twining herb.
1343. IPOMCEA BARLERIODES Clarke; F. B. I. iv. 201.
Chota Nagpur.
A hirsute, twining perennial.
1344. IPOMOEA HISPIDA Roem & Schult. *I. eriocarpa* F. B. I. 204; E. D. I. 382. *Convolvulus spl^cerocephalus* F. I. i. 472.
Behar; Chota Nagpur.
A twiner, with villous stems.
1345. IPOMCEA PES-TIGRIDIS Linn.; F. I. i. 503; F. B. I. iv. 204; E. D. I. 399.
Behar; Chota Nagpur.
A twiner, with hirsute stems. *Beng. Languli-lata.*
1346. IPOMCEA PILOSASW.; F. B. I. i. 213. *Convolvulus pilosus* F. I. i. 473. *
Behar.
An annual twiner, with pilose stems.
1347. IPOMOEA INVOLUCRATA Beauv. *I. pileata* F. I. i. 504; F. B. I. iv. 203.
N. Bengal; E. Bengal.
A twining perennial.
1348. IPOMCEA LEARII Paxt.
A favourite garden plant; semi-naturalised in Chittagong.
A large perennial twiner.
1349. IPOMCEA NIL Roth. *I. coerulea* F. I. i. 501. *I. hederacea* F. B. I, iv. 199; E, D. I. 384.

Cultivated occasionally, especially in the western P^{ro-}vinces.

A creeping, rarely twining plant, with tuberous ro^{ots}.
Vernac. Mita-alu, Shakarkand-alu. The Sweet Pot^{atoes}; the red variety is more frequently found in cultivation in our provinces than is the white.

1357. IPOMCEA PES-CAPRJE Sweet. I. *biloba* F. B. I. iv. 212; E. D.

I. 362. *Convolvulus Pes-caprce* F. I. i. 485.

Orissa; Sundribuns; Chittagong: on the sea-shore among sand, common. Mr. Kurz once found the plant growing on a hill near Raniganj in "W. Bengal; how it found its way there is unknown.

A sand-binding, littoral, creeping perennial. *Uriya* Kansarinata; *Beng.* Chagal-kuri.

1358. IPOMCEA REPTANS Poir. I. *aquatica* F. B. I. iv. 210; E" ⁱ D.

I. 343. *Convolvulus repens* F. I. i. 432.

In all the provinces, very common.

A long-stemmed creeper, emitting roots at each node, floating on the surface of ponds, marshes, or sluggish ditches, or prostrate on wet mud where water & recently stood; often purposely planted: the leaves and young shoots very generally used as a vegetable. *Bcn9-* Kalmi-sák.

1359. IPOMCEA SEPIARIA Keen.; F. I. i. 499; F. B. I. iv. 209; E. D. I. 410.

In the central and eastern provinces.

A twining, hirsute perennial. *Beng.* Ban-kalmi.

- 1359/2. Var. STIPULACEA F. B. I. iv. 209. *Convolvulus stipulaceus* F. I. i. 484.

In the southern, central, and eastern provinces, from Orissa to Chittagong.

A twining, hirsute perennial.

1360. IPOMCEA OBSCURA Ker; F. B. I. iv. 207 E. D. I. 397. *Convolvulus obscurus* F. I. i. 472.

In most of the provinces.

An annual twiner.

1361. IPOMCEA TRICOLOR Cav.

In gardens.

An annual climber; native of America.

This species, though of recent introduction, is now one of the most favourite of annual trellis-climbers; it is usually known to horticulturists as *I. rubro-candea*.

1362. *IPOMOEA SALICIFOLIA* Roxb.; F. I. i. 498; F. B. I. iv. 210.
 N - Bengal, Rangpur.
 A biennial climber.

It has not been found in Nagpur since early in the present century. It has more recently been collected in the Godavery thicket and may therefore possibly be found, if searched for, in southern parts of Chota Nagpur.

1363. *IPOMOEA PULCHELLA* Roth. *I. jalmato*, F. B. I. iv. 214
 P. *Convolvulus digitatus* Roxb.
 A perennial twiner. The "Railway Creeper."
 1364. *IPOMOEA QUINATA* R. Br.; F. B. I. iv. 214.
 Chohta Nagpur.
 A Prostrate twiner.

627. *Quamoclit* Moench.

Annual twining, glabrous herbs; leaves cordate, angled, lobed, or sometimes ovate. Flowers axillary, in few-flowered cymes; bracts subequal, or the outer rather smaller, often subequal. Petals 5, connate in a pink, salver-shaped tube or somewhat funnel-shaped; limb spreading. Corolla slender. Filaments 4, exserted, resupinate; filaments unequal. Carinae 4, angled. Ovary 4-celled; ovules 4; style rather slender. Fruit a 4-celled, 1-valved capsule. Sepals 5, persistent. Seeds 4, black, dull, puberulous or glabrous.

Leaves ovate-cordate, acute or lobed; sepals acuminate; seeds densely hirsute *phymicea*.
 Leaves pinnately dissected; segments linear; sepals elliptic; seeds nearly glabrous *pinnata*.

1365. *IPOMOEA PHYMICEA* Choisy. *Ipomoea phymicea* F. I. L. 502. *I. coccinea* F. B. I. iv. 199.
 In all the provinces, cultivated and naturalised.
 A weak, subscandent annual.

1366. QUAMOCLIT PINNATA Boj. *Ipomcea Quamoclit* F. L. *^{o v v},
F. B. I. iv. 199; E. D. I. 405.

In mosb of the provinces, cultivated and naturalised^{lata,}
A slender, glabrous, annual twiner. *Beng.* Taru-
Kam-lata.

628. Calonyction Choisy.

Large, herbaceous climbers; stems usually muricate; ^{l e a v e s}
large, cordate, entire or angled. *Flowers* solitary or in 2-flowe^{red}
axillary cymes; bracts caducous. *Sepals* 5, herbaceous, siu^{oth},
usually aristate, subequal or the outer smaller. *Petals* 5, conn^{ate}
in a large, glabrous, white or rose-purple, salver-shaped coro^{lla}
tube narrow, cylindric; limb plicate. *Stamens* 5, exserted. ^{Car-}
pels connate in a glabrous, 2-locular ovary; ovules 4; style ^{fili-}
form; stigma 2-globose. *Fruit* a 4-valved capsule. *Seeds* ^{f u r,}
dull, glabrous.

Corolla white..... ^{bona-nox.}
Corolla rose-purple..... ^{muricatum.}

1367. GALONYCTION BONA-NOX Boj. *Ipomcea grandiflora* F. I.
i. 497. *l. Bona-nox* var. *grandiflora* F. B. I. iv. I⁹⁷;
E. D. I. 368.

In most of the provinces, sometimes cultivated, ^{but}
usually wild.

A large, scandent twiner. *Beng.* Dudhia-kalmi, ^{hal-}
kalmi.

1368. CALONYCTION MURICATUM Don. *Ipowoea muricata* F. I.
i. 499; F. B. I. iv. 197; E, D. I. 393.

Behar and other western provinces, cultivated.

A scandent twiner.

629. Lepistemon Bl.

Stout, scandent, villous herbs; *leaves* cordate, usually lobed.
Flowers in very dense, axillary cymes; bracts narrow, deciduous.
Sepah 5, herbaceous, hispid externally, acuminate, subequal.
Petals 5, connate in a small, urceolate corolla, narrowed below to
a short tube, externally hairy. *Stamens* 5, included; filaments
dilated at base into 5 subequal, concave scales, arched over the
ovary; disk large, cup-shaped. *Carpels* connate in a 2-celled ovary >
ovules 4; style very short; stigma capitate, 2-partite. *Fruit* a
4-valved capsule. *Seeds* glabrous.

1369* ^LEPISTBMON WALLICHII Choisy; F. B. I. iv. 216.

Chittagong.

A- stout, hirsute climber.

630. Rivea Choisy.

^C Climbing shrubs; *leaves* cordate, glabrous above, silky beneath; ^{petiole} *axillary*, on 1-3-flowered, sometimes 7-^{peduncles}; bracts 2-3, narrow. *Sepals* 5, ovate or lanceolate-oblong, subequal. *Petals* 5, connate in a large, white, salver-shaped corolla; tube narrow, cylindrical; lobes rounded, plicate. *Stamens* 5, included; anthers narrow, oblong, straight, Disk annular. *Carpels* connate in a glabrous, 4-celled ovary; ^{ovule} *Style* filiform; *stigmas* 2, linear-oblong. *Fruit* a sub-glob 1-lobed, dry, woody berry, or irregularly opening capsule, often ^{from absorption} of septa. *Seeds* 4 or fewer, glabrous, ^{by} mealy pulp.

^{Wd} *se*; peduncles 1-, rarely 8-flowered; leaves rarely ^{er} than long, usually 3-5 in. long by 3 in. wide, or smaller *hypocrateriformis*.

^g *peduncles* rarely 3-, usually 7-flowered; leaves ^{is} broader than long, 4 in. long by 5 in. wide, or larger. . . . *ornata*.

¹³¹⁰ BIVEA HYPOCRATERIFORMIS Choisy; F. B. I. iv. 184; E. D. R. 487. *Lettsomia Bona-nox* F. I. i. 494. *L. uniflora* ^I.i.495.

Behar; ChotaNagpur; W.Bengal; Orissa.

137] ^{^ ^} large climber. *Beng. Kalmi-lata*.

^l RIVEA ORNATA Choisy. *B. ornata* var. *Griffithii* F. B. I. iv- 183. *Lettsomia ornata* F. I. i. 496.

N. Bengal, Duars.

A large, spreading shrub.

631. Stictocardia Hallier f.

^{Cn} Climbing shrubs; *leaves* cordate, long-petioled. *Flowers* axillary, ^{ped} *axillary*, ^{bracts} small. *Sepals* 5, orbicular, ^{her} *heriucii* ^{us} *subequal*, at length greatly enlarged, much imbricate, ^{co} *losing* the fruit in an apple-like case. *Petals* 6, ⁱⁿ *funnel-shaped* corolla; limb plicate, ^{8tr} *anthers* externally. *Stamens* 5, included; anthers oblong, ^m *SisJc* annular. *Carpels* connate in a 4-celled ovary;

ovules 4; style filiform; stigma 2-globose. *Fruit* a thin-walled indehiscent, dry berry, closely enveloped by the accrescent, softly fleshy sepals. *Seeds* 4, minutely villous, with hirsute hilum.

1372. STICTOCARDIA TILIFOLIA Hallier f. *Argyreia tilifolia*

F. B. I. iv. 184. *Convolvulus gangeticus* F. I. i. 467-

C. Bengal; Sundribuns; Chittagong: on banks of tidal rivers and near the sea-face.

An extensive, perennial climber.

632. *Argyreia* Lour.

Climbing, rarely suberect shrubs; *leaves* cordate to lanceolate, pubescent or silky. *Flowers* axillary, usually in many-flowered cymes, often capitate; bracts often conspicuous. *Sepals* 5, baccaceous, in fruit leathery, little enlarged, often red within. *Petals* 5, connate in a rose-purple, funnel-shaped corolla; limb phyllate, more or less hirsute externally, shortly lobed. *Stamens* 5, included; anthers oblong, straight. *Disk* annular. *Carpels* connate in a 4-celled ovary; ovules 4; style filiform; stigma 2-globose. *Fruit* a dry, hard berry. *Seeds* 4 or fewer, embedded in mealy pulp.

Leaves quite glabrous above :—

Leaves oblong or elliptic, acute, base rhomboid or rounded; bracts small; flowers in lax cymes; corolla sparsely hairy on the folds externally :—

Leaves sparsely adpressed-strigose beneath; bracts persistent

Daltoni.

Leaves densely, softly adpressed-silky beneath; bracts caducous
splendent

Leaves ovate-cordate, acute, basal sinus deep, softly adpressed, white-tomentose beneath; bracts large, ovate, deciduous; flowers in dense heads; corolla densely silky on the folds externally.....*speciosa*.

Leaves sparsely, patently hairy above, ovate-cordate, acute; basal sinus shallow; corolla sparsely hairy on the folds externally:—

Leaves densely, softly adpressed-silky beneath; bracts all similar* lanceolate.....*argentea*.

Leaves sparsely, patently hairy beneath as well as above; one bract near apex of peduncle often large, leafy, the rest lanceolate

Roxburghii var. *ampullata*.

1373. ARGYREIA DALTONI Clarke; F. B. I. iv. 190.

Chota Nagpur.

A large climber.

Lettsomia.]

CONVOLWACE&-

1374. ARGYREIA SPLENDENS Sweet; F. B. !, iv. 186. Lettsomia

splendens F. I. i. 487.

Chittagong.

A large climber.

1375. ARGYREIA SPECIOSA Sweet; F. B. 1-1V-

Lettsomia nervosa F. I. i- 4V&

In most of the provinces. . . mieuli; H^{in(l)}

An extensive climber. *««</. Bich-t^ak, gug

Samandar-sok.

13V6. ARGYREIA ARGENTEA Choisy; *! * T iv. 1B5. Lettsomia

argentea F. I. i. 489.

E. Bengal; Chittagong. . . hich-tarak, samandar

A large climber. Vernac. Chota DIU

Bok.

13?7. ARGYREIA ROXBURGHII Choisy var. AMPLA^,^ 215.

Ipomcca multiflora F. I. i- 499; I^H. B. I.

N. Bengal.

A considerable climber.

633. Lettsomia Boxb.

Sc andent, more or less hirsute or strigose shrub, s, ^ ^ capitate
Ar r OUndedi Fhweys in axiUary> peduncled, COIJ mb ellip some .

ymes; bracts concspuous. SepaU 5, ^^^f* % connate in a

what thickened and coriaceous in fruit, i ^ j . lobes sm. ^

fu^ | -shaped corolla? usually pink; 1 ^ £ ^ i W a r | B traight.

Stam«w 5, exerted or included; anthers oblon? . cell ^ ovary;

Disk ananular or cup-shaped. (7 « ^ ^ ^ ^ a dry berry.

ovules ^ style fiLm; stigma 2-globose. 1 ^ ^

Seeds 4 or fewer, embedded in mealy pulp.

Anthers exserted; corolla less than an inch long; leaves dense y^ ^.

tomentose beneath.V"TI". leaves not white-

Anthers ^; corolla more than an inch long, leave

ton
F^{nt}ose beneath:- fln inch long or less,

adpresse corymbose; bracts obovate, obtuse, TM^{ta} xetosa.

Flowers cUtrigose, as are the sepals and the branch --arsely hispid

sepal, ^nsely bristly, as are the branches. ^ . ^

1378. LKTTBOIU BELLA Clarke; F. B. I. iv-192,

Chota Nagpur.

A considerable climbert

1379. LETTSOMIA SETOSA Roxb.; F. I. i. 490; F. B. I. iv-¹⁹⁴<
Behar; Chota Nagpur.

A large climber.

1380. LBTT SOMIA STRIGOSA Roxb.; F. I. i. 491; F. B. I. i^v-^{TM*}
N. Bengal; C. Bengal; E. Bengal; Tippera; Chit
gong.

A powerful climber.

Order XCI. SOLANACEA!.

Herbs, shrubs, or rarely small trees. *Leaves* alternate, often in unequal pairs, rarely clustered, never opposite, entire, lobed or pinnate; stipules 0. *Flowers* regular, hermaphrodite, very rarely dioecious, in terminal or lateral axillary or extra-axillary cymes, on solitary or clustered pedicels; bracts 0; bracteoles 0. *sep* connate in an inferior calyx; limb 5-, rarely 3-7-lobed or toothed, very rarely teeth more numerous or lobes partite, in fruit usually persistent, often accrescent. *Petals* connate in a funnel-shaped or campanulate, or rotate, often plicate corolla; lobes 5, rarely 1 or limb subentire. *Stamens* 5, adnate to corolla-tube; anthers ovate or oblong; dehiscence introrse, longitudinal or apical, porous. *Carpels* usually 2, connate in a 2-celled or imperfectly 1-celled or 4-celled ovary, very rarely ovary 3-5-celled; ovules very many or prominent, peltate placentas; style linear; stigma capitate or shortly lobed. *Fruit* a berry or a circumscissile or valved capsule, usually 2-celled, always many-seeded. *Seeds* compressed* discoid, or subreniform, with embryo peripheric, or occasional seeds hardly compressed and embryo straight.

•Fruit indehiscent, a berry with many compressed, subdiscoid seeds, embryo curved or subspiral; corolla-lobes plaited or valvate:—[p. 743]
f Corolla rotate or wide-campanulate:—[p. 743]

Anthers connivent in a cone, longer than the filaments, not dehiscing throughout their length:—

Anthers dehiscing introrsely by longitudinal slits, the tips empty»
leaves pinnatisect.....**Lycopersiculfl***

Anthers dehiscing by apical pores or by short apical slits; leaves entire, lobed or pinnatifid.....**Solanuifl***

Anthers not connivent in a cone and not longer than the filaments, dehiscing throughout their length by lateral slits; flowers pedicelled:—

Calyx in fruit small; flowers solitary or in pairs..... **Capsicum.**
Calyx in fruit enlarged, overtopping the berry; flowers ^ J j ^

Corolla urceolate; anthers not connivent in a cone; calyx in fruit enlarged, overtopping the berry; flowers clustered, subseTM hⁱ iⁱ. **Wit**

*^uit capsular, valves completely or partially separating :- [P- 742]
Fruit 5, all perfect : _____ -u t
flowers axillary, solitary; corolla-lobes plaited; seeds «J£JJ£
compressed; emb ry o curved..... y" te-valvate;
Flowers in terminal panicles; corolla-lobes tadujfcea **Nicotiana.**
seeds hardly compressed; embryo straight..... **Browallia.**
ri t n'y*o l A t d d : 110 W e l y or S t i l a t e r i l a t e r

6M. Lycopersicum Mill.

Pubescent herbs; leaves pinnate; pinns lyrate or toothed.
Flowers in lax, few-flowered, peduncled cymes. Sepals cowl
in a 5-partite, rarely 6-partite calyx; lobes narrow. P«te« »'
rarely 6, connate in a 5-lobed, short-tubed corolla; hmb &»**£
bud Stamen. 5, rarely 6, adnate to corolla-throat; filam^y
very short; anthers connivent in an elongated cone. * * " £ idric;
slit stigma capitate. Jr«« a fleshy berry, globose, r t riform,
or lobed. S e i * - ^ . compressed, papillose; embryo pe ripheric.
1881. LYCOPERSICUM ESCULENTUM Mill.; F. B. I. iv. 237; E. D.

L. 596. Solarium Lycopersicum F. 1.1. 565.

Cultivated and sometimes as an escape.

A tall herb. Vernac. Gur-begun. The Tomato'

63S. Solatium Linn.

Herbs or shrubs or trees; leaves alternate or opposite, in equal pairs, entire or lobed or pinnatifid.
Flowers in dichotomous or racemose, lateral or terminal cymes.
Sepals connate in a 5-10-lobed, rarely lobed or 5-lobed calyx,
accrescent or not in fruit. Petals usually 5, rarely 4 or 6, connate
in a rotate or tubular corolla-throat; lobes
plicate in bud. S ^ » » ^ * 5, rarely 4 or 6, adnate to c
filaments short = • » * * « • oblong, narrowed upwards, connivent in
a short connate ovary, rarely in cultivated
07s. Carpels connate in 3-4-celled;

style columnar ; stigma small. *Fruit* a, small or large, globose or elongated berry. *Seeds* very many, discoid ; embryo perispermic.

Unarmed ; calyx unaltered or little altered in fruit ; sepals never overtopping the berry ; flowers always several, in racemes or corymbs, white, or if blue (*S. tuberosum* sometimes) the roots mixed with underground tuberous branches ; berry globose, glabrous :—

Roots mixed with tubers ; stems herbaceous, faintly angular ; leaves pinnatifid ; flowers large, blue or white..... *tuberosum*.

Roots not mixed with tubers ; stems round ; flowers small, white ; leaves and stems glabrous or sparingly hairy ; herbs or undershrubs ;

peduncles lateral, extra-axillary :—

Leaves ovate or oblong, sinuately lobed ; pedicels subumbellate ; herbs..... *late*.

Leaves elliptic, acute, entire ; pedicels spirally racemose ; shrubs..... *late*.

Leaves and stems stellately woolly ; shrubs or small trees ; peduncles subtropical ; corymbs dense, very woolly ; leaves elliptic, acuniate, entire..... *late*.

Armed with prickles, or if unarmed (some cultivated forms of *Melonyena*), the flowers blue, the calyx enlarged and the roots not mixed with tubers ; racemes lateral :—

Calyx-tube inflated, deeply cup-shaped, much enlarged, at first overtopping the globose berry, ultimately reflexed and exposing the fruit ; leaves oblong, pinnatifid or twice pinnatifid ; flowers racemose, white or violet ; undershrubs..... *sixymbriifolium*.

Calyx-tube not inflated, shallowly cup-shaped, little altered or unaltered in fruit, or if enlarged, deeply cup-shaped [*S. Melonyena* sometimes), the leaves not pinnatifid ; racemes lateral :—

Flowers white ; leaves ovate ; calyx unaltered in fruit ; berry globose :—

Leaves very prickly on the nerves, with distinct, angular lobes and sinuses an inch deep ; corolla densely woolly ; berry an inch across or larger, hispid with needle-like hairs ; a stout herb

ferox.

Leaves not prickly on the nerves, with rounded lobes and sinuses less than an inch deep ; corolla sparsely pubescent ; berry one-third of an inch across or smaller, smooth ; a woody shrub

torvum.

Flowers blue ; berry smooth ; corolla sparsely pubescent :—

*Stems erect ; stout herbs or undershrubs ; leaves stellately woolly, ovate, sinuate or lobed :—[p. 745]

Eacemes many-flowered; calyx-lobes altered in fruit; berry small, globose, across or less; a much-branched, prickly under. Bacemes few-flowered; calyx-lobes oblong, enlarged in fruit; berry large, semi-wild plants, and then at least overtopped by the calyx; ovate globose in cultivated forms, and then exceeding the calyx :-

Fruiting peduncle solitary, with usually raceme of sterile flowers; cultivated forms. *Uelongena*.

Stems, leaves, and calyx armed. *esculent**.

Fruiting peduncle 3-4-flowered; stems armed with prickles; spontaneous forms. *imna*.

*Stems not erect; leaves glabrescent:—[p- Herbaceous, diffuse; leaves 4 deeply sinuate or subpinnatifid, very prickly. berry half inch or more across. Shrubby, scandent or trailing; leaves irregularly shallow-sinuate or lobed, finely woolly, but soon almost glabrous, inch across or less.

¹³2. *SOLANUM TUBBROSUM* Linn.; F. B. I. iv: 229; E. S. 2320.

Cultivated sparingly. branches. *Vernac.*
A herb with tuberous underground branch
Álu. The Potato. E. D. S. 2299.

¹³3. *SOLANUM NIGRUM* Linn.; F. B. I. iv-229, u
8, rubrum F. I. i. 565.

In all the provinces. *Hind.*
A small, herbaceous weed of fields and
Makoi; *Benq.* Gurkhi, gurkamai. *B. iv* < 230;

¹³4. *SOLANUM SPIRALE* Roxb.; F. L. L. <<>, *.
E. D. s. 2311.

E. Bengal, Mymensingh. feet high, *Vernac.*
An undershrub or shrub, 4-n
Bagna,

1385. SOLANUM VERBASCIFOLIUM Linn.; F. B. I. iv. 230; **E. D.**
 S. 2341. *S. pubescens* F. I. i. 564.
 In all the provinces. . , j, g
 A shrub or small tree, 8-20 feet high ; in village thick
 and waste places. *Beng.* Arasa.
1386. SOLANUM SISYMBRIIFOLIUM Lamk. ^
 C. Bengal. **native**
 A viscid undershrub ; on river banks, an escape:
 of America. **2273.**
1387. SOLANUM FEROX Linn.; F. B. I. iv. 233; B. D. ^s-
S. hirsutum F. I. i. 571.
 C. Bengal; E. Bengal; Chittagong.
 A stout herb. *Beng.* Bam-begun.
1388. SOLANUM TORVUM Swartz ; F. B. I. iv. 234; E. D. S. ^{lo.} %
S. stramonifolium F. I. i. 572.
 In all the provinces. places.
 A shrub, 8-12 feet high, of roadsides and waste
Beng. Gota-begun. v. 234 ;
1389. SOLANUM INDICUM Linn.; F. I. i. 570; F. B. I. i
 E. D. S. 2280. roadsides
 In all the provinces. **Byakur,**
 An undershrub or shrub, 1-6 feet high, of
 and rubbish heaps. *Hind.* Barhanta; *Beng.*
gurkamai.
1390. SOLANUM MELONGENA Linn.; F. I. i. 566 ; F. B. I. iv. 2B5 J
 E. D. S. 2284.
 Cultivated everywhere.
 A stout herb. *Vernac.* Baigun, begun. The Begunⁿ
 Brinjal, or Egg-plant.
- 1390/2. Var. ESCULENTA. *S. longum* F. I. i. 567.
 Cultivated everywhere. Brinjal.
 A stout, prickly herb. The Kuli-begun or Long
- 1390/3. Var. INSANA. *S. insanum* F. I. i. 568.
 In most of the provinces.
 A very prickly herb, in thickets and waste places near
 villages. A form feral by reversion, not a truly ^{wi}ld
 stock.
1391. SOLANUM XANTHOCARPUM Schrad. & Wendl.; F. B. **I.**
 iv. 236; E. D. S. 2345. *S. ctiffuaum* F. I. i. 568. *S. Jac-*
quini F. I. i. 569

In all the provinces.

^ very prickly, diffuse herb, 1-4 feet across. *Hind.*

U. e. tti, ringni; *Beng.* Kantakari; *Urijja* Bheji-begun,

1392 ^ anla*anti» *Scintal.* Rangaini janum.

- ^OLANUM TRILOBATUM Linn.; F. I. i. ,V71; F. B. I. i. 236; @-D). S. 2315.

Sundribuns; Orissa.

A scandent or trailing undershrub, 6-12 feet long.

Uf*ya Nabhi-ankuri.

636. *Capsicum* Linn.

^xAnnual or perennial glabrous herbs or undershrubs; *leave**
 al*emat^e, entire or repand. *Floivers* pedicelled, axillary, solitary
 or 2_g t o ^ etiler, *Sepals* connate in a subentire or minutely
 5"tooth j much shorter than the fruit. *Petals* 5, connate
 in a rot a- COlo a, tu ^ e sn or* J lobes valvate in bud. *Stamens* 5,
 a(^ate n ^ arly to l)ase of corolla-tube; filaments short; anthers
 not exc ee -h S filaments; dehiscence longitudinal. *Carpels* con-
 Hate m & f 2" Celled) rarel y a ^-celled ovary; style linear; stigma
 sub capif f
 Hiany-s v V" *Frwit* a globose or elongated or irregularly shaped,
 ee a d berr_Y< See d* discoid, smooth or subscabrous;
 embryo Peripherie.

* fediceis sqi-i
 or Pen ^ j ent, at leaat as lo ng as, usually longer than, the pedicels; plants
 a n nu. or bienn :- [p. 748]

†Flowers white; berries at first green, afterwards becoming red,
 or an & ge, or yellow :- {p. 748]

* ^ mt not globular :- [p. 748]

er r es tapering» niuch longer than broad :-

^ m j st o ut; flesh thick, usually mildly pungent; calyx not en-
 ctoshig base of berry..... *annuum.*

fruit slender; flesh thin, keenly pungent; calyx enclosing base
 of berry..... *annuum* var. *acuminata.*

Berries n<>t much, if at all longer than broad, usually obtuse;

ca ^ x not enclosing base of berry:—

-erries circular in section, subconical or ovate or oblong; flesh
 thin, pungent..... *annuum* var. *abbreviata.*

berries swollen, angular in section, prismatic or quadrate or
 °blate ; flesh very thick, hardly at all pungent

annuum var. *grossa.*

{Fruit globular, extremely pungent [p. 71] ... *annuum* var. *cerarifolium* *»
 Flowers purple; berries at first dark purple, afterwards orange-red, much longer than broad, only slightly pungent;
 * hardly enclosing the base [p. 747] *annuum* var. *nudum*
 • Pedicels 2 or more, erect; fruit always erect, red, shorter than the pedicels, pungent; plants perennial; flowers white:—[p. 747]
 Berries elongated, tapering, base embraced by the calyx. ... *frutescens*
 Berries globose or nearly so, base seated on the calyx

frutescens vivr. *hac* & *ta*.

1393. *CAPSICUM ANNUUM* Linn.; E. D. C. 448.

Cultivated sparingly in gardens of Europeans.

A shrubby herb.

This includes the majority of the mild forms of Chillie, usually raised from European seed.

1393/2. Var. *ACUMINATA* Fingerh. *C. frutescens* F. I. * 5<74j
 F. B. I. iv. 289; E. D. C. 455.

Cultivated generally.

A shrubby herb.

The forms with erect fruits are the true lied and Yellow Chillie; these are hardly known in the fields of our provinces: those with pendent fruits are the Gachh mirich or Lai gachh mirich, Lanka mirich or Lai lanka mirich of native cultivators, according as the fruits are yellow or red. These native names would indicate a southern origin for the plant, but, curiously, the usual English names are either lied or Yellow "Chillies," which the plants properly are not, or Red or Yellow "Nepal Peppers." Whether of southern (Ceylon, Lanka) or of northern (Nepal) origin, there is little doubt that the forms have been evolved since *C. annum* was first introduced to India, for in America they are only known as having been raised from Indian seed.

1393/3. Var. *ABBREVIATA* Fingerh. *C. annum* F. I. i. 573.

Cultivated sparingly in gardens of Europeans.

A shrubby herb.

This includes the majority of the pungent forms of Chillie usually raised from European seed.

1393/4. Var. *GROSSA* Sendt. *C. grossum* F. I. i. 574; F. B. I. iv. 239; E. D. C. 464.

Cultivated in gardens, both European and native.

A shrubby herb. Vernac. Káphari mirich. Spanish Pepper.

Pi
11^ « - 3

SOLANACEM.

1393/5. Var. CERASIFORMIS Mill. *C. cerasiforme* F. I. i- ®^L
***O. grossum* var. *cerasiformis* F. B. I. iv. * & 9.**

Cultivated occasionally in European gardens.

A shrubby herb. Cherry-pepper.

1393/6. Var. NIGRA. *C. purpureum* F. I. i- 574.

Cultivated occasionally in native gardens.

A shrubby herb. Purple Chillie.

1394. CAPSICUM FRUTESCENS Linn. *C. minimum* 1. 1- * 574.
F. B. I. iv. 239 ; E. D. C. 466.

Cultivated, but not very extensively; quite naturalised in waste places in all the provinces.

A much-branched shrub. Bird's Eye Chilhe of Europeans. Vernac, Dhan gachh mirich or Dhan lanka •

1394/2. C' t c c A T A Irish. *C. minimum* F. B. I. iv. 239 in part.

Cultivated occasionally.

A much-branched shrub. Brazil Pepper or Pimentos.

637. *Physalis* Linn.

W a i or perennial herbs; leaves alternate, entire, imiuate or
* < > % lobed. Flowers solitary, axillary, pedicelled. S f f * ^
aat « inacampanulate, 5-nd calyx, much accrescen Un frmt, to*
** ventricose, loosely enclosing the fruit; teeth s. ^ U, c o n m ^ t
J * * S, connate in a campanulate, lurid-yeUow corolla, some
* * * with purple spots in the base of the tube. * " " " *
" * * > near base of corolla; filaments rather short; anthers
oblo » g, shorter than the filaments; dehiscence ^ ^
C y > h connate in a 2-celled ovary; style linear; • b « n » ^] T ! £
J - ° bed. Fruit a globose berry, enveloped in the bladder-like
O a l » See & many or few, smooth or rugose, compressed,
embr yo peripheric.

^ o l | a - 2.5 in. across or less; calyx in fruit not over 1 in. in length,
- v « d or subglobose; berry not over -5 in. across, insipid; -

W e s and (1. aiting calyx pube B cent; calyx globose or faintly ang t O a }
« « o l l a clear-yellow or, rarely, with 5 small basal spots • • - - • ^ T , "
L ^ v e s and fruitog calyx glabrescent; calyx distinctly 5-angubu,
corolla cleu. 11. v minima var. imtita.

f o r o « a - 5 in ". a e ^ or T M r e 7 calyx " m ' t a i t ' a t a o s t a l « y s o v e r 1 i n j n

S * . usually 1-6-1-75 in., ovoid-conica); berry over -5 m. acic *
palat * ! . ; leaves and fruiting calyx usually villous or P " * - ^ ; ^
with always 5 large pui-ple spots near base within 3c

1395. *PHYSALIS MINIMA* Linn.; F. I. i. 563; F. B. I. *v. ^{238;}
E. D. P. 678.

In all the provinces.

A herbaceous, pubescent, annual weed of roadside ^{s and}
waste places. *Hind.* Tuleti-pati; *Beng.* Ban-tip^{11?} ^{a;}
Santal. Handi khandi.

- 1395/2. Var. *INDICA* F. B. I. iv. 238; E. D. P. 678.

In the central and eastern provinces in the same si^{tua-}
tions as the type.

A small, herbaceous, glabrescent, annual weed. ^{Ben^s}

Ban-tipariya.

1396. *PHYSALIS PERUVIANA* Linn.; F. I. i. 562; F. B. I. *v. ^m ^{238;}
E. D. P. 682.

In all the provinces, cultivated in gardens. ^{Tne}

A stoutish, annual herb. *Vernac.* Tipariya. ⁻
Tipari; the European name is "Cape" Gooseberry
though the plant is of American, not African origin.

638. *Withania* Pauq.

Unarmed shrubs; *leaves* entire. *Flowers* axillary, sessile ^{le u}
short-pedicelled, fascicled or solitary, sometimes polyg^{amo-}
dioecious. *Sepals* connate in a 5-6-toothed, campanulate, ^{ub-}
globose calyx, accrescent in fruit. *Petals* connate in a campanu^{ate}
corolla; lobes 3-6, short, valvate in bud. *Stamens* 5, adnate ne^{ar}
base of corolla; anthers oblong; dehiscence longitudinal. *Ovflp* ^{els}
connate in a 2-celled ovary; ovules numerous; style linear; stign^{ia}
shortly 2-fid. *Fruit* a globose berry. *Seeds* very many, discoi^d»
embryo peripheric.

1397. *WITHANIA SOMNIFERA* Dun.; F. B. I. iv. 239; E. D. W. ^{98#}
Plujsalis flexuosa F. I. i. 561.

N. Bengal; cultivated in small gardens for its reputed
alexipharinic properties.

An erect shrub, reaching 5 feet in height. *Vern* ^{0,}
Asgánd, asvagándha.

639. *Datura* Linn.

Coarse, rank, shrubby herbs, glabrous or minutely pubescent ^{'>}
leaves large, entire, sinuate or deeply toothed. *Flowers* large,
purple or white, solitary, pedicelled. *Sepals* connate in a long*
tubular, herbaceous calyx; mouth 5-toothed, deciduous in fruit by

Nicotiana 1
 a circumscissile above the base* **Petals 6? connate in a long,**
 tubular corolla, with funnel-shaped throat and spreading, plaited
 lobes, entire or sinuate. **Stamens 5.** adnate to near
 base of corolla; filaments uniform; anthers included, linear;
 development longitudinal. **Carpels** connate in a 2-celled ovary, by
 accessory septa from the placentas, spuriously
 6-angled. **Fruit** a capsule, 2-celled or
 4-celled, 4-valved or irregularly 4-valved or irregularly
 4-valved, compressed, very many, compressed,
 rugose; embryo peripheric.

Capsule opening irregularly near apex, usually pendent:—
Flowers more or less purple *fastuosa*.
Flowers white *Santouosa* var. *alba*.
Capsule 4-valved almost to the base, erect; flowers purple
Stramonium var. *Tatula*,

1398. **D**
 NATURA FASTUOSA Linn.; F. I. i. 561; F. B. I. iv. 242;
 *D- &. 151.

wherever in gardens; occasionally spontaneous.
 1398/2 **A** COarBe) shrubby annual. Vernac. Kala dhutra.
 TM. ALBA; F. B. I. iv. 243; E. D. D. 160. *D. alba*
 *J- i. 561.

I
 * all the provinces, in gardens and as if wild.
 1399. **I** AT
 COatSe, shrubby annual. Vernac. Dhutra. Datura.
 & BA STRAMONIUM Linn. var. TATULA; F. B. I. iv. 242.
Ch
 ota Nagpur, in waste places near villages.
A
 oarse, shrubby annual. Vernac, Dhutra.

6*0. *Nicotiana* Linn,

Erect, viscidly pubescent herbs or shrubs; leaves alternate,
 entire or sinuate. **Flowers** in terminal panicles or subterminal
 racemes. **Petals** connate in a 5-lobed ovoid or tubular calyx;
 lobes narrow; **Petal** connate in a funnel-shaped or campanu-
 late corolla; **lobes** 5, induplicate in bud. **Stamens** 5, adnate to lower
 part of corolla-tube; filaments filiform; anthers ovate; dehiscence
 longitudinal. **Fruit** a capsule, 2-celled or
 4-celled, 4-valved, compressed; embryo nearly straight.
 occasionally perfectly 4-celled; valves 2, separating to the
 middle from the apex, often again splitting. **Seeds** very many,
 small, hardly compressed; embryo nearly straight.

[*Nicotiana*.

Leaves ovate, base rounded or cordate; panicle close; calyx-tee^{ab-} obtuse; corolla yellowish, narrow - campanulate; capsule su^{b lobo} 5 in. across.....^{rustica}

Leaves oblong or elliptic, base cuneate; panicle open; calyx-tee^{in Jan-} ceolate, acute; corolla narrowly funnel-shaped ; capsule^{conic al. ~7-g} [\$. Branches of corymb short; corolla rosy-white, large ; capsule^{long}.....^{Tabacum. Mt. very}

Branches of corymb long, laxly racemose; corolla pure wh^{»'oli'} narrow; capsule -25 in. long.....^{plumbagMV}

1400. NICOTIANA RUSTICA Linn.; F. B. I. iv. 245 ; E. D.^{Nf} In all the provinces sparingly cultivated, except iⁿ Bengal, where its cultivation is general.

A coarse, annual herb. Vernac. Angrezi ^{tamaku, or} Hamaku. " English" Tobacco.

1401. NICOTIANA TABACUM Linn.; F. B. I. iv. 245 ; E. D. N.¹⁰¹ In all the provinces, generally cultivated, but^m extensively in N. Bengal along with the prece^{ding.} Vernac. Tamaku. Tobacco.

1402. NICOTIANA PLUMBAGINIFOLIA Viv.; F. B. I. iv. 246. N. Bengal; C. Bengal; E. Bengal. A common annual weed. Beng. Ban-tamaku.

Though now so general a weed, this plant is not alluded^{to by} to Boxburgh; it is not, however, certain that it is an introduc^{tion} subsequent to Roxburgh's time, because the genus *Nicotia*^{is} omitted from the *Flora Indica*; though it is probable,^{beCft} Roxburgh enumerates the two preceding species in the ^{& ortu} *BengalensU* but omits this one.

641. Browallia Linn.

Annual, glabrous or viscidly pubescent herbs ; leaves^{alceafit} entire, membranous. Flowers blue or white, solitary, axillav^{te, or} the uppermost passing into a 1-sided, terminal, bracteate^{age} *Sepals* connate in a tubular, 4-5-lobed calyx; lobes small. *Petals*^{ie.} 5, connate in a slender corolla, with long, straight, narrow^{tube,} narrowed and connate at its base with stipe of ovary; ^{limb} spreading, somewhat 2-lipped, the lobes subplicate-hnbricate, ^{the} 2 upper outermost. *Stamens* 4, perfect, didynamous, adnate^{to} corolla-tube above the middle, included; anthers dimorph^{ous,} those of upper perfect stamens subdivaricate, perfectly 2-celled, the cells at length confluent at the tips, of the lower ^{stamens}

dimidiat

^tary^fTif ** one Perfect and one empty or aborted cell; rudi-
in a stipit t^e Stamen P^resen* or 0- Dish small. Carpels connate
dilated, 2-^J, 2, celled ovary J ovules many; style filiform; stigma
closed i^Gd. Fr U^ a memkranous or subcoriaceons capsule
seQall> pitt^the Calyx, valves 2, each 2, fid_ Seeds many, very
140S. Tj^reticula te; embryo straight or slightly curved.

^KOWALLIA ELATA Linn.

I^11 S^dens in the cold season; often occurring spon-
taneously in garden-beds and on rubbish-heaps.

A small herb; native of Peru.

Order XCII. SCROPHULARINEJE.

Herbs or rarely trees, often semi-parasitic, rarely quite
par'asitic s^ru^s> rarely trees, often semi-parasitic, rarely quite
all alte^o? roo*s> Leaves all, or the lower only, opposite, rarely
ina^e or whorled, occasionally all radical, subrosulate;
stipuler 0, *J^o^w^crs hermai jhrodite, usually irregular; inflorescence
cent^r^petal 01' comp os^e> Sepals connate in an inferior calyx,
SoiUetin only shoi % united, generally persistent; lobes 5,
rai-ely 4 p Or occfisi^e^a^ connate in a hypogynous, more or less 2-lipped
or normally personate 4-5-lobed corolla. Stamens usually 4,
didynamous or subeqqal, with or without a stamonde., more
i^arly 5 or on h 2, a^ithers variously shaped; dehiscence longi-
^dina^i, cell 2> diafcinct or apically or throughout confluent; or 1,
the other ei^a^et^ec^ or abortive; when stamens didynamous the
a^ithers o^y U Conniven* an^ sometimes connate at their apices in
anterior an^u poste^ior pairs. Disk annular, cupular, or glandular,
Carpel 0 conna^e in a 2-celled, superior ovary; ovules many,
rarely few OF on^ ^ *n eac^ ^ce^, ana^ro^ous or amphitropous;
style -I de^ma simple, capitate or dilated, or 2-lobed or
2.^J^?^ Fr u^ a capsule, rarely a berry; placentas either
teUian^ave, Fr u^ a capsule, rarely a berry; placentas either
of ^-ing on a persistent central axis or attached to the margins
e v^lv6S* ^ee^s small, various in shape; hilum lateral or
ve^tr^a^i a^o^umen fleshy, rarely 0; embryo straight or curved.

Leav
lobes^t^11 alter^mate; corolla subrotate; tube short; throat narrow;
-^r^oad> sube^ual>^ffa^e two upper outermost in bud; stamens 4,
didynamous Celsia.
leaves n+1.....
if n^4 ai lea^st the lower if not all, opposite; corolla-tube elongated, or,
if g^ Olt, then {Microcarpaea, Glossostigma, Veronica) stamens 2, or if

stamens 4, either (*Scoparia*) corolla-lobes 4, imbricate, and stamens equal or (*Sopphia*) corolla-throat wide and 2 upper lobes

bud :—

Corolla-tube bulging or spurred at the base in front; limb per the palate on the lower lip closing the throat; upper lip gibbous, outermost in bud; capsule opening by pore*; stamens 4; anthers 4; anther-cells discrete; leaves opposite below, alternate

Corolla spurred in front at the base.

Corolla saccate in front at the base, but not spurred ...

Corolla-tube not enlarged at the base in front; limb not per capsule dehiscing by valves:—

*Corolla with upper Up or two upper lobes outermost and innermost in the bud, or if corolla-lobes regularly imbricate (*Microcarpmi*, *Gloasostigma*), the lobes 5 and stamens 2:—[P- 706]

Corolla elongated; tube cylindric, with more or less throat; limb distinctly 2-lipped, or, if lobes subequal (*Sutera*, *HerpeztU*), with 4 stamens; if stamens 2 and filiform (*Dopatrium*), the anther-cells' parallel and if stamens 2 and anther-cells divaricate, cohering or confluent (*Ilysanthes*, *Bonnaya*), the filaments arcuate, not filiform

[p. 756]

Stamens if 4 all, if 2 (*Doimrtum*) both staminodes stamens inserted within the tube:—[p. 755]

Corolla not distinctly 2-labiate; lobes all rounded, subequal; anther-cells divaricate, confluent 1-locular; calyx 5-lobed; capsule septicidal, valves shortly 2-fid :—

Calyx-lobes much imbricated; filaments incurved; 1 opposite or whorled ; capsule subglobose.....

Calyx-lobes hardly imbricated; filaments filiform; 1 opposite below, alternate above ; capsule ovate-oblong

Corolla distinctly 2-labiate, or if lobes subequal the anther-cells contiguous but distinct, parallel or diverging' capsule loculicidal or both loculicidal and septicidal; if anther-cells confluent (*Mimuliift*), lower lip with 2-gibbous throat:—

§Corolla with 2-gibbous throat; anther-cells divaricate', capsule loculicidal; stamens 4:—[p. 755]

Calyx 5-angled and 5-toothed; anther-cells confluent, often 1-celled ; leaves all opposite.....

Calyx wide-earpanulate, 2-fid; anther-cells contiguous but distinct; lower leaves opposite, upper alternate

Mazus.

§Corolla with throat not 2-gibbous ; anther-cells distinct:—
[p. 754]

Stamens 4 ; corolla-throat little widened :—

Calyx wide-campanulate, 2-fid ; corolla-throat with 2 parallel ridges; anther-cells disjoined, stipitate; capsule loculicidal.....**Lindenbergia.**

Calyx 5-partite ; corolla-throat without ridges; capsule both loculicidal and septicidal :—

Anther-cells disjoined, stipitate:—

Uppermost lobe of calyx considerably or much exceeding the others, 2 or all the stamens with one imperfect cell.....**Adenosma.**

Uppermost lobe of calyx not much, if at all, larger than the others; all the stamens perfect:—

Placentas either separating in the fruit, or if conjoined in a column, the column not winged ; seeds terete.....**Stemodia.**

Placentas always conjoined in a column, winged by the remains of the septa ; seeds angular

Linnophila.

Anther-cells contiguous though distinct; calyx 5-partite, lateral segments inmost much narrower than the others; corolla with 5 subequal lobes

Herpestis.

Stamens 2, perfect, the anterior pair reduced to staminodes ; corolla-throat much widened ; calyx deeply 5-fid

Dopatrium.

‡Stamens if 4 the anterior pair, if 2 the staminodes attached to corolla-throat, the posterior or only perfect pair, inserted within corolla-tube ; capsule septicidal ; leaves opposite:—[p. 754]

All four stamens with anthers perfect :—

Calyx with 3-5 ridges or wings; mouth oblique, 3-5-toothed or 2-lipped ; capsule oblong, not exceeding the calyx*--.....**Torcnia.**

Calyx without wings, 5-lobed or 5-partite ; segments equal; capsule ovoid or oblong not exceeding, or linear exceeding the calyx.....**Yandellia.**

Only the two upper stamens with perfect anthers; calyx without wings:—

irCalyx 5-partite; lobes all narrow :—[p. 756]

Leaves with parallel veins; staminodes unequally 2-lobed; capsule ovate or shortly oblong.....**Ilysanthes.**

Leaves with pinnate veins; staminodes entire; capsule linear or oblong-linear.....**Bonnaya.**

TCalyx 4-partite; upper and lower lobes very large, lobes narrow [p. 7551] interne

Corolla small; tube very short, uniform; lobes subequal, 2 ; filaments, filiform; anther-cells divaricate, confluent very small, branching, diffuse herbs with opposite leaves; loculicidal:—[p. 754]

Calyx tubular, 5-angled, shortly, aoutely 5-fid; leaves narrow Calyx campanulate, with 3-4 short, obtuse lobes; site, fascicled

•Corolla with upper lip or two upper lobes innermost in bud corolla lobes imbricate (*ScoparUi*), lobes 4 and stamens 4:—IP* Corolla-tube short, subrotate, the throat narrow; non-paras plants ; leaves opposite:—

Corolla-lobes 4, subequal, imbricate; stamens 4, subequal sule globose, septicidal..... Corolla-lobes 4-5, unequal, one or both of the lateral outermost in bud, the lateral considerably wider than the lower upper; stamens 2 ; capsule compressed, loculicidal.. Corolla-tube elongated, or if short (*Sopubia*), the throat with corolla-lobes 5, the two upper innermost and the lower outermost in bud; stamens 4, didynamous; plants parasitic or partially parasitic; capsule loculicidal; leaves opposite below, or alternate above:—

Leaves entire or dentate or reduced to scales :-

Corolla subglobose-campanulate; limb oblique ; calyx campanulate; anther-cells both perfect..... Corolla narrow-tubular; only one anther-cell perfect:—

Calyx tubular, 5-toothed or 5-fid; corolla-tube narrow! anthers 1-locular, vertical:—

Corolla-tube straight or slightly incurved ; lobes subequal; basal leaves much larger than those above

Buchnera

Corolla-tube abruptly incurved at or above the middle, upper lobes smaller than the others; basal leaves much larger than those above..... **Striga**.

Calyx spathaceous, compressed, split in front; corolla slightly ventricose at the throat; limb obscurely 2-lipped , anthers with one perfect and one sessile empty cell

Centranthera.

Leaves pinnately dissected, segments linear; calyx campanulate; corolla-tube short; throat much widened; lobes subequal; anthers with one cell stipitate, empty..... **Sopubia***

642. Celsift Linn.

Annual or biennial herbs; leaves alternate, crenate, simple, or incised. Flowers in terminal spikes or racemes, simple or branched. Ovary connate in a deeply 5-lobed calyx; tube 5-lobed. Sepals connate in a wide-rotate corolla, with hairy lobes broad, somewhat unequal, the posterior outer lobes larger. Petals 5, all woolly; anthers transverse or oblique, with confluent filaments. Carpel connate in a 2-locular ovary; ovules many; style ovoid or globose, 2-celled capsule both cells opening by an apical pore. Sepals 5, transversely rugose, not winged.

1404. CBUU COROMANDELUNA Vahl; F. I. 100; 251; E. D. C. 878.

In all the provinces.

An erect, annual weed. Beng. Koksima.

643. Linaria Juss.

Leaves opposite or whorled below and alternate above. Axillary or terminal racemes. Sepals 5, reduced to bracts; bracteoles 0. Petals 5, imbricate. Tube spurred in front; upper lip erect 2-toothed; lower lip 3-lobed; throat usually closed by the tube slightly pervious. Stains 4, ending; anther with distinct, parallel cells, 2-celled capsule both cells opening by an apical pore. Sepals 5, shorter than tube or discoid winged.

1405. LINARIA RAMOSISSIMA Wall.; F. B. I. 369. In most of the provinces. A. PWBrate, tufted herb.

1406. LINARU INCANA Wall. f. fafex, 251. Western Behar.

A. prostrate, tufted herb.

644. *Antirrhinum* Linn.

Annual or perennial herbs; *leaves* entire or lobed, lower opposite, upper alternate. *Flowers* solitary, axillary, or passing into terminal racemes, with bract-like floral leaves; bracts small. *Sepals* connate in a 5-partite calyx; lobes imbricate. *Petals* connate in a compressed, tubular corolla, saccate at the upper lip erect, 2-lobed; lower spreading, 3-lobed, with a broad palate closing the throat. *Stamens* 4, didynamous; anthers with distinct parallel cells. *Carpels* connate in a 2-celled ovary; ovules numerous; style filiform; stigma 2-lobed. *Fruit* an ovoid or globose, 2-celled capsule, each cell opening by one pore posterior by two toothed pores. *Seeds* minute, numerous? truncate, rugose or pitted.

1407. ANTIRRHINUM MAJUS Linn.; F. B. I. iv. 253.

In gardens during the cold season; subsponaneous in some parts of India, but not so in Lower Bengal.

An erect annual. Snap-dragon.

645. *Russelia* Jacq.

Shrubs or undershrubs with angular branches; *leaves* opposite or whorled, those of stem often reduced to scales. *Flowers* lax, dichotomous cymes, sometimes reduced to a single flower; bracts small, leafy. *Sepals* 5, connate in a deeply lobed calyx; lobes imbricate. *Petals* 5, connate in a pink cylindrical corolla, limb somewhat 2-lipped; lobes all rounded, subequal, the upper outermost. *Stamens* 4, didynamous; anthers with dilated cells, with ultimately confluent tips. *Carpels* connate in a 2-celled ovary; ovules many; style filiform; stigma minute. *Fruit* a subglobose, septicidal, 2-valved capsule. *Seeds* numerous, ovoid, wingless, surrounded by long, dilated, hyaline hairs.

1408. RUSSELIA JUNCEA Jacq.

In gardens, very common.

A closely tufted perennial with numerous slender, green branches.

646. *Suteralloth*.

A low, diffuse, viscid herb; *leaves* pinnatifid, lower opposite, upper alternate. *Flowers* small, axillary, passing into terminal racemes; bracts small, leafy; bracteoles 0. *Sepals* 5, connate in a deeply divided calyx; lobes narrow, hardly imbricate. *Petals* 5, connate in a slender, tubular corolla; throat undilated; lobes

Mazus.]

SCROPHULARINEÆ.

obtuse. the 2 upper outermost in bud, slightly smaller than the
 8 Wer. Stamens 4, didynamous, included; filaments filiform;
 anthers confluent, 1-locular. Carpel* connate in a 2-celled ovary;
 ovules many in each cell; style short, filiform; stigma slightly
 2-lobed. Fruit an ovoid-oblong, septicidal capsule with 2 bifid
 valves. Seeds many; testa pitted.

!409. SUTERA GLANDULOSA Roth ; F. B. I. vi. 258.

Behar.

An annual weed.

647. Mimulus Linn.

Erect, prostrate, or creeping herbs; leaves opposite. [^] _o ^w _o
 ^itary, axillary. Sepals 5, connate in a tubular, 5-angled calyx,
 **" short. Petals 5, connate in a 2-lipped corolla, upper Jy
 ^obed, outmost in bud, erect or reflexed, lower 3-lobed, spread-
 y. throat with usually a swollen, 2-lobed palate. Stamen*, J
 HTHUIHIOUB; anther with divergent, subconfluent cells. Carpel*
 ^nate in a 2-celled ovary ovules many in each cell; style m-
 for ^; stigma 2-lamellate. Fruit a compressed, k o ^ «*
 sul* the valves separating from the placentiferous dissepiment.
 Seeds many, oblong, minute.

^10. MIMULUS GRACILIS R. Br.; F. B. I. iv. 259.

Behar; N. Bengal.

c 10 • high

A stoutish herb, branching at the base, 6-12 in. n g .

648. Mazus Lour.

. Small herbs, often with runners; leaves rotate or opposite
 be W, opposite or alternate above. Flower* in terminal sub-
 se «» racemes; bracts minute or 0; bracteolea 0. Sepals o,
 con nate in a campanulate calyx; lobes leafy. P*f*⁶ ' o T ^
 , in a shortly tubular, 2-lipped corolla; upper lip erect ovate, * M,
 W much larger, sprang, 3-fid; throat with 2-lobed palate
 ^ens 4, didynamous; anthers with distinct, doM-lyuW * « «
 **• cells. Carpel* connate in a 2-celled ovary; ovules m each
 u many; style short; stigma 2-lamellate. Fr» t a smaU
 glob«e or compressed, obtuse, loculicidal capsule, with entire
 valves, included in the calyx. Seed, many, very minute, void.
 Colim

1411. MAZUS RUGOSUS Lour.; *• o. A.

tomentosa F. I. iii. 98.

, ch ta NagpUF.

Tirhut; N.Bengal; C.Bengal; Behai, u

A small annual, with tufted radical leaves.

649. Lindenbergia Lehm.

Annual or perennial herbs, woody below; branches straggling or ascending; leaves opposite or the upper alternate, toothed. Flowers yellow, axillary, or passing into terminal spikes or racemes; bracts small, leafy; bracteoles 0. Sepals 5, connate in a 5-lobed calyx; lobes leafy. Petals 5, connate in a 2-lipped corolla; tube cylindric; upper lip outermost, short, wide, notched or 2-fid; lower larger, 3-lobed, spreading; throat and upper lip 2-plicate palate. Stamens 4, didynamous, included; anthers discrete, stipitate cells, all fertile. Carpels connate in a 2-celled ovary; ovules in each cell many; style filiform, clavate upward stigma capitate. Fruit a 2-grooved, loculicidal capsule, the valves separating from the placentiferous dissepiment, many, minute.

Calyx longer than the bracts, with ovate-lanceolate, acuminate lobes; leaves ovate-lanceolate; apex acute; margins dentate; petiole long.

Calyx shorter than the bracts, with obtuse lobes; leaves ovate; obtuse; margins crenate-serrate:—

Leaves usually very shortly petioled, always under 75, generally 5 in. long; flowers sessile.

Leaves long-petioled, blade 1 in. or more long; flowers pedicelled.

1412. LINDENBERGIA PHILIPPINENSIS Benth.; F. B. I. iv. 261. Chittagong.

A tall, erect herb, 2-3 feet high.

1413. LINDENBERGIA POLYANTHA Royle; F. B. I. iv. 262. Behar; E. Bengal.

A much-branched herb, on walls and banks.

1414. LINDENBERGIA URTICIFOLIA Lehm.; F. B. I. iv. 262; E. L. 371. *Stemodia ruderalis* F. I. iii. 94.

In all the provinces.

An annual herb with brittle stem and branches, on walls and banks everywhere.

650. Adenosma R. Br.

Annual, villous or glandular, aromatic herbs; leaves opposite? rugose, crenulate. Flowers axillary or in leafy spikes, racemes or heads; bracteoles conspicuous or 0. Sepals 5, connate in a deeply lobed calyx; lobes imbricate, the uppermost largest, sometimes all

enJarging in fruit. *Petals* 5, connate in a 2-lipped corolla; tube cylindric; upper lip erect, entire or notched, outmost^{m ^ d}; tower spreading, 3-lobed; throat not plicate. *Stamens* 4, didy-ⁿamous, included; anthers with discrete, stipitate cells, one cell of e*ch anterior stamen or of all 4 stamens empty. *Carpels* connate ^-celled ovary; ovules in each cell numerous; style filiform below, winged upwards under the entire or 2-lamellate stigma. *Fr*it* an ovoid, ellipsoid or lanceolate, 2-grooved, 4-valved capsule, °Pening both loculicidally and septicidally. *Seeds* many, mmute, re^eticulate.

^ 5 . ADENOSMA CAPITATUM Benth.; F. D. I. iv. 264. *Erinus hilabiatus* F. I. iii. 92.

ChotaNagpur; N.Bengal; E.Bengal; Chittagong.
A stoutish, annual herb, a weed of rice-fields.

651. Stemodia Linn.

Ht*bs, sometimes woody below, glandular-pubescent, often Somatic; *leaves* opposite or sometimes whorled. *Flowers* soli-^z*y, axillary, passing into terminal leafy spikes or close racemes; or^oacts leafy; bracteoles usually present. *Sepals* 5, connate in a de^{de}eplylobed calyx; lobes narrow, imbricate, equal, or the upper ^mewhat larger. *Petals* 5, connate in a 2-lipped corolla; tube cylindric; upper outer lip suberect, entire or notched; lower Reading, 3-lobed; throat not plicate. *Stamens* 4, didynamous, deluded; anthers wit^i discrete, stipitate cells all fertile. *Carpels* innate in a 2-oelled ovary; ovules in each cell numerous; style filiform, dilated but not winged above; stigma usually 2-lobed. *Fr*uit* a globose or ovoid capsule; valves 2, bifid, dehiscing septi-^{ci}cidally, or valves 4, dehiscing both septicidally and loculicidally. ^{seeds} many, small, striate, and usually reticulate.

W6. STEMODIA VISCOSA Roxb.; F. I. iii. 94; F. B. I. iv. 260; E. D. s. 2792.

W. Behar.

An erect, viscid, aromatic herb, branching at the base.
Beng. Nukachuni.

652. Limnophila II- Br.

Herbs, often paludine or aquatic, glabrous ^{ub} P ^, somatic; *leaves* with transparent dots, **opposite** or w^{noii} toothed or cut, or where submerged often multind. *Jf tower* §

axillary, solitary, sessile or pedicelled, passing into terminal spikes or racemes; bracts leafy; bracteoles small or 0. Sepals 5, connate in a 5-partite calyx; lobes narrow, imbricate, equal or the largest. Petals 5, connate in a 2-labiate corolla; tube upper lip outermost, suberect, entire or 2-fid; lower lip 3-lobed; throat not plicate. Stamens 4, didynamous; anthers with usually discrete and stipitate, less often 2-celled. Carpels connate in a 2-celled ovary; ovules in each numerous; style slender, deflexed to the tip; stigma 2-lobed. Fruit an ovoid or oblong capsule, opening both septicidally and loculicidally, the placentiferous dissepiment separating with valves. Seeds many, small, truncate, angular, reticulate.

•Leaves with nerves pinnate, arching from the midrib; no whorls of pinnatifid or multifid leaves:—[p. 763]

Calyx-lobes not striate in fruit:—

Leaves opposite, petioled, elliptic or ovate, obtuse or crenulate; nerves prominent; flowers sessile, axillary in pedunc heads, rarely solitary; calyx-lobes lanceolate, finely acuminate

Roxburgh

Leaves 4-nately whorled, half-stem-clasping, linear, serrulate; nerves obscure; flowers very many, shortly pedicelled, small, in terminal corymbs; calyx-lobes subulate..... poly

Calyx-lobes striate in fruit:—

Leaves petioled, elliptic, ovate or oblong-lanceolate, subacute, opposite; flowers sessile or, rarely, pedicelled; calyx hirsute

Ilifub

Leaves sessile or rarely (e.g. *conferta* sometimes) sub-petioled:—

Flowers sessile; leaves all opposite; calyx glabrous or nearly so

Leaves oblong or elliptic-oblong, obtuse, crenate-serrate, sessile or sometimes sub-petioled; erect or diffuse herbs; flowers 1-25 in long; calyx-lobes lanceolate-acuminate..... *conferta*

Leaves linear, entire or subserrate, always sessile; small herbs, flowers 1-12 in. long; calyx-lobes subulate..... *mkruntha*

Flowers pedicelled:—

Leaves elliptic-oblong, subcrenate, obtuse, always opposite; flowers always axillary, solitary; calyx hirsute; lobes subulate; pedicels shorter than calyx..... *puVbherrini*

Leaves linear-oblong, serrulate, subacute, often 3-4-nately whorled; flowers in axillary or terminal, many-flowered racemes at end of stems, rarely solitary; calyx-lobes lanceolate-acuminate; pedicels usually longer than calyx:—

Calyx glabrate; capsule oblong.....gratmima.
Leaves with hirsute, rarely glabrous; capsule suborbicular...uY.suta.
nerves running from the base to the apex, or lower
Pinnatifid or multifid; fruiting calyx not striate:—

Flo
Stem ... or Very Shortly Petlicelled :

Uppermost ... whorled, sessile, the
Unear-oblong, 3-5-nerved, the lowermost pin-
ulate ... leafy spikes; calyx-lobes

Stem ... cana.

Uppermost only opposite, sessile, not divided; flowers

Stem ... 5 calyx in fruit hemispheric; lobes broad :—

Usually hirsute, rarely glabrate; leaves usually all 3-6-

whorled or pinnate, very rarely the 2 uppermost

flowers all axillary, solitary; calyx-lobes ovate,

always glabrous; leaves the 2 uppermost usually opposite,

subulate, the next below 4-nately whorled, pinnate, the lowest

uppermost flowers in a leafy spike; calyx-lobes ovate, shortly

...

Flo
Calyx ... J pedicels as long as or longer than the calyx;

Stems ... ruminant :-

Usually 1-2 feet high; flowers large, 5-6 in. long,

ovate ... terminal racemes; upper leaves always sessile,

or linear, serrate, entire or 3-nate, lower multifid with

7 segments.....racemosiu

Stems ... erect, stout, only 4-8 in. high, often elongate, diffusely

branching or suberect, slender; flowers 3 in. long, axillary, soli-

tary, very rarely subracemose; upper leaves rarely entire and

usually leaves all whorled, pinnatifid, or sometimes the

upper pinnatifid, the lower multifid with capillary segments

tjmtioides.

1417. ... ROXBURGHII G. Don.; F. B. I. iv. 265.

praria gratis & ima ¥. I. iii. 92.

Chota Nagpur ; N. Bengal.

An aromatic annual.

1418. LIMNOPHILA POLYANTHA Kurz; F. B. I. iv. 268.

N. Bengal, Duars.

A graceful, slender annual.

1419. LIMNOPHILA DIFFUSA Benth.; F. B. I. iv. 266.
 In all the provinces.
 An erect or procumbent weed of damp places.
1420. LIMNOPHILA CONFERTA Benth.; F. B. I. iv. 266.
 In all the provinces. - f. damp
 A very variable erect or procumbent weed of
 places.
1421. LIMNOPHILA MICRANTHA Benth.; F. B. I. iv. 267.
 N. Bengal; Chittagong.
 A dwarf, stout, branching weed of marshy places.
1422. LIMNOPHILA PULCHEBRIMA Hook. f.; F. B. I. iv. I
 Tippera. 67.
 A small, stout, erect weed of damp places.
1423. LIMNOPHILA GRATISSIMA Bl.; F. B. I. iv. 268.
 Chota Nagpur; N. Bengal. onjy
 A stout, erect weed of damp places, simple or
 branching upwards.
1424. LIMNOPHILA HIRSUTA Benth.; F. B. I. iv. 268.
 N. Bengal; Chittagong; Chota Nagpur.
 A stout, erect weed of damp places.
1425. LIMNOPHILA CANA Griff.; F. B. I. iv. 269.
 E. Bengal. stems,
 A herb of marshes with submerged, creeping
 sending up erect, simple branches.
1426. LIMNOPHILA SESSILIFLOUA Bl.; F. B. I. iv. 270.
 N. Bengal; E. Bengal.
 A herb in swamps and rice-fields, submerged below. 270.
1427. LIMNOPHILA HETEROPHYLLA Benth.; F. B. I. IV
Colwrnnea heterophylla F. I. iii. 97.
 In all the provinces.
 A weed of swamps and rice-fields, submerged below. 270.
1428. LIMNOPHILA RACEMOSA Benth.; F. B. I. iv. 271. C
aquatica F. I. iii. 115. grilla
 N. Bengal; C. Bengal.
 A weed of swamps and rice-fields, submerged below.
1429. LIMNOPHILA GRATIOLOIDES R. Br.; F. B. I. iv. 271-
Colwvnea bahamica F. I. iii. 97.
 In all the provinces.
 A weed of swamps, rice-fields, and damp spots, usually
 submerged below. Beng. Karpur.

653. Herpestis Gaertn. f.

Glabrous herbs; leaves often punctate, entire or toothed, or ^merged and multifid. Flowers axillary or racemose; bracteoles ^ or 0. Sepals connate below in a 5-partite calyx; lobes imbricate the upper largest, the two lateral innermost often very narrow. Petals 5, connate in a 2-lipped corolla; tube cylindric; upper lip outermost, spreading, emarginate or 2-lobed; lower 3-lobed. Stamens 4, didynamous, included; anthers sometimes proximate in pairs; cells contiguous, parallel, distinct. Caripeu CoTmate in a 2-celled ovary; ovules in each cell many; style ^ated at top; stigma entire or 2-lobed. Fruit a globose or ovoid, ^grooved capsule; valves 2 or 4, separating septoidally and locu- ^idally frOm the placentiferous dissepiment. Seeds many, veiy^ minute.

Leaves ovate or obovate; flowers long-peduncled; capsule ovoid:- .. keeping, leaves obovate-oblong or spatulate, entire, obtuse; corolla ^tinged with purple.....V...ii J / o " niera. Erect; leaves ovate, crenate-serrate, subacute ; corolla ^^ des.

^aves linear-lanceolate, entire or subserrate; flowete sessile; capsule globose. Hamiltoniana.

1430. HERPESTIS MONNIERIA H. B. & K. I F. B. I. iv. 272; E. D.

H. 149. Gratiola Monnieria F. I. i. 141.

In all the provinces.

A glabrous, succulent marsh weed. Vnya Unshaparni; Beng. Adha-birni; Hind. Safed chamm.

1431. HEEPESTIS CHAMJEDROIDBS Linn.

Be Lm Jteed of garden paths, of recent introduction, but now thoroughly naturalised. Native of America.

^32. HERPESTIS HAMILTONIANA Benth.; F. B. I. iv. M^2.

ChotaNagpur; Behar; E.Bengal.

An erect, glabrous weed of wet places.

654. Dopatrium Ham.

Annual, slender, glabrous marsh herbs; leaves few, opposite, We pairs small, upper remote minute. Fls com, mag, < * L * u Hillary, violet; pedicels short or slender; bracteoles u. imbricate. connate in a small, 5-partite calyx; lobes narrow,

Petals 5, connate in a 2-lipped corolla; tube slender dilated upwards; upper outer lip short, 2-fid; lower lip 3-lobed, spreading. *Stamens* 2, upper only perfect; anthers parallel, distinct, equal cells; lower pair of stamens represented by 2 staminodes. *Carpels* connate in a 2-celled ovary; many in each cell; style short; stigma 2-lamellate. *Fruit* small, globose or oblong capsule, opening loculicidally, the carrying away the placentas. *Seeds* numerous, very tubercled.

1433. DOPATRIUM JUNCKUM Ham.; F. B. I. iv. 274.

jwncea F. I. i. 142.

In all the provinces.

A weed of rice-fields and swamps.

655. *Torenia* Linn.

Herbs, glabrous or pubescent; *leaves* opposite, entire, or serrate. *Flowers* often showy, axillary, or in pseudo-axillary racemes or umbels; bracteoles 0. *Sepals* in a 2-lipped or 3-5-toothed, 3-5-winged or -folded or -keeled. *Petals* 5, connate in a 2-lipped corolla; tube cylindrical, curved, dilated upwards; upper outer lip erect, concave or notched or 2-fid; lower larger, spreading, 3-lobed. *Stamens* didynamous, 2 upper included, adnate to corolla-tube, adnate to throat, appendaged or not at base and connivent the upper lip; anthers in contact or connate in pairs; cells confluent. *Carpels* connate in a 2-celled ovary; ovules in cell numerous; style slender; stigma 2-lamellate. *Fruit* a or oblong, included, septicidal capsule; valves separating from placentiferous dissepiment. *Seeds* many, rugose or cancellate.

Flowers axillary, solitary or 2-nate, or subumbellate at the ends of branches:—

Longer pair of filaments toothed; calyx keeled only.....*vag*^{an}.

Longer pair of filaments not toothed; calyx wide-winged:—

Wings of calyx decurrent on the pedicel.....*edentulfl*

Wings of calyx not decurrent on the pedicel.....*cordifo*^U.

Flowers axillary and racemed at the ends of the branches, longer pair of filaments not toothed; calyx wide-winged.....*Fournicrt*

1434. TORENIA VAGANS Roxb.; F. I. Hi. 96; F. B. I. iv. 277.

Chittagong.

An erect or decumbent, almost glabrous herb.

1436* TORENIA EDENTULA Griff. T. peduncularis F. B. I. iv. 276.

Chota Nagpur, rare.

An erect or decumbent, sparsely hairy herb.

TORENIA CORDIFOLIA Eoxb.; F. I. iii. 95; F. B. I. iv. 276.

Chota Nagpur, common on the higher hills.

1437 m An erect nearly glabrous annual herb.

TORENIA FOURNIERI Linden.

In gardens.

An erect, nearly glabrous annual, with showy flowers, which springs up spontaneously in garden-beds and waste places. Native of Cochin China.

656. Yandellia Linn.

Y. ... glabrous or Pubescent; leaves opposite, often toothed, usually penninerved, rarely (V.pyxidaria) 3-5-nerved from base. Flowers almost free to axillary or racemose; bracteoles 0. Sepals 5, wings Or ... Petals 5, connate in a 2-lipped corolla; tube upper lip outermost, erect, concave, notched or 2-fid; spreading. Stamens 4, didynamous, 2 anterior ... base ... in contact or connate in pairs under the upper lip; ... Carpels connate in a 2-celled ovary; ovules in globose ... cylindrical, septicial capsule; valves ... the placentiferous dissepiment. Seeds many,

*L... ves pinnately veined:—[p. 768]
capsule not or slightly longer than the calyx-lobes, ovate or oblong-obtuse, or orbicular:—[p. 768]
Calyx-segments in flower not divided beyond the middle; diffusely branching herbs:—[p. 768]
Pedicels axillary and subracemose at ends of branches, strict; leaves glabrous or sparsely hairy; calyx-lobes in fruit short, slightly exceeding the ovate-oblong capsule.....Crustacea.
Pedicels axillary and subumbelated at ends of branches, spreading; leaves softly hairy on both sides; calyx-lobes in fruit long, sometimes free, much exceeding the oblong capsule.....stemonoides.

{Calyx-segments in flower partite to the base or nearly so, lance capsule orbicular :—[p. 767]

Erect, succulent; leaves obtuse, ovate or oblong, entire or sin flowers racemed :—

Glabrous; sepals shorter than capsule.....

Sparsely hirsute; sepals rather longer than capsule...—

Diffuse, much-branched, slender, more or less clothed with ing white hairs; leaves ovate-cordate, serrate or entire; equalling the capsule.....

fCapsule much longer than the calyx-lobes, ellipsoid or linear-late, acute :—[p. 767]

Calyx-segments not free to the base, more than half as ellipsoid capsule; erect, glabrous or puberulous herbs ; leaves rounded or broadly ovate-cordate ; flowers all sessile or a few pedicelled.....

Calyx-segments free to the base, hardly half as long as linear-aeolate capsule ; diffuse, glabrous herbs ; flowers long-pedicelled.....

Leaves short-petioled, ovate, obtuse or subacute, crenate; flowers axillary and in terminal racemes...pedicelled.....

Leaves sessile, linear or linear-lanceolate, obtuse, toothed; pedicels all axillary.....

*Leaves with 3-5 parallel nerves (as in *Ilysanthes*), quite glabrous; erect; sepals free to the base, lanceolate or linear, rather shorter the ovoid-orbicular capsule [p. 767].....

1438. VANDELLIA CRUSTACEA Benth.; F. B. I. iv. 279. *Torenia* *varians* F. I. iii. 96.

In all the provinces.

A small, branching herb.

1439. VANDELLIA STEMONOIDES Miq. *V. Hookeri* F. B. I. i^v. 280.

N. Bengal; Chota Nagpur.

A small, branching herb.

1440. VANDELLIA MULTIFLORA G. Don ; F. B. I. iv. 280. *Torenia* *multiflora* F. I. iii. 96.

Behar; C. Bengal.

A small, erect herb.

1441. VANDELLIA HIRSUTA Benth.; F. B. I. iv. 280.

N. Bengal; E. Bengal.

A small, erect herb.

1442. VANDELLIA SCABRA Benth.; F. B. I. iv. 281. *Columned* *miniata* F. I. iii. 98.

- N. Bengal; E. Bengal; Tippera.
A small, diffuse weed of rice-fields.
1443. VANDELLIA SESSILIFLORA Benth.; F. B. I. iv. 282.
Chota Nagpur.
A small, erect, simple or branching herb.
1444. VANDELLIA PEDUNCULATA Benth.; F. B. I. iv. 282. *Torenia diffusa* F. I. hi. 95.
N. Bengal; E. Bengal; Tippera.
A diffuse, herbaceous weed of rice-fields.
1445. VANDELLIA ANGUSTIFOLIA Benth.; F. B. I. iv. 282.
Chota Nagpur.
A diffuse herb.
1446. VANDELLIA PYXIDARIA Maxim. *V. crecta* F. B. I. iv. 281.
Oratiola integrifolia F. I. i. 137.
In all the provinces.
A small, erect, glabrous herb.

657. Uysanthes Baf.

Annual, glabrous, slender marsh herbs; *leaves* opposite, entire or toothed, 1-5-nerved from base. *Flowers* small, axillary, or posing into terminal racemes; pedicels in fruit often reflexed; bracteoles 0. *Sepals* 5, connate in a deeply lobed calyx; segments narrow. *Petals* 5, connate in a 2-lipped corolla; tube cylindrical; upper outer lip erect, concave, notched; lower larger, 3-lobed, spreading. *Stamens* only 2, upper, subincluded, perfect, adnate to corolla-tube; anthers connivent; cells divaricate, lower pair represented by 2 bilobed staminodes adnate to corolla-throat, one ^{be} & ^{la}ndular the other glabrous. *Carpels* connate in a 2-celled ovary; ovules in each cell many; style slender; stigma 2-lamellate. *Fruit* a septicidal capsule; valves entire, separating from th placenterous septum. *Seeds* many, rugose.

1447. ILYSANTHES PARVIFLORA Benth.; F. B. I. iv. 283. *Gratiola parviflora* F. I. i. 140.

In all the provinces.

A small, erect herb.

658. Bonnaya Link & Otto.

Annual, glabrous herbs; *leaves* opposite, entire or serrate, obscurely penninerved. *Flowers* solitary, axillary, passing often into terminal racemes; bracteoles 0. *Sepals* connate in a 5-partite

E. Bengal; Chittagong.

A decumbent herb.

«0/8. Var. GBANDIFLORA; F. B. I. iv. 285. G w t o * grand*
flora F. I. i. 136.

A small, suberect herb.

141. BONNAYA TENUIFOUA Spreng.; F. B. I. iv. 286.

Behar; C. Bengal.

A small, tufted weed of wet places.

659. Curanga Juss.

Diffuse or creeping herbs; *leave** opposite, ovate, crenate.
Flowers in short, terminal or pseudo-axillary racemes; *aw**
small leafy; bracteoles 0. *Sepa*U connate in a deeply 4-parW*
calyx. the upper and lower lobes very large, \neq lateral smaU,
*narrow**. *Petals* 5, connate in a 2-lipped corolla; \wedge * \ll * \wedge f
outer Up wide, arched, notched; lower lip longer, 3-fid, sp^feadmg,
Stamen> 2, upper only perfect, included, adnate f^{co}rolla4ube,
anthers conna[^]., ceu/dWaricate, 2 lower represented by 2 clavate
staminodes on coroua-throat. C«y* innate in \wedge \wedge d ovary;
ovuleBin each cell numerous; style slender; *stigma*s - -smellate.
Fruit an orbicular, septicial capsule, enclosed u> the accrescent
calyx-lobes valves separating from the wide placen^{tiferous} dis-
sepim . *Seeds* m_{ay}> T^{se} v n I iv 275 *Gratiola amara*
145TC,

EURANOIA AMAEA JUSS. J. F. B. I. IV. HO.

-I. i. 135,

An annual, glabrous, straggling herb.

660. Microcarpaea E. Br.

A small, slender, diffuse or creeping, nearly glabrous herb;
leaves opposite, sessile, oblong, obtuse, entire. *Flowers* n u n^{*},
axillary, solitary, sessile; bracteoles 0. B \wedge \wedge \wedge Z
5-angled, tubular calyx. *Petals* 5, connate in a
corolla; throat wide; lobes broad, spreading, the 2 upper partially
connate. *Stamen*. % perfect; filaments hhform; *antherse*- d
fluent, 1-celled; stannodes 0. Carp* connate. H \wedge 2 - d l c_d,
ovary; ovules many in each cell; style filiform; stigma recurve
capitate. 1M a" small, ovoid, 2-grooved, > o j, J » J \wedge g \wedge
included in the calyx; valves separating from the p_i
dissepiment. *Seeds* ovoid, rather few.

1453. MICROCARPIEA MDSCOSA H. Br.; F. B. I. iv. 287.

N. Bengal.

A minute, tufted herb.

661. Glossostigma Am.

Minute, glabrous, creeping herbs; *leaves* opposite or linear or spatulate, entire. *Flowers* minute, axillary? bracteoles 0. *Sepals* connate in an obtusely 3-4-lobed, late calyx. *Petals* 5, connate in a shortly tubular corolla subequal, spreading. *Stamens* 2 (in our only species) or filiform; anthers with diverging cells, confluent apices. *Carpels* connate in a perfectly or imperfectly ovary; ovules in each cell many; style short; stigma spatulate, recurved. *Fruit* a small, loculicidal capsule, in the calyx; valves separating from a columnar, place axis. *Seeds* small, ovoid.

1454. GLOSSOSTIGMA SPATHULATUM Am.; F. B. I. iv. 288.

Behar.

A minute, tufted herb.

662. Scoparia Linn.

Herbs or undershrubs, with twiggy branches; *leaves* opposite or whorled, glabrous or pubescent, entire or toothed, *Flowers* small, white or yellow, axillary, solitary or 2-nate bracteoles 0. *Sepals* connate in a 4-5-partite, small calyx; imbricate. *Petals* 4, connate in a rotate corolla; throat densely bearded; lobes obtuse, subequal. *Stamens* 4, subequal, filiform; anthers subsagittate; cells distinct, parallel or divergent. *Carpels* connate in a 2-celled ovary; ovules in each cell numerous; style subclavate; stigma notched or truncate. *Fruit* a single, globose or ovoid, septicidal capsule; valves entire, membranous margins inflexed, separating from the placentiferous dissepiment. *Seeds* many, obovoid, angled, scrobiculate.

1455. SCOPARIA DULCIS Linn.; F. B. I. iv. 289.

In every province.

A rigid perennial.

663. Veronica Linn.

Herbs or shrubs, rarely trees; *leaves* opposite, rarely cauline or all alternate. *Flowers* solitary, axillary or in terminal or axillary

late, subfoliaceous calyx; lobes of limb valvate or open in bud.
Petals 5, connate in a widish corolla; tube subglobose, ^{caml?}anu-
 late or shortly funnel-shaped; limb oblique; lobes spreading, ^
 lowest outermost. *Stamens* 4, didynamous, adnate low m ^
 corolla-tube; anthers in contact by pairs, naked or bearded; ^
 parallel, base mucronate. *Carpels* connate in a 2-celled ova r-
 ovules many in each cell; style long, inflexed; stigma elonga ted
 linguiform. *Fruit* a subglobose, loculicidal capsule; valves en tire
 or 2-fid. *Seeds* very many, minute, linear; testa very lax,
 reticulate.

Leavps ovate-lanceolate or lanceolate, green; stem scaberulous; bracts
 longer than the sessile flowers..... indica
 Leaves reduced to brown scales; stem not scaberulous; bracts va&n !
 flowers pedicelled..... Tho»» om'

1458. ALECTRA INDICA Benth.; F. B. I. iv. 297.

Chota Nagpur.

A herb, 6-18 in. high.

1459. ALECTRA THOMSONI Hook. f.; F. B. I. iv. 297.

Chota Nagpur.

A herb, parasitic on roots of *Strobilanthes aurici*(>la^{tus};

6-18 in. high.

665. Buchnera Linn.

Annual, rigid herbs, black when dry; *leaves*, lower broad, opp°*
 site, upper narrow, alternate. *Flowers* sessile, axillary, or ni
 bractcate spikes, 2-bracteolate. *Sepals* connate in a 5-toothed
 and 10-nerved, sometimes 5-ribbed, tubular calyx. *Petals* 5, con-
 nate in a slender, tubular corolla; lobes flat, bubequal, spreading'
 the 2 uppermost inmost in bud. *Stamens* 4, didynamous, in-
 cluded; anthers 1-celled, vertical, dorsifixed, bases obtuse; con-
 nective sometimes mucronate. *Carpels* connate in a 2-celled
 ovary; ovules many in each cell; style thickened or clavate
 upward; stigma entire or notched. *Fruit* an oblong, loculicid^{al}
 capsule; valves entire, coriaceous, septiferous, separating fr°m
 the placentas. *Seeds* very many, obo\oid or oblong, reticulated-

1460. BUCHNERA HISPIDA Ham.; F. B. I. iv. 298.

Chota Nagpur.

A herb, 6-18 in. high.

666. Striga Lour.

Herbs, usually scabrid, discoloured or black when dry; Urn*,
oppo site) upper alternate, linear, entire, rarely toothed,
fna* reduced to scales. * > > < < axillary, or the upper in
spikes; bracteoles usually 2. fi^ob connate m •
5- or 10- or 15-ribbed, 5-toothed or 5-fid calyx- PetaU 5,
fanate in a 2-U PP^ coroUa tubeslender, abruptly incurved at or
the middle; limb spreading; upper lip inner in tad, usually
notched or 2-fid; lower 3-fid. Btammu 4, didynamous:
anthers 1-celled, vertical, dorsifixed; bases obtu e;
otive sometimes mucronate. Carols connate ***f»*
ovules many in each cell; style thickened upward; stigma
Fruit an oblong or subglobose, loculicidal capsule; valves
septiferous, separating from the placentas. Seeds
many, ovoid or oblong, reticulated.

- Caly 5-ribbed. densiflora
Caly 15-ribbed. euphrasioides.

1461 « STRIGA DENSIFLORA Benth.; F. B. I. iv. 299.
N. Bengal.

1462 - STEIGA LUTEA Loul, fF. B. I. iv. 299.' Buchnera aszahca
F. - 1. iii. 81.
Chota Nagpur; N. Bengal; E. Bengal.
A herb, 6-12 in. high ; flowers white, yellow, scarlet or
purple.

146S - STRI(i) EDPHRASIOIDES Benth.; F. B. I. iv.299- BucUera
euphrasioides F. I. iii. 32.
Chota Nagpur; Bohar; N. Bengal; E. Bengal.
A slender herb, 6-24 in. high; flowers white.

667. Centranthera E. Br.

Annual, rigid, scabrid herbs; leaves opposite or the IPP er alter-
entire or toothed. Fhwers axillary
teate spikes or » ^ . ; brateoles 2. B ^ b connate
pressed, spathaceous calyx, split on < " > u side, ^ or
te, entire or shortly 3-5-lobed on the other M* bes
in a long, tubular, incurved corolla; limb oblique, lo

subequal, spreading, the 2 uppermost inmost in bud. *Stamens* 4, chdynamous, included; anthers in contact by pairs; cells transverse, bases spurred or mucronate, often one cell sterile. *Carpet*⁸ connate in a 2-celled ovary; ovules in each cell numerous; style simple, dilated above; stigma linguiform, acute. *Fruit* an ovoid or subglobose, loculicidal capsule; valves entire, carrying away the placentas. *Seeds* very many, obWcuneate; testa reticulated.

Erect, bispid, hoary; leaves oblong or linear-oblong; corolla purplish.

Diffuse, usually glabrous; leaves linear; corolla yellow. *humify*

1464. CENTRANTHERA HISPIDA R. Br.; F. B. I. iv. 301. *Digit**"*
stricta F. I. iii.-gg.

Behar; Tirhut; N.Bengal; E.Bengal.

IAAK n A ngl d aim Ual, X~2 feet high.

1405. CENTRANTHERAHUMIFUSA Wall.; F. B. I. iv. 301.

Chota Nagpur; Behar; N. Bengal.

A diffuse annual, with slender, spreading branches.

668. Sopubia Ham.

Erect herbs; *leaves* opposite or the upper alternate, narrow, usually laciniate. *mowers* spicate or racemose; bracts leafy I bracteoles 2. *Sepals* 5, connate in a campanula calyx; lobes narrow, valvate. *Petals* 5, connate in a funnel-shaped corolla; tube short, rarely exserted; throat dilated; lobes broad, spreading, subequal, the 2 upper inmost in bud. *Stamens* 4, didynamous; anthers of upper or both pairs of stamens in contact by pairs, one ^{f each stam} *stipitate*. *Car*^s connate in a 2-celled ovary; ovules in each cell many; style simple; stigma thickened, linguiform, obtuse ^{en ! ^ T⁰¹ f or oblong, loculic} al capsule; apex rounded or compressed, retuse or notched; valves entire or 2-fid, separating ^{m th pl} *Stamens* numerous ^{di} *Stamens* numerous ^{di} *Stamens* numerous. *Seeds* numerous; testa

Flowers subsessile; calyx-teeth subulate; capsule x top;
leaves much cut..... ifolia.
Flowers ped^^; calyx-teeth lanceolate, acute; capsule compressed at top; leaves sparingly cut StridiU

OROBANCHA CEJE.

^66. SOPUBIA DELPHINIFOLIA G. Don; F. B. I. iv. 302; E.D.

S. 2378. *Gerardia delphinifolia* F. I. iii. 99.

Chota Nagpur; Behar.

A tall, erect herb, 3-4 feet high.

¹⁴67. SOPUBIA STRICTA G. Don; F. B. I. iv. 302.

N. Bengal.

A rigid herb, 8-12 in. high.

Order XCIII. OROBANCHACEJE.

leafless, brown, annual, white or reddish root-parasites; stem dually **simple**, stout or slender, scaly. *Flowers* hermaphrodite, ^{ir}regular, solitary or in spikes, or simple, rarely compound [^]emes; bracts large, scale-like; bracteoles 2 or 1, scale-like, or ^o- *Sepals* 4 or 5, free or connate in a tubular, rarely a spathaceous ^{cal}yx. *Petals* connate in a hypogynous, curved, usually distinctly ²-^oed, occasionally subequally 5-lobed corolla; upper lip often ^{Suited}; throat usually with 2 villous folds. *Stamens* 4, didyna- [^]ous, adnate to corolla-tube; anthers 1- or 2-celled, one cell often [^]Perfect; cells frequently spurred at the base; dehiscence by ^{•*<} or apical pores. *Disk* glandular or unilateral, or 0. *Carpels* ^{2>} rarely 3, connate, 1-, rarely 2-celled; ovules many, rarely few? ^{a*}atropous on 2, rarely 3 pairs of free or confluent parietal ^{Placentas}, which sometimes meet, at least ultimately, in the centre ^{<*} the ovary. *Fruit* a capsule, usually 1-celled, sometimes imper- ^{fe}< or perfectly 2-celled; valves 2, rarely 3. *Seeds* many, rarely ^K minute; testa pitted or tubercled, rarely lax and reticulated, albumen fleshy; embryo ovoid, often undivided.

^Colla-lobes all broad, subequal, spreading; anther-cells unequal. ⁵ [^] ^{^Eginetia.}

^Colla 2-lipped; anther-cells equal..... ^{Orobanche.}

669. JEginetia Linn.

Leafless herbs, with simple or branched, naked or scaly scapes ^{Of} stems. *Flower*, few, large, solitary or corymbose; bracteoles ⁰⁻ *Sepals* connate in a spathaceous calyx, split in front nearly to ^{<*} base. *Petals* 5, connate in a broad, incurved, tubular? ^{obscurely} 2-lipped corolla; lobes broad, spreading, the 2 upper ^{connate}, outer in bud. *Stamen*, 4, didynamous, included; anthers

A stout herb, parasitic on Kohl Rabi and other *Brassic*s.

¹⁴?1. OROBANCHE INDICA Ham.; F. I. iii. 27; F. B. I. iv. 326; E. D. o. 230.

In all the western and northern provinces.

A herb, parasitic on *Nicotiana*, *Papaver*, *Cannabis*, and the *Brassic*s. *Hind.* Sarso-banda, Bhatrea ghas; *Santal.* Turi sim.

Order XCIY. LENTIBULARIACE^.

^He^rbs, aquatic or palustrine. *Leaves* radical, rosulate, or, when ^merged, capillary - mntifid, sometimes obsolete. *Flowers* Regular, hermaphrodite, on 1-many-flowered, simple or branched scapes; bracts small, sometimes 0; bracteoles under calyx 2 or 0. ^So^P*^U connate in an inferior, 2-5-lobed calyx. *Petals* shortly ^connate in a 2-lipped, spurred corolla; upper lip usually the ^S^^Her, entire or emarginate; lower 3-5-lobed. *Stamens* % dilate to base of corolla, alternate with lobes of lower lip; fila- *<*ts wide-curved; anther-cells ovate, transversely confluent; ^hiscence longitudinal. *Carpels* 2, connate in a superior, globose, felled ovary; ovules very many, on a free, basal placenta; style ^{sh}ort; stigma unequally 2-lobed. *Fruit* a globose, 2-4-valved, or ^regularly rupturing capsule. *Seeds* very many, minute; ^^Dumen 0.

671. *Utricularia* Linn.

^Heⁱ V floating or palustrine, or on wet rocks; *leaves* in floating ^species multifid, with capillary segments, in erect or twining ^species entire, frequently with minute bladders. *Flowers* in ^^Ple or branched scapes, racemes few- or many-flowered; ^{bl}acts and 2 bracteoles distinct. *Sepals* connate in 2-partite ^{cal}v^x; lobes entire or subentire, often accrescent. *Petals* 5, ^{na}te in a 2-lipped corolla; upper lip entire or emarginate; lower ^J^ger, 3-6-lobed; tube with a straight or curved spur. *Stamens* 2; ^{ad}nate to base of corolla, alternate with lobes of lower ^Up; ^{fa}Wnts broad; anthers ovate, 2-celled or almost 1-celled. *Car- *eZ*« connate in a globose, 1-celled ovary; ovules many, on a ^c^tral placenta; style short; stigma unequally 2-lobed. *F^lmt** ^S^bose, regularly 2^valved or irregularly opening capsule, *bees* ^{man}y, small; albumen 0.

[Utricularia.

Leaves submerged, divided into capillary segments, mostly interspersed with bladders; stems floating, if rooting in mud (*U. exoletata*) and the multifid capillary leaves absent, the capsule globose—

- Peduncles bearing a whorl of oblong vesicles about the middle—
 - Flowers yellow.....
 - Flowers white with violet stripes.....
 - Peduncles naked or with a few obscure scales; corolla yellow—
 - ^Peduncles rather stout; spur of corolla not longer than flowers 3-8, from 3-5 in. across.....
 - Peduncles slender; spur of corolla rather longer than flowers 1-3, only 2 in. across.....

Leaves at base of scape linear or spatulate, often flowering; stem rooted in mud, if growing in running water, sometimes emitting a few capillary leaves with bladders, the capsule globose:—

Scales of the scape and bracts attached by their bases :—

Flowers blue or purple:—

Scapes glabrous ; flowers pedicelled:—

Scapes straight; calyx-lobes acute.....

Scapes very slender, twining ; calyx-lobes obtuse.....

Scapes hairy; flowers sessile.....

Flowers yellow :—

Scapes straight; pedicels in fruit recurved ; calyx-lobes obtuse.....

Scapes slender, often twining; pedicels in fruit suberect, lobes acute.....

Scales of the scape and bracts produced backward below their point of attachment; flowers blue or sometimes white.....

1472. UTRICULARIA STELLARIS Linn, f.; F. I. i. 143; *• iv. 328.

In all the provinces.

A floating herb, with submerged leaves, the scapes rising from the surface of ponds and ditches. Jhangi.

1472/2. Var. INPLEXA ; F. B. I. iv. 329.

In most of the central and eastern parts.

A floating herb, in habit like the type.

1473. UTRICULARIA FLEXUOSA Vahl; F. 13.1. iv. 329. U. lata F. I. i. 143.

In all the provinces.

A floating herb, much like but always more plentiful.

than the two preceding, in similar situations. Beng.

Jhangi.

1474. UTRICULARIA EXOLETA B. B. ; F. B. I. W. 329- U. biflora

F. I. i. 143.

ChotaNagpur; Behar; N.Bengal; C. lienga, and

A herb, usually floating, but sometimes stranded

rooting.

1475. UTRICULARIA RETICULATA Smith var. ULIGINOSA, X. F. B. I.

iv. 331.

Behar; Orissa.

A small herb, in marshy places.

1476. UTRICULARIA SCANDENS Benj.; F. 13. L iv. 661.

N. Bengal.

A small herb, in marshy places; a P P ^ n w J M Kurz.

provinces, and only once collected by the late Mr.

1477. UTRICULARIA HIRTA Klein; F. B. I. iv. Wi.

Chota Nagpur.

A small herb, in marshy places. U. 67<

1478. UTRICULARIA BIFIDA Linn.; F. B. I. iv. 332, U ^-

In most of the provinces.

A small herb, of marshy places. Santal. Arak' jhâwâr;

Ben^ Chota jhangi. 332.

1479. UTRICULARII WALLICHIANA Wight; I ^ - I - I "

Behar; Chota Nagpur.

A small, usually twining herb, of marshy places.

1480. UTRICULARU RACEMOSA Wall.; F. B. I. iv. 333,

ChotaNagpur; K. Bengal.

A small herb, of marshy places.

Order XCV. GESNERACEJE.

Herbs or undershrubs. Le*'« ^ m ^ te Jx ^ o * *

7 divided or toothed; stipules 0. Flo*» • ^ m -ely

^ a y s ^ g ^ , on axillary or terminal. pean ^ , J ^ ^

1-flowered; bracts small or large, bracteol. lobes v ^ ^ or

SeP«« 5, connate in a short or loop* * ^ b c , a tubular > short

°Pen, very rarely imbricate. PetaU connate in Stame ^ usually

*. >ong corolla; lobes usually 5, imbricate. ^ ^ ^ ^ ^

«dynamous, sometimes 5 fertile, often only all- conniviag

2-°eUed, often by early confluence 1-odW, TM* V 3)S

L T ^ in Pairs; de Wscence longitudinal. I** ***** o*
 shortly cylindric or 0, occasionally unilateral. *Carpels* 2, conn*
 m a l. oelled or imperfectly 2-celled ovary; ovules numerous,
 ana tropous, on 2-fid, parietal, sometimes subcontinent placenta^s,
 sty le linear; stigma capitato or 2-lobed. Fmit a 2-valve ea capsule.
 or a berry. & e & numerouai smaU> f ^ f ^ or ovoid, smooth
S **ipped with a long hair; albumen scanty or 0; embryo**
 ght.

Stamens 2;

locidally:— fru n a oapsule uot ovetto' pp eil b ? t h e Cft1^_dehi3Cing Iocu,

Capsule linear or lanceolate; placentas deeply intruded, not bearing seeds- on their inner faces:-

Capsule much exceeding the small calyx, 2-valved to the base; flowers racemose or subumbellate or solitary :-

htigma oblique, emarginate... **DidymocarpUS.**

Stigma at length shortly 2-fid. Chin'*

Capsule little longer than the rather' large" calyx^valved to the

- Base; flowers subcapitate... .. **TetraphyU''111,**

Capsule ellipsoid or oblong, hardly' exceetog'the" calyx ; pl ^ n t f t S
 be n eeds oD SU ' n ^ ! floWerS in long r ^ emes... Rhyttchoglossui».
 StemTMS^{g4}:-

Calyx plicate; fruit a capsule overtopped by the calyx, bursting "regularly; disk 0. / **Stauranthera.**

talyx not plicate; fruit_{an} indehiscent berry; disk annular

Rhynchotechiun-

672. Didymocarpus Wall.

Stemless or erect herbs; *leave*, opposite, alternate, wborled or crowded. *Flowers* on axillary, many· or few·flowered peduncles; pedicels cymose, subumbellate or subracemoae in pairs; bracts rarely conspicuous. *Sepals* connate in a small, 5-fid or 5-partite cajyx; lobes narrow. *Petals* 5, connate in a tubular corolla; tube cyundnc or ovoid; limb oblique or subsymmetric; lobes rounded. *stamens* 2' anterior, perfect, with 2 or 8 rudimentary, rarely 4 perfect' adnate to corolla-tube, included; anthers connate in pairs!
 S or l PH at 6, Va * m 0 TM > * intr d ' *
 or short; H I T e » a T l * ' close set oa the TM r e TM ' » & * 10 D g
 2-lobed ^ P r . n s , rarCly lanceolate, oblong, rarely
 or T a LZ2 a - r . n s , rarCly lanceolate, loculicldally 2-valved
 or subfollumlar capsule, usually ultimately 2-valved or often

4-valved; valves not twisted before opening, placentiferous, the Placentas revolute and concealing the seeds. Seeds ellipsoid, small, smooth, minutely reticulate.

Stems none; plant very small, 1-ta*a; pedicels few, short, fasciated in the leaf axil.pygmaea.

Stems distinct most verticillate; peduncle

long, cyme lax flowered mollis.

1481. DIDYMOCARPUS FUGMBA C. B. Clarke; F. B. I. iv. 345.

Chota Nagpur.

A small, pubescent herb.

1482. DIDYMOCARPUS MOLLIS Wall.; F. B. I. iv. 350.

Chittagong.

A villous herb, 8-9 in. high.

673. Chirita Ham.

Herbs or low undershrubs; leaves opposite, often unequal, sometimes whorled or alternate, elliptic or ovate, axillary, in many- or few-flowered cymes or on 1-flowered Peduncles; bracts 2, shorter than the flowers, deciduous. Sepals connate in a 5-fid or 5-partite calyx; lobes acute. Petals connate in a funnel-shaped corolla; limb 2-lipped; lobes 2-lipped. Stamen, 2, perfect, adnate to corolla-tube, 2-3 barren; filament flattened, geniculate; anthers usually applied to the stigma. Carpels 2, divaricate, often confluent. Carpels connate in a linear, 1-celled ovary; placentas intruded as far as axis, then refined; ovules many on their margins; style short or long; stigma at margin. Clipe, peltate, notched on lower margin; with age the upper margin produced, oblong, 2-fid. Fruit an elongated, linear, sessile capsule, opening loculicidally to the base; valves 2-partite the following season. Seed ellipsoid, smooth, sometimes minutely umbonate; testa often striate, reticulate.

1488. CHIBITA ACUMINATA E. Br.; F. B. I. iv. 359. *Incarvillea oblongifolia* F. I. iii. 113.

Chittagong.

t. iW. h

A herb, sometimes almost shrubby, 2-6 feet high.

674. Tetraphyllum Griff.

A tawnyvillous undershrub; stems elongate, leafless or sparingly 3-angled. L. i-...-... «* *» ,nfix 4. whorled, nearly sessile, ovate, calyx below; 2-lobed at the apex 4, w

unequal-sided. *Flowers* blue, nearly sessile, in dense, ^{beapitate} cymes; bracts elliptic. *Sepals* connate in a rather large, ^{sub} 2-lipped, 5-partite calyx. *Petals* 5, connate in a wide, ^{capitate} silky corolla; lobes of limb ovate, subequal. *Stamens* ^{capitate} filaments short; anthers 2-celled, apex submucronate; ^{capitate} cells ellipsoid, nearly parallel; dehiscence longitudinal. *Carpels* ^{capitate} an acute, ellipsoid, 1-celled ovary; placentas deeply ^{capitate} 2-partite, lamellae revolute; ovules many on both sides ^{capitate} lamella; style linear; stigma small, obscurely 2-lobed. ^{capitate} narrowly lanceolate capsule, at length 4-valved to the base, ^{capitate} 2 ribs united to the style and 4 papery, revolute placentas, ^{capitate} ellipsoid, obtuse at both ends; testa laxly reticulate, rough.

1484. TETRAPHYLLUM BENGALENSE C. B. Clarke; F. B. !^{xv. 363.}

Chittagong.

A tawny-villous undershrub.

675. *Rhynchoglossum* Bl.

Herbs, almost glabrous; *leaves* alternate, elliptic, ^{acuminate,} unequal-sided, cordate on one side, subentire or sinuate. ^{acuminate,} in long, many-flowered racemes; bracts 0; bracteoles ^{acuminate,} *Sepals* connate in a 5-lobed, campanulate calyx. *Petals* ^{acuminate,} connate in a tubular corolla; tube cylindrical; mouth contracted, ^{acuminate,} 2-lipped; upper lip short, 2-fid, lower longer, 3-lobed. ^{acuminate,} perfect, included; anthers connivent, 2-celled; cells ellipsoid, ^{acuminate,} parallel, slits ultimately subconfluent at apex. *Carpels* ^{acuminate,} a 1-celled, ovoid ovary; placentas much intruded, 2-fid, the ^{acuminate,} lamella bearing numerous ovules throughout; style linear; stig ^{acuminate,} minutely 2-lobed. *Fruit* an included, ellipsoid, membranous, ^{acuminate,} loculicidally 2-valved capsule. *Seeds* narrowly ellipsoid, smoo ^{acuminate,} testa minutely reticulated.

1485. RHYNCHOGLOSSUM OBLIQUUM Bl. var. PARVIFLORA F. 13. ^T iv. 367.

* Chota Nagpur.

A membranous, succulent herb.

676. *Stauranthera* Benth.

Low, succulent, pubescent herbs; *leaves* alternate or opposite, one of each pair reduced to a small auricle, falcate, elliptic, ^{acuminate,} acuminate, very unequal-sided. *Flowers* in lax, peduncled, sub-racemose cymes; bracts small. *Sepals* 5, connate in a wide

[m-/mfef/mm.]

GESNEXACEM.

°»mpanulate calyx; lobes spreading, plicate-dilated at the sinuses. *P*««h 5, connate in a somewhat 2-lipped corolla; tube, c«npw» late, spurred or gibbous at the base; lobes subequal. « TM 8 4, Perfect, subdidynamous; filaments short; anthers 2-celled, ooⁿ nate crosswise in a depressed cone; cells diverging at the bas^e, dehiscing on the inside by slits, ultimately confluent at the apex. *** 0. *CaveU* connate in a sessile, subglobose, 1-celled ovary, Placentas deeply indexed. 2-fld, with lobed branches, bearing ovules on both sides; style short; stigma broad, margin & n> 'obed. *Fruu a* depressed-globose capsule, overtopped by we «alyx; valves thin, chartaceous, irregularly or transverse^ breaking up. *Seeds* minute, obovoia, smooth; testa reticulated.

1486. STADRANTHEKA GSANDIFLOBA Benth.; P. B. I. iv. 371.

Chittagong.

A succulent, pubescent herb.

677. Rhynchotechum Bl.

Erect, simple undershrubs; young shoots tawny-silky; *leaves* opposite or lower alternate, usually large. *Flowers* in many-flowered cymes, 3-chotomous or mnbellately compound, in the lower axils; bracts narrow, inconspicuous. *Sepals* o, small, narrow, open in bud, slightly connate below. *Petals* o, connate in a somewhat 2-lipped corolla; tube short, wide-campanulate, base subequal; upper lip 2-lobed; lower longer, 3-lobed; lobes au spreading, rounded. *Stamens* 4, didynamous, adnate to base oi ewolla; filaments short, linear, curved; anthers 2-celled; ceils subparallel below, dehiscent on the inner face, quite confluent at the tips. *Disc* small, annular. *Carpels* connate m a sessile, ovoid ovary; placentas intruded almost to the axis of the ovary, there naked, then recurved and bearing many ovules; style lineal, long; stigma small. *Frait* a small, globose, apiculate berry.' «ath white, shining epicarp, pulpy within. *Seeds* very small, ellipsoid, smooth.

1487. EHVKCHOTECHUM ELLIPTICUM A. DC. var. HOOKERI Clarke;

F. B. I. iv. 373.

Chi

An Sndershrub, with thickish steins, ^ feet high.

Order XCYL. BIGHOMACEJE.

Trees or shrubs, very rarely climbing, or herbs. *Leaves* opposite, very rarely alternate, compound, 1-8 times odd-pinnate, very simple. *Flowers* hermaphrodite, irregular, usually snowy in racemes or panicles, usually terminal, rarely on short, lateral branches or from the old wood; bracts 0. *Sejtah* connate in 4-lobed calyx. *Perianth* connate, imbricate, 2-lipped, corolla; lobes 5, subequal, imbricate in bud. *Stamens* 5, didynamous, with often a rudimentary and rarely a perfect fifth, insert where the corolla-tube becomes abruptly swollen; filaments globose or hairy at base; anthers 2-celled, included or shortly exerted, usually connivent in pairs; cells elliptic or oblong, parallel or divaricate; dehiscence longitudinal. *Dish* usually thick or annular. *Carpels* 2, connate in a subsessile, 2-celled ovary; ovules usually many-seriate, rarely 1-2-seriate, anatropous, in groups of rows in each cell; style long, glabrous; stigma elliptic, 2-lobed. *Fruit* a loculicidally or septicidally 2-valved capsule, usually elongated; septum enlarging in fruit, deciduous along with the valves; rarely indehiscent, elongated or globular. *Seeds* compressed, discoid, rarely subtrigonal, usually very prominently winged; albumen 0.

Stamens 5, perfect; leaves 2-3-pinnate; capsule septifragal, linear, compressed parallel to the septum, very large, coriaceous, truncate; corolla-tube wide-campanulate... OW*

Stamens 4, perfect:—

Capsule septifragal, linear, compressed parallel to the septum; leaves 2-3-pinnate, tabular, slender, widened at the mouth:

Capsule loculicidal; simple; calyx large, widened at the mouth:

*Capsule not with sides parallel to the septum:— [p. 787]

Calyx tubular, campanulate, equally 5-toothed; capsule compressed. Tecoma.

Calyx subquadrangular, or only slightly compressed;—

Calyx spathaceous, cleft to the base on one side in flower, closed in bud; corolla-tube long or short, cylindrical below, campanulate

above; lobes crisped, crenate or incised; capsule elongated, terete or somewhat compressed, nearly straight

Dolichandrone.

Calyx not spathaceous; corolla-tube ventricose :—

Calyx irregularly, deeply 3-5-lobed in flower, closed in bud; capsule falcate or twisted.....**Heterophragma.**

Calyx truncate or shortly, unequally lobed in flower, closed or open in bud ; capsule with a thickened, spongy septum

Stereospermum.

*Calyx with double wings along the margins, oblong, compressed at angles to the septum; calyx large, swollen, campinulate, 5-fid [p. 78G].....**Pajanelia.**

678. Oroxyllum Vent.

A 1 entire ^gabrous tree; leaves large, opposite » 2-3-pinnate; leaflets &ate in ^ovate < Flowers in long, terminal racemes. Sepals 5, connate in ^a *arge > coriaceous, campanulate calyx; limb truncate or obscure, ^{to}othed. Petals 5, connate in a large, campanulate, purplish or white corolla, lobes round, crisped, toothed, subequal. Stamens 5, ^{ad}nate above the middle of the corolla-tube, exserted ; filaments straight » 4 subequal, the fifth rather shorter; anthers 2-celled, ^glabrous cells oblong, parallel. Disk wide. Carpels ^glabrous, ^{ma} subsessile, 2-celled ovary, contracted below; ovules ^{hu}man y" Seriate; style long; stigma 2-lobed. Fruit a very ^{ro}US > many capsule, compressed parallel to the septum, 2-valvate, ^{aj}ffe > linear opening septifragally. Seeds many, thinly discoid, with a broad, hairy line

UROXYLLUM INDICUM Vent.; F. B. I. iv. 378; E. D. O. 233.

Bignonia indica F. I. iii. 110.

Chota Nagpur; Behar; N. Bengal; Chittagong.

A tree. Beng. Sona, nâsona, sonpatti; Hind, Ullu, fcarkath, syona; Urlya Phonphonia; Kol. Arengembang; Santal. Bana hatak'; Bajbansi Soizong.

679. Millingtonia Linn. f.

An in pan. ^{Gr}o tree » bark corky; leaves opposite, 2-3-pinnate. Floioers in a ^lClas, terminal on the pendent branches. Sepals 5, connate in a small, ^{Ca}in Panulate, obscurely toothed calyx. Petals 5, connate in a white, long, slender, tubular corolla; lobes of limb sub-acute, ^ovate, valvate. Stamens 4, didynamous, adnate to the throat, shortly exserted; anthers dimidiate, of one

ovate cell, the other represented by a small hook. *Carpels* connate in a subsessile ovary; *Ovules* few-seriate; style long; stigma Globed. *Fruit* a linear capsule, compressed parallel to the septum, septifragally 2-valved. *Seed*, thinly discoid, with a broad, hyaline wing.

1489. MILUNGTONIA HORTENSIS Linn, f.; F. B. I. iv. 377; E. T. M. 550. *Bignonia suberosa* F. I. iii. 111.

Planted along roadsides and in gardens, also often occurring spontaneously.

A tall tree. *Hind.* Akas-nim, mini-chmnbcli; *Vn'p* Mach-mach. The Indian Cork-Tree.

680. *Tecoma* Linn.

Erect or *scandent* shrubs or small trees; *leaves* opposite or rarely alternate, pinnate or occasionally entire. *Flowers* in terminal panicles. *Sepals* 5, connate in a tubular-ampullate calyx; limb subequally toothed. *Petals* 5, connate in & orange or red, tubular-ventricose corolla; lobes of limb round, subequal. *Stamens* 4, didynamous, below middle of corolla-tube; anthers glabrous or sparsely hairy; cells linear, usually parallel. *Carpels* connate in a sessile or subsessile ovary; *ovules* 1-2.

Seeds 2, in a narrow capsule, more or less compressed, opening loculicidally. *Seeds* 2, in a narrow capsule, more or less compressed, opening loculicidally. *Seeds* 2, in a narrow capsule, more or less compressed, opening loculicidally.

1490. *TECOMA STANS* Linn.

In gardens, general.

A shrub.

*

Glabrous 681. *Dolichandrone* Seem.

Flowers in terminal cymes; *leaves* opposite, 1-pinnate, closed calyx. *Petals* 5, connate in a tubular-ampullate calyx; limb subequal, crisped, crenate or incised. *Stamens* 4, didynamous, included; anthers glabrous; parallel. *Disk* thickish. *Carpels* 2, connate in a sessile ovary; *ovules* many, usually many-seriate. *Fruit* a long, subterete, 2-valved, imperfectly 4-angled capsule, loculicidally winged on each side.

1491. DOLIOHANDRONE LAWII Seem.; F. B. I. iv. 380.

Behar.
A tree.

682. Heterophragma DC.

Trees ! leave* lar ge. 1-pinnntc. Flower, large, in **f*
* , < Panicles. Segals 5, connate in an ovoid, closed calyx, in
£ * % opening by 3-5 irregular lobes, JW<h 5, connate u. •
^ r . swollen J roll a, g^Dab^Dvous or woolly without; lobes of hmb^s
^ S < J, rounded. < , , , , > . 4, didynamous, included; anthei^s
s^sabron^s; cells oblong-linear, diverging. Disk pulvinate Ovarj^{le}
sessile ovules numerous, many-seriate on each placenta; sty.
long; stigma 2-lobed. Fruit an elongated, cylindnc, or BUD-
comp<*sed capsule, falcate or twisted, loculicidally 8-vidved, with
a flat <* 4-cornered dissepiment. Seeds compressed, with a meiⁿ
brano^s wing on each side. . . . T . r 381 .

1492. HETEROPHRAOMA ADKNOPUYLLUM Seem.; F. U. • " •

E. B. H. 157.
E. Bengal; Chittagong; elsewhere planted.
A tree.

683. Stereospermum Cham.

Tree; leaves 1-2-pinnate, opposite. Flowers in large, tax, ter-
minal panicles. Se,>als connate in an ovoid calyx, cios^{ed} or
opei> in bud, in flower with a truncate or shortly, unequal^
lobed tonb. petois 6t connate in a tubular-ventricose, yellow, or
pale^r rose corolla; lobes of limb subequal, round, crisped, tootnea^d
or laciⁿiate. Stamens 4, didynamous, included; anthers glabrous,
cell³ linear, diverging. Disk pulvinate. Carpels connate in a
se^sile ovary; ov^es many, 1- or more-seriate. FruU an elon-
ga^sed- terete, subcompressed, or obscurely 4-angled capsule' locu
lic^h 2-valved; dissepiment thickened, subterete. Seeds m
l <* 2 series, confessed or subtrigonus, with a membranous
wi^o8 on each side.

Leaflets glabrous; panicle branches slender, glabrous; c^lpsule obscurely
quadrangular; corolla rose with yellow lobes, under an me^h long
chelonoides.

Leaf <* hairy when young . panicle branches short, viscidly ^ ^
sule^{ter}ete; corolla purple, over an inch long.....

1493. STEREOSPERMUM CHBLONOIDES DC.; F. B. I. iv. 382; E. D.
S. 2865. *Bignonia chelonoichs* F. I. iii. 106.
N. Bengal, Duars; Chittagong.
A tree. Vernac. Pader, pander, pondair; Beng- V*ar-
mar, atcapáli. P
1494. STEREOSPERMUM SUAVEOLENS DC.; F. B. I. iv. 382; E-
S. 2876. *Bignonia suaveolens* F. I. iii. 104.
ChotaNagpur; Behar; W.Bengal; N.Bengal.
A tree. Vernac. Paral, parur, padal.

684. Pajanelia DC.

A large, glabrous tree; leaves large, 1-pinnate; leaflets entire, many. Flowers large, in terminal, thyrsoid panicles. Sepals & connate in a large, ovoid calyx, closed in bud, swollen. camp^u late in flower; limb shortly lobed. Petals 5, connate in a la* swollen-tubular corolla; lobes subequal, crisped. Stan**** didynamous; anthers glabrous; cells linear, divergent. &f broad. Carpus connate in a sessile ovary; ovules many-sen[^] on each placenta; style long; stigma 2-lobed. Fruit a to* narrowly oblong, compressed, winged capsule, loculicidally 2-valved. Seeds compressed, with a membranous wing on each side.

1495. PAJANELIA RHEEDEIDC.; F. B. I. iv. 384; E. D. P-^{17<}
Chittagong.
A tree.

Order XCYH. PEDALINEJE.

Herbs or undershrubs. Leaves opposite or the upper alternate, entire, toothed or lobed; stipules 0. Flowers irregular, solitary o* rarely clustered or racemose, usually axillary; pedicels short; bracts 0 or minute. Sepals 4-5, slightly connate below. P < *^b connate in a tubular-ventricose corolla; limb 5-lobed, obscurely 2-hpped; lobes imbricate. Stamens 4, didynamous, rarely 2. Carpels 2, connate in a 2-celled, rarely 1-celled ovary; ovules J[^] " f7. ' ^f'Posed; style filiform; stigma shortly 2-lobed. Frmt hard mdehiscent, or a 2-, less often a 3-4-valved capsule-heads wingless; albumen 0.

•Anther-cells divaricate; connective small; ovary Uocular; placentas parietal; capsules hooked; racemes terminal[^]. 791].....Martynia-

*Anther-cells aubparallelj ovary 2-locular and spuriously 4-chambered; placentas axi al; capsules not hooked; flowers axillary [p. 790] Sesamum.

685. Martynia Linn.

Coarse herbs J annual or with perennial, tuberous roots; leaves large, opposite, pubescent, toothed or lobed. Flowers rather short, terminal racemes; bracts small, linear or 0; bractlets 2. Sepals 5, connate in a membranous, somewhat inflated tube with subequal lobes; tube sometimes 2-lobed. Petals 5, connate in a somewhat equal tube oblique or decurved at the base; lobes subequal. Stamens anterior only perfect, adnate near base. Carpels connate in a 1-locular ovary; ovules many, 1-senate. Fruit subglobose with an incurved beak; the pericarp deciduous, 4-angled; the enlarged, persistent placentas connate in a hard, rough, spinescent or smooth, 4-celled capsule. Seeds many in each cell.

ABTWU DIANDRA Glox.; F. B. I. iv. 386; E. D. M. 308.

Chota Nagpur, very common on roadsides and near villages.

A tall, coarse herb. Hind. Shcr nui; Beng. Bagh noki;

*ntal. Bag lucha.

686. Sesamum Linn.

erect or prostrate herbs; leaves opposite below, alternate above, few and lobed or divided. Flowers axillary, solitary or 5-partite, portly pedicelled. Sepals connate in a small, 2-lipped corolla tube. Petals 5, connate in a 2-lipped corolla tube. Stamens 4, didynamous, included; anthers 2-celled; cells subparallel, distinct. Ovary 2-celled; cells soon divided into 2 chambers by the intrusion of a false dissepiment from between the placentas; ovules 2 in each chamber; style filiform; stigma 2-lobed. Capsule oblong or ovoid, usually 4-angled and 4-grooved, 2-valved, 4-chambered. Seeds many, obliquely oblong, somewhat compressed, foveolate.

§Bracts herbaceous; spike sessile, or if stalked the peduncle
 naked [p. 792] J.....**Nelsonia**.
 †Calyx 5-p; Utitte; sfcamens⁴ CP- 792].....**Ebermaiera**.
 †Ovule n m 2 10WS in each eell; corollft_lobes contorted, twisted to
 the left in? m 2 10WS in each eell; corollft_lobes contorted, twisted to
 *See k sunp 10Wer leaves pinnatel J cut [P- 792] ...**Cardanthera**.
 ^lateral O 0<?ed on hard> upward curving retinacula; ovules 2, not
 row or else r l ~ mole 'than 2 (rtre, y exceeding 8), superposed in one
 CoroUa y. a^"anged al ternately in each cell :- [p. 792]
 a with
 2 in each cell? * UPPer liPf 10Wei> lip lftlge> exp andecl, 3nlobed y ovules
 Ante or filamen WUh an excunent p process**Blepharis**.
 A^te^or fil ents without any excurrent process.....**Acanthus**.
 Corolla ^vuu either 2 JiPs or with 5 subequal lobes :—
 Corolla lobes
 Ovules ^ ^ ^ t0 the lGft in bud: ~
 - es more than two in each cell; capsules normally with 6 or
 more seeds :—
 Co i-olla distinctly 2-Hpped.....**Hy^rophila**.
 Cor o llasubequ y 1 5 obel :--
 Bracteoles large; capsule clavate with a solid base...**Ruellia**.
 Bracteoles small, narrow, or none; capsule seed-bearing
 throughout :—
 Anthers acuminate at apex.....**Jechmanthera**.
 Ovule A l U h e r s b l l u n t**Hemigraphis**.
 6S 2 in Gac^ ce^ i ^ Cft psules normally with 4 or fewer seeds ;
 corolla usually subequally 5-lobed :-
 Placentas separating elastically from the valves from the base
 up*ards; stamens 4 :-
 Bracteoles very large, reticulately nerved. . . . **Petalidium**.
 Bracteoles none.....**Phayloopsis**.
 Placentas not separating elastically from the valves :—
 -antherg minutely mucronate at the base; stamens 4
Calophanes.
 Anthers muticous :—
 Corolla-tube long, slender; limb very little enlarged;
 onl y 2 stamens perfect.....**Daedalacanthus**.
 Corolla-tube short, widened gradually from near the
 k^se; perfect stamens usually 4; if corolla-tube slender
 below, or if perfect stamens only 2, then limb of corolla
 Cor 11 W i d d y f u n n e l n s h f t petl.....**Strobilanthes**.
 ^"a-Jobes imbricated in bud :-
 Ovules 3-10 in each cell; capsule normally 6- or more-
 seeded :— [p. 794]

- Capsule compressed at right angles to the septum > seeds
 ovoid, hardly compressed..... **Andropogon raphis.**
- Capsule subterete; seeds much compressed :—
- Corolla-tube narrowly cylindric, slender, straight, ovary
 pubescent..... **Gymnostacny um.**
- Corolla-tube funnel-shaped, curved ; ovary glabrous
Phlogacanthu*
- 11 Ovules 2 or, rarely, 1 in each cell:—[p. 793]
- Corolla-lobes 5, subequal:—
- Anthers 1-celled, muticous; stamens 4, didynamous m outer
 calyx-lobes larger than the others..... **Andr ^**
- Anthers 2-celled:—
- Sepals 4, two opposite outer larger than the tners;
 stamens, 2 only perfect, 2, sometimes 3, others dimer ^
 tary..... **fu rieria.**
- Sepals 5, subequal, all small:—
- Stamens 4 ; corolla-tube long ; limb enlarged **a
Asystasia.
- Stamens 2:—
- Corolla-tube long, slender..... **Eranthemum.**
- Corolla-tube short; limb enlarged... **Codonac anthus.**
- Corolla distinctly 2-lipped ; anthers 2-celled:—
- Stamens 4..... **Lepidagathis.**
- Stamens 2:—
- Placentas not separating elastically from the valves :—
- Anther-cells parallel, subequal; bracts large, mbricate;
 corolla-tube long, narrow **Ecbolium.**
- Anther-cells placed one higher up than the other \—
- Anther-cells, at least the lower, with a white, basal,
 spur-like appendage..... **Justicia.**
- Anther-cells not spurred at the base :—
- Anther-cells apiculate..... **Adhatoda.**
- Anther-cells muticous:—
- Bracts and bracteoles small, subequal; corolla
 white..... **Rhinacanthus.**
- Bracts larger than bracteoles, in opposite, vft
 vate pairs ; corolla rose or purple... **Peristroph e#**
- Placentas separating elastically from the valves from th^e
 base upwards; bracts involucrate :—
- Bracts arranged in unilateral spikes **Rungia.**
- Bracts either clustered in leaf-axils or (occasionally)
 laxly cymose..... **Diclip en³.**

687. Thunbergia Linn, f.

Climber S; leaves opposite, often caudate, hastate or angular.
Flow PedT s axillarv > solitary or paired or racemose; bracts at base of
 you^{10cus} k^Kke; bracteoles large, margins connate, at least when
 or h[<] s*paU connate in a small, annular, or 10-16-toothed calyx,
 or obscure - **Petals** 5, connate in a conspicuous corolla; tube
 swollen, curved; limb oblique, with rounded lobes, twisted to the
 left- tub m bUd* **Stamens** 4> didynamous, adnate near base of corolla-
 the^ anthers 2-celled; cells parallel, oblique, spurred or not at
 2 if ase. **Disk** annular or cushion-like. **Carpels** connate in a
 -ceded fin o Vary; ovules 2 in each cell > collateral; style long; stigma
 ^el-like, 2-lobed or entire, or style 2-fid with capitate stigmas.
 sw^U a capsule, globose below, suddenly narrowed to a barren,
 -, ord-shaped beak. **Seeds** 2 in each cell, ovoid or dorsally com-
 jessed, glabrous base plane or hollowed; funicle minute or conic.
 W^{oy}!! axillarv 5 calvx 10-15-toothed; seeds ovoid, excavated at the

Corolla white, fragrant; petioles not winged :—

^psule glabrous; calyx-teeth hardly longer than tube:—

^Pedicels solitary in each axil; stems hairy..... *fragrans*.

^Pedicels often 2 in each axil; stems glabrous or grey-puberulous
fragrans var. *Uevis*.

Corolla villous; calyx-teeth much longer than tube..... *tomentosa*.

» a yellow, with a brown or claret-coloured eye; petioles winged
alata.

Drpr? racen^d; calyx an almost entire ring; seeds dorsally com-
 Presse*; base plane; corolla blue..... *grandiflora*.

149 «. THUNBERGIA FRAGRANS Eoxb.; F. I. iii. 33; P. B. I.
 iv. 390.

N. Bengal, Duars.

A. slender climber.

1498/2. Var. L^EVIS; F. B. I. iv. 391.

Behar; W. Bengal.

^ slender climber.

1499. THUNBERGIA TOMENTOSA Wall.; F. B. I. iv. 391.

Chota Nagpur; Orissa.

A slender climber.

1&0. THUNBERGIA ALATA Boj.; F. B. I. iv. 39.

E. Bengal, spontaneous; elsewhere often cultivated.

A slender climber.

1501. THUNBERGIA GRANDIFLORA Boxb.; F. I. i. 34;
iv. 392.

Behar; N. Bengal; Chittagong.

A very extensive climber. *Vernac.* NÚMata.

688. Elytraria Vahl.

Herbs, almost stemless; *leaves* alternate, crowded, ^{subradical.}
Flowers in close, rigid, simple or divided spikes; scapes ^{cove}
by spirally imbricate bracts; bracteoles small. *Sepals* ^{na} COD. ^{^ ^}
a 4-partite calyx; lobes unequal, the largest sometimes ^{^ ^}
Petals 5, connate in a small, 2-lipped corolla; tube ^{^ ^ ^} a -
of limb oblong, imbricate. *Stamens* 2, perfect, adnate to ^{^ ^} throat;
anthers elliptic, acute; cells 2, parallel, with ^{^ ^} a minute, basal spur. *Disk* small. *Carpels* connate ^{^ ^} III a
ovary; ovules 6-10, superposed in each cell; style short, ^{^ ^} shortly 2-lobed. *Fruit* an ellipsoid, acute capsule, ^{^ ^} *bceas* ^{^ ^}
ovoid, reticulated, minutely papillose, attached by a minute ^{^ ^} hilu
without retinaculum.

1502. ELYTRARIA CRENATA Vahl; F. B. I. iv. 394. ^{^ ^} *acaulis* F. I. i. 119.

Chota Nagpur.

An almost stemless herb.

689. Nelsonia II Br.

Diffuse, softly hairy herbs; *leaves* opposite, elliptic, ^{en}
Flowers in ovate or cylindric spikes; bracts ovate, glandular-vu ^{us}
closely imbricate, alternate or spirally scattered; bracteoles ⁰
Sepals 4, unequal, lanceolate, shortly connate below, the la*^S
often 2-lid. *Petals* 5, connate in a very small, purplish rose ^{oi}
white, 2-lipped corolla; tube slender; lobes obtuse, spread-^b
Stamens 2, adnate above middle of tube; anthers 2-celled, su-^{b-}
included; cells ellipsoid, somewhat divergent, discrete, glabrous ^{or}
ciliate, mucous or minutely spurred. *Carpels* connate in ^a
2-celled ovary; ovules 8-10 in each cell; style slender; stig^{ma}
shortly 2-lobed. *Fruit* an oblong, acute capsule, seed-bear^u
below, barren above. *Seeds* small, round or ellipsoid, smooth
attached without retinacula.

Flowering stems trailing *campestris*.
Flowering stems suberect, all parts more hairy ... *campestris* var. *vestita*.

JUSTICIA CAMPESTRIS E. Br.; F. B. I. iv. 394. *Justicia lamifolia* <* F. I. i. 134.

In all the provinces.

A diffuse herb.

var. VESTITA F. B. I. iv. 395. *Justicia tomentosa* F. I. i. 131.

ChotaNagpur; Chittagong.

A suberect herb.

690. Ebermaiera Nees.

Herbs or dwarf undershrubs; leaves opposite, rarely alternate, entire. Flowers in terminal or pseudo-axillary, dense racemes or spikes; bracts leafy or shorter than bracts. Sepals 5, connate below, subequal or one larger than the other. Petals 5, connate in a 2-lipped or slightly oblique cylindrical; lobes short, spreading. Anthers 4, didynamous, included or rarely shortly exerted; anthers with 2 ovoid, discrete, mucous cells. Carpels connate in a glabrous, 2-celled ovary; style linear, glabrous; stigma once or frequently 2-lobed. Fruit a small, oblong capsule, seed-bearing throughout. Seeds 15-30 in each cell, small, globose or cuboid; hilum hollowed; retinacula.

Bracts obtuse; flowers blue or purple, with linear markings:-

Stems erect, pubescent upwards, with leaves and branches opposite the base. Corolla 3-lin, long or less; purple with paler (rose or yellow) stripes:-

Stems viscid with glandular, spreading hairs; leaves of upper portion alternate; flowers in lax spikes, interrupted below, the bracts leaf-like. glaucavax. *pathul<tu.

Stems pubescent with adpressed, grey hairs; leaves of upper portion opposite; flowers in dense, uninterrupted, cylindrical spikes

Stems teretripolybotrya.

Corolla 5-angled, numerous, pubescent throughout; leaves all opposite; bracts spherical, blue, with darker (purple) stripes; heads subaxillary. v. lutinosa.

Bracts very acute:- Bracts, bracteoles, and sepals not awned at the tips; stems decumbent

and branching at the base, then erect, longer than the branches; corolla -3 in., white or nearly so; flowers in cylindric, thyrsoide-

thyrsoido-

Bracts^f bracteoles, and sepals with long, subulate, awned tips; a «* o^f bracts ciliate; stems short, prostrate, rooting; corolla '6 in. !*>* Purple, with rose markings; flowers in short cylindrio, or sub case S^pikes[.....*atwustifol**'

1504. EBBBMAIEBA GLAUCA Nees var. SPATHULATA; F. B. I-iv. 396.

N. Bengal; E. Bengal.

..... A n⁻ 6reCt hgrb in rice,fiel ds.

1505. EBEBMAIBBA POLYBOTRYA Nees; F. B. I. iv. 396.

N. Bengal.

Una T, Anerec^t herb. i « swamps.

isob. EBEBMAIBBA GLUTINOSA Wall.; F. B. I. iv. 396.

Tirhut; Behar; N. Bengal; C. Bengal.

..... A trailm g herb, in rice-fields.

1507. EBERMAIERA THYRSOIDEA Nees ; F. B. I. vi. 397. *Capraria diffuui* F. I. iii. 93.

Chittagong.

A suberect herb.

1508. EBK^rMAIERA AHOUBTIFOUA T. And.; F. B. I. iv. 398,

Chittagong.

A prostrate herb,

691. Cardanthera Ham.

Aromatic, often viscid h^{**^*}. ? ; leaves oPposite, the upper toothed, rarolv nntirl • U ..

bracts or bracteoles o H e . ^ J ^ ^ opposite a-
unequal, slightly connate below P e i f** 5narr , ZfZ
corolla; tube nearly straight j j l f J 5, connate ln • 2nhpp^{ed}
lobes twisted to the left; t h l w h^{ha} » *>-«=alyx; limb long;
Stamens 4, didynamous Others If, * *? » " « « * * P^{laite} (1 Palato^t
cells parallel. Carpels ^ i^{pos}vet^t ^ ^ ^ sma["] f ;
many; style spa/sely in a " * TM ^ T ^ ^ ^ ovules
seed-bearing throughout. Li, ^ i m SeS^s f' " ^ ^ le
compressed, gtodular-puberulous or i n n small, 7*** *om TMhZ^u
conical, soft, straight. g^{ab}tous; r^t ^ acula minute,

5 * " « terminal spikes, with 4 iowb of imbricating bracts... ^ ^ « -
'lowers mostiy in axiUary whorUi basa i leaves much divided ...U yuta.

**»• CAKDAHATHERA ULIMNOSA Ham.; ¥. B. I. iv. 403. *Buellia uliginose*, F. I. iii. 52.

N, Bengal, swamps in Dual's.

An annual erect or decumbent herb.

UW. CAHDANTHERA IRIFLOBA Ham.; V- B. I. iv. 405. B « H «
<<>toro P. I. iii. 52.

Behar; Tirhut; N. Bengal; C. Bengal; h. Bengal.

An annual weed, near edges of ponds and ditches.

692. *Blepharis* Juss.

n a «sh, often rigid or prickly herbs or undershrubs; faw«
\$***> or 4-nately whorled, subentire, toothed or pnek^.
^ ' « m in terminal spikes or on suppressed, axillary branches,
~^ bilate, tetrastichous or capitate and few-flowered, or ax^llaij,
^ ^ er ed; bracts leafy; bracteoles linear. *Sepals* 4, TM^TM
. ° P P ^ pairs, the inner smaller; one of the outer pan: eTMrgm*te ox

^ . with ovoid, rigid tube; upper Up » ^ ^ J ^ !
°f* dtag, 3-lobed, purple or blue. *Star*, **, 4, ...
J^ente thick, rigid, those of anterior stamens produced beyond
ttachment of anthers; anthers with 1 large cell, i ts margins
d ^ ly bearded, the outer cell small or obsolete. D»* annular.
C*** connate in a glabrous, 2-celled ovary; ovule. 2 in each
cel, %le linear; stfgma shortly 2-fid. JV»»* « oblong or
ell: psoid, 2- or 4-celled capsule. S«<?s compressed, or
echinate-papiUse.

Leaves acute, distinctly stalked; seeds densely cover f with obtuse
spines. temed of tube3> frce at the ttp when moistened. ...erhaaviifolia.
Leaves obtuse, subsese, ue; seeds shaggy, f«» a TM of annular
tubes, connecte(l at their bases only..... molluginifolia.

1511. BLEPHAHIS BOERIAAVIIFOLIA Ters.; F. B. I- iv. 478. *Acan-
thus madera^atensls* F. I. "i- 33.

Behar; ChotaNagpur; Orissa.

A prostrate, wiry herb.

1512. BLEPHARIS MOLLUGINIFOLIA Pers.; F. & 1-iv. 479.

Chota Nagpur.

A prostrate, wiry, perennial herb.

693. *Acanthus* Linn.

Erect or twining herbs or shrubs; *leaves* pinnatifid, toothed, spinous, rarely entire. *Flowers* in terminal or pseudo-axillary, densely strobilate or interrupted spikes; bracts large, ovate, spinescent, or small; bracteoles large, lanceolate, sometimes obsolete. *Sepals* 4, shortly connate below in 2 opposite pairs, the outer the larger. *Petals* 5, connate in a 2-lipped corolla; tube short, ovoid, rigid; upper lip subobsolete, lower blue or white, elongate, obovate, shortly obtusely 3-lobed. *Stamens* 4, didynamous, shorter than the lower lip; filaments stout, narrowed, curved below the anther, not produced at apex; anthers oblong, 1-celled, bearded. *Disk* 0. *Carpels* connate in a 2-celled ovary; ovules 2 in each cell; style acute at the tip; stigma shortly 2-fid. *Fruit* an ellipsoid, compressed capsule, brown, shining. *Seeds* 4, compressed, orbicular, glabrous; testa lax.

Leaves toothed or pinnatifid, spinous, holly-like, base of petiole usually spinous; bracteoles broad-lanceolate; corolla blue; stems erect

ilicifolius-

Leaves entire, not spinous, base of petiole unarmed; bracteoles 0; corolla white or rose; stems twining.....*volubilis**

1513. ACANTHUS ILICIFOLIUS Linn.; F. I. hi. 32; F. B. I. iv. 481; E. D. A. 324.

Sundribuns.

A shrub, in clumps in maritime swamps. *Beng.* Harkucli kanta, hargoza.

1514. ACANTHUS VOLUBILIS Wall.; F. B. I. iv. 481.

Sundribuns.

A shrub, twining among reeds in littoral swamps.

694. *Hygrophila* K. Br.

Herbs, occasionally spinescent; *leaves* opposite, lanceolate or obovate, entire. *Flowers* sessile, in terminal heads or axillary whorls; bracts elliptic or lanceolate; bracteoles oblong or lanceolate, shorter than calyx. *Sepals* connate in a tubular, 5-fid, rarely 4-partite calyx; lobes lanceolate or linear. *Petals* connate in a deeply 2-lipped, bluish-purple corolla, nearly glabrous; tube swollen at the apex; lips oblong, straight. *Stamens* 4, didynamous, posterior pair like the anterior or smaller or rudimentary; filaments glabrous; anthers oblong, cells equal, divaricate or

connate at the base & ... connate in a 2-celled, oblong ovary with hair ... ovules in each cell 4-many, rarely 2; style long, ... Fruit a linear or narrowly oblong ... Seech numerous, rarely ... retinacula hardened,

Flowers ... armed ... ovate ... leaves ... poly&pcrma. ... seeds 8-10 ... stems ... whorls; herbs with erect stems, or if

elliptic, acute:— Bracteoles acute, lanceolate; calyx in flower divided half-way down; lobes linear:— Stems ... geniculate, rooting, the branches erect; leaves obovate-elliptic. ... Bracteoles obtuse, oblong; calyx in flower divided one-third down; lobes lanceolate. ... Leaves half-erect; lobes linear:— Stems erect; leaves subsessile, elliptic or oblong ... phlomoides.

Sp. ... axillary whorls ... calyx 4-partite; seeds 4-8; stems erect ... flowers in distinct whorls ... lanceolate, hispid ... apinosa.

- 1515. ... POLYSPEHMA T. And.; F. J3.1. iv. 406. Annual herb.
1516. ... ILA ... ERPYLLUM T. And.; F. B. I. iv. 406. Perennial herb.
1517. HYGR ... PHILA SALIOIFOLIA Nees; R B* L iv. 407; E. D. Erect herb. Santal Mathom arak'.

- 1517/2. Var. ASSURGENS F. B. I. iv. 407 ; E. D. H. 506.
E. Bengal.
A prostrate herb.
1518. HYGROPHILA QUADRIVALVIS Nees; F. B. I. iv. 408.
In all the provinces.
An erect herb.
1519. HYGROPHILA PHLOMOIDES Nees; F. B. I. iv. 408. *Ruellia*
hirsuta F. I. iii. 51.
N. Bengal; Chittagong.
An erect herb.
- 1519/2. Var. ROXBURGHII ; F. B. I. iv. 408. *Buellia obovata*
F. I. iii. 51.
Sundribuns; Chittagong.
A prostrate herb.
1520. HYGROPHILA SPINOSA T. And.; F. B. I. iv. 408; E.
H. 508. *Ruellia longifolia* F. I. iii. 50.
In all the provinces.
An erect, spinous herb. *Hind.* Talmakhana, golpu
kanta, kanta kûlika; *Beng.* Kanta kalika, kuliakhara,
Santal. Gokhula janum.

695. *Ruellia* Linn.

Herbs or undershrubs ; *leaves* opposite, entire. *Flowers* sessile or subsessile, solitary or clustered or racemed; bracts 0; bracteoles large, usually exceeding the calyx. *Sepals* 5, subequal, narrow, acute, more or less connate below. *Petals* 5, connate in an oblique corolla; tube ventricose; lobes subequal, rounded, twisted to the left, spreading in flower. *Stamens* 4, didynamous; filaments glabrous or sometimes hairy at the base; anthers subequal, 2-celled; cells oblong, mucous, glabrous. *Carpels* connate in a glabrous, 2-celled ovary; ovules in each cell 3-10; style linear-hairy; stigma simple. *Fruit* a clavate, cylindric, ellipsoid capsule, solid below, seed-bearing upwards. *Seeds* large, thin, discoid, marginate, overlapping ; retinacula large, strong, hooked.

•Inflorescence few-flowered, contracted ; capsule markedly clavate, with long barren base; bracteoles large, leafy :— [p. 803]

leaves ovate ; bracteoles spatulate ; flowers pale grey-purple ; stems prostrate or rambling; swollen part of corolla-tube twice as long as cylindric base ; all parts glabrous or nearly so :— [p. 803]

Leaves ^{SUB}obtusely elliptic; nodes of stem short *prostrata*.
 Leaves ^{ES} **en acute**, nodes of stem long *prostrata* var. *dejecta*.
 †Leaf ^{nam}widely elliptic; bracteoles elliptic, acute; flowers white;
 stem ^Serect; swollen part of corolla-tube not longer than cylindric
 base: -r [p. 802]
 Leaf ⁵in ¹ tapering from below the middle to an acuminate tip; sepals
 Leave ^{AA} Corolla with rose or pinkish-purple marks *cemua*.
 S ^{Wide}St a little beyond the middle, tip sometimes obtuse,
 somet ^{acute} but not acuminate; sepals 25 in. long; corolla
 pure ^{ate} *suffruticosa*.
 *Infl ^Jores ^{la} Cymose many-flowered; capsule linear-oblong, with
 very short ^{ari}en base » bracteoles not leafy; swollen part of corolla-
 tube ^{mill} exceeding short, cylindric base; flowers blue [p. 802] *tuberosa*.

1521

• &UELLIA PROSTRATA Lcimb; F. B. I. iv. 411; E. D. B. 633.
 Orissa; Chota Nagpur; Behar; W.Bengal.

1521/9

^A ^Uch ^lrail ^lled » prostrate undershrub.

* var. DEJECTA; F. 13. I. iv. 412; E. D. B. 633. *Buellia*
angens F. I. m. 44.

^A ⁿ all the provinces except Chittagong.

1522 P ^diffuse, rambling undershrub.

• ^UMLLIA OERNUA Koxb.; F. I. iii. 45; F. B. I. iv. 413.

Chota Nagpur.

^A ⁿ ^lndershrub with woody rootscock and annual, erect
 stems.

1523. RUELLIA ^{su}FFituTicosA lioxb.; F. I. iii. 53; F. B. I.
 iv. 413; E. D. R. 635:

[^]ota Nagpur; Behar; Tirhut; N.Bengal.

⁻ⁿ ^undershrub with woody rootstock and annual steins.

1524

^Janial ^{Ch} ^{AA}

^WELLIA TUBKROSA Linn.

• Bengal, occasionally naturalised.

An undershrub with tuberous rootstock and annual

⁸tem «- Native of America.

^{-ne} near capsule of this species makes it very unlike our
 nat ^{*ve} *Iuellias*.

696. iEchmanthera Nees.

Shrub ^{or} ^undershrub ^{*u} ^{AS}; *leaves* broad, elliptic, acute, crenate,
 of ten ^V ^{ISCI} [^] ^{*l} ^{owc}TM in sessile, close or distant clusters on the
 branches of a 3-chotinous or 1-sided panicle; bracts linear, as

lon

corolla; tube vent 5, connate in an almost straight
 Palate with 2 hirsute widened near the middle;
 to the left in bud lobes subequal, rounded, twisted
 of filaments hairy, didynamous > included; longer pair
 ovate or oblong, 2-cell anthers subsimilar,
 produced. Carpel; mucous > connective sometimes
 apex; ovules 6 in a 2-celled ovary, with densely hairy
 upwards stigma. Seed linear-lanceolate. Fruit a narrow-
 oblong capsule, seed 12, discoid and hirsute
 hooked. glabrous; retinacula strong,

1525.

Nesvar WALCHER F. B. L.
 N. Bengal, Duars; Chittagong.
 small shrub.

Herbs or h

W, Hemigraphis Nees

Bessile, milder branchlets, rarely large, imbricate, obsolete. Sepals 5, or linear. Petals 5, connate below, funnel-shaped or twisted to the left. Stamens 5, anthers oblong, 2-celled, bases acute. Carpels 5, each cell; style 1, very short. Fruit linear, the other almost from the base with a white margin.

Corolla-limb ventricose; longer filaments glabrous in their upper half

Corolla-tube narrowly densely bearded in their upper part; longer filaments

more viscidly

aromatic ...latehrota var. rupestris*.

• *tfKMiGRAPHis HIRTA* T. And.; F. B. I. iv. 422. *Rueltia hirta* F. I. iii. 46.

Behar ; W. Bengal; C. Bengal.

1527 TT^{A hil, S Ute herb*}

• -HKMIGRAPHIS LATEBROSA Nees; F. B. I. iv. 423. *Buellia Pavala* F. I. iii. 47,

Behar; Chota Nagpur.

• 1527/2. ^{v diffuse, hirsute herb*} var. RUPESTRIS; F. B. I. iv. 424.

Behar.

^A diffuse, viscidly pubescent herb.

698. *Petalidium* Nees.

^{^j}undersl^Jubs, minu^{tely} pubescent; *leaves* ovate or narrow-
^{oblong} ^{usual} ^{linear} ^{crowded on} ^{shortened lateral branchlets; bracts 0; bracts} ^{linear} ^{reticulate} ^{veined, ultimately scarious. Sepals}
^{connate} ^{subequal, connate below, or with the 2 lower}
^{straight} ^{lobes} ^{swollen from near the base ; lobes rounded,}
^{the} ^{in bud, spreading in flower. Stamens 4, didy-}
^{base} ^{lar, 2-celled; cells parallel, spurred at}
^{cell; filaments} ^{connate in a 2-celled ovary ; ovules 2 in each}
^{capsule} ^{linear; stigma unequally 2-lobed. Fruit a clavate}
^{Wacent} ^{parallel to the septum. Seeds 2 or 4, on}
^{carrying} ^{themselves} ^{elastically from the bottom of the capsule,}

1528 1 ^{theUI the di8Coid Seeds,}

• *KTALIDIUM BARLERIOIDES* Nees ; F. B. I. iv. 416. *Raellia wacteata* F. I. iii. 47.

Orissa ; Chota Nagpur ; Behar.
 A undershrub.

699. *Phayloopsis* Wilkl.

^perennial ^{prostrate} herbs; *leaves* opposite, petioled, ovate,
^{entire or obscurely} ^{crenate. Flowers} in dense, terminal, 1-sided
^{spike} ^{bracts} ^{obovate} ^{linear, bract-like. Petals} ^{5, connate in a small}
^{bract} ^{linear, bract-like. Petals} ^{5, connate in a small}
^{nerve} ^{linear, bract-like. Petals} ^{5, connate in a small}
^{corolla} ^{tube} ^{slender} ^{cylindric; lobes slightly unequal, rounded,}
ⁱⁿ ^{bud, spreading in flower. Stamens 4, didynamous;}

anthers similar, 2-celled; cells parallel, short-oblong, base
 s K S m "Cronate - "Tpeh connate in a 2-celled ovary; ovules
 cW ----- cell I Style long) hairy, "sti 8TM "iupte, linear. Fruit a
 ciavata capsule, compressed parallel to the septum. Seeds 4, on
 2TM S T m h e B tically, from the base of the capsule.
 -w j j o a o c t i , d i s c o i d s e e d s .

S. T. m. h. PARVIFLORA Willd.; F. B. I. iv. 417. *BudU**
imbricata F. I. iii. 49.

In most of the provinces.

A prostrate, much-branched herb.

700. Galophanes D. Don.

Perennial herbs; leaves opposite, entire, petioled. Flowers in
 axilla, sh ort cyms of clusters; bracteoles very small, narrow.
 Seval Jr. Tubular polyx; lobes subt ital lanceolate of
 subulate T f ? ^ a i tubular polyx; lobes subt ital lanceolate of
 corolla, lobes obtus e > * Wisted to the le n ^ obscurely 2-lipped, tubular
 flower w bud, spreading in
 hairy v > ^ m m S . 4 > d l d y nam o ^ - perfect; filaments glabrous or
 mucron S . or * * * % M i * * * * M T M < T M S P ^ Cutely
 2-celled ovary; ovules In each Cell 5 8 ^ Mneaf hairy; stigma
 ^ i ^ ^ t i r . " ^ 1 1 - 1 0 " 4 b e l ^ i n f o .

strong, curved oscular, much compressed; retinacula
 1830. CALOPHANES NAGU ANA Nees; F. B. I. iv. 410.
 Behar; W. Ben al.

A prostrate, perennial herb. Vernac. Nag-chana.

701. Dædalacanthus T. And.

Perennial herbs or shi-nho. ?
 obscurely toothed, lineolate L T ^ ? P o Site > petioled, entire or
 linear, t o t a n t o r ^ ^ T ^ ^ > ! * < < < • Flowers in
 bracteoles linear-lanceokfp a u i e r " l e u ds; bracts u sually large ;
 connate in a deeply TblV a a y x ; lobes UalTOW > often scarious ;
 Petals 5, connate in a s l e n i r , ,
 at the mouth, or in in T M ^ " f * " tube long, linear, widened
 spreading in flower T l : T T ^ m the midale 5 lobes ovate >
 glabrous! anthe r U S I * 0 " ? I r f t in bud - < - > 2,
 almost included. Ca, - Z ^ 1 0 ? 2 C e U e d , m u t i c o u s _ e x s e r t e d o r
 in each cell; style 7 o Z , m a g l a b r o u s o v a r y ; o v u l e S 2
 J l e l o n g l * < < d y hairy; stiglua shup l e , linear.

Strobilanthes.]

ACAETHACKX.

*"

Fruit a clavate capsule with a solid, cylindrical base. Seeds normally 4, compressed, discoid; retinacula acute,

Spikes wtwupted, narrow-linear, forming large terminal panicles; bracts obtuse.....!.....ntncliu.

Spikes short, uninterrupted, oblong"-

S** forming a ceros e, terminft) panicle, bvtct elliptic, subobtus or nervosus.

shortly acu, ainRte) not ciliate nervosus.

Spikes solitary; bracts ovate, much acuminate, ciliate ...purpurascens.

1531. DFDALACAKTHHS STRICTUS T. And. ; F. B. I. IV. 419.

Chittagong; Tippera.

A stoutish herb. 1-3 feet high.

1532- DFDALACANTHUS NERVOSUS T. And.; F. B. I. iv. 418:

E. D. D. 4.

TMiut; N. nengal; Choto Nagpur; Sundribns.

A stoutish herb, 2-6 feet high.

1533. D* DALACANTHUS PORPCRASOBNS T. And.; F. B. I. iv. i*);

E. D. D. 5. Mrantheiuumpidchellum F. I. iii. HI.

Bchar; Chota Nagpur.

A rtoatuh herb, 2-4 feet high. Hwrf. Gulsham; Beng.

K alla-jati.

702. *Strobilanthes* VA.

Shrub (herb) si !««« opposite, often unequal, toothed, or succot«e, often with" raphides. Flowers capitate, or in strobilate or interrupted spikes, or panieled, sessile or sometimes pedioellecl, bracts and bracteoles large or small or 0. persistent or caducous.

f f * 5, 5 connate in a deeply, subequally 5-fid, or wneBMM

^ Pped calyx, with one lip shortly 8-toothed. Petals 5, connate

* a straight or curved, corolla; tube somewhat swollen; lobes o,

S 4 or ovate, sube: ai twiste<1 m bu. Stamen< 4 myTTMI

stipe t oblong, 2-celled, muticous. DM small or elongated as a

o the ovary. Carp* connate in a 2-celled ovary; ovules 2

J; .e** cell; style linear; stigma of one long, linear arm, he

h < «m obsolete. Fruit a 2 or 4-seeded capsule. S «* » «h

j e s s e d, glabrous or hairy; retinacula strong, curved; placentas

. or ?«mes separating ekstically from the base, carryng the seeds

wid » them.

api X 2-lip p^ to the faasC) one Hp ,horOy -2-fid, the other shortly 3-fid ;

kes dense, strobilate, hirsute; corolla, V... ^ ^ ^ rMqinSAmsa.

*Calyx deeply, subequally 5-fid:— [p. 807]

Uiotic or

Corolla yellow, hairy within; spikes very short; leaves e

obovate, acuminate, scabrous:—

Seeds discoid, with large, glabrous areoles and numerous **fine hairs**
near the margins. **scaber.** hairy on

Seeds ovate, with small, glabrous areoles, elsewhere densely
all sides. ^ ^

Corolla pale-purple:—

1. termini

Leaves hairy, sessile, auriculate, serrulate; spikes most, y

linear-oblong, closely velvety; bracts obtuse; bracteoles **auriculat** u ^

Bracts and calyx closely velvety.

Bracts and calyx with long, white, spreading hairs ^ ^

auriculate var. . ^ ' ^ . y ,

Leaves nearly glabrous, petioled, cuneate, subentire; spikes a **teol** ^

sessile, lax, scarcely interrupted; bracts linear-acuminate; bracteoles **tequius.**

cuspidate. *macro* * ,

1534. STROBILANTHES RUFESCENS T. And. var. RUBIGINOSA **F. B. I.**

iv. 430. *Buellia comosa* F. I. iii. 43.

Chittagong.

A shrub.

1535. STROBILANTHES SCABER Nees; F. B. I. iv. 446.

N. Bengal; E. Bengal.

A herb.

1536. STROBILANTHES DURUS T. And.; F. B. I. iv. 447. **S. P^dU** **110-**

stachyus var. *dura* F. B. I. iv. 446.

Chittagong.

A herb.

1537. STROBILANTHES AURICULATUS Nees; F. B. I. iv. 453; E. **D.**

S. 2923.

Chota Nagpur.

A shrub. *Santal* Gadakalha, harna pakor.

1537/2. Var. EDGEWORTHII; F. B. I. iv. 453. -

N. Bengal; Chota Nagpur.

A shrub.

1538. STROBILANTHES MACROSTEGIUS Clarke; F. B. I. i^v. **456.**

S. Neesii F. B. I. iv. 476.

Chittagong.

A large shrub.

703. *AndrographU* Wall.

4^ ual, erect, or procumbent herbs or small shrubs; *leaves*
entire- *Fhwcn* in lax, often prided, or dense and subcap.tate,
axill**y and terminal racemes/sometimes reduced and 1-flowered,
oft* unilateral; bracts small; bracteoles minute or obsolete.
S** 5r "arrow, shortly connate below. *Petals* 5, connate in a
sm aU, tubular, 2-Uppod corolla, white or pink, with dark purple
low er 1P- Pubescent. *Stamen*, 2; filaments effiate or setulose
an a 2_ Celled_ ««rted; cells oblong, parallel, subequal, mu-
col ? 2_ Celled_ ««rted; cells oblong, parallel, subequal, mu-
h*. Wded at base. *Carpels* connate in a 2-celcted, spanngy
2?7 ary; ovule « 3-6 in each cell; style slender; stigma shortly
ri\$ • *Fruit* TM oblong-lincsvr or elliptic capsule, compressed .vt
ru** angles to septum. *Seeds* fr-W, hard, subquadrate or oblong
so*dy pitted, glabrous; retinacula lanceolate.

Ci*«le nearly glabrous, linear; leaves lanceolate, glabrous; «
laxly r iole<1: P^cels distinct..... paniculata.
Capsu. a. ? * W — ou subemptic hairy: racemes
axillary chiodes.

. pedicels very short.....

1539. *Andrographis PANICULATA* Nees, f. » . X. iv. 501; E. D«

A- 1064. *Justicia paniculata* F. I. i. 117.

In all the provinces.

An erect annual. *Hind.* Kiryat, charayetah, mahatita,

ie^ *Beng.* Mahatita, kâhuegh. . •

154o - AKDROOEAPHIS ECHIOM Ne«; F. B. I. iv. 505. / « * « •

echioides P. I. i. 118.

Chota Nagpur; Hehar; W. Bengal.

An annual herb.

704. *Gymnostachyum* Nees.

*••• or undershrubs; *leave* cauline or subradical, enfcrc,
s^ e . **cumulate** or toothed. F t o « in axillary cymes or ma
t^ P^ani^ . often spicate or racemose, " " " f^ T^
s^dlar y- subsessile or shortly pedicelled; bracts and bracteoles
v ^ v o r y smill. \e]MU l l m * - - a small, deeply d.v^ded
c*M lobes equal, Itaear-lanceolate. *Petals* 5, connate ma
s^er, 2 . U ppe^ \ Q rolla; tube narrow, cylindrical; lobes subequrf.
t^c-quadratic, Lubricate. *Stamen*, % nearly as km* « coroUa
flanie nt8 U8uall y hai ry, at least near base; anther-cells 2, sub

equal, oblong or ovate, hairy or glabrous. Carpels connate in pubescent, slender; capsule. acute.

1541. GYMNOSTACHYOM LISTKRI Pram.

Chittagong.

A small undershrub, on rocky hills.

705. Phlogacanthus Nees.

in or cymes; bracts very narrow. Sepals 5, connate in 2-lipped lobes; limb more or less in flower. Stamens 3, with 2 in each cell. U.S. densely shortly pubescent.

Flowers in dense whorls, hardly widening at the base. Flowers in terminal panicles yellow marked with purple.

1542. PHLOGACANTHUS CURVIFLORUS Nees; F. B. I. iv. 511. Chittagong.

A stoutish undershrub.

1543. PHLOGACANTHUS TICIA vitellina Nees; F. B. I. v. 115. Chittagong.

A stoutish undershrub.

706. Cr

Undershrubs - Uav... Flowers sessile, yellow; leafy; bracteoles linear, 5, ovate, acute, the 2 inner much

the 2 lower sometimes connate. *Petals* connate in a subequal,
 J* corolla, with unilateral limb; tube incurved; lobes
 *gj -briate ia bud *— * . * * » £ £ ^
 H auticous, with mucronate connective. WTM ; a
 * 2^ Ued ovary; ovules 2 in each cell ; style linear, sbgm
 ^ % 2-lobed. ^FrvAt an oblong, acute capsule ft**^
 l -ved, orbiTolar . adpressed-lepidote, the scales of many
 hairs.

15*4- C80SSANDRA DNDD ^ O L U Salisb.; F. B. I. W. <<>> *Ruellia*

infimbuliformis F. I. iii. 41. i w a n
 In gardens, not infrequently. Native of the Deccan.
 An undershrub.

707. Barleria Linn.

Ar''d or unaimed, small shrubs or undershrubs, U<>> oppo-
 site. * <<<. W o i t) n a t o w t s e s s U e i ; solitary or in dense ther
 lax s S V that M b h d L e s h g t S S T S S X c lete.
 Sepa , n o P p 0 s i t e p a i r s _ o u t e r p a i r m f V M S << ^ 5 , connate or
 sepal often emarginate, 2-lobed, or deeply 2-nd. fetu''<, sub-
 in a f U n n e l " * ^ e o r d l a ; tube long or very long- ° b << 6- ° act,
 S 1 ' <vate or elliptic, imbricate in bud. *Stamens* 2 s p e ^ e n s
 ^ o b l o n g , 2-celled anthers, usually 2 - f I . * . * t s 0 In a
 P <<< e n t , occasionally with a little pollen in their cells, half-
 rudimentary fifth stamen added. Vuk ^ . ^ a 0 0 ^
 embracing the ovary, its margin often toothed. C << 2 << f ~ ^
 in a 2-celled o T M y ; o ^ << 2 in _ * C e U ! ^ ? 1 l o n ; s 3 n a
 or subtentire. j - y ^ an ovoid or oblong capsule, with 2 << 4 seeds
 below the middle. *Seed*, compressed, ovate, beset with wa y,
 silky, usually closely adpressed hairs.

Prickly bush ; flowerB1 venow ; capsule ovoid with a solid beak ; ^
 close to the ow,

Unarmed
 ellipsoid; Med. 4, or if (occasionally) 2, then near the nudcU^
 Bracteoto. 2 (b^t 0), very long, linear, laxly V*£ 2 J in. long as the
 two outer, ovate, entire, scarious sepals; flowers white, ^ iflora.

Bracteoles 2 (bracts 1-2), shorter than the 9 ^ J f ^ ^ cently
 *Outer sepals ovate-aeminate, or lanceolate. * s ^ aller than
 toothed; bracteoles linear-lanceolate, toothed, much
 outer sepals:— [p. 812]

- Flowers blue.....
- Flowers white..... *crisitata* var. *dkhoton*
- Outer sepals ovate, ciliate, denticulate, strigose; bracteoles on slightly shorter than the outer sepals:— [p. 811]
- Leaves subabruptly contracted, long decurrent on the upper surface.....
- Leaves gradually cuneate at base, with long hairs on the upper surface.....
1545. BARLERIA PRIONITIS Linn.; F. I. iii. 36 ; F. B. I. iv. 485 ; E. D. B. 171.
- In all the western provinces.
A spinescent bush, 2-5 feet high. *Hind.* Katsareyft.
Benrj. Kānta jāti; *Uriya* Dasa karantod.
1546. BARLERIA LONGIFLORA Linn, f.; F. I. iii- 40; F. B. I. iv. 485; E. D. B. 168.
- Orissa.
A shrub, 2-4 feet high.
1547. BARLKRIA CRISTATA Linn.; F. I. iii. 37; F. B. I. iv. 489 ; E. D. B. 165. *B. ciliata* F. I. iii. 38.
- In every province, as is the variety.
An erect undershrub. *Beng.* Jati.
- 1547/2. Var. DICHOTOMA. *B. cUchotoma* F. I. iii. 39.
- An erect or diffuse undershrub. *Beng.* Sada-jati.
1548. BARLERIA STRIGOSA Willd.; F. I. iii. 39 ; F. B. I. iv. 489 ; E. D. B. 175.
- Orissa; ChotaNagpur; N.Bengal.
A small shrub, 2-4 feet high. *Beng.* Dasi; *Santal.* Rail a baha.
1549. BARLERIA POLYTRIOHA Wall.; F. B. I. iv. 490.
- Chittagong.
A small shrub, 2-4 feet high.

708. *Asystasia* 61.

Herbs or undershrubs; *leaves* entire, opposite. *Flowers* opposite or alternate, usually solitary, in lax or dense, 1-sided or suberect, simple or compound spikes or racemes; bracts and bracteoles linear, shorter than the calyx. *Sepals* 5, connate below, equal, linear or sublanceolate. *Petals* 5, connate in a straight or incurved corolla; tube short or long, narrow or swollen or funnel-shaped; lobes subequal, imbricate in bud. *Stamens* 4, perfect, didynamous,

subequal; anthers oblong; cells parallel, approximate, base
 2-celled or 4-celled; purred or submuticous. *Camels* connate in a hirsute,
 2-fid or 4-fid. Ovules 2 in each cell; style linear; stigma minutely
 Solid base. Fruit an elliptic capsule with contracted,
 Pressed, orbicular or somewhat angular,
 rugose or tubercled.
 puberulous; leaves ovate, rounded, or some-
 times cuneate at base; perennial herbs; cylindric base of capsule -3 in.
 "A..... *gongetica*.
 ided, less often kx, very pubescent; leaves
 undershrubs; cylindric base
macrocarpa.

1550. AsvSTAS

iv 493 IA GANGE TICA T. And. *A. coromandeliana* F. B. I.

v Uris ' *Ruellia zeylanica* F. I. iii. 42. Bengal, banks of Ganges.

A procumbent, perennial weed; flowers in our provinces

1551, A alva blue, with pale (almost white) tube.

SY STASIA MACROCARPA Nees; F. B. I. iv. 495.

2' Bengal, Duars.

diffuse, rambling undershrub, flowers pink.

709. Eranthemum Linn.

undershrubs; leaves entire, rarely wide-
 sessile, solitary or ternate in the axils of
 in terminal, dense or interrupted, simple or
 spikes, or pedicelled, ternate at the tips of axillary
 Sepals 5, connate in a 5-lobed or 5-partite calyx; lobes
 narrow, subequal. Petals 5, connate in a long corolla, with
 spreading, flat, subequal, or the 2 upper inner, narrower. Stamens
 2; fertile with usually 2 posterior, small clavate staminodes;
 anthers ovate or oblong; cells 2, equal, parallel, discrete; connate
 Disks annular or shortly cup-shaped. Carpels connate in a 2-
 celled ovary, usually glabrous; ovules 2 in each cell; style filiform or shortly 2-lobed. Fruit an oblong capsule
 contracted below in a long stipe. Seeds normally 4, com-
 mute, orbicular or subquadrate, smooth or rugose; retinacula

Corolla pale-purple :—

Capsule pubescent *palatiferum*.

Capsule glabrate *palatiferum* var. *levicapsa* ^{rt} -

Corolla white ^{alm,}

1552. ERANTHEMUM PALATIFERUM Nees; F. B. I. iv. 498.

N. Bengal.

A perennial under shrub.

1552/2. Var. LEVICAPSA; F. B. I. iv. 498.

Ohittagong.

A perennial undershrub.

1553. ERANTHEMUM ALBUM Nees; F. B. I. iv. 498. *Justicia aloa*

F. I, i. 116.

Chittagong.

A perennial undershrub.

710. Codonacanthus Nees.

Erect or ascending, glabrous herbs; *leaves* membranous, entire. ^e
Flowers small, in pairs along one side of the rachis of simple or ^r
branched racemes; pedicels short; bracts and bracteoles minute. ^{te.}
Sepals 5, somewhat connate below, short, narrow, subequal. ^d
Petals 5, connate in a short, obliquely campanulate, incurved. ^d
corolla; lobes flat, obovate or oblong, subequal, imbricate in bud.
Stamens 2 perfect, with 2 short, clavate, posterior staminodes, 5
filaments adnate to middle of corolla-tube; anthers 2-celled; cells
ovate, attached by their middle to a very small connective. ^{^%sH}
obscure. *Carpels* connate in a 2-celled ovary; ovules 2 in each
cell; style filiform; stigma capitate. *Fruit* an oblong capsule,
contracted below in a long, solid stipe. *Seeds* normally 4, coin-
pressed, suborbicular, smooth, shining.

1554. CODONACANTHUS PAUCIFLORUS Nees; F. B. I. iv. 500.

Chittagong.

An erect, gregarious herb.

711. Lepidagathis Willd.

Herbs or undershrubs, often pubescent; *leaves* entire or crenate-
serrate. *Flowers* sessile, usually capitate, sometimes opposite
and solitary; heads terminal or axillary, almost always dense,
usually 1-sided, often fascicled; bracts usually conspicuous, rarely
small; bracteoles smaller than bracts. *Sepals* connate in a deeply
5-lobed calyx, the lobes unequal, the 2 anterior often more or less

connate, and the calyx almost 4-partite. Petals 5, connate in a
all, 2-lipped corolla; tube slender below, suddenly swollen in
middle ; lower lip 3-lobed, spreading, often spotted. Stamens
4>idynamous; anthers 2-celled; cells oblong, mucous, parallel,
or one lower, somewhat divergent. Disk annular. Carpels con-
nate in a 2-celled ovary; ovules 2, rarely 1 in each cell; style
Curved; stigma capitate, shortly 2-lobed or entire. Fruit an
elongated, conic, or oblong capsule. Seeds 4 or 2, compressed,
ovate-oblong or orbicular, hairy.

Capsule 2-seeded, long-conical, scarious on the back, thin and irregularly
rupturing; seeds long, ovate, with long hairs :—

- Calyx-lobes lanceolate, spinescent..... Hamiltoniana
Calyx-lobes not spinescent....." or

Capsule 4-seeded, oblong, early 2-valved from apex; seeds short, ovate
orbicular, with short hairs :-

Leaves entire or undulate, margined:—

- Bracts striate..... purpurea. du.
bracts not striate :—

Leaves more or less pubescent, some at least ovate:—
Lower leaves ovate, upper narrower, minutely pubescent
hyalina.

Leaves all ovate, hairy on both sides..... hyalina var. mollis.

Leaves glabrate, often shining, all linear-lanceolate
hyalina var. semiherhacea.

Leaves crenate-serrate, margined

1555. LEPIDAGATHIS HAMILTONIANA Wall.; P. U. I. 516

L. cristata var. rupestris E. D. L. 273.

Behar; Chota Nagpur.

A perennial herb. Santal. Of dhompō.

1556. LEPIDAGATHIS TRINERVIS Nees; F. B. I. iv. 517.

Chota Nagpur.

A perennial herb.

1557. LEPIDAGATHIS PDRPURIQVULIS Nees; F. B. I. iv. 518.

Chota Nagpur.

A suberect or diffuse, perennial herb.

1668. LEPIDAGATHIS HYALINA Nees; F. B. I. iv. 521. Buellia

dependens F. I. ill- 49.

Behar; Chota Nagpur; Chittagong.

A suberect, perennial herb.

1558/2. Var. MOLLIS ; F. B. I. iv. 521.

N. Bengal, Duars ; Tirhut.

A suberect, perennial herb.

1558/3. Var. SEMIHERBACEA ; F. B. I. iv. 521.

N. Bengal, Duars.

A diffuse, perennial herb.

1559. LEPIDAGATHIS FASCICULATA Nees ; F. B. I. iv. 522.

fasciculata F. I. iii. 48.

In all the western and northern provinces.

A diffuse herb.

Ruellia

712. *Ecbolium* Kurz.

A small, nearly glabrous shrub; *leaves* entire. *Florets* in dense, terminal spikes; bracts large, leafy, imbricate, more or less 4-rowed ; bracteoles small, narrow. *Sepals* 5, connate below, narrow, equal. *Petals* 5, connate in a 2-lipped corolla; tube almost "filiform; upper lip narrow, shortly 2-fid; lower 6-lobed, pendent; lobes imbricate in bud. *Stamens* 5 adnate near apex of corolla-tube ; anthers 2-celled ; cells oblong, parallel, approximate muticous. *Carpels* connate in a 2-celled ovary; ovules 2 in each cell; style filiform; stigma shortly 2-fid. *Fruit* an ovoid, compressed capsule, narrowed below into a long stipe. *Seeds* 4 or oftener 2, large, compressed, orbicular, tuberculate, scabrid.

1560. ECBOLIUM LINNEANUM Kurz var. DENTATA ; F. B. I. iv. 544.

Justicia Ecbolium F. I. i. 114.

C. Bengal; E. Bengal.

A small shrub. *Vernac.* Udu-jati.

713. *Justicia* Linn.

Herbs or shrubs; *leaves* entire. *Flowers* sessile or subsessile, spiked or paniced, rarely solitary, usually small; bracts large or small; bracteoles narrow or obsolete. *Sepals* 5 or 4, narrow, slightly connate below. *Petals* 5, connate in a 2-lipped corolla; tube as short as or shorter than the lips; upper lip 2-lobed or subentire, lower 3-lobed; lobes imbricate in bud. *Stamens* 2; filaments often dilated, hairy near the base; anthers 2-celled; cells oblong or round, usually more or less discrete, lower always with a white basal appendage. *Carpels* connate in a 2-celled ovary ; ovules 2 in each cell; style filiform; stigma shortly 2-fid. *Fruit* an ovoid or ellipsoid capsule, sometimes seed-bearing from

the base, sometimes contracted below in a cylindric, elongated f&. Seeds 4, ovoid, more or less compressed, tuberculate, lepidote or glochidiate.

Calyx 5-partite; segments equal or nearly so; corolla 5 in. long or longer; shrubs:—

Spikes continuous; bracts large, ovate or elliptic, 4-ranked, imbricate, longer than the calyx:—

Bracts white, green-nerved:—

Stems erect:—

Branches glabrous; leaves puberulous; flowers white, rose-spotted *Betonia*.

Branches softly hairy; leaves hairy beneath; flowers salmon-coloured. *Betonia* var. *villosa*.

Stems decumbent, diffuse; flowers white, rose-spotted ^ > *Betonia* var. *ramosissima*.

Bracts green, purple-tinged; flowers white, rose-spotted l. oreop h^.

Spikes interrupted; bracts linear, shorter than the mlyx. Genddf~

Calyx sub-4-partite (fifth segment if present much smaller than the other to<r) 5 corolla -25 in. long or less; prostrate herbs:—

Leaves linear or linear-lanceolate, sessile or nearly so; bracteoles and Pals linear-oblong, obtuse, glabrous. *quinqueangulans*.

Leaves elliptic, oblong or ovate, petioled:—

Bracteoles and sepals linear-oblong, obtuse, glabrous *quinqueangulans* var. *peplodes*.

Bracteoles and sepals lanceolate, acute:— u —

Sepals minutely scabrous near the tips, elsewhere glabrous: ^ Leaves cuneate at base, sparsely hairy. d s u

Leaves rounded at base, closely hairy beneath *diffusa* var. *orbiculata*.

Sepals hirsute, with white hairs nearly to their bases:—

Leaves -75-1 in. wide; spikes more than 1 in. long. *implex.

Leaves -3 in. wide; spikes less than 1 m. tag^ ^ *simplex* *yllifolia*.

¹⁵⁶L JUSTICIA BETONICA Linn.; P. I. LU8; * B; \ iv, 525.

In most of the provinces, but often cultivated.

An erect shrub.

¹⁵⁶1/2. Var. VILLOSA; F. B. I. iv. 525.

Chota Nagpur.

An erect shrub.

¹⁵⁶V3. Var. RAMOSISSIMA; P. B. I. iv. 525. *J. ramosissima*

P. I. i. 129.

In most of the provinces.

A diffuse, decumbent undershrub.

1562. *JUSTICIA OREOPHILA* C. B. Clarke; F. B. I. iv. 526.

Chittagong.

An erect shrub.

1563. *JUSTICIA GENDARUSSA* Linn, f.; F. I. i- 128; iv. 532; E. D. 1.116.

In all the provinces.

An erect shrub. *Hind.* Udi-sanbhálu, nili-narga

Beng. Jagat-madan.

1564. *JUSTICIA QUINQUEFANGULARIS* Koen. : F. B. I. iv. 536.

Behar; W. Behal; Chota Nagpur.

A prostrate herb.

1564/2. Var. *PKPLOIDKS*; F. 13.1. iv. 537.

Behar; C. Bengal; E. Bengal.

A prostrate herb.

1565. *JUSTICIA DIFFUSA* Willd.; F. B. I. iv. 5B8. *l. procumM*
F. I. i. 132; E. D. J. 120.

Chota Nagpur; Behar.

A diffuse herb.

1565/2. Var. *OKBICULATA*; F. B. I. iv. 538.

Chota Nagpur.

A diffuse herb.

1566. *JUSTICIA SIMPLEX* Don; F. B. I. iv. 539.

In most of the provinces.

A prostrate herb.

1566/2. Var. *SBRPYLLIFOLIA*; F. B. I. iv. 539.

Chota Nagpur.

A small, prostrate herb.

714. *Adhatoda* Nees.

Tall shrubs; *leaves* entire. *Flowers* subsessile, several in the axils of opposite bracts, in dense, oblong thyrses at the ends of branches or fascicled in the upper axils; bracts herbaceous, oblong, longer than calyx; bracteoles similar, nearly as large as bracts. *Sepals* 5, connate in a shortly campanulate calyx; lobes lanceolate, the 2 lowest subconnate. *Petals* 5, connate in a 2-lipped corolla; tube short; upper lip galeate, subentire, lower spreading, recurved, 3-lobed; lobes imbricate; *Stamens* 2, adnate

>» top of corolla-tube; anthers 2-celled; cells acute, minutely
piculate, hardly spurred. Disk cup-like. Carpels connate in a
short, 2-celled ovary, usually tomentose; ovules 2 in each cell,
style filiform, subclavate above; stigma entire, flattened an oblong,
Wate capsule, contracted below in a long, solid stipe, berry
usually 1 or 2, orbicular, compressed, rugose.

1567. ADHATODA VASICA Nees; F. B. L. iv. 540; H. »• A. *»*•
JuHida Adhatoda F. I. i. 126.

In all the provinces.

A dense shrub, 4-8 feet high, frequent in village shrub-
beries. Hind. Arusha, adhasa; Beng. Bakas, vasato.

715. Rhinanthus Nees.

Shrubs, sometimes scandent; leaves entire. **Flowers soli-**
tary or in small ovules, sessile, in dense or divaricate panicles,
bracts and bracteoles small, similar, unear-lanceolate. Sepals
connate below in a small calyx; lobes linear-lanceolate, **hardly**
connate in a 2-lipped corolla; tube long, narrow, cylindrical, **shortly**
flattened above; upper lip lanceolate, acuminate, entire or **2-**
lobed, twisted or recurved; lower lip wide, 3-lobed, **8ta**
mentous near top of corolla-tube; anthers 2-celled; cells «*
muticous. Disk cup-like. Carpel* connate in a 2-celled ovary,
ovules 2 in each cell; style filiform; stigma minutely 2-fid. fl. «|
Wate capsule, contracted in a long, solid, cylindrical stipe, 8«*
fl. ovoid, somewhat compressed, glabrous, obscurely rugose
tuberculate.

Corolla-tube **large, lax; calyx densely**
pubescent not exceeding an inch; panicle **communis.**
Corolla-tube **exceeding an inch; panicle rather dense; calyx nearly**
glabrous **calcaratus.**

1568. HUINACANTHUS COMMUNIS Nees; F. B. I. w. »» —. D.

R. 231. *Justicianasuta* F.T.-i. WO- **Bengal;**
Cultivated in Orissa; Chota Nagpur; W.
C. Bengal; E. Bengal.

A small shrub. Vernac. Palak-jui, jīm-pana. 1.

1569. KHINACANTHUS CALCAIUTUS Nees; F. B. I. iv. ^1.

Chittagong.

A shrub.

716. *Peristrophe* Nees.

Erect, spreading herbs; *leaves* entire. *Flowers* in axillary or terminal clusters, often paniced from reduction of floral leaves, bracts 1-4 together, linear or ovate, usually longer than calyx, bracteoles linear-lanceolate, shorter than bracts. *Sepals* 5, connate below in a deeply lobed calyx; lobes equal, linear-lanceolate. *Petals* 5, connate in a 2-lipped corolla; tube slender; upper lip subentire, lower shortly 3-lobed. *Stamens* 2; filaments pubescent below; anthers 2-celled, linear or rarely ovoid; one mucicous higher than the other or distant. *Disk* cup-like. *Carpels* connate in a 2-celled ovary; ovules 2 in each cell; style filiform; stigma minutely 2-fid. *Fruit* an ellipsoid, stipitate capsule, usually 4-seeded, more or less pubescent. *Seeds* ovoid, compressed, glabrous, minutely glandular-papillose.

Corolla under 1/2 in. long; bracts linear or linear-spathulate, acute, mucronate..... *bicalyculata*

Corolla over 1 in. long; bracts elliptic :—

Bracts dusky-puberulous, not ciliate..... *tinctoria*.

Bracts hairy, ciliate..... *fera* var. *intermedia*.

1570. PERISTROPHE BICALYCVLATA Nees*; F. 13. I. iv. 554; E. I*

P. 425. *Justicia bicalyculata* F. I. i. 126.

Chota Nagpur; Behar; W. Bengal; E. Bengal, TMynien-singh.

A spreading herb. *Hind.* Atrilal; *Beng.* Nasa bhaga; *Santal.* Bange khode baha.

1571. PERISTROPHE TINCTORIA Nees; F. B. I. iv. 556; E- D-

P. 427. *Justicia tinctoria* F. I. i. 123.

Cultivated.

An erect herb. *Benj.* Bet-rang, bhatia-rang.

1572. PERISTROPHE FERA C. B. Clarke var. INTERMEDIA; F. B-^L iv. 557.

Chittagong.

An erect herb.

717. *Rungia* Nees.

Erect or diffuse herbs or shrubs; *leaves* entire. *Flowers* in dense terminal or axillary, 1-sided spikes; bracts 2-rowed or 4-rowed, with 2 of the rows often flowerless, flowering bracts often with scarious margins; bracteoles like bracts or narrower. *Sepals*

connate in late, P a small, deeply 5-lobed calyx ; segments linear-lanceo-
 eorolla; u 6als 5, connate in a small white or blueish 2-lipped
 anthers a 1*1*1 Kp emar Sinate > lower longer, 3-lobed. Stamens 2 ;
 superposed, i; cells parallel, subequal, or oftener somewhat
 base. n. the lower cell muticous or with a white, basal appen-
 2.celid ^ annular or shortly cupular. Carpels connate in a
 minitel o Vary; o Vules 2 in each cell; style filiform; sti gma
 capsule, 2"fid- Fwit an ovoid or oblong, shortly stipitate
 base of placentas w^h retinacula elastically separating from
 Coffjpre Capsule after dehiscence to scatter the seeds. Seeds 4,
 callv, 6SSed> orbicilar, glabrous, minutely or strongly concentri-
 ^y verrucose.

leaves all subsessile, scabrid, puberulous; bracts round, apiculate,
 Uniform h rac teole8 linear-lanceolate; spikes only imperfectly 1-sided ;
 c o » olla \ / -ite, With rose or purple spots repen *
 Leaves n eai baSG petioled, all neiir ly glabrous ; bracts dimorphic, fertile
 Ones ob o Vate, Cilifitte • bracteol es elliptic, scarcely acute ; spikes markedly
 1-sided ; V - e n T olla blueish Ol, white, without spots:—
 than t, bracts mucronate, often cuspidate, fertile ones hairy, smaller
 Bar, ne o llers pavijlora var. pectinata.
 spikes blaCts o Vate, acute, fertile ones neftnl, as large as the othels i' .
 PikeT ver y dense parvijlora var. muralis.

1573. RUNGIA REPENS Nees; F. B. L. iv. 549; E. D. R. 660.

Justicia repens F. I. i. 132.

Behar; W.Bengal.

1574 ft ^ procumbent, diffuse, branching weed.

^ UNGU PARVIFLORA Nees var. PECTINATA; F. B. I. iv. 550;

E- I>. R. 656. *Justicia pectinata* F. I. i. 133.

In a^ the provinces.

^ diffuse, procumbent, branching weed. SantaL Bir

1574/2 lo P o n g aiak? v

< *' Var. MURALIS ; F. B. I. iv. 550.

Chittagong.

A small, branching weed.

718. Dicliptera Juss.

Use herbs; leaf < * ovate, acute, entire or obscurely undulate.
 Flo?le T* S6SSile, o P P o s i t e f one of each pair usually reduced to a
 rudimentary calyx and bracteoles, in clustered or paniculate

[*Dicliptera*.

cymes; bracts proper opposite, unequal, exceeding the calyx, bracteoles linear or linear-lanceolate, as long as calyx. connate below in a short calyx-tube; lobes equal, linear-lanceolate, more or less pubescent. *Petals* 5, connate in a red or entire or emarginate; lower lip 3-lobed, recurved. *Stamens* 2-celled, superposed, muticous. *Dish* cup-like. in a 2-celled ovary; ovules 2 in each cell; style shortly 2-fid. *Fruit* a clavate capsule, narrowed below into a solid stipe; placentas elastically separating from their base. *Seeds* ovoid, compressed, glabrous, verrucose or subpapillous.

Corolla under .25 in. long; flowers mostly in axillary clusters; glabrous except the ciliate margins; leaves ovate, acuminate.

Corolla .75 in. long; flowers in terminal as well as axillary clusters; bracts thinly pubescent as well as ciliate; leaves elliptic, acute.

Bracts obovate or cuneate, elliptic, apiculate, not acuminate. *Roxburghiana* var. *bup*

1575. DICLIPTERA MICRANTHES Nees ; F. B. I. iv. 553.

Behar; Chota Nagpur.

A diffuse herb.

1576. DICLIPTERA EOXBUGHIANA Nees; F. B. I. iv. & D. 410.

In all the provinces.

A herb, 1-3 feet high.

1576/2. Var. BUPLBUROIDK-S; V. V. 1. iv. 554; K D. 411.

Chittagong.

A herb, 2-3 feet high.

Order XCIX. YERBENACEJE.

Herbs, shrubs, or trees. *Leaves* opposite or whorled or digitate, very rarely pinnate; stipules 0. *Flowers* hermaphrodite or, by abortion, polygamous, almost always irregularly cymes, racemes, or spikes, simple or, especially if compound; bracts various. *Sepals* connate in a 5- or 4-, very rarely 6-8-toothed, persistent calyx. • *Petals* connate in a tubular corolla.

with a 2 li -
 than 5. " Pped or subequally 5-lobed limb, occasionally lobes more
 ^ther 9 Stamens 4, didynamous, rarely 2, very rarely 6 of 6;
 Wit d* "Celled} distinct or rarely confluent at apex; dehiscence
 *arel_v << P^s 2, connate in a superior, 2-4-celled, very
 very v T led or alnios t 1-celled ovary, entire or 4-lobed; ovules
 ir>ina 2 ai* 0llsly attached, two or solitary in each cell; style ter-
 sely Y*gn V entire, rarely 2- or more-lobed. Fruit a drupe,
 Pendni suocapsulair, 2"4" or 1-celled; cells 1-seeded. Seed erect or
 *n(^ous; albumen 0.

Inflorescence With the lowest flowers opening first :—

Inflorescence of dense spikes :-

Fruit with two or one 1-seeded pyrenes:—

S-ik f. s caPitate, ovoid or cylindric; calyx small; stamens 4;
 !f f. s us <<ally shrubs or undershrubs:-

F r m t feculent or leathery, not dehiscing.....**Lantana.**

F ru li dry, partially dehiscent, one species herbaceous ...**Lippia.**

Spik 68 l ong, slen(ler 5 calyx lo»g» tubular; perfect stamens 2;
 herbs**Stachytarpheta.**

Pruit with fruit with 1-seeded pyrenes; calyx*tubular; herbs...**Yerbena.**
 hiflor escence racemose; fruit fleshy, with two 2-seeded pyrenes

Duranta.

Inflorescence cymose, centrifugal :~

***Cymes lax,** Paniculate; trees or shrubs:— [p. 824]

Fruit ind eifscent, containing one or four pyrenes:—

Corolla regular; stamens isomerous, equal; leaves simple:—

C il all, unaltered in fruit; corolla purple or red; drupe
 with four 1-seeded pyrenes.....**Callicarpa.**

Calyx accrescent in fruit; corolla white; drupe with one 4-celled
 pyrene .. Tectona:

Corolla 2

Drupe -lipped; stamens didynamous :—

with one 4-celled pyrene :-

Leaves simple, entire or toothed : —

blowers large, an inch long.....**Gmelina.**

blowers small.....**Premna.**

D Leaves digitate.....**Yitex.**

l^pe with four 1-seeded pyrenes; leaves simple:—

Ca^lyx campanulate or tubular or suburceolate, truncate,

C-toothed or deeply 5-fid.....**Clerodendron.**

ftlyx rotate, widely patent, entire or obscurely 5-lobed

Fruit**Holmskioldia.**

breaking up into four valves, with one pyrene attached to

each; trees or shrubs; leaves simple; cymes axillary, ^{d_{en}* e or}
 thyrsoid.....Caryopter*

* Cymes densely capitate:— [p. 823]

Cymes 3-9-flowered; bracts of flower-head large, forming an
 lucre ; fruit small, nearly dry; large climbers :—

Bracts 6 : -

Calyx 3-8-toothed; corolla-lobes 6-16; stamens ^{b¹ ^ re in a .}
 exserted.....SymP ..tle ^

Calyx 5-toothed ; corolla-lobes 5, rarely 6 ; stamens ^{o^{ll} odesma .}
 not at all exserted.....^{B^h en} ..Congea.

Bracts 3-4; corolla distinctly 2-lipped.....^{ly x;}

Cymes many-flowered, densely capitate; bracts shorter than * ^{ly x;}
 calyx 5-partite; segments concave, much imbricated; ^{it rathe ^}
 fleshy, partially dehiscent; shrubs.....^{Avicennia ^}

719. Lantana Linn.

Scrambling or scandent, pubescent or glabrous shrubs; bra ^{nches}
^{xiamonng or scanaenii, puDescenu or gwuiuuaoi»«—»} ^{etioleg,}
 4-angled, sometimes prickly; leaves opposite, simply P.oid ^
 crenate, often rugose. Flowers in peduncled, capitate, o^v. ^{brac-}
 cylindric spikes ; bracts conspicuous, longer than the calyx, t ^u
 téoles 0. Sepals connate in a small, membranous, trunca ^e
 sinuately 4-5-toothed calyx. Petals 4 or 5, connate in a cy ^l
 corolla with slender tube ; lobes of limb spreading. Stanie ^{ns}
 didynamous, included; anthers broadly oblong. Carpels co ^{nnate}
 in a 2-celled ovary ; ovules solitary in each cell, erect from ^{b_a se or}
 attached laterally close to base of cell; style short; stigma objiq^{u e *}
 subcapitate. Fruit a fleshy or nearly dry drupe, with ¹ ^{ony,}
 1-celled pyrenes. Seeds without albumen; radicle inferior.

Stems not prickly; erect shrubs:—

Leaves usually opposite, sometimes ternate; branches, at least ^{D^elow,}
 adpressed scabrid-pubescent.....^{*^{ll} lica.}

Leaves usually ternate, sometimes opposite; branches patently ^{hairy}
 throughout.....^{ttifo ^}

Stems armed with recurved prickles.....^{Gam^l}

1577. LANTANA INDICA Koxb.; F. I. iii. 89; R B. I. iv. 562.

In most of the provinces.

A shrub, 3-8 feet high.

1578. LANTANA TRIFOLIA Linn.; F. B. I. iv. 563.

E. Bengal, Barisal; Chittagong: naturalised, native o ^f
 America.

A small shrub.

1579. LANTANA CAMARA Linn.; F. B. I. iv. 562 ; E. D. L. 74.

In the central and eastern provinces frequently, in the western parts only occasionally naturalised.

A. large climbing shrub.

720. Lippia Linn.

Shrub * or #n(iers)shrubs» rarely herbs; leaves opposite or ternately whorled, rarely alternate, simple, entire or lobed, smooth or rugose. Flowers in elongated, slender, or dense spikes, or in heads. Heads in slender spikes small, in dense spikes or spikes conspicuous, wide-imbricate; bracteoles 0. Sepals connate in a small» membranous, ovoid, campanulate or compressed and 2-ridged. Petals 4-5, connate. Corolla 2-lipped corolla; tube cylindric, straight or curved, limb 2-lobed; lower lobe wider, emarginate or slightly incised; anthers ovate or broadly oblong. Carpels connate in a lat. n. ovary» ovules in each cell solitary, erect from the base, or 8ub. attached near base of cell; style short; stigma obliquely pyrenes. Fruit small, dry, separating into two 1-seeded seeds without albumen ; radicle inferior.

Annual, creeping» minutely hairy; leaves cuneate-spathulate, serrate; pedunc. rarely opposite; bracts obovate, acute..... nodiflora. Perenn. l. erect) so: itty strigose; leaves ovate-oblong, crenate; peduncles mostly opposite ; bracts ovate-acuminate..... geminata.

1580> Lippia NODIFLOBA Rich.; F. B. I. iv. 563 ; E. D. L. 451.

In all the provinces.

A- prostrate, much-branched herb, often rooting at the nodes. Hind. Dhui-okra.

1581- Lippia OKMINATA H. B. & K.; F. B. I. iv. 563.

In nearly every province.

A shrub, 3-8 feet high.

721. Stachytarpheta Vahl.

Herbs or shrubs, glabrous or villous; leaves opposite or alternate to often rugose. Flowers in terminal spikes, long or short» dense or rather lax, each solitary, sessile, or half-buried in the axils of the bracts; bracts small, narrow, Passed or ovate or lanceolate, imbricate; bracteoles 0. Sepals

5, connate in a tubular, membranous or herbaceous, somewhat 5-ribbed calyx; lobes equal or unequal. *Petals* 5, connate in narrow, oblique corolla; tube cylindrical; lobes of limb spreading, equal or unequal, obtuse or retuse. *Stamens**2, anterior one perfect, adnate to middle of corolla-tube, included; anthers small, ovate, vertically divaricate cells; posterior stamens small. *Carpels* connate in a 2-celled ovary; ovules solitary in each cell, attached laterally near base of cell; style long; stigma terminal, subcapitate. *Fruit* dry, included in the calyx, separating into two hard, 1-seeded pyrenes. *Seed* erect, without albumen.

1582. STACHYTAHPHETA INDICA Vahl; F. R. I. iv. 564.

In all the provinces, naturalised; often also cultivated in native gardens.

A herb, 1-2 feet high; native of America.

722. *Verbena* Linn.

Herbs or undershrubs, usually pubescent; *leaves* opposite or ternate, toothed or pinnatifid. *Flowers* small, in terminal, simple or corymbose spikes; bracts small; bracteoles 0. *Sepals* 5, connate in a tubular, 5-ribbed calyx; lobes short. *Petals* 5, connate in an oblique, somewhat 2-lipped corolla; tube straight or curved; lobes oblong, obtuse or retuse. *Stamens* 4, didynamous, included; anthers ovate, 2-celled; cells subparallel. *Carpels* connate in a more or less 4-lobed ovary, in flower already sometimes 4-locular; ovules 4, laterally attached near base of cell; style short; stigma obscurely 2-lobed. *Fruit* dry, included in the calyx, separating into four oblong pyrenes. *Seeds* erect, albumen none.

1583. VERBENA OFFICINALIS Linn.; F. B. I. iv. 565; E. D. V. 70.

In all the provinces.

A weed in waste places.

723. *Duranta* Jacq.

Glabrous or tomentose shrubs; *leaves* opposite or whorled, toothed or entire. *Flowers* in long, terminal, or shorter axillary racemes, alternate on the rachis, short pedicelled in the axils or small bracts; bracteoles 0. *Sepals* connate in a tubular or sub-campanulate, truncate or minutely 5-toothed calyx, enlarged in fruit, embracing but free from the drupe, often narrowed at the mouth. *Petals* 5, connate in a short corolla; tube cylindrical; limb oblique or not; lobes spreading. *Stamens* 4, didynamous, in-

clⁿded; anthers oblong; cells parallel. Carpels connate in a
a^o«> or less completely 8-celled ovary; ovules 1 in each cell,
y* short; stigma oblique, unequally 4-lobed. Fruit a succulent
draPe, enveloped in the calyx, which is open or closed at the
mouth; pyrenes 4, each 2-celled and 2-seeded. Seeds small;
albumen 0.

158*. DUUAUTA PLUMIBRI Jacq.

In gardens and shrubberies in all the provinces, planted;
occasionally also subsontaneous in village thickets in
C. Bengal.

A shrub.

724. Callicarpa Linn.

Trees or shrubs; young shoots stellately hairy; leaves opposite
I kmate, toothed or subentire. Flowers in axillary cymes,
««*. than the leaves; bracts linear, very minute or obsolete.
be PaU 4, connate in a very small, campamilate, minutely 4-lobed,
campa^{nulate} calyx. Petals 4, connate in a small, subsymmetrie,
tubular> Purple or red corolla; lobes subquadrate, spreading.
Stamens 4, equal; anthers exserted, 2-celled, glandular. CarpeU
c**** in an imperfectly 2-celled ovary; ovules 2 in each cell,
JJ» linear; stigma dilated, obscurely 2-fid. FruU a smaU,
J*OBe drupe; pyrenes 4, or fewer by suppression, 1-seeded.
eds 8l»ortly oblong; albumen 0.

J««; leaves ovate to narrow-oblong, entire, closely, finely tomentose
Deneath • u , 1 1 1arborea.

Shrub, berries purple, ultimately black. nly. ven. h
dens ^ leaVeS Crenate or Serrate, rftl>ely SUBentire? ^ C

Sely, stellate-tomentose beneath:—
• J*nfa. pwp16) m a M g b)ack. leaves broadly eluptic, cvenate.
-e»ate, densely stellate-tomentose beneath.....

Be»ies white :-
Ws ovate or ovate-lanceolate, closely ornate, densely, perlis-
^tly stellate-tomentose beneath.....^''''Tntire'

L=ves narrow-lanceolate, serrulate or occasionally subentire,
sP«sely tomentose and densely, minutely gland-dotted benea h
lonpifolia var. Umceolana.

158 5. CALLICAEPAAKBORBAKoxb.; F. I. i. 390; F. B. L iv. 567;
E. C. B.
ctta Sgpur; Behar; N. Bengal; Tirhut; Chittagong.
A tree, 40 feel high. Beng. BormaUa: Ko/. Bundun,
Smtal. Dum kotokoi; JJriJ/a Boropatn.

1586. *CALLICARPA CANA* Linn.; F. I. i. 392; F. B. I. iv. 568; B.P.-C. 126.

Often cultivated; occasionally naturalised in O. Bengal.

A large shrub; native of the Malay peninsula. Arusha.

1587. *CALLICARPA MACROPHYLLA* Vahl; F. I. i. 393; F. & iv. 568; E. D. C. 133. *G. incana* F. I. i. 392.

In all the provinces.

A shrub, 3-8 feet high.

1588. *CALLICARPA LONGIFOLIA* Lamk var. *LANCEOLARIA* iv. 570; E. D. C. 132. *C. lanceolaria* F. I. i. 395.

C. Bengal; Tippera; Chittagong.

A shrub.

F. B. I.

725. *Tectona* Linn. f.

Trees; stellate-tomentose; leaves large, petioled, entire opposite or whorled. Flowers numerous, in dichotomous cymes, disposed in large, terminal panicles; bracts small, narrow, connate in a campanulate, shortly 5-6-lobed calyx, in enlarged, ovoid or urceolate. Petals 5-6, connate in a short, tubular corolla; limb equally lobed; lobes spreading. Stamens 5 or 6, adnate near base of corolla, equal, exserted; anthers oblong. Carpel connate in a 4-celled ovary; ovules solitary in each cell; style linear; stigma shortly 2-fid. Fruit a 4-celled drupe with a bony endocarp, enclosed in the calyx. erect, oblong; albumen 0.

1589. *TECTONA GRANDIS* Linn. f.; F. I. i. 600; F. B. I. iv. 870.

Orissa.

A tree, 80-120 feet high. Vernac. Sagun, singum (Orissa). The Teak.

726. *Gmelina* Linn.

Trees or shrubs, unarmed or spinous, shoots usually tomentose; leaves opposite, entire, toothed or lobed. Flowers large, yellow or brownish, often tomentose, in small or paniced cymes; bracts usually narrow, rarely leafy; bracteoles 0. Sepals 5, connate in a campanulate calyx; limb toothed or entire. Petals 5, connate in an irregular corolla; tube narrow below, swollen upwards; limb oblique; lobes equal or the 2 upper connate in a lip, and limb 4-fid. Stamens 4, didynamous, subexserted; anthers with oblong?

pendulous, more or less discrete cells. Carpels connate in a 4-celled ovary; ovules solitary in each cell; style slender; stigma sh or 2-celled bony endocarp; calyx in fruit persistent. Seeds oblong; alb ^ en 0; cotyledons thick.

An unarmed tree; leaves large, ovate-cordate, acute, fulvous-tomentose ^ ne * th arborea.

- sh IUB, aimed or not; leaves small, ovate or obovate; base not (m)late, mat ure glabrous to pubescent beneath, with a close coating of minute 8lan < ls. a * iatica.

1590 < ^ MKLINA Ait Bot EA Linn.; F. I. iii. 84; F. B. I. iv. 581; K- D. G. 287.

Chota Nagpur; W. Bengal; C. Bengal; Chittagong. A tree, 60 feet high. Hind, Kumbhar; Beng. Gimbar; * Uriija Gainbari; Kol. Gumher; Santal. Kasmar.

1- 091 - ^ MKLINA ASIATICA Linn.; F. I. iii. 87; F. B. I. iv. 582; E- D. G. 298.

Generally cultivated. A- small shrub. Vernac. Badhara.

727. Premna Linn.

Trees or Shrubs, sometimes climbing; leaves opposite, entire or 5-ctned. Flowers cymose, often polygamous, small, greenish or yell with -white, the cymes corymbose or panicled, sometimes 5 yr 80' d, Pubescent; bracts small, narrow; bracteoles 0. Sepals n' iir T? ^ nate in a 8m * ll, cup-shaped calyx; limb subentire or ^ tely 2-5-toothed, subequal or 2-lipped. Petals 5, connate in a s ^ all corolla; tube short; throat hairy; limb 2-lipped, 5-lobed, or * 7 e < | * % 4 l, tube short, throat hairy. Stamens 4, didynamous, anthers ovate or ro U ^ ed; ceUs parallel or diverging. Carpels connate in a 2-celled or ^ * celled ovary; ovules 4; style linear; stigma shortly 2-nd. r *** a b small drupe embraced by the calyx, globose or oblong, d, end 0 Carp hard, undivided, didd 4, did ad 1-4. seeds - Seeds oblong; albumen 0.

Calyx tr ^ ^ 1, ol < nearly So; leaves entire, glabrous; corymbs large, compound: -

Leaves coriaceous; calyx minutely pubescent ... earuiea var. oblonga* scandens

Leaves m p m u i i. Cap x - mem branous; calyx glabrous 3 H ^ tU stinctly toothed or lipped.—

- Calyx manifestly 2-lipped, one lip 2-toothed, the other entire :—
 Leaves subobtusely, broadly oblong or ovate, undulate or coarsely serrate; corymbs dense, minutely hairy..... *integrifolia*
 Leaves acute, ovate, entire ; corymbs compound, pubescent..... *longifolia*
- Calyx 5-, less often 4-toothed, indistinctly 2-lipped or uniform, calyx-teeth subequal and similar :—
 Leaves entire or nearly so, apex always acuminate; calyx 5-toothed; corymbs large, compound :—
 Corymbs stellately pubescent, with no patent hairs; leaves ovate or narrow-elliptic, entire, stellate-pubescent on the nerves..... *bengalensis*
- Corymbs simply pubescent:—
 Leaves undulate; calyx patentely pubescent or strigose, lobe enlarged in fruit:—
 Leaves at base cordate-ovate, with a small, central, cuneate decurrence along the petiole..... *lutijolia*
 Leaves at base cuneate..... *latifolia* var. *mucronata*
 Leaves entire, setulose above, villous beneath, ovate or obovate; calyx closely pubescent..... *flacescens*
- Leaves, when mature, toothed; corymbs small, more or less compact:—
 Calyx 4-toothed; leaves ovate-acuminate, rather sparingly toothed; corymbs somewhat dense, 1-2-5 in. wide..... *havha*
 Calyx 5-toothed ; leaves elliptic or obovate, much toothed :—
 Calyx-teeth minute ; leaves sharply serrate, acuminate; corymbose, 2-5 in. wide ; shrubs 0-8 foot high..... *ecacu*
 Calyx-teeth distinct, ovate, obtuse; leaves coarsely serrate, obtuse; corymbs somewhat dense, 1-25 in. wide ; almost stemless undershrubs..... *herbacea*

1592. PRKMNA COEIAEA Clarke var. OBLONGA ; F. B. I. iv. 573.
 N. Bengal, Duars.
 A large, scandent shrub or small tree.
1593. PREMNA SCANDENS Roxb.; F. I. iii. 82 ; F. B. I. iv. 573.
 N. Bengal.
 A large, scandent shrub or small tree.
1594. PREMNA INTEGRIFOLIA Linn.; F. I. iii. 81 ; F. B. I. iv. 574;
 E. D. P. 1233. P. *serratifolia* F. I. iii. 77. P. *Winososa*
 F. I. iii. 77.
 Sundribuns.

- A shrub or small tree. *Hind.* Agetha, ami, ustabunda;
Beng. Bhiit-biravi, ganiari; *Uriya* Aguyábat.
1595. *PREMNA LONGIFOLIA* Roxb.; F. L iii. 79; F. B. I. iv. 577.
 E. D. p. 1246.
 Tippera; E. Bengal.
 A tree. *Vernac.* Gohora.
1596. *PREMNA BENGALENSIS* Clarke; F. B. I. iv. 577.
 E. Bengal; Chittagong.
 A small tree.
- *** *PREMNA LATIFOLIA* Roxb.; F. I. iii. 76; F. B. I. iv. 577.
 E. D. p. 1239.
 Behar; Chota Nagpur; Orissa.
 A small, scraggy tree. *Uriya* Gondhona.
- 1597/2. Var. *MUCRONATA*; F. B. I. iv. 578; B. D. P. 1242. P.
mucronata F. I. iii. 80.
 N. Bengal.
 A tree. *Hind.* Bakar, bakarcha, tumari, jnatela.
1598. *PREMNA FLAVESCENS* Ham.; F. B. I. iv. 578.
 E. Bengal.
 A shrub or small tree.
1599. *PREMNA BARBATA* Wall.; F. B. I. iv. 579.
 Behar.
 A shrub or small tree.
1600. *PREMNA ESCULENTA* Roxb.; F. I. iii. 76; F. B. I. iv. 577, fl. I). P. 1228.
 C. Bengal; E. Bengal; Chittagong: cultivated.
 A branching shrub, 6-8 feet high.
1601. *PREMNA HERLEA* Roxb.; F. L iii. 79; F. B. I. iv. 577.
 E. D. p. 1231.
 W. Bengal; Behar; Chota Nagpur; N. Bengal.
 A small, almost stemless undershrub. *Beng.* Btau-jam; *Santal* Kada-met*.

728. Yitex Linn.

Tree* or shrubs; young shoots hairy or glabrous; leaves* opposite, digitately 3-5-foliate. Flower, in peduncled or sessile cymes, terminal and axillary or wholly axillary panicles or corymbs; bracts small, shorter or longer than calyx. Sepals 5, connate in a campanulate calyx; limb truncate or shortly 5-toothed. Corolla; tube rarely 3-toothed. Petals 5, connate in a 8-lobed

short; limb 5-lobed, central lobe of lower lip usually ^{lar} ^{Sf} ^{S^t} [^]
Stamens 4, didynamous, usually exerted; anther-cells at ^{fr}
parallel, pendulous, at length divaricate, often twisted so th [<] [^]
their bases become suberect. *Carpels* connate in a 2-celle ^d ⁻
4-celled ovary; ovules 4; style filiform; stigma shortly 2- ^{fid}
Fruit a globose or obovoid drupe, resting on the somew ^{hat}
enlarged calyx; endocarp bony, 4-celled or, by suppression, ³⁻¹⁻
celled. *Seeds* obovate or oblong; albumen 0.

Panicles terminal, with axillary peduncles sometimes also presen ^t ⁱⁿ
the upper leaf-axils :—

Leaves beneath and panicles closely white-tomentose; flowers ^{blue} ;
berries black; leaves glabrate above; shrubs or small trees:—

Leaves 3-foliolate and simple; leaflets sessile, obovate or obova ^t ^e
oblong, entire.....*trifoua*.

Leaves 5-foliolate and 3-foliolate; leaves petioluled, lanceolate,
entire or rarely crenate.....*Nc* [<] ^{jundo}.

Leaves beneath minutely pubescent or glabrate ; tall trees :—

Leaves 3-foliolate, with frequently 1-2 smaller leaflets added ^{ts}
leaflets sessile, ovate or oblong, entire, bases of outer leafle
unequal, minutely pubescent on both sides ; panicles densely oorum
bose, fulvous-tomentose ; flowers blue.....*pubescent*.

Leaves 5-foliolate; leaflets petioluled, elliptic or oblong, entire,
glabrate, with white glands above and yellow glands beneath,
panicles compound, long-branched, thinly ashy-pubescent; flowers
yellowish, with blue lower lip.....*heterophyU^a*-

Peduncles all axillary, sometimes short; leaflets petioluled; trees :—

Leaves 3-foliolate; leaflets entire, lanceolate, mature densely covere ¹
with minute yellow glands beneath ; panicles long-peduncled, elongate,
many-flowered, ashy puberulous; berries globose or cuboid, hardly
succulent, -2 in. across; flowers yellowish, the tips tinged with
blue:—

Petiole slender, wingless, or very faintly winged.....*pedinulari**-

Petiole wide-winged.....*peduncularh* var. *Roxburghum*"•

Leaves 5-foliolate, petioles not winged; leaflets oblong or ovate, usually
entire, rarely slightly serrate; corymbs divaricate; berries obovoid,
succulent, large: if leaves 3-foliolate (*V. (jlahrata* sometimes), leaflets
when mature with adpressed hairs beneath :—

Corymb* glabrous, lax; flowers sessile, white, with violet hairs
inside lower lip; leaflets always 5, with patent yellowish hairs on
midrib beneath otherwise glabrate; drupe -6 in. long....*leucoxylon*.

Corymbs puberulous, usually dense, generally short-peduncled;

^vers usually pedicelled, yellowish with purple lower KP5 leaflets usually 5, sometimes 3, with minute, scattered, ^ hairs beneath; drupe "35-5 in. long..... v labrata.

1602. VITEX TRIFOLIA Linn, f.; F. I. iK. TM S F" B, L iv< 5835 E. D. V. 181.

C. Bengal; E. Bengal; Chittagong. A shrub or small tree. Vernac. Pani-sanbhalu.

1603. VITEX NEGUNDO Linn.; F. I. iii. 70; F. B. L iv. >»*. E. 14.

cL V aN o agp UR; Behar; Tirhut; N. Bengal; Sundribuns. A shrub or small tree. Hind, and B^ Sandbhalu, nishinda; Santal. and XoZ. Sinduari; ^ Begunia. D. V. 177.

1604. VITEX PUBESCENS Vahl; F. B. I. iv. 585; E' F. arborea F. I. iii. 73.

E. Bengal; Tippera; Chittagong. A tree, 30-50 feet high.

1605. VITEX HETEROPHYLLA Roxb.; F. I. Hi. 75; F. B. I. n. ^>. Tippera.

A large tree. Orissa; ChotaNagpur; Behar; Chittagong.

1606. VITEX PEDUNCULARIS Wall.; F. B. i. iv. ^7. A tree, 20-40 feet high.

^06/2. Var. ROXBURGHIANA; F. B. I. iv. 587; B. D. v. F. aZato F. I. iii. 72.

ChotaNagpur; Behar; Chittagon A considerable tree. Beng. Boruna, goda; flontal Badu marak; Magh. Krawru.

1607. VITEX LEUOOXYLON Linn. ff F. I. iii. ^ P a * ; l * " iv. 587. F. m%na F. I. iii. 75.

Orissa; on islands in the river Mahanadi; perhaps only introduced. A considerable tree.

1608. Vm x GLABEATA B. Br.; P. B. L iv. 588; B. D. V. 160. F. leucoxylon F. I. iii. 74 partly.

E. Bengal; Chittagong. A small tree. Beng. Ashval, goda, honna.

729. Clerodendron Linn.

Trees or shrubs, sometimes sarmentose-; leaves opposite, 1 3-4-nate, simple, occasionally lobed, entire or toothed. Rarely flowers

in axillary cymes or terminal panicles, often leafy below; bracts conspicuous or small; bracteoles 0. *Sepals* 5, connate in a campanulate calyx; limb truncate or 5-toothed or almost 5-partite, persistent, often accrescent, sometimes coloured. *Petals* 5, connate in a slender, cylindric, usually long, filiform corolla; to^b more or less oblique; lobes spreading. *Stamens* 4, didynamous, far exserted, adnate under corolla-throat; anthers ovate or oblong; cells parallel. *Carpels* connate in an imperfectly 4-celled ovary; ovules in each cell solitary; style filiform; stigma shortly 2-fid. *Fruit* a globose, succulent, very rarely almost dry drupe, 4-grooved, and separating into 4 pyrenes, of which 1-B may often be suppressed. *Seeds* oblong; albumen 0.

- Corolla irregularly salver-shaped, 1-5 in! long or less:—[p. 835]

Panicles axillary, or if (occasionally in *C. yhlomoides*) terminal, the panicle lax, leafy below :—

Calyx minutely toothed, in fruit somewhat enlarged, subtruncate, embracing the base of the berry; fruit spongy; leaves entire :—

Leaves obovate or elliptic, subobtusate, opposite or rarely ternate; calyx in fruit closely applied to base of berry.....*inemC,*

Leaves elliptic-acute, or linear-oblong, generally ternate; calyx in fruit subpatent.....*neriifoli¹,*

Calyx lobed half-way down; lobes triangular, caudate-acuminate, in fruit more rigid, almost covering the berry; fruit somewhat succulent; leaves ovate, sinuate or serrate.....*phlomoide?.*

Panicles terminal:—

- Calyx subtruncate; bracts large, -5-1-5 in. long, often coloured; leaves oblong or elliptic, acuminate :—

Leaves subsessile; calyx very shortly 5-lobed; panicle dense; leaf-margins always serrate.....*serrat^{*IH,}*

Leaves very shortly petioled; calyx 'almost' truncate; panicle open; uppermost leaves sometimes entire

semitum var. *Walliehi*—

Calyx deeply 5-lobed; bracts small :—

Panicle pendulous, lax, open; corolla pure white; berry purp^{le} 5 calyx divided to near the broad base; segments ovate-lanceolate; leaves narrowly obovate or lanceolate, entire".....*nntaw.*

Panicle erect; corolla tinged with pink or rose; berry black; leaves wide-ovate or subrotund:—

fCalyx large, with broadly lanceolate, acute, suberect segments; panicle open, pyramidal; leaves entire or serrulate, acuminate, base cordate or obtuse [p. 835].....*infortuvatwv-*

Clerodendron.]

VERBENACE&

fCalyx small, with subulate segments \ ^ ^ T ^ j Z ^ ' rym.
 base ; leaves subcordate, rounded, w* » IP- anicle terminal,
 Corolla narrowly funnel-shaped, 3 in. long 01'10'' o' er, ^ bentire [p. 834]
 elongated, lax ; leaves narrowly lanceolate, suoses, , sip lionanhu».

1609. CLERODENDRON INERMK Gaertn., F. X. iii- 58; F. B. L

iv. 589 ; E. D. C. 1377.

O. Bengal; Sundribuns.

A straggling, littoral shrub of mu shore a> ffin<Z.
 Sang-kupi, lan-jai; Beng. Ban^i, Da^ met^ bat-raj^

1610. CLERODENDRON NBRIIFOLIUM JVaii-i

Volkameria nerifolia 1? I- 64.

Chittagong, sea-coast. *

A bushy, littoral shrub of rocky shore^ ^ ^ , - ^ R L

1611. CLERODENDRON PHLOMIDBS Linn. t.,

iv. 590; E. D. C. 1386.

Orissa; ChotaNagpur; Behar. ; l. Panjot.

A large bush. Hind. Urui, piron. 6 ^ < ^ ^ ^ E^ p^

1612. CLERODENDRON SERRATUM Spreng,

O. 1388. *Volkameria serrata* * ^ ^ ^ chota Kagpur^

Chittagong arangi; Santal. Saram

A shrub, 2-

mtur.

1612/2. Var. WALLIOHII ; F. B. I. iv. »*•

N. Bengal.

A shrub.

1613. CLERODENDRON NUTANS Wall., J. B. L iv. 591.

Chittagong.

A shrub, 6 feet high.

1614. CLERODENDRON INFORTUNATUM Uaerx, ^ . I. m. gg.

E. D. C. 1380. *Volkameria* ^ ^ ^ ChotaNagpur; Behar; Tirhut; N. Bengal; C. Bengal;

Chittagong. — . r Bh&nt; ^ en^ . Bhfa*

A shrub, 4 feet high. < ^ - . . - t Ku iamarsal.

ghentu; Santal. Kharbari, varni, i q. ^ . 5gg.

1615. CLERODENDRON PRAGRANS Vent., F. B. I. cultivation. In

C.Bengal; Chittagong: escaped torn

other provinces also often cultivated.

A small shrub. Native of China.

1616. CLERODENDRON SIPHONANTHUS R. Br.; F. B. I. iv. 595;
E. D. C. 1394. *Siphonanthus indica* F. I. & 67>

In all the provinces.

A shrub, 4-7 feet high, ffrad. Barangi; Beng. #^a.
hatti.

730. Holmskioldia Retz.

Straggling or climbing shrubs; leaves opposite, short cymes, in leaf-axils or aggregated at ends of bracts small; bracteoles 0. *Sepals* 5, connate in a widely subtruncate, membranous red calyx. *Petals* 5, connate oblique corolla; tube cylindric, curved; lobes short. *Stamens* didynamous; anthers ovate, exserted; cells parallel, connate in an obtuse or obscurely depressed ovary, becoming 4-celled; ovules 1 in each cell, laterally attached; stigma shortly 2-fid. *Fruit* an obovoid drupe, in the accrescent calyx, divaricately 4-lobed about half-way pyrenes 1-4. *Seeds* oblong; albumen 0.

1617. HOLMSKIOLDIA SANGUINEA Retz; F. B. I. iv. 596;
H. 322. *Hastingia coccinea* F. I. Hi. 65. H. F. I. iii. 66.

Chota Nagpur.

A climbing shrub.

731. Caryopteris Bunge.

Erect or rambling shrubs; Reives opposite, acuminate, or subentire, minutely punctate, with yellow, glistening *Flowers* in small, dense, many-flowered cymes, axillary or into a terminal thyrse; bracts small; bracteoles 0. *Sepals* 5, shortly connate in a deeply divided calyx; lobes triangular lanceolate, somewhat accrescent. *Petals* 5, connate in a 2-lipped corolla; tube short, cylindric; limb spreading, midlobe of lower lip longer, crisped or fimbriate. *Stamens* 4, didynamous; anthers exserted; cells divaricate, confluent. *Carpels* connate in imperfectly 4-celled ovary; ovules in each cell solitary; stigma filiform; stigma shortly 2-fid. *Fruit* a small, globose capsule, separating into 4 concave valves with incurved margins, retaining the seeds. *Seeds* oblong, erect; albumen 0.

1618. CARYOPTERIS WALLICHIANA Schauer; F. B. I. iv. 597;
E. D. C. 710/2.

Tirhut, Bettiah.

A spreading shrub.

732. Symphorema Roxb.

Scandent shrubs; leaves opposite, entire or toothed. Peduncled, capitate, 7-flowered cymes; bracts 6, oblong, involu- <rate, accrescent in fruit; bracteoles 0. Sepals connate, short, obovoid, 4-8-lobed, somewhat accrescent calyx, connate in a small white corolla; tube cylindrical; limb obovate; lobes subequal, narrowly oblong. Stamens 6-16, as many as corolla-lobes; anthers exserted, ovate cells parallel, inserted in a 2-celled or imperfectly 4-celled ovary; ovules 4, styliform; stigma shortly 2-fid. Fruit dry, included in the calyx. Seed solitary, erect; cotyledons fleshy.

Corf * in long 6 - ... S... b... e... a... £ £. Coiblla -5 in. long, 12-16-lobed.

1619. SYMPHOREMA INVOLUCKATBM Roxb.; F. I. ii. 262; F. B. I. iv. 599; E. D. S. 3042.

Behar.

A large climber.

1620. SYMPHOREMA POLYANBEOM Wight; F. B. I. IV. 599.

Chota Nagpur; Orissa.

A large climber.

733. Sphenodesma Jack,

Large, scandent shrubs; leaves opposite, entire, petioled. Covers in capitate cymes 3-3 or 7-flowered, bracts 6, involu- <rate; cymes more or less P " ^ ; * 8 ^ <? the base of the peduncles being reduced and bract-like, mostly woous; bracteoles 0. Sepals connate in a 4-toothed, rarely 6-toothed calyx, enlarged or inflated in fruit. Petals connate in a short, cylindrical corolla; lobes 5, ovate-oblong or narrowly lanceolate. Stamens 5, subexserted; anthers ovate. Camels connate in a 2-celled ovary; ovules 4, pendulous from the apex of style filiform; stigma 1-2-fid or obscurely 2-lobed. Fruit a small, globose or obovoid drupe, more or less completely included in the calyx. s w * 1, or rarely 2; cotyledons thick.

1621. SPHENODESMA UNGUICULATA Schauer; F. B. I. iv. 601.

Chittagong.

A large climber.

734. *Congea* Roxb.

Large climbing shrubs; *leaves* opposite, entire. *Flowers* in peduncled, capitate, 3-9-flowered cymes; bracts at base of peduncles leaf-like, coloured; cyme-bracts 3-4, elliptic or oblong, connate below. *Sepals* 5, connate in a funnel-shaped, slightly accrescent calyx; limb toothed. *Petals* connate in a short, 2-lobed corolla; tube slender, rarely much exceeding calyx; throat usually hairy; upper lip suberect, 2-lobed, lobes linear-oblong; lower lip 3-lobed, lobes shorter, pendent, obovate. *Stamens* 4, slightly didynamous; anthers exerted, ovate; cells parallel. *Carpels* connate in an imperfectly 2-celled ovary; ovules 4, pendulous from apex of axis; style filiform; stigma shortly 2-fid. *Fruit* small, obovoid, almost dry, usually 4-partite and 4-seeded.

1622. CONGEATOMENTOSA Roxb.; F. B. I. iv. 604; E. D. C. 1763.
Chittagong: sometimes cultivated in other provinces.
A large climber.

735. *Ayicennia* Linn.

Shrubs or small trees; *leaves* coriaceous, opposite, entire. *Flowers* small, sessile, in capitate, peduncled heads of close cymes, paired in penultimate axils or terminal in 3-chotomous corym^{bs}; bracts small. *Sepals* 5, connate in a short calyx; limb deeply lobed; lobes ovate, imbricate, unchanged in fruit. *Petals* connate in a short corolla; tube wide, cylindrical, straight; limb with 4 subequal lobes, or with uppermost rather the widest. *Stamens* 4, adnate to corolla-throat; filaments subequal; anthers shortly exerted, ovate; cells parallel. *Carpels* connate in an imperfectly 4-celled ovary, central axis 4-winged; ovules 4, pendulous between the axial wings; style short or long; stigma 2-fid. *Fruit* a compressed capsule; valves two, thick, leathery. *Seed* solitary, erect; embryo imperfectly covered by its two integuments; cotyledons large, longitudinally plicate; radicle inferior, villous.

1623. AVICENNIA OFFICINALIS Linn.; F. B. I. iv. 604; E. D. A. 1655. *A. tomentosa* F. I. iii. 88.
Sundribuns; Chittagong.

IAOA A tre 6; 16a Ves obtuse, capsule broad. Beng. Baén.
1624. AVICENNIA ALBA Rl A officinalis var. alba 1^H « * » 1[↓]
it. 604.

Sundribuns, on river banks.

A shrub; leaves acute; capsule narrow. Beng. Baén.

Whorls in terminal and axillary, globose or ovoid heads, with imbricate bracts; calyx suberect, upper lip widely 1-lobed, anterior and lateral lobes united in an entire or 4-toothed lower lip.....**Acrocephalus**,

Whorls racemose or subspicate; calyx usually dechna.e, upper lip widely 1-lobed, with the anterior and lateral pairs not connate, subequal, smaller; or upper lip 3-lobed, with posterior and lateral lobes subconnate, and lower lip 2-lobed, with anterior lobes subconnate:—

Racemes simple; bracts conspicuous; calyx in fruit rugosely pitted near base; posterior lobe even with upper lip 3-lobed, wider than lateral lobes

Geniosporum

Racemes paniced; bracts small; calyx in fruit pitted; lateral lobes, when upper lip 1-lobed, subequal with anterior lobes, when upper lip 3-lobed subequal with posterior lobe.....**Moschosma**.

©Lower lip of corolla deflexed, concave, boat-shaped or saccate:—[p. 839]

Corolla with upper lip very short, obtusely 3-4-toothed; lower lip much elongated, boat-shaped :—

Calyx equally 5-toothed or somewhat 2-lipped, with 3-toothed upper and 2-toothed lower lip, or with upper lobe large, rounded, reflexed, the others narrow, subulate :—

Filaments free.....**piectranthus**.

Filaments connate in a sheath at their bases, round the style.....**Coleus**.

Calyx very oblique, 2-lipped, with upper lobe large, entire, inflexed, and closing calyx-mouth, the lower lip truncate, obscurely 4-toothed, or 1-lipped, slit in front, the solitary lip 5-toothed, incurved, but not quite occluding the calyx-mouth.....**Anisochilus**.

Corolla obscurely 2-lipped, with two upper lobes flat, similar and subequal to two lateral, all about as long as the abruptly deflexed, saccate lower lip, with thickened margin and much-contracted base; calyx-teeth subequal.....**Hyp^{*is}**

H Attachment of nutlets slightly oblique to the outer side; calyx-lobes subequal; tube 13-15-nerved; corolla 2-lipped; upper lip 2-nd, lower 3-fid; lobes all flat, spreading; stamens included in tube [p. 839].....**LaYandula**.

\Stamens erect or spreading or ascending :—[p. 839]

§Stamens 4, perfect:—[p. 841]

Corolla-lobes 4 or 5, flat, subequal and similar, or the lowest

somewhat unlike the others, but limb not 2-lipped; stamens subequal, diverging ; anther-cells short:—

Lobes of corolla 4; anthers 1-celled; calyx 5-nerved; teetn equal:—

Calyx 5-toothed; stamens exserted:—

Lower corolla-lobe subpatent; whorls in glomerate or paniculate or solitary, interrupted spikes; filaments

f , , , , Pogostemon. bearded or naked ? in, lor

Lower corolla-lobe like the others; whorls in slender, dense, continuous spikes ; filaments

Calyx 5-partite; segments plumose in tower, pappose in fruit; whorls in slender, cylindric spikes; stamens included or little everted; filaments ^ * A " X ^ ~

Lobes of corolla 5, lowest rather longer than anthers; anthers, at least when young, 2-celled; calyx 10-nerved, in fruit declinate, distinctly 2-lipped Perilla.

Corolla 2-lipped; stamens didynamous :—

Anterior pair of stamens the longer:—

Calyx 13-nerved; anthers 2-celled; cells short; upper lip of corolla not hooded:— Micromeria.

Calyx equally 5-toothed. Calamim.ha.

Calyx distinctly 2-lipped —"

Calyx 5-10-nerved; anthers 2-celled ; cells Unear-

Upper lip of corolla short, nearly flat, not, « £ £ stamens exserted; anther-cells of upper pair* dimidiate, of lower pair parallel, transverse. A isomeles.

Upper lip of corolla long, hooded, densely woolly .

"Lhelcells parallel; stamens more or *"££^ calyx 5-toothed; teeth spinescent"

Anther-cells divergent; stamens not exserted, calyx 6-10-toothed:—

Lower lip of corolla longer than the hood. Leucas.

Lower lip of corolla shorter than the hood Leonotis.

Posterior pair of stamens the longer; calyx 15-ne £^ 5-toothed; stamens not exserted Ne

stamens 2, anterior pair only perfect, ascending 01 eiec cell abor- cells linear, separated by an elongated connective or one tive; calyx 2-lipped:—[p. 840]

H-Corolla 4-lobed; lobes subequal; ^ ^ ^ Us endu. Jc ^ lous, parallel, stipitate on the arms of th Meriandra.

10-nerved [p. 842]

-^Corolla 2-lipped, upper entire or emarginate concave, **lower** spreading, 3-fid; anthers dimidiate; connective **transverse.** linear, jointed with filament, posterior arm ascending **with a** fertile anther-cell, anterior horizontal or deflexed, with a **fertile** empty anther-cell or naked ; calyx 5-nerved [p. 841]. **lvs**

f Nutlets succulent; corolla 2-lipped, upper lip hooded; anther-cell parallel, anterior pair of stamens longer [p. 839] **...Gomphostemip**

•Ovary 4-lobed; nutlets with a large, oblique, or lateral areola on **inner side** ; stamens 4, perfect, erect, exserted from the notch of **fissu** of the upper lip :- [p. 839]

Corolla deeply slit behind, and apparently 1-lipped, the two **sma** upper lobes, along with the small lateral pair, springing from the **on-** truncated base of the very large lower lobe. **Teucriu**

Corolla distinctly 2-lipped, upper lip short, 2-lobed, notched; **in-teia-** pair of lobes very small, springing from sides of very large lower lobe. **be**

Ajuga*

736. Ocimum Linn.

Strongly scented herbs, undershrubs, or shrubs. *Flowers* **sni&** in 6-10-flowered whorls, spicate or racemose, tips of pedicels **els** recurved; bracts minute, caducous. *Sepals* 5, connate in **o*** ovoid or campanulate calyx, deflexed in fruit; upper- **th** tooth **te** broadest, decurrent, 2 lowest teeth acuminate. *Petals* 5, connate **l** in a 2-lipped corolla ; tube short, not annulate within; upper **lip** subequally 4-fid; lower hardly longer, decimate, entire. *Stamens* 4, didynamous, declinate, exserted; filaments free or the lower pair connate below, naked, or the upper toothed or hairy below ; anther-cells confluent. *Disk* entire or 3-4-lobed. *Carpels* connate in a 4-partite ovary; style-lobes subulate or flattened. *Fruit* **of** 4 fly, smooth or subrugose nutlets, mucilaginous when **mo** **ist** basal scar small.

Pedicels as long as the calyx, two lower calyx-teeth longer than the **upper** lobe. **sanctum-**

Pedicels shorter than the calyx:___

Bracts sessile, longer than the calyx, two lower calyx-teeth minute **gratissimum.**

Bracts petioled, shorter than the calyx; two lower calyx-teeth longer than the upper lobe :—

Corolla *2 in. long **canum.**

Corolla -4-*5 in. long:___

Flowers white, stems green **Basilicum.**

Flowers pink, stems purplish :—

Spikes simple..... *Basilicum* var. *jmrapurascen**.

Spikes thyrsoid..... *Basilicum* var. *thyrsiflora*.

¹⁶25. OCIMUM SANCTUM Linn.; F. I. iii. 14; F. B. I. iv. 609; E. D. o. 31.

In all the provinces, cultivated.

A herb, sometimes woody at the base. Vernac. Tulsi.

1628 . OCIMUM GRATISSIMUM Linn.; F. I. iii. 17; F. B. I. iv. 608; E. D. o. 28.

Orissa; C. Bengal; E. Bengal; Chittagong.

A shrub. Vernac. Earn tulsi.

¹⁶²7. OCIMUM CANUM Sims; F. B. I. iv. 607; E. D. O. 26. <>- *album* F. I. iii. 15.

Behar; ChotaNagpur; W.Bengal.

A herb, 1-2 feet high. Santal. Bharbari.

¹⁶28. OCIMUM BASILICUM Linn.; F. I. iii. 17; F. B. I. iv. 608; E. D. O. 18. *O. pilosum* F. I. iii. 16. *O. caryophyllatum* F. I. iii. 16.

In all the provinces, cultivated and as if wild.

A herb. Vernac. Babui tulsi.

16²⁸/2. Var. PURPURASCENS Benth.

In most of the provinces, cultivated.

A herb.

¹⁶28/3. Var. THYRSIFLORA Benth. *O. thyrsiflorum* F. I. iii. 16.

In most of the provinces, cultivated.

A herb.

737. Orthosiphon Benth.

Herbaceous shrubs or shrubs. Flowers small or medium, in 6- or 8-flowered whorls, racemose; bracts small. Sepals 5, connate, ovoid, campanulate, or tubular calyx, deflexed in fruit; upper broad, membranous, margins decurrent on the tube, lateral and lower distinct or shortly connate, usually subulate. Petals 5, connate in a 2-lipped corolla; tube often slender, straight or curved; upper lip 4-lobed; lower entire, concave. Stamens 4, monothalamous, declinate; filaments free, toothless; anther-cells confluent. Disk usually gibbous. Carpels connate in a 4-partitovary; style with a minute capitate or clavate, entire or notched stigma. Fruit of 4 dry, ovoid or orbicular nutlets, smooth or nearly so; basal scar small.

Stamens included :—

- Corolla-tube not exceeding calyx ; leaves petioled *pallidus*.
 Corolla-tube twice as long as calyx:—
 Leaves sessile *rubicundus*.
 Leaves petioled *rubicundus* var. *rigida*.
 Stamens exerted ; leaves petioled; corolla-tube thrice as long as calyx *stamineus*.

1629. ORTHOSIPHON PALLIDUS Royle ; F. B. I. iv. 613.

W. Behar, rare.

A woody, diffuse herb.

1630. ORTHOSIPHON RUBICUNDUS Benth.; F. B. I. iv. 614.

Ocimum tuberosum F. I. iii. IB.

N. Bengal; Behar; Chota Nagpur.

A herb.

1630/2. Var. RIGIDA Benth.; F. B. I. iv. 615.

Behar; Chota Nagpur.

A herb.

1631. ORTHOSIPHON STAMINEUS Benth.; F. B. I. iv. 615.

Chota Nagpur, rare.

A herb.

738. Acrocephalus Benth.

Annual herbs; *leaves* small, petioled. *Flowers* very small, sessile; whorls in terminal or axillary, globose or ovoid, dense " heads, with imbricate bracts. *Serials* 5, connate in an ovoid calyx, tubular in fruit, base gibbous; upper lip flat, entire, lower entire or 4-toothed; throat naked. *Petals* connate in a small, somewhat 2-lipped corolla; tube short; upper lip subequally 4-lobed ; lower entire, sometimes lobes all subequal. *Stamens* 4, didynamous declinate ; filaments free, toothless, included. *Disk* small, gibbous. *Carpels* connate in a 4-partite ovary; style shortly 2-fid at tip. *Fruit* of 4 smooth, dry nutlets; basal scar small.

1632. ACROCEPHALUS CAPITATUS Benth.; F. B. I. iv. 611.

Chota Nagpur; Behar; W. Bengal; Tirhut; N. Bengal; E. Bengal.

A small herb.

739. Geniosporum Wall.

Herbs. *Flowers* small or minute; whorls many-flowered, long, lax racemes or spikes; bracts often coloured. *Scj* < *tl* > ⁸ ⁵ ¹¹ »

connate in ϵ Upper WIT $\circ \wedge$ ovoid Calyx, tubular in fruit, suberect or declinate; with un \dots $\text{Wl}(\ast \text{est})$, not decurrent, lateral i^air free or connate in a 2? $\text{er}, 10 \text{WGSt Pair Short} \rangle$ free or connate. *Petals* 5, connate. *Stamen* $\wedge \vee \wedge$ CoroUa; uPPer HP. 4-fid J lower declinate, entire. *Disk* $\text{swif} \text{did} \wedge \text{namous} \rangle$ decimate; filaments free, toothless. *Carpels* connate in a 4-partite ovary; $\% \text{le w'th} \text{t} \text{ni, gi} \wedge \text{bous} \langle$ flattened arms. *Fruit* of 4 dry, ovoid or oblong, smon+ $\text{i} \text{---} \text{S} \text{---} \text{ort}$)

- 1633 \wedge PUnctulate nutle *s.
- GENIOSPORUM PROSTRATUM Benth.; F. B. I. iv. 610; E. D. G. 161.

Orissa, sand-dunes on coast.
A small, prostrate herb.

740. Moschosma Reichb.

Annual \circ Perennial herbs - *Flow* e^{TM} very minute ; whorls 6-10-flowered, $\text{secun}(\text{1})$ in axillary and terminal, paniculate racemes; bract s sniall - *Sejmls* 5, connate in an ovoid or cainpanulate calyx, $\text{UPPer tooth or 8 Upper teeth large than the 4 or 2 lower, not d}$ corolla \wedge Urrrenti, tnr boat naked. *Petals* 5, connate in a 2-lipped longer / UPPer lip 4-lobed, lobes subequal or the 2 central rather declinate; filaments fre e, toothless; anther-cells confluent. *DM* uniform. $\text{or somew} \wedge \text{at}$ swollen in front. *Carpels* connate in a 4-partite ovary, Style clav ate-capitate, with a 2-fid tip. *Fruit* of 1 coin $\text{pressed} \rangle$ smooth, dry nutlets; basal scar small.

- MOSCHOSMA POLYSTACHYUM Benth.; F. B. I. iv. 612.
- Ocimum 2>olystachyum* F. I. iii. 18.

E. Bengal.
A slender, erect, annual herb.

741. Plectranthus L'Heit.

Herb $\text{J S or Undersm, ubS}$ - *Flowers* usually small, in lax, rarely close PamcIe(i or) seemed, 6-8-flowered cymes. *Sepals* 5, connate in a $\text{u} \wedge \text{Ua} \%$ 2-lipped calyx; lobes subequal or upper widest, enja $\text{e} \wedge \text{m}$ fruit. *Petals* 5, connate in a 2-lipped corolla; tube exs $\text{er-ed, Ion g or short, straight or decurved; throat equal or}$ okH $\text{qu} \wedge \text{SWo} \wedge \text{en}$ 5 UPper lip usually short, broad, 4-fid, recurved ; low er m uch longer, entire, boat-shaped, stipitate or narrow at the base " *Stamens* $\text{4} \rangle$ didynamous, declinate ; filaments simple, free ; anther " Cells usually confluent. *Dish* usually enlarged in front.

Carpels connate in a 4-partite ovary; style subequally 2-fid.
Fruit of 4 orbicular, ovoid or oblong, smooth granulate
 punctate, dry nutlets; basal scar small.

Leaves sessile, usually ternately whorled, lanceolate-acun^{it}
 serrate; cymes in dense panicles; fruiting calyx cylindrical; ^{tee}th su
 equal..... UmS ^{oli} TM»

Leaves petioled, large, opposite, wide ovate-cordate, crenate; ^{oy}
 laxly racemose ; fruiting calyx 2-lipped, wide campanulate, upper ^a
 rounded, reflexed, lower with sharp teeth..... MICHI ^{uis}.

1635. PLECTRANTHUS TERNIFOLIUS Don; F. B. I. iv. 621. *Els*-
holtzia Thonypsoni F. B. I. iv. 643. ^

Chota Nagpur; N. Bengal, submontane forests; -
 Bengal, Mymensingh.

A bushy herb, 3-5 feet high.

1636. PLECTRANTHUS INCANUS Link; F. B. I. iv. 621. *P. secundu* §
 F. I. iii. 20.

Chota Nagpur.

A large herb, not uncommon on roadsides.

742. *Coleus* Lour.

Herbs or undershrubs. *Flowers* in lax or close, paniced o^r
 racemed, 6-8-flowered cymes. *Sepals* 5, connate in a 2-lipP^{ed}
 calyx, enlarged in fruit, upper lobe the widest, not deourren^t.
Petals 5, connate in a 2-lipped corolla; tube exerted, decurve^d.
 throat equal or obliquely swollen; upper lip short, broad, 4-n^d.
 recurved; lower much longer, entire, boat-shaped, stipitate or
 narrow at base. *Stamens* 4, didynamous, decimate; filaments
 simple, shortly connate below in a sheath separate from the
 corolla; anther-cells usually confluent. *Disc* enlarged in fron^t.
Carpels connate in a 4-partite ovary; style subequally 2-nd.
Fruit of 4 orbicular or ovoid, smooth, dry nutlets; basal scar
 small.

Calyx-throat villous within.....*barhatu* \$-

Calyx-throat glabrous within :—

Corolla pale-purple ; stamens shortly exerted ; leaves fleshy

aroviaticu s-

Corolla white, with blue lower lip'; stamens included; leaves mem-
 branous. *scute* *l* *h* *r* *o* *i* *d* *e* *

- ¹⁶37. COLEUS BARBATUS Benth.; F. B. I. iv. 625; E. D. C. 1719.
Chota Nagpur.
A herb with tuberous rootstock.
- ¹⁶38. COLEUS AROMATICUS Benth.; F. B. I. iv. 625; E. D.
C 1715. *Plectranthus aromalicus* F. I. iii. 22.
In gardens in most of the provinces.
A herb, 1-3 feet high, with fleshy steins. *Vernac.*
Pathor chur.
- ¹⁶39. COLEUS SCUTELLARIOIDES Benth.; F. B. I. iv. 626. *Plectranthus scutellarioides* F. I. iii. 21.
In gardens generally.
A slender herb, 2-3 feet high.

743. Anisochilus Wall.

Herbs or undevshrubs. *Flowers* small, in dense, oblong, 4-angled or cylindric spikes; bracts caducous. *Sepals* 5, connate in a tuberculate calyx, inflated below the middle, 2-lipped or toothed, rarely 1-lipped; upper lip entire and deflexed or short, minutely 3-lobed. *Petals* 5, connate in a 2-lipped corolla; the lower slender, decurved; throat inflated; upper lip short, entire or 4-lobed; lower elongated, concave. *Stamens* 4, didynamous, declinate; filaments free. *Disk* lobed. *Carpels* connate in a 4-partite ovary; style 2-fid at apex. *Fruit* of 4 ovoid, smooth, dry nutlets; basal scar small.

*ruitinff calyx with the upper lip large, broad, entire, inlexed, occluding the mouth; lower lip truncate.....*carnosu**.
b'Wing calyx slit in front; mouth very oblique, but not quite occluded
*the incurved, 5-toothed lip.....*polystachyus*.

- ¹⁶40. ANISOCHILUS CARNOSUS Wall.; F. B. I. iv. 627; E. D.
A. 1130. *A. eriocephalus* F. B. I. iv. 627. *Plectranthus strobiliferus* F. I. iii. 23.
Chota Nagpur; Behar.
A herb with stout, 4-angled stems, 1-2 feet high. *Hind.*
----jiri.
- ¹⁶41. ANISOCHILUS POLYSTACHYU* Benth.; F. B. I. iv. 639.
N. Bengal, Duars.
A herb, with strict, rigid stems, 3-9 feet high.

7M. Hyptis Jacq.

Herbs or shrubs. **C** connate in an ovoid, **T** tubular sube **S** 5-lobed or 5-lobed calyx. **P** tube cylindric or slightly enlarged; limb with 4 spreading; lowest lobe abruptly deflexed, saccate, base. **Stamens** 4, didynamous, declinate; anther-cells confluent. **Disk** entire or glandular in front. **Carpels** connate in a 4-partite ovary; style shortly 2-fid or subentire at the tip. **Fruit** of 4 dry, ovoid or oblong nutlets, smooth or rugulose, sometimes slightly winged; basal scar small.

Flowers in globose heads

Flowers in secund heads.....*capitata*.
.....*suaveolens**

1642. HYPTIS CAPITATA Jacq.

C Bengal, naturalised, rare,

annual; introduced from America.

1643. **H** **E** **L** **P** **O** **I** **T** **A** **I** **6** 30.

In the western provinces, very common.

2-4 feet high; native of America.

alsi.

745. Lavandula Linn.

Herbs or shrubs; leaves entire. **Flowers** in 2-10-flowered whorls, collected in simple or branched spikes. **Sepals** 5, connate in an erect, ovoid-tubular, shortly, equally 5-toothed, 13-15-nerved calyx. **Petals** 5, connate oblique, 2-lipped, blue corolla; **lobes** slightly enlarged; upper 2-fid; lower 3-partite; lobes all spreading. **Stamens** 4, didynamous, declinate, included; filaments free; anther-cells confluent. **Disk** equal. **Carpels** connate in a 4-partite ovary; style shortly 2-fid; lobes flattened. **Fruit** of 4 dry, smooth nutlets; basal scar somewhat oblique.

1644. LAVANDULA

Benth.; F. B. I. iv. 631.

Notes

A slender herb, 2-3 feet high.

746. **P** **O** **S** **T** **E** **M** **O** **N** **D** **E** **S** **F**.

Herbs or undershrub small, in solitary or small, in solitary or contracted racemes, formed

Dysophylla.

LABIATÆ.

of many dense-flowered, subcapitate cymes. *Sepals* 5 connate in
 asubequally toothed calyx; throat glabrous. *Petal* innate in
 4-lobed, somewhat 2-lipped corolla; *woe* (ing) flatj the
 lowest usually longest. *Stamens* 4, subequa ^ sligbtly unequal,
 upper pair rather longer, straight or somewhat i ^, filaUie
 usually bearded; anther-cells confluent. *is* equa ^ sU
 Corpch connate in a 4-partite ovary; sy ^ e shortly 2-fid; lobes
 equal, subulate. *FrM* of 4 smooth, ovoid or oblong, y

basal scar small.

Hoary-pubescent; bracts large, ovate; spikes, tout ^ ...jfertw***-
 Glabrous, or if pubescent not hoary; bracts ellip" ^, s ^ikesrat her slender
 parviflorus.

1645. POGOSTEMON PLECTRANTHOIDES V ^, F. B. I- *v- 632t
Mewi7ta fruticosa V. I. &• 6-

In most of the provinces.

A large bush. JBcn ^ Jui-lata- . F ^ Liv#632; E. B.

1646. POGOSTEMON PARVIFLORUS Bentn., .

P. 1020.

Chittagong.

A stout herb.

747. Dysophylla Bl.

Herbs; ie ^ es opposite or whorled. *Floivers* mimite, in vo J
 dense, long spikes of many dense-flowerea, *whor kd cynies. *Sepals*
 5, connate in a very minute, ovoid, equany ^ calyx; throat
 naked within. *Petals* connate in a very minu ^ e ^ a Uy 4-fid
 corolla; tube exserted or included; upp er lobe ^ r ^ or ^ Tid |
 lowest more spreading. *Stamens* 4, exsei ted gubequal or slightly
 unequal, straight or subdeclinate; tilam ents, very long-bearded;
 anther-cells confluent. *DisTc* equal, suben. tire ^ s connate
 in a 4-partite ovary; style 2-fid; lobes, ubulate. ^ . ^ of
 4 ovoid or oblong, smooth or rough, dry nuue ,

*Calyx-tube terete or nearly so:—[P- 850 ^

Leaves opposite:-

Dwarf, stout, erect, adpressed-pubescent, .. lpaves sessile, lanceolate
W..... An der*on.

or narrow-oblong, entire.....VV"Vr."...ipaves shortly petioled or

Tall-, slender, erect, patently hirsute, leav.....aMricMtorifl.

sessile, oblong, serrate

Leaves whorled:-

^pntose, subsilky or pubes-

Leaves shortly petioled, 4 in a whorl, tottentose,

cent, linear or linear-oblong, acute or obtuse, serrate or subentire, stems tomentose, perennial, erect, simple or branched; spikes tonientose or pubescent, often interrupted below.....*quadrijo*

Leaves sessile:—

Leaves revolute, margins entire, 3-0 in a whorl, linear, obtuse, stems hirsute, perennial, erect, simple; spikes villous, dense

Leaves flat; stems glabrous, annual, erect, usually branched, spikes often interrupted :—

Calyx-teeth in fruit stellately spreading; leaves 4-10 in a whorl, entire or obscurely toothed; spikes tomentose or villous

Calyx-teeth in fruit erect or conniving ; leaves 4-6 in a whorl, serrate or subentire ; spikes glabrate or pubescent:—

Taller, much-branched; stem decumbent below; calyx almost glabrous.....*cranicauh**

Dwarf, little-branched; stem usually erect; calyx hirsute

*Calyx-tube deeply 5-grooved, with 5 elevated ridges; stems erect, nearly glabrous; leaves 4 in a whorl, linear, obtuse; slender, pubescent:—[p. 849]

Calyx densely pubescent all over; teeth minute, occluding the mouth in fruit; nutlet solitary ; angles of fruiting calyx obtuse ...*pentagon"*
Calyx glabrous below; teeth white, villous; nutlets 4; angles of fruiting calyx acute.....*Giffithii*

1647. DYSOPHYLLA ANDERSONI Prain.

N. Bengal, Duars.

A small, stoutish herb.

1648. DYSOPHYLLA AURICULARIA Bl.; F. B. I. iv. 638. *Mentha auricularia* F. I. iii. 4.

Chittagong.

A slender, flaccid herb, 1-2 feet high.

1649. DYSOPHYLLA QUADRIFOLIA Benth.; F. B. I. iv. 639. *Mentha quadrifolia* F. I. iii. 4.

Chittagong.

A stout undershrub, 2-4 feet high; smells of Chanio-mile.

1650. DYSOPHYLLA CRUCIATA Benth.; F. B. I. iv. 639.

Chota Nagpur.

A strict, stoutish herb, 1-1*5 feet high.

1651. DYSOPHYLLA VERTICILLATA Benth.; F. B. I. iv. 639.
***Mentha verticillata* F. I. iii. 5.**

In all the provinces.

A variable weed of rice-fields and swamps, sometimes thick-stemmed and much-branched, 2 feet high; sometimes slender and almost simple. *Beng.* Pani-kula.

- ^{1652,} DYSOPHYLLA CRASSICAULIS Benth.; F. B. I. iv. 640.

E. Bengal.

A stout-stemmed weed of rice-fields and swamps.

- 1652/2. Var. PUMILA; F. B. I. iv. 640.

N. Bengal.

A dwarf, slender weed of wet places.

- *653. DYSOPHYLLA PENTAGONA C. B. Clarke; F. B. I. iv. 641.

Chota Nagpur.

A slender, branching herb, in rice-fields. 1-1*5 feet high.

- ^{1654,} DYSOPHYLLA GRIFFITHII Hook. f.; F. B. I. iv. 641.

Orissa.

A slender, branching herb, in rice-fields, 1-1 "5 feet high.

748. Colebrookia Smith.

^A densely hoary shrub; *leaves* opposite or ternate, petioled, ^{*u}glose, elliptic-oblong, orenulate. *Flowers* small; whorls dense-^{fi}owered, in paniced spikes; bracts connate. *Sepals* 5, connate ⁱⁿ a ^{verv} short calyx-tube; teeth long, subulate, ultimately elong-^{& f}ed, capillary and penicillate. *Petals* connate in a small corolla; ^{tub} ^{very short} lobes 4, subequal. *Stamens* 4, very short, ^{cl} ^{ide} ^{e(11al)} distant; anthers orbicular; cells confluent. *Disk* ^{in f} ^J ^{*-ori} ^l ^{bulate} *Carpels* connate in a 4-partite ovary; style 2-fid; lobes ^{SU} ^{bulate} *Fruit* of 4 obovoid, dry nutlets, with hairy tips; basal ^{sc}ar small.

- ^{1655,} COLEBUOOKIA OPPOSITIFOLIA Sin.; F. I. üi. 26; F. B. I. iv. 642; E. D. O. 1711. *C. ternifolia* F. I. iii. 25.

Chota Nagpur.

A functionally dioecious shrub, 5-10 feet high. *Vernac.*

Pansra.

749. Perilla Linn.

Herbs; *leaves* opposite. *Flowers* small; whorls 2-flowered, in ^{sec} ^m ^{axillar} ^{and} ^{terminal}, simple or paniced racemes; bracts ^{^-} *Sepals* 5, connate in a campanulate, 5-toothed calyx, ^m ^{Uch enl} arged in fruit, gibbous at the base; limb 2-lipped; upper

Up dilated, 3-toothed ; lower of 2 lanceolate-subulate teeth. *Petals* 5, connate in a short corolla, tubular below, campanulate above; 4 upper lobes equal, the lowest rather larger. *Stamens* 4, subequal, erect, distant, hardly exerted; anther-cells distinct, parallel, at length diverging. *Disk* of a large posticous gland. *Carpels* connate in a 4-partite ovary; style 2-fid; lobes equal, subulate. *Fruit* of 4 globose, coarsely reticulated, dry nutlets; basal areola small.

1656. PERILLA OCIMOIDES Linn.; F. B. I. iv. 646; E. D. P. 413.

***Mentlia perilloides* F. I. iii. 7.**

Chittagong, cultivated.

A coarse, aromatic annual, grown for its oily seeds.
Hind. Bhanjira.

750. Micromeria Benth.

Herbs or undershrubs ; *leaves* usually small, entire or toothed. *Flowers* small; whorls in axillary or terminal spikes, rarely paniculate. *Sepals* 5, connate in a 13-nerved, 5-toothed or 2-lipped alyx. *Petals* 5, connate in a 2-lipped corolla; tube straight; upper hp entire or emarginate, flattish; lower spreading, 3-fid. *stamens* 4, didynamous, the lower pair longer, ascending, incurved with diverging apices; anther-cells distinct, parallel, at length divergent; connective usually thickened. *Carpels* connate in a 4-celled ovary; style 2-lobed, the lobes equal, or the upper very short and lower recurved, flattened. *Fruit* of 4 smooth, dry, ovoid or oblong nutlets; basal scar small.

Stems tall, slender, erect, pubescent; leaves shortly petioled, obtuse; whorls subglobose, distant, in slender spikes, the lower spikes pedunculate
qt . . . *capiteUata.*

rams short, dense, leafy, fastigiate, glabrous or very sparingly hairy; leaves sessile, subacute ; whorls small, axillary, few-flowered, or flowers solitary
solitary

1657. MICBOMERIA CAPITELLATA Benth.; P. B. I. iv. 649.

Chota Nagpur.

1658 *M* [↑] ₇ ⁿ ^{er} ^{er} ^b ^M ^f ^e ^t ^h ⁱ ^g ^h ^w ⁱ ^t ^h ^w ^o ^d ^y ^r ^o ^o ^t ^e ^t ^o ^c ^k.

16,8. MICROMEWA BIPL0BA Benth.; P. B. I. iv. 600.

Ohota Nagpur.

A densely tufted, dwarf herb, *vd* ^h wiry branches.

751. Calamintha Moench.

Herbs or Shrubs, leaves entire or toothed. *Flowers* small; whorls dense and axillary, or loose and panicled or spiked. *Sepals* 5, connate in a 2-lipped calyx; limb 2-lipped; upper lip 3-toothed; lower 2-fid, with narrower teeth; throat naked or villous. *Petals* 5, connate in a 2-lipped corolla; tube straight; throat villous; upper lip erect, flattened, lower 3-lobed. *Stamens* 4, didynamous, ascending under upper lip; anther-cell 2-lobed, parallel or divergent. *Carpels* connate in a 4-celled ovary; style 2-fid, the lobes equal or the lower larger. *Fruit* of 4 minute globose, smooth, dry nutlets; basal scar small.

* CALAMINTHA UMBROSA Benth.; F. B. I. iv. 650. *Glinopodium repens* F. I. iii. 13.

Chota Nagpur.

A. small, slender, decumbent herb.

752. Anisomeles E. Br.

Tall erect, branching, coarse herbs. *Flowers* purplish, in axillary whorls or lax-flowered, branched, panicled cymes. *Sepals* 5, connate in an ovoid or tubular, straight calyx; limb equally 5-lobed. *Petals* 5, connate in a 2-lipped corolla; tube short, lobes 5, within; upper lip erect, entire; lower broad, 3-lobed, exserted, the central lobe emarginate. *Stamens* 4, didynamous, 1-lipped; anthers connivent, of anterior longer pair dimidiate, of shorter 2-locular, the cells transverse, parallel. *Disk* lobes 4, connate in a 4-partite ovary; style 2-fid at apex; nutlets 4, subulate. *Fruit* of 4 ovoid, obtuse, smooth, dry nutlets; basal scar small.

Leaves sparsely or densely pubescent beneath..... *ovata*.

Leaves closely, softly woolly beneath..... *ovata* var. *mollissima*.

1660 - ANISOMELES OVATA E. Br.; F. B. I. iv. 672; E. D. A. 1136.

Ajuga disticha F. I. iii. 2.

Chota Nagpur; Chittagong.

A tall annual, 3-6 feet high. Smells of camphor. Vernac. Gobura.

1660/2. Var. MOLLISSIDIA Prain.

In most of the provinces.

A tall annual, 3-4 feet high.

753. *Leonurus* Linn.

Erect, stout, leafy herbs; *leaves* lobed. *Flowers* small, in dense-flowered, distant, axillary folds. *Sepals* 5, connate, 5-nerved, turbinate calyx; teeth spreading, spinescent. *Peta* connate in a 2-lipped corolla; tube naked or annulate with upper lip entire, erect; lower 3-fid, midlobe obcordate. *Stamens* 4, didynamous, lower pair longer; filaments ascending; anthers connivent; cells transverse. *Disk* uniform. *Carpels* connate in a 4-partite ovary; style 2-fid; lobes equal, obtuse or subulate. *Fruit* of 4 triquetrous, smooth, dry nutlets; apices truncate, basal scar small.

1661. LEONURUS SIBIKICUS Linn.; F. B. I. iv. 678; E. D. Lt 269.

L. tataricus F. I. iii. 8.

In most of the provinces.

An annual weed in waste places, 2-6 feet high. *Verna* Guma.

754. *Leucas* B. Br.

Herbs or undershrubs, usually woolly or villous. *Flowers* usually white; whorls axillary, usually distant. *Sepals* connate in a striate, 10-nerved calyx; mouth equal or oblique, equally or unequally 6-10-toothed. *Petals* 5, connate in a 2-lipped corolla; tube included, annulate or naked within; upper lip erect, concave, externally villous; lower lip spreading, 3-fid, midlobe very large. *Stamens* 4, didynamous, the lower pair longer; filaments ascending; anthers connivent, the cells divaricate, ultimately confluent. *Disk* entire or lobed, equal or glandular in front. *Carpels* connate in a 4-partite ovary; style subulate at apex, the posterior lobe obsolete. *Fruit* of 4 ovoid, triquetrous, obtuse, dry nutlets basal scar small.

•Calyx-mouth oblique:— [p. 855]

Mouth* of calyx split above, produced below *urticifolia*.

Mouth of calyx projecting forward above :—

\Calyx-teeth very short:—[p. 855]

‡Calyx-mouth glabrous within; whorls both axillary and terminal :—[p. 855]

Perennial; hispidly hairy; bracts few, subulate; calyx-mouth wide..... *hyxsopifoli*'

Annuals; calyx-mouth contracted:—

Calyx smooth below, ribbed above; bracts long, linear, filiform *asperci-*

Calyx smooth throughout; bracts few, short *linifolia*.

†Calyx=mouth hairy within ; whorls terminal; annuals: —[p. 854]
 Whorls very large, subglobose; bracts many, large, membranous, elliptic or linear-lanceolate, awned.....*Ccephalotes*.

Whorls small;" bracts few, filiform, ciliate.....*involucrata*.

tCalyx-teeth long and slender; bracts very slender :—[p. 854]

Teeth of calyx subequal, lanceolate, ciliate ; whorls terminal and axillary.....*nutans*.

Teeth of calyx unequal:—

Whorls all globose, axillary; uppermost calyx-tooth longest; leaves ovate.....*martinicensis*.

Whorls terminal, globose; three uppermost calyx-teeth longer than the others ; leaves linear or lanceolate.....*Glarkei*.

*Calyx-n_u-mouth straight or nearly so :—[p. 854]

Calyx slightly hairy within; teeth long, slender, ciliate; bracts filiform, rigid, ciliate ; whorls solitary, terminal; annual.....*stricta*.

Calyx naked within ; teeth short; bracts minute, setaceous; whorls numerous, axillary ; perennials :—

Whorls many-flowered ; flowers almost sessile; leaves more or less

Pubescent; calyx hairy :—

Hairs on the branches erect or spreading, not deflexed; calyx-teeth minute.....*lanata* var. *naypurens*U.

Hairs on the branches deflexed :—

Leaves softly velvety ; calyx coolly ; teeth very small

Montana.

Leaves more or less tomentose but not velvety; calyx-teeth short, slender:—

Leaves adpressed-pubescent; calyx woolly.....*moUUsima*.

Leaves scaberulous, sparingly pubescent; calyx hispid

molliihima var. *scaheru*U.

Whorls 1-2-floweied ; flowers pedicelled ; leaves almost glabrous ;

°alyx glabrous, teeth short, lanceolate-acuminate.....*procumbent*.

!662. LEUCAS URTICIFOLIA R. Br.; F. B. I. iv. 680. *Phlomis urticifolia* F. I. iii. 11.

W. Behar, rare.

An annual herb.

!663. LEUCAS HYSSOPIFOLIA Benth.; F. B. I. iv. 690.

Chota Nagpur.

A perennial herb.

1664. LEUCAS ASPERA Spreng.; F. B. I. iv. 690; E. D. L. 309.

Phlomis esculenta F. I. iii. 10.

In most of the provinces.

An annual herb. Vernac. Chhota hal-kūsa.

1665. LEUCAS LINIFOLIA Spreng.; F. B. I. iv. 690; E. D. L. ^{323.}
Phlomis zeylanica F. I. iii. 9.
 In all the provinces.
 An annual herb. Vernac. Hal-kúsa, gúima.
1666. LEUCAS CEPHALOTES Spreng.; F. B. I. iv. 689; E. D. L. ^{312.}
Phlomis Cephalotes F. I. iii. 10.
 In most of the provinces.
 An annual herb. Hind. Dhurpi ság; Bertg. Bara ^{na ^}
 kiisa ; Santal. Andia dhurup arak'. ^{68g,}
1667. LEUCAS INVOLUCRATA Benth. *L. zeylanica* F. B. I. i ^{v'}
 E. D. L. 329.
 Chittagong.
 An annual herb.
1668. LEUCAS NUTANS Spreng ; F. B. I. iv. 688.
 Behar; Chota Nagpur.
 A dwarf, annual herb.
1669. LEUCAS MARTINICENSIS B. Br.; F. B. I. iv. 688.
 Chota Nagpur.
 A stout, annual herb. ^{~1}
1670. LEUCAS CLARKEI Hook, f.; F. B. I. iv. 688; E. D. L. 61 •
 Chota Nagpur. [^] [—] ^{* a}
 A slender herb. Santal. Enga dhurup arak'; *Hⁱⁿ* *
 Dhurpi ság.
1671. LEUCAS STRICTA Benth.; F. B. I. iv. 688.
 S. Orissa, sand-dunes near coast.
 A slender herb. ^s
1672. LEUCAS LANATA Benth.; F. B. I. iv. 681 var. NAGPURENSI
 C. B. Clarke.
 Chota Nagpur.
 A stout herb or undershrub.
1673. LEUCAS MONTANA Spreng.; F. B. I. iv. 682. *Phlomis Mon-*
tana F. I. iii. 11.
 Chota Nagpur ; Orissa; Behar.
 A slender, branching herb.
1674. LEUCAS MOLLISSIMA Wall.; F. B. I. iv. 682 ; E. P. L. ^{327.}
 Behar; Chota Nagpur ; W. Bengal; Orissa.
 A slender, branching herb.
- 1674/2. Var. SCABERULA ; F. B. I. iv. 682 ; E. D. L. 327.
 Chota Nagpur.
 A slender, branching herb. Santal. Gitil arak'.

757. *Meriandra* Benth.

Hoary or woolly, strongly scented shrubs; *leaves* opposite, coriaceous, oblong, crenulate, rugulose above. *Flowers* small, whorls very many and dense-flowered, in large, terminal, broad or small and paniculate, catkin-like spikes; bracts closely, strobilate y. imbricate. *Sqmls* 5, connate in a small, ovoid, 2-lipped ca 3-^l throat naked; upper lip concave, subentire; lower lip 2-fid. *Petals* connate in a tubular corolla, with 4-fid limb; lobes sub equal, spreading, the upper entire or emarginate. *Stamens* 2, anterior only perfect; filaments short, stout, erect, distant, anthers 2-celled; cells linear, pendulous, stipitate, discrete; posterior stamens reduced to 2 usually small staminodes, but with occasionally one of the 2 provided with an imperfect anther, uniform. *Carpels* connate in a 4-partite ovary; style shortly 2-lamellate at tip. *Fruit* of 4 ovoid-oblong, obtuse, smooth, dry nutlets; basal scar small.

1678. MERIANDRA BENGALENSIS Benth.; F. B. I. iv. 653; E. M. 485. *Salvia bengalensis* F. I. i. 145.

In native gardens in C. Bengal.

A large, straggling shrub; native of Abyssinia. *Vernac.* Kafur-ka-pat.

758. *Salvia* Linn.

Herbs or shrubs. *Flowers* small, or large and showy; whorls usually racemose or biplicate; bracts small or large and leafy, sometimes coloured. *Sepals* 5, connate in a 2-lipped calyx; tube cylindrical or campanulate; throat naked; upper lip entire or 3-toothed. lower 2-fid. *Petals* 5, connate in a 2-lipped corolla; tube naked or annulate within; upper lip erect, entire; lower 3-lobed, lateral lobes spreading. *Stamens* 2, anterior only perfect, filaments short, articulate with the slender connective, and sometimes produced beyond the joint; anthers dimidiate; connective linear, transverse; posterior arm ascending and bearing a linear, fertile cell; anterior arm straight or deflexed, with a fertile or empty cell or naked; posterior stamens represented by small staminodes or obsolete. *Disk* usually enlarged in front. *Carpels* connate in a 4-partite ovary; style shortly 2-fid; lobes equal, subulate, or the anterior longer, sometimes flattened. *Fruit* of 4 ovoid, triangular, smooth, dry nutlets; basal scar small.

Corolla **y small** | tube not exserted.....pUbeja.
Corolla long, slender, tube far exserted.....coccinea.

1679 « SALVIA PLEBEJA E. Br.; F. B. I. iv. 655; E. D. S. 746.
»• hrachiata F. I. i. 145.

In most of the provinces.

1680 c. An annua J we ed. Scny. Koka-Buratli, Bhu-tulsi.
SALVIA COCCINEA Linn.

In gardens generally, and occasionally subsponaneous.

A slender herb, 1-2 feet high ; native of S. America.

759. Gomphostemma Wall.

Perennial herbs or undershrubs > stellately pubescent or tomentose; **ots often** mixed with tubers - **lowers** rather large, usually yellow? **wh** 01's 6~8n flowered, dense or lax, axillary or in terminal spikes, **t** ^ ^ 5 > connate in a 10-nerved calyx ; tube campanulate. **ln** Gually 5-toothed. **Petals** connate in a 2-lipped corolla; **lip** **h** **ender**; throat more or less dilated, rarely annulate; upper **ng, low** ed; lower broadly 3-fid. **Stamens** 4, didynamous, ascending, **parallel**, " ^ ^ ^ on S^{er} anthers approximate in pairs, 2-locular; in a 4 " o ^ uniform or slightly swollen. **Cartels** connate **Fruit** **partite** ovate; **style** 2-fid; lobes subulate, nearly equal. **ork** **o-4** ot > ^ **eduction**, 3-1 glabrous or pubescent, thickly **y** **flesh** y drupelets; basal scar broad -

GOMPHOSTEMMA PARVIFLORUM Wall.; F. B. I. iv. 697.

Chittagong.

An undershrub.

760. Teucrium Linn.

" **Herb**s or **f** **rubs**; **leaves** entire, serrate, or lobed, floral leaves often **b** **ra** **ct** **like** - **Flowers** usually small; whorls in 2-6-flowered axillary **ar** or ***ermina** ^ **Pikes**, racemes or heads. **Sepals** 5, connate in a **lf** or ***ermina** ^ **tyx**; teeth equal or the upper larger. **Petals** 5, **Con** **n** **U** a 1 **n** **lipped** corolla **J** tube not annulate within ; limb slit **ehi** **V** **i** **the** **2** upper and the lateral lobes cuneate or short or obsolete **kte** **i** **the** **2** upper and the lateral lobes cuneate or short or obsolete **longe** **o** **w** **r** **lobe** **very** **lar** **S** **e** - **Stamens** 4, didynamous, the lower **ge** **r** **exse** **rted**; anthers reniform; cells short, at length confluent. **Disk** equal. **Carpels** connate in a shortly 4-lobed ovary ; **style** **9** **fi** **equal**. **Carpels** connate in a shortly 4-lobed ovary ; **retic** **ate** **a** ***** **^** ***ok** **es** subequal. **Fruit** of 4 obovoid, rugosely **th** **ate** **nutlets** **J** scar oblique or lateral, often extending more than **an** **half** **wa** **y** up the nutlet.

1682. *TEUCRIUM STOLONIFERUM* Roxb.; F. I. iii* 3 5 F. B. I.
iv. 700.

N. Bengal; E. Bengal; Tippera; Chittagong.

An erect herb, 1-2 feet high.

761. *Ajuga* Linn.

Annual or perennial herbs, often decumbent or ^{stolo} ^{life} ^{yl} ^s
leaves usually coarsely toothed. *Flowers* sessile; whorls 2-m ^{te} [^]
flowered, axillary or in terminal, leafy spikes. *Sepals* 5, connate ^b ^{...}
a 10-nerved or irregularly many-nerved calyx; teeth ^e ^q [^]
Petals connate in a 2-lipped corolla, marcescent and more ^{oi}
persistent in fruit; tube often annulate within; throat ^{su} [&] ^{htly}
dilated; upper lip very short, 2-fid; lower lip spreading, ^{lobe}
usually largest, emarginate or 2-lobed. *Stamens* 4, didyna ^{mous}
the lower pair longer, ascending, exerted or included; an ^{ther} [^]
2-celled; cells diverging or divaricate, ultimately confluent. ^{D'sk}
uniform or slightly swollen. *Carpels* connate in a shortly ^{4,1} ^{bed}
ovary; style 2-fid, the lobes subulate, nearly equal. ^f [^]
Fru ^U ^o [^]
obovoid, rugosely reticulate nutlets; scar lateral, extending beyo
the middle of the nutlet.

Corolla-tube one-half longer than the calyx..... *macrosp* ^{na} ⁿ

Corolla-tube not, or slightly, longer than the calyx

macrosperma var. *breviflora*.

1683. *AJUGA MACROSPERMA* Wall.; F. B. I. iv. 704. *A. repens*
F. I. iii. 3.

Chittagong.

A procumbent herb.

- 1683/2. Var. *BREVIFLORA*; F. B. I. iv. 704

Chota Nagpur.

A procumbent herb.

IV. INCOMPLETE.

Sepals distinct, herbaceous, rarely petaloid, imbricate or valvate,
or connate in a tube with imbricate or valvate lobes. ^{Pe} ^{als}
usually 0, very rarely 1-seriate and like the sepals, more rarely
1-seriate and truly corolline, inserted on the disk or rarely adnate

to the ovary. *Torus* small, or raised and stalk-like. *Stamens* few, rarely numerous, inserted on torus or rarely on base of perianth. *Carpels* 1 or more, free or connate.

Order CI. NYCTAGINEA

Herbs, shrubs, or trees. *Leaves* usually opposite, entire; stipules 0. *Flowers* hermaphrodite, rarely 1-sexual, regular, sometimes dimorphous, often disposed in terminal and axillary, Paniced or corymbose cymes, rarely racemed or solitary, sometimes umbellate or capitate; bracts often involucrate, free or connate. *Perianth* usually small, petaloid, segments connate in an inferior, monophyllous, persistent tube, campanulate, funnel-shaped, or salver-shaped, often thickened below, enclosing the limb persistent or deciduous, 3-5-lobed; lobes plicate in bud. *Stamens* 8-30, hypogynous, sometimes unilateral; filaments usually unequal, inflexed in bud; anthers included or exerted, dorsifixed, didymous; dehiscence lateral, longitudinal. *Carpel* sessile or stipitate, often somewhat elongated, forming a membranous, included, 1-locular ovary; ovule solitary, basal, erect, capyotropous; style filiform or capillary or 0, involute in bud; stigma small, simple or multifid. *Fruit* membranous, indehiscent, enclosed in the coriaceous perianth-base. *Seed* erect; testa adherent; albumen soft or floury; embryo straight with conduplicate cotyledons, or incurved; radicle elongated, inferior.

Embryo hooked; radicle long; limb of perianth plicate :—

Leaves opposite; stigma capitate; herbs : —

Flowers involucrate; bracts connate.....**Mirabilis.**

Flowers paniculate or umbellate, bracteolate.....**Boerhaavia.**

Leaves alternate; stigma lateral; climbing shrubs; flowers in threes, attached to midribs of large, coloured bracts.....**Bougainvillea.**

Embryo straight; radicle short; limb of perianth induplicate-valvate; fls small, in paniced cymes..... PiBoma _

762. *Mirabilis* Linn.

- Glabrous or glandular herbs, 2-3-chotomously branched; root often tuberous; leaves opposite, the lower petioled, the upper sessile. *Flowers* rather large, in branched, usually dense, involute cymes, the involucre 1- or more-flowered, calyx-like, 6-lobed, with erect, acuminate, imbricate segments, not enlarging

in fruit. *Perianth-tube* elongated, narrowed above the ovary; limb spreading, 5-lobed, plicate, deciduous. *Stamens* 5-6, exserted; filaments unequal, capillary, incurved, connate below in a fleshy cup; anthers didymous. *Ovary* ellipsoid or ovoid; style filiform, exserted; stigma capitellate, stipitately papillose. *Fruit* enclosed in a papery, crustaceous, or coriaceous, ribbed, persistent perianth-base; utricle obovoid, coriaceous. *Seed* with adherent testa; embryo hooked; cotyledons enclosing the scanty, floury albumen.

1684. MIRABILIS JALAPA Linn.; E. D. M. 606.

Cultivated, and as an escape, in every province.

A tall herb, with showy flowers; native of America.

Hind. Gul-abbas; *Beng.* Krishno-kefi. Marvel of Peru.

763. Boerhaavia Linn.

Erect or diffuse herbs, often divaricately branched; *Leaves* opposite, thickish, often in unequal pairs. *Flowers* small, panicled, umbellate, or capitate, articulate with the pedicels; bracteoles minute, often deciduous, rarely whorled and involucrate. *Perianth-tube* short or long, ovoid below, narrowed above the ovary; limb funnel-shaped, with a 5-lobed margin; lobes plicate, spreading, deciduous. *Stamens* 1 or 2-5, connate below, exserted; filaments capillary, unequal; anthers didymous. *Ovary* stipitate, oblique, narrowed to a slender style; ovule erect; stigma peltate. *Fruit* enclosed in the ovoid, turbinate or clavate, obtuse or truncate perianth-base, round, 5-ribbed, or 5-angled, with small or large sticky glands; utricle oblong. *Seed* with adherent testa; embryo hooked; cotyledons thin, broad, the outer the larger, enclosing the scanty albumen.

Flowers subcapitate; leaves entire or faintly undulate :—

Leaves white beneath; branches slender :—

Branches usually under a foot long, adpressed-pubescent.... *repen**.

Branches usually over 2 feet long, glabrous... *repent*, var. *procumbent*.

Leaves green beneath; branches stout..... *repen** var. *diffusit*.

Flowers umbellate; leaves repand-sinuate..... *repandu*.

1685. BOERHAAVIA REPENS Linn.; F. B. I. iv. 709.

In all the provinces; common chiefly in the western parts.

A small, diffusely branched herb.

1685/2. Var. PROCUMBENS; F. B. I. iv. 709. *B. procumbens*
P. I. i. 146.

In the provinces ; common chiefly in the central and
eastern parts.

1685/* A large, diffusely branched herb.

/* Var. DIFFUSA; F. B. I. iv. 709 ; E. D. B. 619.

ChotaNagpur; Orissa, "rare.

A large, diffusely branched herb. Vernac. Sánt, punar-
n&ba.

1686. SOERHAAVIA REPANDA Willd. J F. B. I. iv. 709.

W. Behar.

A large, diffusely branched herb.

764. Bougainvillea Comm.

Shrub climbing, usually armed with recurved or straight
spines, petioled, entire. Flowers bracteate, one
inserted below the middle of each bract, greenish
yellow above; bracts in threes, large, leafy, coloured,
slightly curved, narrow, fusiform below the middle,
narrow > funnel-shaped, and at length twisted; limb shortly
5-6-ribbed often crispately edged. Stamens 7-8, included; filaments
capillary, connate below in a cup; anthers didymous.
Ovary narrow-fusiform, stipitate; ovule solitary, erect; style
short, lateral, ^h'form, included; stigma elongated, one-sided,
Fruit enclosed in the coriaceous, slightly compressed, 5-ribbed
perianth-base; utricle stipitate, cylindric 'or clavate. Seed with a
thin testa; embryo hooked; cotyledons convolute, enclosing the
albumen.

Leaves and bracts Ranges glabrous; flowers appearing throughout the year;
magenta

Leaves and bracts blanches softly pubescent; flowers appearing only in the dry
seasons

Bracts dark magenta or purple spectabilis.

Bracts brick or terra-cotta red spectabilis var. latentia.

1687. BOUGAINVILLEA GLABRA Choisy.

±n gardens, both native and European.

A large, climbing shrub, with axillary, recurved spines;
native of Brazil

1688. BOUGAINVILLEA SPECTABILIS Willd.

In gardens of European residents, common.

A large, climbing shrub, with axillary, recurved spines; native of Brazil.

1688/2. Var. LATERITIA Hort.

In gardens of European residents, rare.

A large, climbing shrub, with axillary, recurved spines; native of Brazil.

765. Pisonia Linn.

Trees or shrubs, unarmed or with axillary spines; *leaves* opposite or alternate, sessile or petioled, entire. *Flowers* ^{small} dioecious, rarely monoecious or hermaphrodite, in paniced ^{sub-} sessile or peduncled cymes; bracteoles 2-3, not involucre. *S Perianth* tubular or narrow campanulate; limb 5-lobed ^{or} 5-toothed; segments induplicate-valvate, erect or spreading. *Stamens* 6-10, exserted; filaments unequal or alternately shorter and longer, filiform, connate below in a tube or ring; *antennae* ^{robust} oblong or didymous. ? *Perianth* oblong, usually enlarged at the base. *Ovary* elongated, ovoid, sessile; ovule solitary; ^{style} slender, included or exserted; stigma capitellate, peltate, ^{or} fimbriate. *Fruit* enclosed in the coriaceous or hardened, oblong? linear or clavate perianth-base, cylindrical, compressed or 5-angled, with 5 viscid ribs or with 5 rows of viscid, stipitate glands; utricle elongated, membranous. *Seed* with a hyaline testa adnate to the pericarp; embryo straight; albumen scanty, gelatinous.

1689. PISONIA ACULEATA Linn.; F. I. ii. 217; F. B. I. iv. 711; E. D. P. 824.

Orissa.

A large climbing shrub, with axillary, recurved spines^{es}.
Beng. Baghachura; TJriya Hati-ankusa.

Order ML AMARANTACEJE.

Herbs, rarely undershrubs, erect or with climbing branches[^]. *Leaves* opposite or alternate; stipules 0. *Flowers* usually hermaphrodite, rarely polygamous or dioecious, small, usually in terminal, simple or paniced spikes cymes or clusters, outermost flowers of a fascicle sometimes deformed; bracts hyaline or

scarious, never leafy; bracteoles 2, scarious. *Penant* h dr ^ of
 • dually 5 free or slightly connate, hyaline or scarious, peib i ent
 sepals, imbricate in bud, usually erect, equal, or the in ner 2-3
 smaUer. *Stamens* 1-5, hypogynous or adnate to the bas e of the
 perianth, always opposite the perianth-segments, usually in cluded
 filaments rarely free, usually connate below, directly or oy ^ means
 of interstaminal membranous staminodes, in a hypogynous cur ^
 anthers dorsifixed, short and didymous, or long; cells 1 or ^
 dehiscence introrse, longitudinal. *Carpels* solitary or connate, 1 in
 an ovoid, ellipsoid, or globose 1-celled ovary, free and sometm ies
 somewhat stipitate; ovules 1 or more, amphitropous, erect a nd
 basal, or suspended from short or long, free basal funcles, st le
 sometimes simple or obsolete, with stigma capitellate oi small
 sometimes 2-3-fid, with stigmas acute, or styles 2 or 3, papmoi y
 stigmatic on inner face, erect or recurved. *Frmt* a membranous
 utricle, rarely a circumscissile or irregularly rupturing capsule er
 very rarely a small berry, enclosed in or supported by the p
 sistent perianth. *Seed* inverted or erect, orbicular oi ova e com
 Pressed; testa crustaceous ; embryo horseshoe-shaped or annulai
 surrounding a floury albumen.

Leaves alternate, or, if opposite (*Xrua* sometimes), then either fascicu-
 le and filiform, or with alternate leaves mixed with opposite ones,
 anthers 2-celled :—

Ovary 2-many-ovuled:— Deeringia.
 lu'uitaberry; shrubby.....Celosia.
 Fruit membranous; herbs.....

Ovary 1-ovuled :—

Ovules erect :—

Flowers 2-sexual:—

Flowers capitate; fruit a circumscissile utricle Allmannia.

Flowers **spicate** ; fruit a crustaceous nut. Digera.

Flowers 1-sexual..... Amarantus.

Ovules suspended from a basal funicle; flowers perfect, ^ 8 tams
 with interposed staminodes..... of i f v m a

Leaves ^poppo_{sit}e) not fascicled ; ovary 1-celled ; ovules suspended from
 sal funicle :—

*Anthers 2-celled :—[p. 866]

tFlowers all perfect :- [p. 866] .

Stamens with interposed staminodes..... Achyrantes.

Staminodes none..... Psilotrichum.

Flowers clustered, 1-3 perfect, surrounded by deformed ones:—
[p. 865]

Stamens with interposed staminodes.....**Cyathula.**

Staminodes none.....**Pupalia.**

•Anthers 1-celled:—[p. 865]

Staminal-tube short; stigma capitate, subsessile ...**Alternanthera.**

Staminal-tube long; stigma 2-fid ; style long.....**Gomphrena.**

766. Deeringia K. Br.

Climbing undershrubs; *leaves* alternate, petioled. *Flowers* small, in simple or paniced spikes, hermaphrodite or polygamous; bracts and 2 bracteoles scarious. *Perianth*-segments 5, sepaline, membranous or herbaceous, spreading in fruit, free and equal or nearly so. *Stamens* 4 or 5; filaments connate below in a hypogynous cup ; anthers broadly oblong, 2-celled. *Carpels* connate in an ovoid or subglobose, sessile or substipitate ovary; ovules many or few, with elongated funicles; styles 2 or 4, subulate, connate below, uniformly papillöse throughout, or small, sessile, and capitellate. *Fruit* a small, globose berry, or a circumscissile capsule, seated on the spreading perianth. *Seeds* few or many, reniform, compressed; testa black, shining; arillus 0; embryo annular, surrounding the floury albumen; cotyledons linear; radicle descending.

1690. DEBRINGA CELOSIOIDKS R. Br.; F. I. i. 682; F. B. I. iv. 714.

Behar; Tirhut; N. Bengal; C. Bengal; E. Bengal; Chittagong.

A slender, climbing shrub. *Kind*, Latman; *Beng.* trola mohani.

767. Celosia Linn.

Herbs, usually annual; stems sometimes woody; *leaves* alternate, usually petioled. *Flowers* hermaphrodite, in dense terminal and axillary panicles, sessile or shortly pedicelled, white or coloured; bracts scarious; bracteoles 2 scarious. *Perianth* of 5 segments connate below, scarious, oblong or lanceolate, obtuse, erect in fruit. *Stamens* 5; filaments subulate or filiform, connate below in a membranous, hypogynous cup; anthers short or long 2-celled in a linear ovoid or subglobose ovary, ovules 2 or more, funicles long; style

or short or long, sometimes elongating in fruit; stigmas simple or 2-3, subulate. *Fruit* a circumscissile capsule, ovoid or globose, acute or obtuse, sometimes corky or coriaceous. *Seeds* 2 or more, erect, lenticular; testa crustaceous, black, shining; embryo annular, surrounding the floury albumen; cotyledons lineal, radicle descending or ascending.

Flowers white, glistening, -35 in. long or larger..... *argentea.*
Flowers pink, rose, or yellow, -25 in. long or smaller..... *cristata.*

1691. CELOSIA ARGENTEA Linn.; F. I. i. 678; F. B. I. iv. 714; E. D. C. 868.

In all the provinces, cultivated and as an escape.

An erect annual, 1-3 feet high. *Hind.* Delta* safed murgha-ka-phul; *Beng.* Swet murgha-phul; *Santa* Sirgit arak¹.

1692. CELOSIA CRISTATA Linn.; F. I. i. 679; P. B. I. iv. 71», E. D. C. 873. *C. cernua* F. I. i- 680.

In all the provinces, cultivated; occasionally as an escape.

Wet annual, 2-3 feet high. *Vernac.* Murgha-ka-phul.

768. Allmania B. Br.

Erect or diffuse herbs; *leaves* alternate, narrow, entire. *Flowers* hermaphrodite, white or greenish, in terminal and axillary, sessile or peduncled heads; bracts subherbaceous; bracteoles ^{us} *i*, scano ^{us}. *Perianth-Membranes* 5, free or nearly so, sepaline, scarious, equal, oblong-lanceolate, striate, erect in fruit. *Stamens* 5; filaments elongated at base, connate in a membranous, hypogynous cup, anthers small, linear-oblong, 2-locular. *Carpels* solitary, ^formuig ^ ovoid, 1-celled ovary, narrowed into a long, straight style, ovule solitary, sessile, erect; stigma 2-lobed *irmit!* » w«j Pressed, subglobose, or ovoid, circumscissile capsule, ^{eed erect} o ^{cu} » sibglobose; testa black, crustaceous, shining, with a *I* " * * * /taped arillus; embryo annular, surrounding the copious, floury albumen; cotyledons linear; radicle inferior.

1693. ALLMAKIA KOWFLOKA E. Br.; F. B. I. iv. 716. *Achyranthes nodiflora* F. I. i. 678.

ChotaNagpur; Behar; Tirhut; N.Bengal.

A diffuse, dichotomously branched annual.

769. *Digera* Forsk.

Annual herbs with angular branches; *leaves* alternate, petiole entire. *Flowers* in axillary, peduncled spikes, ternate, outer reduced to crested scales, the central perfect; bracts and bracteoles subherbaceous. *Perianth* submembranous, calyx segments 5, slightly connate below, oblong, erect, the 2 outer larger, erect in fruit. *Stamens* 5, hypogynous; filaments filiform; anthers didymous, 2-locular. *Carpels* forming an obovate, compressed, truncate, 1-celled ovary; ovule solitary, erect, short; style filiform; stigmas 2, short, recurved. *Fruit* a subglobose, crustaceous nut, included in the perianth, slightly compressed, sides ridged. *Seed* erect, subglobose; testa broadly adnate to albumen; embryo annular; cotyledons linear; radicle descending.

1694. *DIGERA ARVENSIS* Forsk.; F. B. I. iv. 717; E. D. D. 420.
Achjranthes alternifolia F. I. i. 674.

In most of the provinces.

A slender, annual field-weed, sometimes perennial by waysides. *Beng.* Luta rnahauria, gatiay; *Santal.* Kari gandhari.

770. *Amarantus* Linn.

Annual, erect or decumbent herbs; *leaves* alternate, the base, entire or lobed. *Flowers* small, monoecious, in clusters or dense, terminal panicles; bracts herbaceous, persistent; bracteoles 2. *Perianth* of 5, rarely 1-3 members equal or nearly equal, ovate-lanceolate segments. *Stamen* rarely 1-3; filaments free, subulate or filiform; anthers linear, 2-celled. *Permanent* segments oblong or linear, fruit erect, sometimes coriaceous and usually persistent. *Perianth* forming an ovoid, compressed, 1-celled ovary; ovule solitary, subsessile, erect; style short or 0; stigmas 2-3, subulate, or 3-lobed, hirsute or papillose. *Fruit* an orbicular or ovoid, compressed utricle, of a circumscissile, membranous or coriaceous capsule, with entire or 2-3-toothed apex. *Seed* erect, orbicular, compressed; testa crustaceous; embryo annular, enclosing noury albumen; cotyledons linear; radicle inferior. *Bracts* awned or setaceous, equalling or exceeding the sepals; utroque dehiscent, circumscissile; leaves long-petioled: - [p. 869]

Stamens 5; sepals 5:—

Leaf-axils with 5 spines; stems terete; leaves ovate or oblong, obtuse; bracts setaceous; flowers in dense or lax spikes...*syrinotus*.
Leaf-axils not spinous; stems striate; leaves elliptic or ovate-lanceolate; bracts acicular; spikes thyrsoid \—

Leaves acute or acuminate; bracts recurved, much exceeding the oblong-lanceolate, acuminate sepals.....*mnicuUitus*.

Leaves obtuse, rarely acute; bracts hardly recurved, not greatly exceeding the obovate, mucronate sepals.....*caudatu**.

Stamens 3; sepals 3; leaves obtuse or emarginate:—

Erect; flowers clustered in lower axils, and also forming a long, terminal spike; sepals long-awned, much exceeding the utricles; leaves ovate, oblong, or lanceolate:—

Stems branching above the middle; yielding only one crop annually.....*gangeticus*.

Stems branching near the base; yielding several crops annually
(jamjeticwi var. trtetis).

Diffuse; flowers clustered, all axillary; sepals short-awned, not greatly exceeding the utricles; leaves ovate-elliptic or deltoid-ovate

mangostanus.

Bracts acute, hardly awned, shorter than the sepals; utricles in dehiscent

or rarely, dehiscent; leaves obtuse; rounded or notched:—[p. 868]

stamens 3; sepals 3:—

Utricle acute at the tip, rugose, indehiscent; clusters axillary and in terminal, paniced, slender spikes:—

Leaves green.....*viridix*.

Leaves with a pale crescentic, transverse band

viridis var. fasciatu.

Utricle blunt at the tip:—

Utricle membranous, orbicular or broadly ovate, indehiscent:—

Procumbent; leaves small, 2-lobed; clusters all axillary

lilitum.

Tall, succulent; leaves large, oblong or rounded; clusters axillary and in terminal, simple or lobed spikes

lilitum var. oleracea.

Utricle rugose, ovoid, indehiscent or dehiscent; leaves obtuse,

or rarely retuse or 2-lobed; clusters all axillary.....*polygtimm*.

Stamens 2; sepals 2; utricles orbicular, compressed, membranous

or dehiscent; clusters minute, all axillary; leaves small, linear-oblong,

or rounded, obtuse, or 2-lobed tip.....*tenuifolius*.

1695. AMARANTUS SPINOSUS Linn.; F. I. iii. 611; F. B. I. iv. 718;

E-D. A. 943.

u.

In all the provinces.

An erect, spinescent herb. *Beng.* Kanta-nutia, kanta-miris; *Santal.* Janum arak'.

1696. AMARANTUS PANICULATUS Linn.; F. B. I. iv. 718. *A. p^omentaceus* F. I. iii. 610; E. D. A. 925.

In most of the provinces, cultivated.

A tall, robust annual. *Santal.* Larka baha.

1697. AMARANTUS CAUDATUS Linn.; F. B. I. iv. 719; E. D. A. 921.

In the south-western parts, cultivated.

A tall, robust annual.

1698. AMARANTUS GANGETICUS Linn.; F. I. iii. 616; F. B. I. iv. 719; E. D. A. 927. *A. oleraceus* F. I. iii. 605; A. 938. *A. lanceolatus* F. I. iii. 607; E. D. A. 932. *A. atropurpureus* F. I. iii. 608; F. B. I. iv. 722; E. D. A. 919. *A. tricolor* F. I. iii. 608. *A. melanclwlicus* F. I. iii. 608; E. D. A. 937. *A. lividus* F. I. iii. 605; E. D. A. 933.

In all the provinces, cultivated.

An erect, stout annual, very variable in colour and shape of leaves. *Hind.* Lai-ság; *Beng.* Dengua, lw-shák, rakna-shák, lál-nati, kánka-nati, gobura-nati, *Santal.* Arak' gandhari.

The species separated by Roxburgh are all well-marked races of this variety, and some of them, but more particularly the more described in the *Flora Indica* as *A. oleraceus*, possess many or less distinguishable and definite subraces or cultivated forms.

- 1698/2. Var. TRISTIS. *A. tristis* F. I. iii. 604; E. D. A. 950. *A. polygamies* F. I. iii. 603.

In most of the provinces, cultivated.

An annual herb with many prostrate branches from the base of the stem. *Santal.* Pond-gandhari.

As variable in shape and coloration of leaves as the preceding variety, from which this mainly differs in being cut down several times, a new crop of shoots springing up, whereas the forms included under the typical plant are either taken up by the roots or have the tender tops only once taken as a vegetable. The species described in the *Flora Indica* correspond to two well-marked races, both of which, but particularly the race named *A. tristis*, include a multitude of distinguishable subraces and cultivated forms. The *A. polygamus* of Roxburgh is not the true plant of that name.

1699< AMARANTUS MANGOSTANUS Linn.; F. B. I. iv. 720; E. D. A. 934.

In most of the provinces.

A diffusely branched annual; perhaps a feral state of

17n ^{Λ' SlanΛeΛcus var-} *tristis*. 'Beng. Sâg.

-700. AMARANTUS VIRIDIS Linn.; F. I. iii. 605; F. B. I. iv. 720; E. D. A. 953.

In all the provinces, a weed of cultivation.

A slender annual.

17⁰⁰/2. Var. FASCIATA. *A. fasclatus* F. I. iii. 609; E. D. A. 923.

In most of the provinces.

A slender annual. Beng. Ban-nati, tun-tuni-nati.

17^{-U1} - AMARANTUS BLITUM Linn.; F. B. I. iv. 721; E. D. A. 920.

In the western provinces,

r - A procumbent, annual weed.

^uI/2. Var. OLERACEA; F. B. I. iv. 721.

In most of the provinces, cultivated.

A tall, succulent annual. Beng. Sada-natia, natiya-sâg.

17^{o2}. AMARANTUS POLYGAMUS Linn.; F. B. I. iv. 721; E. D. A. 941. *A. polygonoides* F. I. iii. 602.

Behar; Tirhut; N.Bengal; C.Bengal.

A prostrate, annual weed. Vernac. Champa-natiya, lal^uca^{ta} mpa-natiya.

1703 - AMARANTUS TENUIFOLIUS Willd.; F. I. iii. 602; F. B. I. iv. 722; E. D. A. 949.

Tirhut; Behar; C. Bengal; E. Bengal.

A prostrate, annual weed. Beng. Genti-nati, jêlchumli.

771. Cyathula Lour.

Herb 01'unΛei<sîruΛs; leaves opposite, petioled, ovate, entire,
Flo ^{wer}S-SJnaΛ' U1 ΛarS^e or small bracteate and bracteolate fas-
cicl ^{es} with *~2 flowers perfect and the rest imperfect; fascicles
spi ^{ca} or ca^{pit}ate, reflexed in fruit; perianth-segments of the
im ^p ^{IGct} ^{rto}Wers ^{ultima}Λely converted into rigid, hooked awns;
bract !-ne*S ?Vate^r concay^e, often aristate. Perianth of 5 scarious,
f1 ived sepals, acuminate or with hooked aristae. Stamens 5;
stai ⁿⁱ ^{des} ^{connat}e below, with intervening linear, lacerate or 2-fid
2-cell [!]? ^Λ ^a ^ΛvP^oSy^{nous}, membranous cup; anthers oblong,
ε ^{...} Carpels forming an obovoid, 1-celled ovary; ovule

solitary, pendulous from a long, basal funicle; style simple, filiform; stigma capitellate. *Fruit* an ovoid, membranous utricle, enclosed in the perianth, its apex areolate. *Seed* inverse, oblong, testa coriaceous; embryo annular; cotyledons linear, flat; radicle erect.

1704. *CYATHULA PROSTRATA* Bl.; F. B. I. iv. 723. *Achyranthes prostrata* F. I. i. 674.

E. Bengal; Chittagong.

A slender, erect weed.

772. *Pupalia* Juss.

Herbs or undershrubs, 3-chotomously branched; leaves opposite, petioled, ovate or orbicular, entire. *Flowers* green, fascicled in simple or paniced spikes; fascicles with 1 perfect flower, rest imperfect; perianth-segments of imperfect flowers ultimately converted into stellately spreading, hooked bristles; bracts and bracteoles scarious. *Perianth*-segments of perfect flowers slightly connate below, herbaceous, sepaline, almost equal, lanceolate, acuminate, 3-5-nerved. *Stamens* 5; filaments subulate, shortly connate at the base; anthers didymous, 2-locular. *Carpel* forming an ovoid, 1-celled ovary, gradually tapering into a slender style; ovule solitary, pendulous from a long, basal funicle; style simple; stigma capitellate. *Fruit* an ovoid, membranous utricle, enclosed in the perianth, its apex areolate. *Seed* inverse, lenticular, rostellate; testa thinly coriaceous; embryo annular; cotyledons linear, flat; radicle ascending,

Herbaceous, glabrous or nearly so, annual or biennial; leaves distinctly petioled; sepals laxly villous; bracts pungent..... *atropurpurea*. Shrubby, tomentose, perennial; leaves short-petioled; sepals densely woolly; outermost bract very broad, membranous.

1705. *PUPALIA ATROPURPUREA* Moq.; F. B. I. iv. 723. *Achyranthes lappacea* F. I. i. 673.

Chota Nagpur; Behar; Tirhut; N. Bengal; W. Bengal. A slender, straggling herb. *Beng.* Kuya-duya, duya-kuya.

1706. *PUPALIA LAPPACEA* Moq.; F. B. I. iv. 724.

Behar.

A large, straggling undershrub.

773. Psilotrichum 131.

Herbs silruΛSj 3-chotomously branched; *leaves* opposite, *entire*. *flowers* small » all hermaphrodite, in axillary, solitary or **panicled**. *heads* bracts small, hΛaline; bracteoles 2, small, *Perianth* of 5 sepaline, papery segments, slightly connate below. *Stamens* 5. *filaments* unequal, linear or subulate, connate below **anthers** 2-celled, short or long. *Carpels* 5 **anthers** 2-celled, short or long. *Carpels* oblong, 1-celled ovary; ovule solitary, **basal** funicle; style simple, slender; *Stigma* globose or compressed utricle, **annular** the perianth » which is often hardened at the base, *testa* coriaceous or crustaceous; embryo **radicle** superior.

170. PSILOTRICHUM FERRUGINEUM Moq.; F. B. I. iv. 725.

Achyranthes ferruginca F. I. i. 675.

C. Bengal; Sundribuns.

An annual, prostrate weed. *Hind.* Lal-sirinchi; *Deng.* Kakto-sirinchi.

774. >ffirua Forsk.

Erect or ΛdosΛraΛe or climbing herbs or undershrubs; *leaves* **alternate** or oPPosite or whorled. *Flowers* minute or small, **hermaphrodite** or P^Samous, in solitary or panicled spikes; bracts **panicled** small. *Perianth* short, sepaline, membranous or **woolly**. *Stamens* 5, rarely 4; *filaments* **annular** with short or long intervening staminodes in a **annular** *anthers* 2-celled, didymous. *Carpels* 1 **globose**, 1-celled ovary; ovule solitary, **simple**; *stigma* capifcellate or **stigma** 2. *Fruit* a membranous utricle or **capsule** scissile capsule with coriaceous apex. *Seed* inverse; *testa* **annular**, surrounding the floury albumen; *radicle* linear; **radicle** superior.

Spikes alternate, or oPPosite and alternate mixed :—
Spikes in terminal panicles as well as axillary; *leaves* opposite and alternate mixed *candens.*
Spikes all axillary; *leaves* all alternate *lanata.*
Leaves filiform in opposite fascicles; *spikes* peduncled *Monwnia.*

1708. ÆRUA SCANDENS Wall.; F. B. I. iv. 727; E. D. A. 558.

Achyranthes scandens F. I. i. 676.

Behar; Chota Nagpur.

A climbing undershrub. Beng. Nuriya.

1709. ÆRUA LANATA Juss.; F. B. I. iv. 728; E. D. A. 558.

Achyranthes lanata F. I. i. 676.

E. Bengal; Behar.

An erect or prostrate undershrub. Beng. Chaya.

1710. ÆRUA MONSONIA Mart.; F. B. I. iv. 728. *Achyranthes**

Monsonia F. I. i. 673.

W. Bengal; Chota Nagpur.

A much-branched herb.

775. *Achyranthes* Linn.

Herbs, sometimes woody below; leaves opposite, petioles entire. Flowers hermaphrodite, in slender, simple and paniculate spikes, soon deflexed; bracts membranous, spinescent; bracteoles 2, diverging, spinescent. Perianth of 4-5 rigid, ultimately ribbed, sepaline segments, somewhat connate below, subulate-lanceolate, aristate. Stamens 2-5; filaments filiform, subulate, connate at the membranous base, with as many quadrate, toothed or dorsally lamellate staminodes; anthers 2-celled, oblong or didymous. Carpels forming an oblong, subcompressed, 1-celled ovary; solitary, pendulous from a long, basal funicle; style filiform, stigma capitellate. Fruit an oblong or ovoid utricle; apex rounded or areolate. Seed inverse, oblong; testa coriaceous, embryo annular, surrounding the floury albumen; cotyledons linear or lanceolate; radicle erect.

Outer sepal long, pungent, exceeding the others; leaves elliptic-lanceolate, acuminate; an aquatic plant of swamps and river-banks...*aqw*^{flim}
Sepals subequal:—

Bracteoles ovate, tipped with a spine as long as or longer than their blade; staminodes fimbriate:—

Leaves rather rigid, velvety tomentose or rarely glabrate, orbicular obovate or elliptic, obtuse or acute, not acuminate; rachis of spike rigid; a weed of roadsides and waste places.....*aspew*•

Leaves membranous, large, wide-elliptic, acuminate, sparingly pubescent or glabrous; rachis of spike slender; a straggling, subscandent herb in forest undergrowth ...*asjpera* var. *porphyristachya*;
Bracteoles reduced to a spine, minutely 2-auricled at the base; stami-

777. *Gomphrena* Linn.

Herbs, hirsute or villous, with usually thickened nodes ; *leaves* opposite, entire. *Flowers* short or long, white or coloured, hermaphrodite, usually capitate ; bracts scarious ; bracteoles short or long, concave, keeled winged or crested. *Perianth* composed or not, of 5 sepaline, lanceolate, acuminate, nearly equal segments. *Stamens* 5 ; filaments linear, united below in a long tube, 5-nerved at apex, usually with no intervening staminodes ; anthers 1-celled, oblong or linear, sessile or stipitate, in the sinuses of the staminal tube. *Carpels* forming a subglobose or turbinate, 1-celled ovary, ovule solitary, pendulous from a long, basal funicle. *Fruit* a compressed utricle, ovoid or oblong. *Seed* inverse, lenticular, testa coriaceous ; embryo annular, surrounding the floury albumen ; cotyledons narrow or obovate ; radicle superior.

1715. GOMPHRENA GLOBOSA Linn. ; F. I. ii. 63 ; F. B. I. iv. 732.

In all the provinces, cultivated and as an escape.

A tall, branching, annual herb. *Vernac.* Gul-inakhmal.

Order CIII. CHENOPODIACEJE.

Annual or perennial herbs or shrubs, sometimes mealy or lepidote, occasionally fleshy. *Leaves* alternate, rarely opposite, simple, usually entire, flat or rarely semiterete or cylindrical. *Stipules* membranous or fleshy, sometimes obsolete ; stipules 0. *Flowers* small, almost always green, hermaphrodite or 1-sexual, usually regular, often dimorphic ; bracts 1 or 0 ; bracteoles 0 or 2. *Perianth* simple, sepaline, of 3-5 free or connate segments, imbricate in bud ; in ? flowers often 0. *Stamens* usually 5, opposite the perianth-segments, hypogynous or perigynous ; filaments almost always free, occasionally with intervening staminodes ; anthers didymous or sagittate, 2-locular ; dehiscence longitudinal, anterior or lateral. *Disk* 0 or annular, lining perianth-base, occasionally crenate or lobed. *Carpels* connate in a superior, 1-celled ovary, free or enclosed in the perianth-base, ovule solitary, basal or lateral, campylotropous ; style terminal* short or long ; stigma capitate, 2-3-lobed, or styles 2-3, or stigmas 2-5, free or slightly united, sessile. *Fruit* a small, membranous, coriaceous, or fleshy utricle, rarely a circumscissile capsule, generally enclosed in the perianth unless perianth be absent. *Seed*

erect, Inverse or horizontal; testa crustaceous, coriaceous or membranous, sometimes adnate to albumen; albumen fleshy or urceolate or 0; embryo curved, annular or spiral.

Stems not twining; bracteoles free from the perianth; anthers erect or curved in bud :-

Stems leafy, not jointed :-

Leaves fleshy, semiterete; embryo spiral; albumen scanty or none;

flowers minute, axillary, usually 2-sexual; stamens perigynous or mostly hypogynous..... Suaeda.

Leaves membranous, flat; embryo annular; albumen floury; stamens perigynous; flowers clustered :-

Flowers all similar, hermaphrodite :-

Perianth 5-partite, hardly altered in fruit; flowers without bracts or bracteoles..... Chenopodium.

Perianth 5-lobed, the base thickened and indurated in fruit; flowers bracteate and 2-bracteolate..... Beta.

Flowers dissimilar, monoecious or polygamous; male florets bracteolate, 3-5-lobed or -partite :-

Male flowers in terminal leafless spikes; sepals 4-5; females in axillary clusters, without bracteoles but with a 2-4-toothed perianth, in fruit leathery and sometimes armed with dorsal spines..... Spinacia.

Male and female or hermaphrodite and female flowers usually associated; male sepals 3-5; female perianth 0; bracteoles 2, flat, connate or not in fruit, dilated into a 2-valved covering for

Stems jointed; leaves 0; flowers hermaphrodite :-

flowers 2-6 together in the axils of the scales of sessile, cone-like

perianth ovoid or pyramidal; mouth narrowed, 3-4-fid; ovary horseshoe-shaped; albumen fleshy..... Arthrocnemum.

flowers 3-nate, sunk in superposed cavities in successive joints; perianth pyramidal, mouth truncate or with 3-4 minute

Stems conduplicate; albumen none..... Salicornia.

Perianth 2-lobed; bracteoles 2, broad, adnate to the face of the leaves flat, membranous; anthers versatile; embryo spiral

Basella.

778. Suaeda Forsk.

Herbs Shrub usually of saline tracts; leaves fleshy, ternate, rarely flattish. Flowers minute, axillary, hermaphrodite, 2-sexual, bracteate and 2-bracteolate. Perianth globose or urceolate, 5-lobed or 5-partite; segments equal

or not, simple, gibbous, or almost winged. *Stamens* 5; filaments short, hypogynous or perigynous; anthers rather large, large or 0. *Ovary* usually sessile, wide-based, adnate below the perianth, ovoid or orbicular; apex rounded or truncate; ovule solitary, subsessile; style 0; stigmas 2-5, minute, subulate, recurved, papillose throughout. *Fruit* a small, membranous spongy, included utricle; pericarp usually free from the seed. *Seed* erect, horizontal, or oblique; testa coriaceous or crustaceous, albumen 0, or scanty and 2-partite; embryo slender, somewhat spiral.

Styles 3; seeds erect *niuliflora*.
 Styles 2; seeds usually horizontal *maritimo-*

1716. SUJEDA NUDIFLORA Moq.; F. B. I. v. 14; E. D. S. 2994.
Salsola nudiflora F. I. ii. 60.

Orissa, sea-coast.

A diffusely branched, woody, perennial undershrub.
Uriya Géria.

1717. SUJEDA MARITIMA Dumort.; F. B. I. v. 14; E. D. S. 2990.
Salsola indica F. I. ii. 62.

Sundribuns, common.

An erect herb or undershrub, branching from the base.

779. *Chenopodium* Linn.

Annual or perennial, erect or prostrate herbs; leaves alternate, entire, lobed or toothed. *Flowers* minute, hermaphrodite, axillary fascicles or cymes; bracts 0; bracteoles 0. *Perianth* usually 5-, rarely fewer-lobed; segments concave, incurved. *Stamens* 5 or fewer, hypogynous or almost perigynous; filaments sometimes connate below; anthers didymous or oblong, 2-celled. *Disk* 0 or annular. *Ovary* depressed-globose, rarely ovoid; ovule solitary, subsessile; style usually 0; stigmas 2-5, sometimes united below in a style, subulate or filiform. *Fruit* a membranous utricle, enclosed in the perianth. *Seed* horizontal, rarely erect; testa crustaceous or coriaceous; embryo nearly or quite annular, surrounding the floury albumen.

•Scentless; mealy or green or red; leaves long-petioled, rhomboid, deltoid, or lanceolate, acute or obtuse; embryo completely annular; seed keeled; stigmas 2 [p. 879] *album**

>Pinn<lj

*Aro at late, Tbt margin of ^{IC>} glandular, pale green J leaves short-petioled, oblong or lanceolate, ^{US6 1} lower sinuate, upper entire i' embryo incompletely annular; seed obtuse ; stigmas 5 [p. 878]..... ambrosioides.

1718. CHENOPODIUM ALBUM Linn.; F. I. ii. 58; F. B. I. v. 3; E. B. c. 1003. C. viride F. I. ii. 58. (7. laciniatum F. I. ii. 59.

In all the provinces, cultivated, and a weed in cultivated ground.

A tall herb, 1-10 feet high. Vernac. Betuá-sak, chandan betu.

1719. CHENOPODIUM AMBROSIODES Linn.; F. B. I. v. 4; E. D. C 1009.

In most of the provinces.

A tall, much-branched herb.

780. Beta Linn.

Succu ternat fascic1 kracts lat e, 5 in fruU abula tt-infe ovule usual the h Pericar 2 Onta flourv y albumen. ^{AA} glabrous herbs, with fleshy roots » * leaves radical and ^{Su^entire} Flowers small, hermaphrodite, ternate or ^{rarely solitar} y> axillary, or in terminal spikes or panicles; ^{stinct} bracteoles 2 Perianth calycine, simple, urceol- ^{adnate below to the ovary} y > *bases of segments hardened ^{on the back} Stamens 5, perigynous; filaments ^{anthers oblong} g' 2-celled. Ovary depressed globose, ^{or < tnickish} surrounding the base of the ovary ; ^{sessile; sti} gmas connate below in a style, free above, ^{Subulate, papiose within} Fruit adnate below to ^{Perianth, enclosed ab} ove by the perianth-lobes; ^{shy, indent} scent, not adhering to the seed. Seed hori- ^{vest} a thin embryo a nnular, surrounding the copious,

1720. SETA VULGARIS Linn.; F. B. I. v. 5. B. benghalensis F-1. ii. 59.

In most of the provinces, cultivated.

A- herb with large tap-root. Vernac. Palák, palánki. The Beet.

781. Spinacia Linn.

Erect, sinuate or 1°ked. ^{annUal>} S^brous herbs; leaves alternate, petioled, entire ^{or 1°ked}. Flowers dioecious; males in terminal, leafless

spikes; females in axillary clusters; bracts 0; bracteoles 0. 3
Perianth sepaloid, 4-5-partite; segments oblong, obtuse. *Stamens*
 4 or 5, hypogynous; filaments capillary; anthers oblong, exserted,
 didymous. *Disk* 0. ? *Perianth* herbaceous, 2-4-toothed, iⁿ
 fruit coriaceous, enclosing the utricle, unarmed or with 2-3 dorsal
 spines. *Ovary* subglobose; ovule subsessile; stigmas 4 or 5, long,
 filiform, connate below. *Fruit* a hard, compressed utricle, adnate
 to and enclosed in the perianth; pericarp thin, adnate to seed.
Seed erect, turgid; testa thin; embryo annular, surrounding the
 floury albumen; radicle inferior.

1721. SPINACIA OLBRACBA Linn.; F. B. I. v. 6. 8. *tetrandra*
 F. I. iii. 77.

' In most of the provinces, cultivated.

A succulent herb. *Vernnc.* Palak, palang. Spinach.

782. *Atriplex* Linn.

Herbs or shrubs, usually mealy; *leaves* alternate, rarely oppo-
 site. *Flowers* small, moncecious or polygamo-dicecious, clustered,
 the sexes often mixed; in axillary, sessile fascicles, or in simple or
 paniced spikes; bracts 0; bracteoles in # flowers 0, in ? 2, flat,
 accrescent, dilated in fruit, and forming a 2-valved covering to the
 fruit. 3 *Perianth* 3-5-partite, sepaline; segments oblong or
 obovate, obtuse. *Stamens* 3-5, inserted at base of perianth;
 filaments free or connate below; anthers didymous. *Ovary* rudi-
 mentary or 0, rarely perfect, s *Perianth* 0, rarely like that of 3 •
Disk 0. *Ovary* ovoid or depressed-globose; ovule oblique or ver-
 tical; stigmas 2, subulate or filiform, connate below. *Fruit* a
 membranous utricle, rarely adnate to seed, enclosed in the enlarged
 bracteoles. *Seed* erect or inverted, and suspended from a long
 funicle, or rarely (in hermaphrodite flowers only) horizontal;
 embryo annular, surrounding the floury albumen.

1722. ATRIPLEX HORTENSIS Linn.; F. B. I. v. 6; E. D. A. 1606.

In most of the provinces, cultivated.

A succulent, annual herb. Orache.

783. *Arthrocnemum* Moq.

Fleshy, jointed, branching shrubs or herbs; *leaves* 0. *Flowers*
 minute, hermaphrodite, 2-3 together in the axils of scaly bracts,
 forming sessile, cone-like spikes; sunk in superposed and decus-
 sately opposite cavities of the internodes; bracteoles 2. *Perianth*

1725. BASELLA RUBRA Linn.; F. B. I. v. 20. *B. alba* F. I. ii- 1^o4 J E. I). B. 203.

In all the provinces, cultivated or wild.

A glabrous, much-branched, twining fleshy herb.

Vernac. Poi, ban-poi.

Order CIY. PHYTOLACCACEJE.

Trees, shrubs, or herbs. *Leaves* alternate, entire ; stipules 0 or small or reduced to tubercles. *Flowers* hermaphrodite or 1-sexual, usually racemose, rarely axillary, racemes terminal and axillary; bracts and 2 bracteoles generally present. *Perianth* simple, herbaceous or coriaceous, rarely membranous or coloured, 4-5-partite, rarely obconic or discoid; segments imbricate, equal or unequal, oblong or orbicular, persistent. *Stamens* 4, rarely more, alternate with perianth-segments or irregularly inserted; filaments usually persistent, subulate or filiform, free or connate below; anthers deciduous, dorsifixed, 2-locular; dehiscence anterior, posterior or lateral. *Disk* hypogynous, obscure or annular. *Carpels* 1^{or} more, free or connate, superior; ovules solitary in each carpel, amphitropous or campylotropous; stigmas usually sessile, recurved. *Fruit* of a solitary, coriaceous, crustaceous, fleshy or samaroid carpel, or of several distinct or connate carpels, and then 1-locular or several-locular, each cell 1-seeded. *Seeds* erect, often arillate; albumen fleshy or floury ; embryo peripheric.

786. Rivina Linn.

Herbs, woody below, with sulcate branches; *leaves* alternate, petioled ; stipules minute, caducous. *Flowers* hermaphrodite, in axillary, rarely terminal, slender, many-flowered racemes; pedicels slender; bracts subulate; bracteoles caducous. *Perianth* corolline, 4-partite; segments subequal, obovate-oblong, obtuse, concave, unaltered in fruit. *Stamens* 4, hypogynous, alternate with perianth-segments; filaments filiform; anthers oblong, erect, dehiscing in front. *Disk* small, hypogynous. *Carpel* solitary, Bubglobose, compressed; ovule solitary, sessile, amphitropous; style subterminal, short, curved ; stigma capitellate. *Fruit* indehiscent, compressed, subglobose; pericarp fleshy, adnate to seed. *Seed* erect, lenticular; testa crustaceous, arillus minute; embryo

Polygonum.

POLYGONACEÆ.

IKiimen- cotyledons con-
annular, surrounding the scanty, floury albumen,
volute; radicle thick.

1726. RIVINA HUMILIS Linn.; F. B. I. v. * • • **most** of them
In all the provinces, cultivated, and in
thoroughly naturalised and as if wild.
A slender herb ; native of America.

Order CY. POLYGONACEÆ.

Herbs, rarely shrubs, sometimes climbing;
Leaves alternate, rarely opposite, entire
scarious or membranous, usually sheathing
hermaphrodite, rarely by abortion polygamouB.
medium, solitary or fascicled within the bract,
cymose or racemed; pedicels usually
ochreate or imolucrate. *Perianth* simple, i-
Petaloid; lobes or segments 3-6, free or « ^ TM w e r opposite the
cate in bud. *Stamens* 5-8, rarely more or
Perianth-segments; filaments filiform, free o ^ ^ ^ parallel;
ring; anthers 2-celled, usually versatile; ce
dehiscence longitudinal. *Disk* annular, iglanQu
innate in a superior, sessile, free, 1-oeUed o
3"gonous, rarely 4-gonous ; ovule solitary, oi
^ the end of a distinct funicle ; styles 3 or
free or somewhat connate; stigmas capitate, p
^ » it a small, hard nut, 3-gonous, coin Pf S
^ closed in the perianth. *Seed* erect; *****
^ en copious, floury, sometimes ruminant; emu
^ ved, or sometimes peripheric; radicle superio

Herbs or undershrubs, erect, or, if climbing (W - _ times),
^ florescence not ending in tendrils :— ...Polygo num#
Perianth 4-5-, rarely 3-oleft; stigmas capitellate..... Rumex .
Perianth 6-cleft; stigmas fimbriate..... ending in tendrils;
L ai'ge climbing shrubs, the rachis of the innoresce..... **Antigonon.**
Perianth 5-cleft.....

787. Polygonum Linn.

Herbs, rarely undershrubs, erect, rarely
*te, entire, rarely lobed ; stipules tubular, in
he; inaphrodite, small or minute, axillary o

sessile or in spiciform, capitate or paniced racemes; pedicels short, usually jointed under the perianth; bracts and bracteoles membranous, ochreate. *Perianth* simple, green or coloured, 4<» rarely 3-cleft, the 2 outer segments usually smaller than the others. *Stamens* 5-8, rarely 1-4, perigynous; filaments filiform, usually dilated below, or alternate with the lobes of an annular or glandular disk; anthers 2-celled; cells discrete; connective small. *Ovary* compressed or 3-gonous; ovule solitary, usually stipitate, styles 2 or 3, free or slightly connate below; stigmas capitate. *Fruit* a compressed or B-gonous nutlet, angles obtuse or acute, covered or nearly covered by the persistent perianth; pericarp usually hard, shining or dull. *Seed* albuminous; embryo lateral or excentric; radicle long; cotyledons usually small.

* Stems unarmed :—[p. 885]

Inflorescence in axillary clusters:—

Sepals all obtuse:—

Sepals short, broad :—

Flowers hidden among the stipules..... *plebejum*.

Flowers all or mostly pedicelled..... *plebejum* var. *effusa*.

Sepals narrow..... *plebejum* var. *micranthema*.

Sepals 2 outer acute :—

Leaves 2-5 in. long or less..... *plebejum* var. *brevifolium*.

Leaves *5 in. long or longer..... *plebejum* var. *eleo^{anSt}*.

Inflorescence terminal, racemose, spicate or capitate:—

Inflorescence in elongated, stout or filiform racemes or spikes:—

[p. 885]

{Nutlets biconvex :—[p. 885]

Bracts hairy:—

Bracts coarsely hairy or strigose :—

Leaves ovate; petioles long, 1-4 inches..... *orientate**

Leaves lanceolate; petioles short, less than 5 in. long :—

Limb of ochrea truncate, ciliate, erect..... *tomentosuni-*

Limb of ochrea scabrid, ciliate, spreading or recurved

limhatuni-

Bracts densely woolly..... *lanifolium*.

Bracts glabrous:—

§Bracts not ciliate :—[p. 885]

Perianth without glands; limb of ochrea not ciliate

glabrum-

Perianth glandular; limb of ochrea shortly ciliate

lapathifolium.

• Bracts ciliate; perianth without glands; limb of ochrea
shortly ciliate [P-884].....*minus.*

outlets distinctly trigonous :- [p. 884]

Racemes stout, short, spicate, with closely imbricating bracts:—
• Bracts hairy or strigose :—

Plant everywhere covered with stalked glands.....*vitcosum.*

Plant quite without glands.....*stagnin urn.*

- Bracts glabrous :—

Leaves tapering to the base; marginal cilia of the ochrea
longer than the tube.....*barbatum.*

Leaves rounded or cordate at the base, or, if tapering, the
marginal cilia of the ochrea not longer than the tube

serrulatum.

Racemes filiform, long, with more or less distant bracts :—

Racemes decurved, interrupted, the bracts distant throughout;
limb usually glandular ; cilia of the ochrea if present not as
long as the tube :—

Ochrea very shortly ciliate or eciliate ; bracts glandular or
not.....*Hydropiper.*

Ochrea with cilia at least half as long as the tube; bracts
always glandular.....*flaccu him.*

Racemes erect, strict; bracts closely imbricate above with one
or two removed far below; bracts without glands; ochrea with
cilia * as long as the tube.....*mavmntlmm.*

Inflor. compressed > capitate:—[p. 884]

Infl. With an involucre below each head.....*alatum.*

* Steniarorence without an involucre.....*chinense*

Leaves T. the angles with recurved prickles:—[p. 884]

oid, very long-petioled; racemes solitary, short

Leaves lanolate.....*perfoliatum.*

Or subelocose:—t-petioled or sessile ; racemes paniced, cblong

Bracts beneath prickles:—peduncles and nerves of leaves

Bracts beneath prickles:—angles of stem.....*strigosiwi.*

acuminate; prickles confined to stem and there sparse

pedunculare.

1727

POLYGONUM PLEBEJUM R. Br.; F. B. I. v. 27; E. D.
* 1114.

iji most of the provinces.

A Prostrate, diffusely branched weed in cultivated

gun. Santal. Raniphul.

- 1727/2. Var. EFFUSA F. B. I. v. 28.
N. Bengal; C. Bengal; E. Bengal.
A prostrate weed in damp places.
- 1727/3. Var. MICRANTHEMA F. B. I. v. 29.
E. Bengal; W. Behar.
A small, very slender weed, on sandy river-churs.
- 1727/4. Var. BREVIFOLIA F. B. I. v. 28.
Chota Nagpur ; Behar; W. Bengal. **in**
A prostrate weed, with stout rootstock and branches, **in**
dry places.
- 1727/5. Var. ELEGANS F. B. I. v. 29. *P. elegans* F. I. ii- **291.**
In all the provinces.
A prostrate, perennial herb, in dry, uncultivated ground **d.**
1728. POLYGONUM ORIENTALE Linn. ; F. B. I. v. 30. *P.2>ilosum*
F. I. ii. 286.
C. Bengal; N. Bengal; E. Bengal; Tippera; Chittagong.
A tall annual, 3-10 feet high, with fistulous branches, in
damp places. *Beng.* Bara-pani-mirich. **I.**
1729. POLYGONUM TOMENTOSUM Willd.; F. I. ii. 287 ; F. I. **1>**
v. 30.
E. Bengal; Chittagong.
A stout annual, prostrate below ; in ditches and swamps-
1730. POLYGONUM LIMBATUM Meisn.; F. B. I. v. 30.
Chota Nagpur; N. Bengal; E. Bengal.
A stout annual, prostrate below; in ditches and swamps*
1731. POLYGONUM LANIGERUM R. Br.; F. B. I. v. 35. *P. lanatw»*
F. I. ii. 285.
N. Bengal; E. Bengal. **.**
A stout annual, prostrate below; in ditches and swamp^s **•**
perhaps also perennial. *Beng.* Shwet-pani-mirich.
1732. POLYGONUM GLABRUM Willd.; F. I. ii. 287 ; F. B. I. v. 34;
E. D. P. 1091.
In all the provinces.
An erect annual, with reddish stem; in ditches **and**
swamps. *Sanial.* Sauri arak', jioti.
1733. POLYGONUM LAPATHIFOLIUM Linn.; F. B. I. v. 35. *J-^l-*
mutans F. I. ii. 285.
Behar.
An erect annual.
1734. POLYGONUM MINUS Huds.; F. B. I. v. 36.

- E. Bengal; Chittagong.
- 1735 P^A s^{en}er annual; in ditches and marshes.
 • POLYGONUM VISCOSUM Ham.; F. B. I. v. 36.
 Chittagong.
- 1736 P^A s^men(*er or stout annual; in damp places.
 • POLYGONUM STAGNINUM Ham.; F. B. I. v. 37.
 In all the provinces.
- 1737 D^A s^mP^e or branched annual; in damp places.
 • POLYGONUM BARBATUM Linn.; F. B. I. v. 37 ; E. D. P. 1084.
 P. rivulare F. I. ii. 290.
 In all the provinces.
- 1738 P^A St^oUt annual > in damp places. Beng. Bekh-unjubaz.
 • POLYGONUM SERRULATUM Lagasc.; F. B. I. v. 38. P. flaccidum F. I. ii. 291.
 c - Bengal; E. Bengal.
 A stout annual; in swamps and ditches. Beng. Pani-mith.
- 1739 • POLYGONUM HYDROPIPER Linn.; F. B. I. v. 39; E. D. P. 1095.
 In all the provinces.
- 1740 P^A st^outistl annual; in wet places. Beng. Packirmul.
 • POLYGONUM FLACCIDUM Meisn.; F. B. I. v. 39. P. tenellum F. I. ii. 289.
 N - Bengal; C. Bengal; E. Bengal; Chittagong.
- 1741 P^A acci d > branching annual; in ditches and swamps.
 • POLYGONUM MACRANTHUM Meisn.; F. B. I. v. 40. P. baroatum F. I. ii. 289.
 E - Bengal, in the Jheels.
- 1742 P^A ta^l ei⁶C* ^{ae}*^Λ; in deep marshes.
 • POLYGONUM ALATUM Ham.; F. B. I. v. 41.; E. D. P. 1076.
 Chota Nagpur, Parasnath.
- 1743 P^Λ p^rocumbent annual; on hillsides.
 • POLYGONUM CHINENSE Linn.; F. I. ii. 289; F. B. I. v. 44.
 *** vynoswtⁿ F. I. ii. 289.
 Chota Nagpur; Tippera ; Chittagong.
- 1744 I^D A^{ra}iublin^{ft} shrub, 4-5 feet high ; on hillsides.
 • POLYGONUM PERFOLIATUM Linn.; F. I. ii. 288; F. B. I. v. 46.
 E - Bengal.
 A scandent, prickly perennial.

1745. POLYGONUM STRIGOSUM R. Br.; F. B. I. v. 47. *P. horridum*
F. I. ii. 291.

N. Bengal, Duars ; Tippera; Chittagong.
A scandent, prickly herb.

1746. POLYGONUM PEDUNCULARB Wall.; F. B. I. v. 48.

N. Bengal, Duars; Chittagong.
A scandent, sparingly prickly herb.

788. Rumex Linn.

Perennial or annual herbs, rarely shrubs ; *leaves* mostly radical¹ or cauline, alternate, entire or toothed; stipules hyaline, ochraceous, often ultimately disappearing. *Flowers* hermaphrodite or by abortion, monoecious, in axillary clusters or in whorls, arranged in simple or paniced racemes ; pedicels jointed; bracts ochrea^{te} bracteoles 0. *Perianth* simple, sepaline; segments 6, rarely⁴ the inner accrescent, entire or toothed, midrib or disk oftenⁿ enlarged or tubercled. *Stamens* 6; filaments short; anthers oblong. *Carpels* connate in a 3-gonous ovary; ovule solitary, styles 3; stigmas fimbriate. *Fruit* a small nut, enclosed in the usually enlarged, inner perianth-segments; angles acute. *&*^{e6d} erect; embryo lateral, nearly straight; cotyledons linear or oblong-

Flowers hermaphrodite; styles terminal; inner sepals coriaceous in fruit^{uf t} leaves never hastate:—

Inner fruiting sepals narrow-margined, hardly toothed:—

Bases of leaves always narrowed into the petioles gradually*^{tip s} usually acute ; flowers distinctly pedicelled; perianth in fruit brown

ma. ..

Bases of leaves always cordate, with a contraction just beyond, tip^s always obtuse; flowers short-pedicelled; perianth in fruit nearly black, much larger.....*niO*^{ah8m}

Inner fruiting sepals with wide, much-toothed wings.....*dentate*-
Flowers monoecious; styles arising from inner angles of ovary; ^{inner} sepals membranous and reticulate in fruit; leaves hastate.....*ve*icar*»**.

1747. RUMEX MARITIMUS Linn.; F. B. I. v. 59; E. !>• B. 645.
B. acutus F. I. ii. 208.

N. Bengal; C. Bengal; E. Bengal.

An erect annual, 1-4 feet high, in marshy places.

Jal-palam; *Bevg.* Ban-palang.

1748. RUMEX NIGRICANS Hook, f.; F. B. I. v. 59.

Hind.

Ail'fyonon.]

ABISTOLOCHUCEJE.

Behar; Tirhut; N. Bengal.

An erect annual, -5-1-5 feet high, in ^cultivated Places.

1749. RUMEX DENTATUS Linn.; F. B. I. v. 59; E. D. B. ww•

In most of the provinces.

An annual herb, 1-2 feet high, in waste places. v 51 •

W50. ECMEX VESIOAEIUS Linn.; F. I. u. 209; F. B. * . . .

E. D. R. 650.

Behar; Tirhut; occasionally cultivated.

An annual, pale green, glabrous herb, -5-1 foot high.

Vernac. Chuka-sak, ehuka-palang.

789. Antigonon Endl.

Large climbers, herbaceous above, woody ^ m l \ leaves alter-
 >>>te, cordate or deltoid, with stem-clasping petioles; stipules
 " * >>te or obsolete. Flowers medium, rather showy, fascicled in
 th o «Us of a small bract; fascicles in terminal « subterminal
 * >>nu». the rachis often ending in a tendril; pedicels short,
 i * W- P «fa«ft Bimple, of 5 corolline segn.ents, persistent,
 membranous-scarious in fruit, the 2 outer crispate, wi de-cordate,
 * • third semi-cordate, crispate on outer, even on « * * edge, the
 ^ inae oblong. Sterns 7-8; filaments filiform, ate ' ' w
 m a short cup with intervening teeth; anthers ovate W. ry
 3-gonous; ovule solitary, at first pendulous from a long funicle, ^
 length erect; styles 3, short; stigmas capitate or peltate ^ Fru ed
 a * ^ply 3-gonous nut, enclosed in the persistent V? > ^ J »
 ^globose, rather deeply S-6-lobed; albumen ruminat, ryo
 somewhat excentric; cotyledons narrow-oblong.

1751. ANIGONON LEPTOPUS Bndl.

In gardens generally.

A large climber with showy panicles of pink flowers.

Order CVI. AWSTOLOCHUCE*.

r Herbs or shrubs, often climbing, usually more less foetid.
 * • " . alternate, entire or lobed; stipules 0. f to- * " hermaphro-
 ^ often, large, usually lurid, terminal axillary - W - J solitary
 'aemose or cymose; bracts large, small, or 0. rerw simple,
 ' >>>e or less adnate below to the ovary, often TM ^ & x r o ' o bed or
 * o bnl M; i o bea valvate > stallens 6 or more, adnate 1- oi s r iately
 10 the top of ovary or round the style; anthers erect, cells

parallel; dehiscence dorsal. *Carpels* connate in a 4-6-celle^d ovary ; placentas parietal, free or meeting at the axis ; ovules many* anatropous ; style columnar; stigma lobed. *Fruit* a capsule or a berry. *Seeds* many; albumen copious, fleshy; embryo minute.

790. *Aristolochia* Linn.

Prostrate or climbing, perennial herbs or shrubs; *leaves* alternate, entire or lobed, often with the stipule-like leaf of an undeveloped bud in the axil. *Perianth* corolline ; tube inflated below, then contracted, hairy within; limb dilated, oblique, 1-2-lipP^{ecī}-*Stamens* 6, rarely 5 or more than 6, adnate 1-seriately above the ovary, the filaments or connectives not distinguishable from the style ; anthers adnate to the column ; dehiscence extrorse. C^{*w}-*pels* connate in a more or less perfectly 6-locular, rarely 5- or 4-locular, inferior ovary; placentas parietal or intruded, or conniving or connate in the axis; ovules many, 2-seriate; style or column short, thick, dividing above into 3 or 6, rarely more, obtuse or linear short lobes. *Capsule* lantern-like, opening septicidally o^r through the placentas by 6, rarely 5, valves. *Seeds* usually man;}. horizontal, often covered by the remains of the placenta ; albumen fleshy ; embryo minute.

Leaves and branches glabrous ; column 6-lobed ; flowers axillary:—

Leaves glaucous beneath, margin undulate, reniform or very wide-cordate ; flowers solitary; peduncle with a large orbicular bract; hp of corolla erect, linear, with revolute edges, and villous with purple hairs..... *hracteata*-

Leaves green beneath, margin flat; bracts small:—

Flowers 1-3 ; bract opposite base of peduncles ; lip of corolla short, oblong, obtuse, glabrous; leaves linear to obovate-oblong; base cuneate, rounded, or shallow-cordate..... *indica*-

Flowers numerous, in racemose, puberulous cymes; lip of corolla villous, linear, obtuse, as long as tube ; leaves large, deeply cordate, or the upper narrow, sagittate-lanceolate..... *Tagala*.

Leaves, at least beneath, and branches pubescent; column 3-lobed; flowers chiefly in villous cymes on the old wood; mouth of perianth square, with purple border. *saccata*-

1752. ARISTOLOCHIA BRACTEATA Ketz ; F. I. iii 490 •, F. B. I. v. 7⁵»

E. D. A. 1395.

W. Behar, very rare.

- A slender, decumbent perennial. *Hind* Kiramav, gandan, gandati; *Vrlya* Faniri.
- ¹⁷⁵3. ARISTOLOCHIA INDICA Linn.; F. I. iii. 489; F. B. I. v. 75; E. D. A. 1398.
In nearly all the provinces.
A shrubby, twining perennial. *Beng.* and *Hind.* Isharnial; *Santal.* Bhedi janetet.
- ¹⁷⁵4. ARISTOLOCHIA TAGALA Cham. & Schlecht. *A. acuminata* F. I. iii. 489. *A. Roxburgliana* F. B. I. v. 79.
N. Bengal; Chittagong.
A shrubby, twining perennial.
- ^A6. ARISTOLOCHIA SACCATA Wall.; F. B. I. v. 76.
Chittagong.
A stout, lofty, woody climber, with corky, fissured bark.

Order CYII. PIPERACEffi.

Herbs or shrubs, usually aromatic. *Leaves* alternate or opposite or whorled, often gland-dotted; stipules 0 or % connate or adnate to petiole. *Flowers* minute, hermaphrodite or 1-sexual, in axillary or terminal, catkin-like spikes, subtended by a peltate bract. *Stamens* 2-6, rarely 7-8, hypogynous; anthers often joined on the filaments; cells sometimes confluent; dehiscence longitudinal, *Carpels* 3-4, forming a sessile or rarely stipitate ⁷ free or connate at the base, each carpel many-ovuled, less than ovary Uocular, ovuled; ovules orthotropous; stigmas discrete on the free carpels or ovary-lobes, or terminal on the undivided ovary, occasionally solitary, sessile, terminal; simple or Penicillate. *Fruit* small, indehiscent in the 1-celled species, or of cocci or follicles in the several-carpelled. *Seeds* globose, oval, or oblong; testa thin; albumen copious, floury; embryo enclosed in an amniotic cavity at the end of the albumen remote from the hilum; cotyledons minute or obsolete; radicle superior.

Anther-cells distinct; fruit fairly conspicuous; stigmas 3-5, confluent
Piper.

Anther-cells confluent; fruit minute; stigma usually penicillate
Peperomia.

791. Piper Linn.

Shrubs, rarely herbs, erect or scandent, often glandular or aromatic; branches with swollen nodes; leaves entire, often oblique; stipules various. Flowers dioecious, very rarely neuter; perianth minute, spiked, each in the axil of a bract, without 2 lateral bracteoles; bracts peltate or cupular and adnate to rachis, sometimes decurrent, with or without raised margin; bracteoles when present forming low ridges on each side of flower, or connate and semi-lunar. Perianth 0. Stamens rarely 5 or more; filaments short; anthers 2-celled; cells parallel distinct, or terminal divaricate, distinct or confluent. Carpel 1-celled in a 1-celled ovary; ovule solitary, erect; style slender, conic, beaked, or 0; stigmas 2-5. Fruit a small ovoid or globose, 1-seeded berry. Seed usually globose; testa thin; albumen floury within, with hardened periphery.

Fruits small, in dense, cylindric spikes; bracts orbicular, peltate:—

Leaves 3-5-nerved at the very obliquely cordate base, with 3-5 pairs of alternate nerves along the midrib above; stems stout, climbing; leaves all very shortly petioled..... *betula*.

Leaves 5-7-nerved from the equal or sometimes slightly oblique base, or (*P. sylvaticum* occasionally) with the inner pair of nerves leaving the midrib a little above the base:—

Leaves all petioled:—

Leaves firmly coriaceous, 5-7-nerved, ovate-oblong or ovate-cordate, basal lobes often unequal; petioles rather long, those of the upper leaves never less than 5 in..... *Betula*.

Leaves thinly membranous; basal lobes always equal:—

Leaves long-petioled (petioles of lower leaves 2-4 in. long), 5-7-nerved, wide-ovate; base deep-cordate; stems and branches flaccid, succulent; a low creeper..... *sylvaticum*.

Leaves short-petioled (petioles of lower leaves never exceeding 5 in. long), 3-5-nerved, ovate-oblong, oblong, or linear-oblong; base rounded or faintly cordate; stems and branches thin, rigid; a bushy climber..... *peepuloides*.

Leaves 7-nerved, the lower long-petioled (petioles 1-3 in. long)* ovate-cordate, basal lobes equal; the upper sessile, stem-clasping; narrower basal lobes often unequal..... *longipes*.

Fruits larger, in loose, interrupted spikes; leaves all petioled (petioles 5-2 in. long), coriaceous, elliptic or oblong or rounded; base never cordate, often slightly oblique, 3-9-nerved from above the base:—

tracts orbicular-peltate, margin free all round ; leaves 5-7-nerved; shrubby. *Hamilton***-

Bracts and bracteoles more or less adnate to the rachis ; scandent:—,
 Bracts of female spike forming a short hemispheric cup beneath the ovary; bracteoles forming a semilunar ridge above the ovary, leaves 5-9-nerved. *ni*TS*
 Bracts of female spike adnate to rachis, with slightly raised, Recurrent margins, which are confluent with bracteoles on either side of the ovary ; leaves 3-5-nerved. *rhytidocarpwn.*

¹⁷756. PIPER CILVBA Hunter; F. I. i. 156; F. B. I. v. 83; E. D. P. 797.

Cultivated generally.

A stout climber, with flexuous branches. *Hind.* Chab, chava; *Beng.* Choi.

¹⁷757. PIPER JETLE Linn.; F. I. j. 158; F. B. I. v. 85; K. V. P. 775.

Cultivated.

A stout climber. *Vernac.* Pán, támbuli.

¹⁷758. PIPER SYLVATICUM Boxb.; F. I. i. 156; F. B. I. v. 84; E. D. p. 821.

E. Bengal.

A low creeper. *Beng.* Pahari pipal.

¹⁷759. PIPER PEEPULOIDES Roxb.; F. I. i. 157; F. B. I. v. 83. Chittagong.

A slender bush. *Vernac.* Pipal.

¹⁷760. PIPER LONGUM Linn.; F. I. i. 156; F. B. I. v. 83; E. D. P. 805.

N. Bengal; E. Bengal; C. Bengal; Behar.

A slender creeper with erect flowering shoots. *Beng.* Pipla, pipla-mul; *Hind.* Pipul-mul; *Santal.* Balh.

¹⁷61. PIPER HAMILTONII C. DC.; F. B. I. v. 88.

N. Bengal; Chittagong.

A shrub, creeping below.

¹⁷62. PIPER NIGRUM Linn.; F. I. i. 150; F. B. I. iv. 90; E. D. P. 811.

Generally cultivated.

A climber. *Vernac.* Gul-mirich, kala-mirich.

¹⁷63. PIPER RHYTIDOCARPUM Hook, f.; F. B. I. v. 92.

Chittagong.

A climber.

792. Peperomia Ruiz & Pav.

Annual or perennial *herb* or whorled, *leaves* often alternate; *leaves* opposite stipules 0. *Flowers* minute, *racemes* *sessile* or sunk in the *axils*, rarely axillary, *bracts* sometimes peltately attached very short; *anther-cells* obtuse or acute or beaked *stigma* lateral or terminal indehiscent, almost dry *testa* - m b ^ ^ *pericarp* thin. * * *flowers*

Leaves coriaceous, 4-nately whorled,
Leaves thinly membranous, opposite,

.....reflexa.
.....pellucida.

1764. PEPEROMIA REFLEXA A. Dietr.; F. B. I. v. 99.
Chota Nagpur.

A small, tufted herb, with stems, densely branched

1765. PEPEROMIA PELLUCIDA

C. Bengal, naturalised.

A succulent, slender, annual herb, recently introduced, but now extremely abundant!

OR

Evergreen tree *MYRISTICACEAE*.

Leaves alternate, regular, *bracteoles* persistent or caducous, *lobes* usually *connate* below, *anthers* usually *monadelphous*, 3-18, less often dorsally to central *column*, free from each *flower* base without *short* connate, *stipules* *rudimentary* *ovary* *sessile* at *base*, basal, erect, anatropous;

gma usually sessile? oapitate dis(JOid or lobed. *Fmit* more or
 le** fleshy or thickly coriaceous, often splitting into 2, sometimes
 "7-4 valves. *Seed* erect, with a fleshy or membranous, entire,
 lo^ or lacinate, often apically induplicate, usually coloured,
 I^{f.en} aromatic arillus; testa usually thick; albumen copious,
 ^ruminant; embryo very small, basal; cotyledons divaricate,
 flat or coⁿ'ugated; radicle inferior, short.

793. *Myristica* Linn.

KNEMA Bl.

Lar^{ge}, evergreen trees; *leaves* alternate, entire, lanceolate;
 8. Pules 0. *Flowers* small, dioecious, regular; males pedicelled, in
 dusters of 3-15 from short, axillary tubercles; pedicels with a
 Patent bracteole usually near the middle; females axillary,
 so^{itary} or clustered. *Perianth* usually 3-lobed. *S Staminal*
 c^mn peltate, disk-like, flat or concave, rarely convex, usually
 *talked; anthers discrete, ovate, usually sessile, attached by their
 Dase^s or by short filaments from edge of disk, spreading hori-
 zontally from the column with dehiscence downwards, or suberect
 £J* dehiscence outwards. *Fruit* more or less fleshy, usually
 'ob^{ed} in dehiscence; arillus usually shortly lacinate.

{**« a foot long or longer.....*Umgtfolia*.
 ^aves under a foot long.....*longifolia* var. *enatica*.

¹⁷⁶6. MYRISTICA LONGIFOLIA Wall.; F. 13. I. v. 110; E. D.
 M. 901.

Chittagong.

A lofty tree.

^{1766/2} Var. ERRATICA F. B. I. v. 110; E. D. M. 901. *M. linifoha*
 F. I. iii. 847.

Chittagong.

A lofty tree.

Order GIX. LAURINEJE,

Erect, aromatic trees or shrubs, usually evergreen. *Leaves*
 *lter^{nate}, rarely opposite or deciduous, gland-dotted; stipules 0;
 ver^y rarely (*Oassytha*) leafless, parasitic climbers. *Mowers*
 reTM, small, hermaphrodite or 1-sexual, in axillary cymes,
 UIUsc<*y, panicles, or racemes; bracts deciduous, often involucrate,

sometimes 0 *Perianth* inferior or occasionally somewhat adnate to the ovary, tube short, sometimes enlarging in fruit, lobes limb usually 6, rarely 4, 2 seriate, lobes of each series imbricate, rarely subvalvate, all similar, small, herbaceous or petaloid and equal, of the outer rarely smaller, very rarely larger than the inner, occasionally one or more lobes abortive, or one or more additional lobes present *Stamens* usually a multiple of the perianth lobes in 2-4 series on the tube, filaments flattened, inner or some or all the filaments often 2 glandular at the base, anthers erect, 2 celled or 4 celled, cells dehiscent by recurving, at length deciduous, valvular flaps *Carpels* commonly a sessile, 1 celled ovary at the base of the perianth tube, ovule solitary, anatropous, pendulous from apex of cell, style terminal, stigma simple or discoid or dilated *Fruit* a dry or fleshy berry, situated on the often thickened peduncle, naked or rarely enclosed in or adnate to the perianth tube *Seed* pendulous, testa membranous, albumen 0, cotyledons plano convex, fleshy, radicle minute, superior

*Shiubs or trees, inflorescence lax — [p 897]

Anthers of the two outermost lobes opening inwardly, of the third opening outwardly by valves, flowers hemiphragmatic —

Anthers all 2 celled —

Perianth tube persistent, enclosing the fruit, its lobes 6 subequal
Cryptocarya.

Perianth tube altogether deciduous —

Perianth lobes 5, subequal, pedicels not thickened in fruit, stamens ovate or cordate
Beilschmiedia.

Perianth lobes 6, the 3 outer much the shorter, pedicels much enlarged in fruit, stamens minute or absent
Dehaasia.

Anthers all 4 celled —

Perianth in fruit with deciduous lobes, but wholly or partly persistent tube, if lobes persistent the leaves opposite and 3 nerved
Cinnamomum.

Perianth in fruit altogether persistent leaves alternate penninerved —

Lobes of perianth reflexed in fruit
Machilus.

Lobes of perianth erect in fruit
Phoebe.

Anthers of all the lobes opening inwardly by valves, 4 celled, flowers dioecious —

Flowers clustered, enclosed in densely unbracteate bracts
Actinodaphne.

Flowers umbellate, the umbels involucre
Litsea.

Parasitic, leafless, twining herbs; inflorescence compact; » * * " * J J
t«° outermost rows opening inwards, of the third row o p e n - B * tha.
by valves, all 2-celled [p. 890]. CM v

794. Cryptocarya B- Br.

Evergreen trees or shrubs; leave, alternate, rarely ^{subopposite,}
erved from base or penninerved. Flowers small, ^{hermaphro-}
e, in ^{axillary and subterminal} panicles. P e r i a n t ^{h-tube} ^
or ovoid, ultimately narrowed at the top; lobes of limb b,
equal. Stamen, 9 perfect, those of two outer series with
glandular filaments and with anthers introrsely 2-celled; of ^{hu}
M* < * with ^-glandular filaments and anthers extrorsely 2-celled;
01 fourth series replaced by stipitate staminodes. Ovary sessile
a t ^ of perianth, enclosed in the tube; style shortly exerted,
"ona obtuse or discoid. Fruit wholly enclosed in the P TM " "
* < * and sometimes adnate to it; tube accrescent, hardened of
fher fleshy, smooth or ribbed, the mouth occluded, the hmb
ae < iduous or more or less persistent; pericarp proper TM e m b r " "
or Wd. Seed with a membranous testa, often scarcely separable
from pericarp. „ R I

^67. CEYPTOCARYA FLOEIBUNDA Nees. C.amygdahnai.v. .
v. 118 in part; E. I). C. 2242.
N. Bengal, Duars; Chittagong.
A tree.

798. Beilschmiedia Nees.

Evergreen trees or shrubs; leaves alternate or opposite, penn-
n er ved. ir; oiuers small) hermaphrodite, fascicled or panicled
P o r i a n t - t x x b 6 short; lobes of limb 5, subequal. Stamps a
P ^ e c t, those of two outer series with eglandular filaments, and
^ h anthers introrsely 2-celled; of third series with S - ^ T "
fili" « e n t s and with anthers extrorsely 2-celled; of fourth series
placed by ovoid or cordate staminodes. Ovary sessile, free from
P ^ a n t h, narrowed into the style; stigma obtuse . Frmt ^ n
obl o n g, ovoid, or globose berry; pedicel not or shghtly thickened,
Pe n a n t h quite deciduous. Seed with membranous testa. ^ _

^768. BEILSCHMIEDIA BOXBDRGHIANA Nees; F. B. 1. " S ,
E. D. B. 426. Laurus bilocularis F. I. ii. 811.
Tippera.
A deciduous tree. Vernac. Serai-guti.

796. Dehaasia Bl.

Evergreen trees; *leaves* alternate, often fascicled at the ends of the branches, penninerved. *Flowers* small, hermaphrodite, axillary, peduncled panicles. *Perianth-tube* very short; lobes of limb 6, those of outer series much smaller than those of inner. *Stamens* 9 perfect, those of two. outer series with eglandular filaments and with anthers introrsely 2-celled; those of third with 2-glandular filaments and with anthers extrorsely 2-celled; inner series represented by minute staminodes or sometimes quite obsolete. *Ovary* sessile, free from perianth, narrowed to a short style; stigma obtuse. *Fruit* an oblong berry, resting on a much accrescent, coloured pedicel; perianth quite deciduous. *Seed* with membranous testa.

1769. DEHAASIA KURZII King; F. B. I. v. 125.

Chittagong.

An evergreen tree. *Vernac.* Modon-mosto, bágráj.

797. Cinnamomum Bl.

Evergreen trees or shrubs; *leaves* opposite or alternate, usually 3-nerved. *Flowers* small, hermaphrodite or, by abortion, polygamous, in axillary and subterminal panicles; female flowers usually rather larger and sometimes with fewer parts. *Perianth-tube* short; lobes of limb 6, subequal. *Stamens* 9 perfect or, by abortion, fewer; those of two outer series with eglandular filaments and introrsely 4-celled anthers; of third row with filaments glandular, glands sessile or stalked, anthers extrorsely 4-celled, less often 2-celled; of fourth row replaced by shortly stipitate, cordate or sagittate staminodes. *Ovary* sessile, free from the perianth, narrowed into a style; stigma discoid or obscurely 3-lobed. *Fruit* a berry, resting on the spreading, more or less enlarged perianth, with wholly or partly deciduous segments, less often persistent and entire. *Seed* with thin testa.

*Buds naked or with very small scales; leaves opposite, 3-nerved; axils of principal nerves without pits:—[p. 899]

Perianth-lobes deciduous in fruit; stamens and ovary villous...*Tamala*.

Perianth-lobes rounded, persistent in fruit; stamens and ovary sparsely hairy or glabrous:—

Leaves 8-12 in. long, secondary nervation very faint ...*obtusifolium*.

Leaves 5-7 in. long, distinctly reticulate beneath*zeylanicum*.

*Buds enclosed in large, orbicular, concave, silky, caducous, imbricating
 scales; leaves alternate, penninerved; axils of principal nerves pitted,
 Persistent wholly deciduous [p. 898].....*Camphora*.

1770. CINNAMOMUM TAMALA Fr. Nees; F. B. I. v. 128; E. D.
 O. H83. *Laurus Cassia* F. I. ii. 297. —
 Tippera; cultivated in C. Bengal, N. Bengal, and fc.
 Bengal.

A medium tree. *Beng.* Tej-pat; *Hind.* Talispatra,
 Tez-pat.

1771. CINNAMOMUM OBTUSIFOLIUM Nees; F. B. I. v. 128; E. D.
 C 1165. *Laurus obtusifolia* F. I. ii. 302.

Chittagong. — —
 A large tree. *Beng.* Ram tej-pat, kinton; *Magii.*
 Krowai.

1772. CINNAMOMUM ZEYLANICUM Breyn; F. B. I. v. 131; E. D.
 C 1196. *Laurus Cinnamomum* F. I. ii. 295.

Planted, but very rarely.
 A small tree; native of Ceylon. *Vernac.* Dalchmi.
 Cinnamon. —

1773. CINNAMOMUM CAMPHORA F. Nees; F. B. I. v. 134; E. D.
 C 1154.

Planted, rather commonly. —
 A medium tree; native of China. *Vernac.* Kapnur
 (from the Chinese name). **Camphor.**

798. Machilus Nees.

Evergreen trees; leaves alternate or clustered at ends of
 branchlets, penninerved. Flowers small, hermaphrodite, in axillary
 Panicles. Perianth-tube short or obsolete; lobes of limb 6, sub-
 equal, persistent and spreading or reflexed in fruit. Stamens 9
 Perfect, those of two outer series with glandular filaments and
 anthers all introrsely 4-celled; of third row with filaments 2-glan-
 dular at base, glands stipitate, anthers extrorsely 4-celled; of
 fourth row replaced by stipitate, cordate staminodes. Ovary
 sessile, narrowed into the style; stigma discoid. Fruit a globose
 ovoid berry, seated on the persistent perianth. Seed with thin
 testa.

Serves of leaves 6-8 pairs, very stout; leaves when young tomentose
 beneath [p. 900]

Nerves of leaves 8-10 pairs, very slender; leaves when young finely silky beneath:—[p. 899]

Leaves when adult quite glabrous beneath *Gamblei*
 Leaves persistently finely pubescent beneath, and hairy along the midrib *hombycina*.

1774. MACHILUS VILLOSA Hook. f.; F. B. I. v. 140, 860. *Laurus villosa* F. I. ii. 310.

N. Bengal, Duars ; Chittagong.

A large tree.

1775. MACHILUS GAMBLEI King; F. B. I. v. 138, 860.

N. Bengal, Duars ; Cooch Behar.

A small tree.

1776. MACHILUS BOMBYCINA King; F. B. I. v. 861.

Chittagong.

A small tree.

799. Phoebe Nees.

Evergreen shrubs or trees; *leaves* alternate or scattered or clustered at ends of branchlets, penninerved. *Flowers* small, hermaphrodite or polygamous, in axillary and subterminal panicles. *Perianth-tube* short; lobes of limb 6, subequal, erect and accrescent in fruit and clasping the base of the berry. *Stamens* perfect, those of the two outer series with filaments eglandular and anthers introrsely 4-celled ; of the third series with filaments 2-glandular and anthers extrorsely 4-celled ; of fourth row replaced by cordate or sagittate staminodes. *Ovary* sessile, narrowed into the style ; stigma discoid. *Fruit* an ellipsoid or oblong berry, base clasped by the hardened perianth-segments. *Seed* with thin testa.

Leaves, shoots, and panicle quite glabrous *lanceolata*.
 Leaves, shoots, and perianth pubescent *paniculata*.

1777. PHOEBE LANCEOLATA Nees; F. B. I. v. 141. *Laurus lanceolaria* F. I. ii. 309.

Tirhut, Bettiah, on the northern frontier; Chittagong—
 An evergreen tree.

1778. PHOEBE PANICULATA Nees ; F. B. I, v. 142.

Chittagong.

An evergreen tree.

800. Actinodaphne Nees.

Evergreen shrubs or trees; *leaves* almost whorled, rarely
 opposite or opposite, penninerved or 3-nerved. *FUMrt*, *maU*,
 *4»w, in axillary or lateral, dense, sessile or peduncled, biac-
 tate fascicles or umbels; bracts imbricating, caducous. *Penantl*[^]
 * short; lobes of limb 6, subequal. * *Stmnens* 9 perfect, or
 Retimes only 6; filaments of two outer rows eglandular, of
 third row 2-glandular, sometimes the third series obsolete; antfers
 of all three series introrsely 4-locular. *Ovary* reduced and empty
 obsolete. ? *Staminodest*. Owr? free; style longish, slender,
 %aa dilated. *Fruit* a berry, resting on the enlarged, hardened,
 fias> spreading or concave perianth-tube. *Seed* with thin testa.

¹W9. ACTINODAPHNE ANGUSTIFOLIA Nees; F. B. I. v. 10²

N. Bengal, Duars; Chittagong.

An evergreen tree.

801. Litsæa Lamk.

Evergreen, rarely deciduous, trees or shrubs; *leave** alternate,
 rai% opposite or nearly so, penninerved, rarely 3-nerved; buds
 ^ e d or scaly. *FhWm* small, dio-cious, umbeUate or capitata,
 labels 4-6-, rarely more-flowered, sessile or short-peduncled;
 fancies clustered, rarely soUtary, axillary or in scars of iauen
 teaves, sometimes racemose or fascicled on common peduncles,
 bracts involucrate, 4-6, rarely more to an involucre, concave, con-
 aee<>B or membranous. *Perianth-tuhe* ovoid, campanulate, or
 v <y short; lobes of limb 6 or 4, rarely fewer or more, equal or
 !»equal, sometimes small, in a few obsolete, t *Stamns* 9 or U
 "" 3-merous, 6 in 2-merous flowers, aometimes by abortion fewer
 ill!""i 6, rai-ely mol-e than 12. of the two outer series with usually
 glandular filaments; of the third row and, if present at all, of
 *h<< fourth row, with 2-glandnar filaments; anthers of all ro<<s
 intwrsely 4-celled, or occasionally with the lower cells of anthers
 of the third row lateral. *Ovary* minute empty, or obsolete, iery
 r < % perfect. ? *Staminodm* 9 or 12, or in 2-merous flowers b.
 o^<J enclosed in perianth-tube or free; style short or long,
 stilgma usually irregularly lobed. *FrwU* a drupe or beny, resting
 <<* the unchanged perianth or partly clasped at the base by the
 <<*> much enlarged, discoid or cupular perianth-tube. *Seed* with
 tain testa

Leaves penninerved -

Perianth segments incomplete 01 absent, fruit globose, on a short thickened perianth tube, leaves alternate —

Leaves thin, oblong, sparsely pubescent beneath

Leaves chalcitaceous, ovate acute, rather closely tomentose beneath

*stbifeianx qMiatu**

Perianth segments distinct usually 6 occasionally 5 only —

Perianth tube not enlarging in fruit —

Leaves opposite or a few also alternate thin short petioles narrow acute or acuminate glaucous beneath

Leaves all alternate, chalcitaceous long petioled, broad, obtuse apiculate tomentose beneath

Perianth tube enlarged, disciform or cupular in fruit, leaves narrow, lanceolate acute or acuminate —

Umbels all solitary or fascicled, axillary —

Leaves grey hoary, rarely glabrous beneath, nerves sparse, stamens villous, umbels clustered

sahcifoia \M launt

Leaves nearly or quite glabrous beneath, nerves 15-30 pairs, stamens sparsely many, umbels almost always solitary, clustered

Umbels in racemes, male racemes 5-7 in long, female leaves quite glabrous beneath —

Racemes glabrous, fruit longer than broad, almost enclosed the slightly 3 cleft, unilobed perianth tube

Racemes pubescent, fruit subglobose, seated on the entire cup shaped perianth tube

Leaves 6 nerved, alternate or subverticillate, perianth segments deciduous, usually 4 —

Umbels in sessile clusters

Umbels in solitary or bipartite racemes

1780 LITSEA SEBIFERA Pers., F. B. I. v. 157, k. 1. L. 483
Tetranthera lauiifolia F. I. m. 823 *T. apttala* F. I.
in 819

In most of the provinces

An evergreen tree, 20-50 feet high. Hind Garbi Jaur, singraf, Bencj Kukur chita, ratun, garur

1780/2 Var GLABRARIA T. B. I. v. 158

In all the provinces

An evergreen tree, 20-50 feet high

1781 LITSEA LANCIFOLIA Hook. f., Y. B. I. v. 159

Chittagong.

A small evergreen tree or bush.

1782. LITS;EA POLYANTHA Juss.; F. B. I. v. 162; B. V. ^

Tetranthera mono'petala F. I. iii- 821.

. In all the provinces.

HT«J₀ W.

An evergreen tree, 20-40 feet high, ff** · Meda, tart medh; Jfcn^ . Bara kukur-chita; fitanfo*- P^op. ▽ 18₈.

^ S . LITS^EA SALIOIFOLIA Hook, f. var. LAURIFOLIA V. Ji. 1- V. ,
E. D. L. 481. , ,, oua..

N. Bengal; C. Bengal; E. Bengal; Sundnlmns; Chitto

g.

^evergreen bush or small tree. Vernac Sum, digloti.

!7B4. LITS/EA ANGUSTIFOLIA Wall.; F. B. I. v. 169.

Chittagong.

An evergreen bush or small tree.

1785. IJITS&A NITIDA Hook. f I F. B. I. v. 174.

Chota Nagpur, Singhbhum.

A tall timber tree.

1786. LiTSiA PANAMONJA Hook. f.; F. B. I. v. 17^.

Chittagong.

A large evergreen tree. Vernac. Panamonja. -- . ▽ D

"87. LHMA ZBYIANICA C. & Fr. Nees; F. B. L v. 17B, * .
L. 493.

Chittagong.

A small tree.

"88. LITS,EA CLABKEI Prain. Afinodaphne ? sp. w B I.
v. 154.

Chittagong.

A small tree.

802. Cassytha Linn.

Filiform, twining green parasites, adhering to the host ^b y
«*«* : leaves of minute scales or 0. Ftowm m*hf<*
elite, sometimes dimorphic, spicate or capitate 0l. acemose;
maphro
bracteoles 3. Perianth-tab* short and globose; or, in the same
species as long as limb and tobinate; lobes of » « • the outer
«« smaller. Stamens 9 or 6 perfect; of the first sen*rwrf*
glandular filaments and introrsely 2-celled anthers ; of the sec ^{and}
series like the first, or sometimes reduced to stammodes, ol ^{the}
«*d row with 2-glandular filaments and extrorselj 2 ^{celled}

[*Cassytha*

anthers; of the fourth row replaced by sessile or swpi vere^ by nodes. *Ovary* globose, in flower free, in fruit closely capitate. the enlarged perianth; stigma subsessile, small on tub^ and *Fruit* a small drupe, enclosed in the succulent periant - t ledons crowned by the perianth-limb. *Seed* with thin testa; co y ultimately confluent. n j. vi188;

1789. CASSYTHA FILIFORMIS Linn.; F. I. h\ 314; F. x>

E.D.O.805. ou*dribuns;

JfeW; ^oifi Migpur; W. Bengal; &<=

Ohittagong. -- d. Amar-

A twining, leafless parasite, stems green. ti^in

beli; £engr. Akas-bel; *Santal* Alag-jari.

Order CX. PROTEACE7E.

Trees or shrubs, rarely herbs. *Leaves* alternate or scat e t red rarely subopposite or whorled, usually coriaceous, entire, to othead or pinnatisect; stipules 0. *Flowers* racemose, spicate or ra rely solitary, hermaphrodite, regular oblique or irregular; b/acts^ small, caducous or subobsolete, or imbricate, persistent in fru-f 4, strobilate; bracteoles 0, rarely 2. *Perianth* inferior; segments free, at first valvately connate in a tube with gibbous base, tips recurved. *Stamens* 4, inserted on or opposite the perianxn- & ments; anthers erect, adnate to filaments; dehiscence longitude^ introrse. *Disk* replaced by 4 free or connate, hypogynous scales alternate with filaments, sometimes 0. *Carpels* forming a fr^ sessile or stipitate, 1-celled, often oblique or excentric ovary, ovules solitary, paired, or several 2-seriate; style terminal, tip thickened; stigma terminal or lateral. *Fruit* a nut or drupe, indehiscent or ultimately opening on the inner edge or at the tip* or a follicle or capsule with often thickly coriaceous valves. *Seeds* solitary or paired or few, flattened or thick; testa membranous or coriaceous, sometimes winged; albumen 0; embryo with compressed or fleshy, often unequal cotyledons.

803. *Helicia* Lour.

Trees or large shrubs; *leaves* alternate, entire or toothed. *Flowers* medium or rather long, in terminal and axillary racemes, hermaphrodite, regular, pedicelled and in pairs; bracts small,

^c*_{lube} cou^s or 0. *Perianth-tube* slender; limb hardly wider than straight, ovate or oblong; segments revolute when flower ^oP^eQ^s. *Stamens* 4, opposite perianth-segments ; filaments short; others oblong; connective shortly appendaged. *Disk* hypo-^on^o*_&, of 4 scales, free, or confluent and cupulw or annular. ^Uv[^]y sessile ; ovules 2, basal or lateral, and attached below the ^J*_{ld}<N_e; _styl_e long, straight, with slightly thickened tip; stigma [^]munal. *Fruit* a subglobose, hard nut. *Seeds* solitary, sub-^ogbose or 2, hemispheric; testa rugose or veined.

WO. HELICIA EXCELSA Bl.; F. B. I. v. 191. *lihopala excelsa* F. I. i. 363.

Chittagong.

A- large tree.

Order CXI. **THYMELEACEÆ.**

Shrub_s or small trees, with tough, fibrous bark. *Leaves* alter-[£]a^{te} or opposite, simple, quite entire. *Flowers* hermaphrodite or, ^by abortion, polygamous or rarely dioecious, in axillary or terminal ^llea⁽*_s, umbels, clusters or racemes. *Perianth* regular, often ^{cor}olline, tubular or campanulate; limb 4-5-lobed; segments [^]bncate in bud, often with 1 or 2 scales at the base. *Stamens* as ^{man}y or twice as many as lobes of perianth, rarely half as many as ^{lo}bes, adnate to perianth-tube, those opposite the lobes usually ^{cached} above the alternate ones; filaments short, rarely as ^{lon}g as anthers ; anthers erect, 2-locular; cells parallel; dehiscence ^{lon}gitudinal. *Dish* hypogynous, annular, cup-shaped, scaly or ^{obs}o^{lete}. *Carpels* forming a superior 1-, rarely 2-celled, very rarely 4-5-celled ovary; ovules anatropous, solitary in each cell, ^{pendulous} from near its apex; style short or long, terminal or ^{acentric}; stigma capitate. *Fruit* a small berry, drupe, or nut, ^{rare}ly a loculicidal capsule. *Seed* solitary, or one in each cell, ^{pendulous} or lateral; testa crustaceous, rarely membranous, with ^a distinct membranous tegmen; albumen fleshy, copious, or 0; ^{emb}ryo straight; cotyledons fleshy, usually thick; radicle short, superior.

*^{Fruit} indehiscent; ovary 1-celled, 1-ovuled; shrubs; leaves opposite :- [P. 906]

t^{Stamens} 8,2-seriate; filaments short; disk of linear scales ; perianth-^{lobe}s 4, without any scales [p 900].....Wikstroemia.

†Stamens 10; filaments filiform, exserted; disk none; perianth-lobes 5, with 10 linear scales, united in pairs above the stamens [p. 905]

Linostoma.

*Fruit a loculicidal capsule; ovary 1-ovuled; trees; leaves alternate; stamens 10; disk none; perianth-lobes 5, with 5 scales, connate at their bases above the stamens [p. 905] A uilaria.

8M. Wikstroemia Endl.

Shrubs, rarely trees, leaves opposite - rarely alternate. Flowers hermaphrodite. Branches terete or striate. Bark smooth or fissured. Leaves alternate or opposite, rarely sessile, ovate or elliptic, slender, lobes 4, spreading, naked. Filaments 8, 2-seriate, included or shortly exserted; distichous, anthers oblong, connective inconspicuous. Stigma large, pendulous; style short; ovules solitary, pendulous; perianth, or fleshy, with a dehiscent perianth, or peltate; pericarp staccate; albumen scanty or 0; cotyledons fleshy.

1791. WIKSTROMIA VIETNAMICA MERRILL. indica var. viridiflora F. B. I. v. 195. Chittagong. A shrub.

805. Linostoma Wall.

laxly branched and sometimes climbing; leaves opposite or sessile. Branches in dense whorls forming globose heads; ultimately enlarging and 10-12-angled, ultimately terete. Perianth-tube 5-angled, the perianth-throat 10-angled, scales or glands on Stamens 10, adnate to the perianth-tube, short, narrow; connective

membranous testa, often fleshy; perianth; albumen 0;

1792. LINOSTOMA DECANDRUM WALL. B. B. L. v. 198. Nectandra decandra P. I. a 425. Chittagong.

An erect, evergreen shrub. Vernae. Herenda.

806. *Aquilaria* Lamk.

Trees m a p h f late, nerves slender, parallel. *Flowers* hermaphrodite, subsessile, axillary and terminal umbelliform; scales, radially, campanulate; lobes 5, broad, spreading; short, sessile, perianth-tube 5, densely pilose, connate below in a sessile tube to perianth-throat; anthers subsessile, broad. *Disk* 0. *Carpels* connate in a perfectly or imperfectly 2-celled; style late, loculicidal capsule; pericarp coriaceous, or hard with a long tail; testa crustaceous; 1793 A k; albUmeno.

- AQUILARIA AGALLOCHA Roxb.; F. I. ii. 422; F. B. I. v. 199; E. D. A. 1251.

Tippera.

A large evergreen tree. Vernac. Agar, agaru.

Order CXII. ELJEAGNACEJE.

Shrub or tree with a copious covering of silvery or brown scales. *Leaves* alternate or opposite, quite entire; stipules 0. *Flowers* small, regular, hermaphrodite or dioecious, solitary or fasciculate, axillary or racemed in leaf-axils or on leafless nodes; deciduous. *Perianth* in hermaphrodite or female flowers tubular, lobed above the ovary and persistent below, reduced to a lobed limb. *Stamens* in male flowers 4, alternate with or 8, both opposite to perianth-base, 4 alternate with or 8, both usually shorter than perianth-lobes; filaments free, dehiscent, 2-locular; cells parallel, contiguous; free, 2-locular. *Staminodes* in ? 0. *Carpel* forming a 1-locular ovary in base of perianth; ovule solitary, erect, anatropous; style terminal, linear or dilated above, thick. *Fruit* a nut, closely covered by the perianth-base; pericarp membranous. *Seed* scanty or 0; embryo straight; cotyledons thick, fleshy; radicle inferior, very short.

807. *Elaeagnus* Linn.

Trees or shrubs, often silvery, with a scaly or stellate tomentum; leaves alternate, petioled, entire. *Flowers* hermaphrodite, axillary,

[*Eleagnus*.

shortly petioled, usually solitary or 2-3-nate, sometimes on short, leafless, or leafy branchlets; bracts 0. *Perianth* oblong or globose, persistent base, narrowed above the funnel-shaped or campanulate, yellow or white within, limb valvately 4-lobed, often with a prominent ring above constriction within. *Stamens* 4, adnate to corolla-throat; short. *Ovary* 1-celled; style linear, included, slightly above; stigma lateral. *Fruit* with a thin pericarp, the persistent, accrescent, berried, or rarely dry perianth-toughened within. *Seed* with hard, shining testa; albumen very scanty.

1794. *ELAGNUS LATIFOLIA* Linn.; F. B. 1. v. 202; E. 1. - *E. conferta* F. I. i. 440.

N. Bengal; E. Bengal; Chittagong.

A much-branched, scandent shrub. *Bi'H'J*- A%7t. Kamboong.

Order CXHI. LORANTHACEÆ.

Evergreen, semi-parasitic shrubs. *Leaves* usually conaceous, entire, sometimes absent; stipules 0. *Flowers* hermaphrodite or 1-sexual, racemose spicate or capitate or bracts usually scale-like; bracteoles usually 2. *Perianth* or double. *Sepals*, or simple perianth when scaploid, adnate to ovary, in flowers solid or obsolete; Umb annular or cup entire or shortly toothed. *Petals*, or simple perianth-segments when petaloid 3-6, rarely 2, valvate, free or more or less in a tube or in a sheath, split on upper side. *Stamens* as many and opposite the corolla-lobes, usually adnate to them; *Wifami*; anthers usually 2-locular; dehiscence longitudinal sometimes by pores. *Dish* epigynous or in flowers within stamens, fleshy and rather prominent, or 0. *Stamens* flowers, and rudimentary ovary in flowers merely present. *ovary*, 1-celled; ovule solitary, adnate throughout to the ovarian axis; *Fruit* a 1-seeded berry, adnate throughout to the pericarp; albumen & embryo straight; radicle superior.

Flowers hermaphrodite

Flowers 1-sexual

..Loranthus.
Yiscum.

808. Loranthus Linn.

Semi-parasitic shrubs, usually on trees, rarely terrestrial; *leaves* opposite, less often alternate, usually thick and fleshy or coriaceous, mostly penninerved, but nerves, except midrib, obscure. *flowers* hermaphrodite, usually coloured, spicate racemose or cymose, axillary or on old nodes, rarely terminal; bracts concave or oblique, cupular; bracteoles 2, free or connate with bract, or 0. *Perianth* double. *Sepals* connate in a tube, adnate to ovary; limb short, truncate or 4-6-toothed or obsolete. *Petals* 4-6, valvate, free or more or less connate in a tube with spreading tips, or a sheath split behind; tube naked or with 5 conniving scales at the base. *Stamens* 4-6, adnate to the petals; filaments filiform or thickened; anthers ovate-oblong or linear, adnate or versatile; *cells* parallel; dehiscence longitudinal, lateral or introrse. *Disk* 0. *Ovary* inferior, 1-celled; ovule solitary; style columnar, filiform or rarely, twisted; stigma entire, terminal, obtuse or capitate. *Fruit* a berry or drupe, globose ovoid or oblong. *Seed* adnate to pericarp; testa 0; albumen copious fleshy, or 0; embryo usually *resh*; cotyledons 2 or 4.

**Flowers* bracteate but not bracteolate:—[p. 910]

Tracts scale-like; flowers in spikes, racemes, or short-peduncled fascicles:—[p. 910]

Corolla of 4-6 free petals; anthers continuous with filaments, distinctly 2-celled:—

flowers under an inch long; petals 4-5; buds straight, clavate, angled below; anthers oblong:—

Flowers glabrous, in erect, strict, stout axillary spikes longer than the leaves; petals 5, rarely 4; bud suddenly inflated and 5-angled at the base; style jointed in the middle, thick below; calyx-limb obscurely toothed.....*pentapetalus*.

Flowers rusty-pubescent, 1-2 pairs in short, axillary racemes; petals 4; bud swollen, 4-angled below the middle; style slender; calyx-limb entire.....*ligustrinus*.

Flowers over an inch long; petals 6; buds curved, fcutc, slender; anthers slender, twice as long as filaments; racemg longer than the leaves, very stout, curved, sparse-flowered; styw filiform
heteranthus.

Corolla gamopetalous, 4-5-lobed or -parUte, usually split above; anther-cells indistinct; ilowers almost always mealy or scurfy:—

Corolla-tube 4-cleft, always split above; calyx hardly produced

above the ovary; flowers in axillary, solitary or clustered fascicles, rarely subracemose; leaves mealy or scurfy on lower and usually also on upper surface :—

Fruit papillose, clavate, contracted into a pedicel, with a thick, annular base ; leaves cinnamon-scurfy with a stellate tomentum below, glabrous above.....*thelocarpm.*

Fruit not papillose :—

Fruit mealy, clavate; young shoots and leaves covered with flocculent, white, fugacious, mealy tomentum; flowers in solitary or fascicled, long-pedicelled, subracemose fascicles, scurfy-white-tomentose.....*pulverulent us-*

Fruit tomentose, pyriform; young shoots and leaves covered with short, soft, rusty or white scurfy tomentum :—

Leaves over 3 in. wide, large, orbicular or broad-ovate, base cordate or rounded, copiously tomentose beneath; petioles rather long.....*cordifolins.*

Leaves under 3 in. wide; base cuneate or rounded, rarely subcordate, shortly adpressed-tomentose or glabrate beneath :—

Adult leaves persistently white- or rusty-tomentose beneath; fascicles short-peduncled; petioles distinct, short or long.....*Scurrula.*

Adult leaves glabrous beneath :—

Fascicles short-peduncled; petioles none

Scurrula var. *bengalensis.*

Flowers subracemose; petioles distinct

Scurrula var. *graciliflora.*

Corolla-tube 5-fid or 5-cleft; calyx distinctly produced above the ovary; flowers in long or short racemes; leaves glabrous :—

corolla 5-fid; lobes short; tube split above; calyx cupular, truncate; racemes long, slender, glabrous or, rarely, puberulous
longifloru.*

Corolla equally 5-cleft to the middle; lobes long, linear; racemes short, densely scurfy.....*pentandnu-*

Bracts large, leafy, 4, ovate, involucrate, much wider than flowers; flowers fascicled, sessile, laxly villous; calyx limb 4-lobed; corolla equally 5-cleft to the middle [p. 909].....*involucratus.*

Flowers bracteate and also bracteolate, racemose ; bracts small, shorter than the ovary; bracteoles 2, connate in a cup ; all parts quite glabrous; spatulate, as long as the tube:—[p. 909]

Fruit ellipsoid; corolla always 6-cleft.....*ampdla**.*

Fruit globose; corolla usually 6-, sometimes 5-cleft.....*globosm.*

- 17⁹⁵ - LORANTHUS PENTAPETALUS Roxb.; F. I. i. 553, ii. 190;
F. B. I. v. 206.
Chittagong.
^ stout, glabrous branch-parasite.
- 17⁹⁶ » LORANTHUS LHHJTKINUS Wall. J. F. B. I. V. 207.
Chittagong.
- 17⁹⁷ A stout, puberulous root-parasite.
LOHANTHUS HETERANTHUS Wall. ; F. B. I. V. 208.
Chittagong.
A- robust, almost glabrous branch-parasite ; leaves alter-
nate.
- 17⁹⁸ - LOBANTHUS THELOCARPUS Hook. f. J. F. B. I. V. 211.
Chittagong.
A stout branch-parasite.
- 17⁹⁹ - LORANTHUS PULVEEULBENTUS Wall.; F. B. T. -v. 211.
N. Bengal, Duars.
- 1800 ^ r o ^ u st branch-parasite.
LORANTHUS CORDIFOLIUS Wall.; F. B. I. v. 209.
Behar; Chota Nagpur. -
- 1801 A stout branch-parasite.
LORANTHUS SODRRULA Linn.; F. I. i. 550, ii. 186; F. B. I.
v. 208.
Chota Nagpur ; liehar ; W. Bengal; N. Bengal; Chitta-
gong.
- 1801 A larS< bushy branch-parasite.
V2. Vav. BENGALENSIS F. B. I. v. 209.
C Bengal; E. Bengal; Sundribuns.
- 1801 ^ arS< bushy branch-parasite.
V3. Var. GRACILIFLORA F. B. I. v. 209.
Chittagong.
- 1809 ^ *ar&e> bushy branch-parasite.
LORANTHUS LONGIFLORUS Desr.; F. B. I. v. 214; E. D.
L. 249. L. bicolor F. I. i. 548, ii. 185.
In all the provinces.
A large, bushy branch-parasite. Hind. Ban da;
- 1800 ^ an ta > L Banda ; Beng. Bura-manda.
LORANTHUS PENTANDRUS Linn.; F. B. I. v. 21(5).
Chittagong.
- 1804 A loutish branch-parasite.
U4 - TJORANTHUS INVOLUCRATUS Roxb.; i. 552, ii. 188.

Chittagong.

A slender, bushy branch-parasite.

- 1805 LORANTHUS AMPULLACEUS Roxb.; F. I. i. 552, ii- 189;
F. B. I. v. 220.

Chittagong.

»A bushy branch-parasite.

1806. LORANTHUS GLOBOSUS Roxb.; F. I. i. 550, ii. 187 ; F. B. i.
v. 220.

In all the provinces.

A bushy branch-parasite. *Beng.* Chhota-manda.

809. Yiscum Linn.

Shrubs, semi-parasitic on trees; *leaves* opposite, flat and thick,
or reduced to small scales or teeth. *Flowers* dioecious or monoecious,
fascicled or rarely solitary in axils or on nodes, rarely terminal;
fascicles sometimes stalked; bracts usually small; bracteoles
free or connate, rarely obsolete. *Perianth-tube* in 3 flowers
short, solid, in ? flowers adnate to ovary ; limb 3-4-lobed; lobes
usually deciduous. *Stamens* 3-4; anthers broad, sessile, adnate
to perianth-lobes ; cells confluent; dehiscence introrse by numerous
pores. *Ovary* in ? flower inferior, 1-celled; ovule solitary; stigma
sessile or subsessile, large, pulvinate. *Fruit* a succulent berry
with soft, viscid mesocarp. *Seed* adnate to pericarp; albumen
copious, fleshy; embryo enclosed in the albumen, sometimes
embryos present, terete.

Branches leafy:—

Leaves obliquely ovate or falcate, acute or acuminate..... *monoid*¹¹,

Leaves equally obovate, or elliptic- to linear-oblong, obtuse...*orienta* 12.

Branches leafless.....*artkulatmn*-

1807. VISCUM MONOICUM Roxb.; F. I. iii. 763; F. B. I. v. 224;
E. D. V. 154.

ChotaNagpur; Behar; W.Bengal; C. Bengal; Sundri-
buns.

A large, parasitic shrub. *Hind.* Kuchle-ka-malang >
^Bital. Pet chamra banda.

1808. VISCUM ORIENTALE Willd.; F. B. I. v. 224 ; E. D. V. 156.
F. verticillatuvi F. I. iii. 764.

Chota Nagpur; Behar; E. Bengal; Chittagong.

Vernac. Banda.

^09. VISCUM ARTICULATUM Burm.; P. B. I. v. 226; E. D. V. 152. *V. opuntioides* F. I. iii. 764.

Chota Nagpur.

A pendulous branch-parasite. *Hind.* Pan, pūdu; *Santal.* Katkom janga.

Order CXIY. SANTALACEJE.

Trees, shrubs or herbs, usually semi-parasitic on roots. *Leaves* ^{alt}ernate or opposite, entire, sometimes scale-like or 0; nerves conspicuous; stipule* 0. *Flowers* hermaphrodite or 1-sexual, ^{re}gular, usually small or inconspicuous, in simple or compound ^cymes; bracts sometimes leafy, usually small; bracteoles 2, free or ^{or} connate, subopposite, sometimes 1 or both obsolete. *Perianth* simple, green or coloured, superior or inferior; limb 3-8-toothed, ^{~io}W or -partite; lobes with often a tuft of hairs behind anthers, ^u ^ % valvate. *Stamens* as many as and opposite the perianth-lobes <*, adnate above, rarely on, the perianth-base; filaments filiform or ^{or} wide; anthers 2-celled; dehiscence longitudinal, introrse or lateral. *Dish* epigynous or perigynous. *Carpels* connate in a ^Alocular ovary usually, at least ultimately, inferior; ovules 2r-6, ^{JW}nate to or pendulous from a central column, rarely solitary and ^{basal} 1; style usually short; stigma entire or 3-6-lobed. *Fruit* a ^{nut} or drupe. *Seed* globose or ovoid, smooth, rugose or sulcate; ^{te*}ta thin or obsolete; albumen copious, fleshy; embryo usually ^{terete} 5 radicle superior.

810. Santalum Linn.

Trees or shrubs; *leaves* glabrous, coriaceous, opposite, rarely ^{^r}nate. *Flowers* hermaphrodite, axillary or in terminal, ^{d-}hotomous, paniculate cymes; bracts minute. *Perianth-txihe* ^{ca}»ipanulate or ovoid, adnate to the base of the ovary; limb 4-, ^{**ly} 5-lobed; lobes valvate, with a tuft of hairs on the face. [»]stamen* 4 or 5, adnate to base of perianth-lobes; filaments slender, ^{sh}oH; anthers ovate; cells parallel. *Dish* of fleshy, spatulate ^{sca}ks, projecting between the stamens. *Ovary* at ^{*st} free, ultimately half-inferior; ovules 2-3, inserted below the summit of a ^{lc*}g> acuminate, free central column, reflexed; style elongate; ^{^giua} 2-3-lobed. *Fruit* a subglobose drupe, annulate on the top ^{by} the deciduous perianth; endocarp rugose. *Seed* subglobose;

albumen copious; embryo linear, terete, straight or nearly so in the centre of the albumen; radicle exceeding cotyledons.

1810. SANTALUM ALBUM Linn.; F. I. i. 442; I^r. 13- I^y 231; E. D. S. 790.

W. Bengal; Chota Nagpur.

A small evergreen tree. Vernac. Chandan.

Order CXY. EUPHORBIACE/E.

Herbs, shrubs, or trees, often with milky juice. Leaves alternate or opposite, rarely divided or compound; stipules usually small, caducous or persistent, occasionally large, rarely connate a bud-protecting sheath; glands sometimes present at apex of leaf-stalk or base of leaf-blade. Flowers usually small, often minute, always 1-sexual; inflorescence various, usually compound, sometimes (*Eujihorbia*) of single, naked, 1-stamened florets with a perianth-like involucre surrounding a solitary pistil, more often the main-inflorescence centripetal, axillary, or racemose, the divisions cymose, sometimes wholly cymose in terminal, dichotomous panicles, or reduced to simple clusters or solitary nodes; bracts usually solitary, small, scale-like, sometimes enlarged or 2-3 connate and forming an involucre; bracteoles often 2 with each bract, or numerous in the more open cymes. Perianth often small, sometimes obsolete, often dissimilar in the two sexes, usually simple, calycine, with segments valvate or imbricate, sometimes calycine and 2-seriate, imbricate, with segments all similar or occasionally dissimilar, rarely double, the inner then 4-5 small scale-like or very rarely conspicuous petals, longer than calyx-segments and generally contorted-imbricate. *Torn* sometimes forming an intrastaminal disk or with disk-glands or lobes alternate with stamens of the outer series. Stamens very various, sometimes solitary or fewer than, sometimes as many as the sepals or petals, often indefinite, in a few very many; filaments free or connate; anthers 2-celled, often didymous; dehiscence longitudinal, transverse or porous. Rudiment of ovary present or absent. Sepals usually rather larger and less connate than in males. Petals sometimes smaller and less often present than in males. Disk hypogynous, entire, or of discrete glands or 0. Staminodes often present but rarely constant. Carpels connate in a sessile or stipitate ovary, usually 3, rarely 2, sometimes

EUPHORBIACEM.

several; ovules 1-2 in each carpel, pendulous from the inner angle of the cell, funicle often thickened; styles as many as the carpels, free or united and entire or divided; stigmas usually on the inner side of the styles or style-arms. Fruit usually a capsule of three-valved and 1-2-seeded cocci separating from a persistent axis, or a drupe with 1-3 cells, or of one or more combined nuts. Seeds orally attached at or above the middle of the cells, with or without an arillus or caruncle at the hilum; albumen fleshy; embryo straight, enclosed in the albumen; cotyledons flat, leafy, and radicle superior; rarely albumen 0 and cotyledons fleshy.

flowers aggregate-monoecious, many males consisting of each a solitary pedicelled stamen, surrounding a single central, 3-carpelled, pedicelled female, all enclosed in a pseudo-calycine involucre; perianth proper none, or rarely of 1-3 minute scales at the joint between pedicel and flower; cells of ovary 1-ovuled; herbs, shrubs, or trees with milky Juice:—

Involucre regular, campanulate or turbinate, or slightly irregular; lobes free and alternate with segments of involucre. . . . **Euphorbia.**

Involucre oblique, irregular, slipper-shaped, declinate, produced into a spur, glandular within. . . . **Pedilanthus.**

flowers dioecious or separate-monoecious; perianth of sepals almost always present, occasionally also with a corolla; stamens 1-2-seriate or all in the centre of the flower:—

*Stamens of the outer or only series opposite the sepals, or if stamens all in centre of flower, the cells of the 2-many-carpelled ovary each 2-ovuled; petals when present always minute; sepals 1-2-seriate; inflorescence always lateral or axillary:—[p. 917]

Leaves compound, 3-foliolate, alternate; trees, dioecious; flowers of both sexes panicled; sepals 5, imbricate; petals 0; stamens of male 5; ovary of female 3-4-carpelled; fruit a berry. . . . **Bischofia.**

leaves simple, entire or rarely (*Cyclostemon* sometimes) serrulate, alternate or rarely subopposite:—

Male flowers in axillary fascicles or solitary axillary.—[p. 915]

{Corolla of 5, rarely 6, scale-like petals:—[p. 916]

Calyx-lobes or -segments 5, valvate; stamens 5; filaments united in a column; trees or shrubs:—

Ovary 2-celled; fruit indehiscent; flowers monoecious or dioecious. . . .

Ovary 3-celled; fruit dehiscent; flowers monoecious

Cleistanthus.

Calyx of 5-6 imbricate sepals; stamens 3-6, free or only

- slightly connate at the base ; ovary 3-celled ; fruit dehiscent,
monoecious or dioecious.....Actepni^{la.}
- {Corolla absent in both sexes ; sepals imbricate:—[p- 915]
- Styles in the female confluent in a long or short column
cone faintly toothed at the apex ; calyx 4-6-lobed or -toothed
disk none in either sex; anthers 3-8, connate in an
or oblong, sessile column, with linear cells; trees or shrubs,
monoecious or dioecious.....Glochidion^{b.}
- Styles separate or, if partly connate, the style-arms and
stigmas free:—
- Styles or style-arms slender :—
- Rudimentary pistil in male flower well marked; disk^{is.}
present in both sexes; stamens 3-5, free, exserted
alternating with glands of disk; sepals 5; fruit dry, or
fleshy, with 6 cocci; shrubs, dioecious.....Fluegge^{a.}
- Rudiment of pistil not present in male flower; stamens
usually connate, if free (*Phyllanthus* § *Cicca*), fruit
fleshy, with a 3-4-celled, bony endocarp:—
- Disk none in either sex, or if present [*Agyneia*], then
only in the male flowers ; stamens 3; filaments united
in a column :—
- Fruit a capsule with three 2-valved carpels ; anthers
sessile at apex of column; disk present in male
flowers; herbs, monoecious.....Agyneia^{*.}
- Fruit of 3-6 indehiscent cocci; disk absent from
flowers of both sexes:—
- Anthers sessile on angles of column; calyx of
male 6-lobed, spreading; of female 6-cleft, persistent;
persistent; small shrubs or undershrubs, monoecious
- Sauropus.**
- Anthers adnate to whole length of column ; calyx
of male turbinate or hemispheric; lobes not
inflexed ; of female short, 6-lobed ; shrubs or small
trees, monoecious.....Breynia.
- Disk present in both sexes, or if absent (*Phyllanthus*
§ *Embliea*), then only so from male flowers; stamens
partly united, or free; fruit dehiscent, or separating
into cocci, or indehiscent; herbs, shrubs, or trees,
monoecious.....Phyllanthus
- Styles much dilated; fruit indehiscent:—
- Stamens 2-3 ; ovary 2-3-celled ; drupe 1-seeded ; trees,
usually dioecious [p. 917].....Putranjiva.

§Stamens 4 or more; ovary 2-4-celled; drupe 2-4-seeded; trees, dioecious; leaves sometimes crenulate [p. 915]

Cyclostemon.

Male flowers in axillary spikes, racemes, or panicles; stamens free round a rudimentary pistillode ; anthers didymous; filaments hiscent; trees or shrubs, dioecious, rarely monoecious :- [p. 915]

Seeds without an arillus:—

Ovary 1-celled; drupe small, rugose, somewhat compressed, flowers of both sexes in slender racemes or spikes; trees or shrubs, dioecious; stamens 2-5, inflexed in bud...**Antidesma.**

Ovary 2-celled; drupe coriaceous, not compressed, 1-2-seeded; flowers of male in dense, catkin-like spikes; at female clustered; trees, dioecious or (rarely) monoecious, stamens 1-5; filaments capillary.....**Aporosa.**

Seeds with an arillus; ovary 2-3-celled; flowers in racemes; capsule fleshy, often rupturing irregularly, but not elastic; cent; trees, dioecious, rarely monoecious; stamens 4-8, filaments short.....**Baccaurea.**

•Stamens of the outer or only series alternate with the sepals, or if stamens all central, the cells of the 2-3-, rarely 4-carpelled ovary each 2-valved ; petals, if present, often exceeding the sepals ; inflorescence axillary or terminal :- [p. 915]

flowers in terminal spikes, racemes, or panicles, almost always androgynous; petals present, at least in the male flowers, or 1 absent from both sexes (*Manihot*), then with a large hypogynous disk in both male and female flowers, and stamens definite, 2-seriate, marginal:—[p. 918]

©Flowers in 2-3-lobedly cymose panicles; stamens erect, leaves always digitately lobed :—[p. 918]

Calyx imbricate in bud, regularly 5-lobed ; fruit dry, capsular, each carpel 2-valved :—

Stamens 10, inserted in two series round the lobes of a hypogynous disk; petals none in either sex; shrubs or trees, flowers dioecious, occasionally monoecious.....**Manihot.**

Stamens many, the outer 5 in 1 series opposite the petals, the rest in a column in centre of flower; petals 5; shrubs or small trees, flowers monoecious, the central ones female

Jatropha.

Calyx irregularly valvate, rupturing into 2-3 lobes; fruit, a drupe ; stamens 8-20, the outer 5 in a series opposite petals, the rest free in centre of flower; trees, flowers monoecious, or dioecious.....**Aleurites.**

O Flowers in androgynous spikes or racemea, stamens in bud with anthers levised, many, inserted on the hany iecep fruit dry, capsulai, each carpel 2 \al\ed , leaves pennine 6 or more neived from the base, ties oi shiubs, monoecious [p 917]

% Flowers in axillary clusteis, spikes, lacemes or panicles* or minal then with disk absent at least fion male flowei, and from both, with (*Mallotus* sometimes, *Ricmus*) the stamens **cential, oi** (*Extcecaia* sometimes, *Sapmm*, *btbastiania*) with definite, 1 senate, —

Petals present in male flowei, filaments stiaight, ovaiv 3 ce fruit capsular —

Sepils imbricate , disk developed in both sexes, stamens free, shiubs oi ties, floweis monoecious, in usually racemes, laiely a female at base of male nceme fascicled, female solitaiy

Sepals valvate, disk in male obscuie, stamens below, diffuse heibs, floweis monoecious upper part of raceme, females solituj, pedicelled

Chrozophora.

Petals none in eithe sex —
Sepals imbiicate, 4 6, fiee —

Floweis in both sexes in axillaiy clusteis, diacious, ties oi large shrubs —
btamens 10-60, ciowded in centie of flowei, nlaflien fihfoim, disk obsolete, pistillode 0, capsule thickly leathexy

Stamens 5-20, combined below in a slendei column a long pistillode, disk piominent, capsule woody

Chaetocarpus.

Floweis in both sexes in clusteis on numeiou axiu racemes or pimcles, monoecious or dioecious small shiubs, stamens 10-30, central filaments fiee oi united, anthei cells adnate thioughtout to a bioad connective , pistillode 0 , disk piesent, capsule diy, ciustaceous

Bahospermuin-

bepals or calyx segments valvate, oi, occasionally, letete, floweis in axilUiy, i uely teiminal spikes, nceine&f panicles —

Calyx in male flowei unequally 4 toothed, in female 5 toothed, closed in bud , ties, dioecious , flowers small, in long, sirn spikes or iaceine&, all axillaiy, males clusteied, females

tary m the biacts; stamens 6-10, cential; filaments short; antheis didymous, equally 4-locellate, pistillode 0, styles connate, fi uit indehiscent. **Endospermum.** Cal^x in male flower partite to the base, closed in bud, or, if 3-5-lobed oi -toothed, open in bud :—

JCalyx of male flowei closed in bud, usually membrianous, oblong, ovoid or globose, splitting valvately to the base into 3-5 concave sepals, the sepals of female flowers sometimes imbricate :—[p 920]

& Styles distinct, usually long, entne, 2 fid, multifid or papillose-fimbnate ; erect herbs or tiees, or erect, larely climbing sbiubs; fruit capsulai, rarely drupaceous :—[p 920]

*Filaments fiee —[p 920]

Anthci-cells 2, united only by their bases ; stamens many or few; heibs oi shiubs —

Styles undivided, spieadmg, hinged, shoit ; floweis usually dioecious; disk of S hypogynous scales. **Claoxylon.**

Styles fhfoim, long, laciniate oi hmbnate; floweis monoecious, males minute, ebiacteate, females at base of male spikes oi in sepaiate spikes, usually with a large biact; disk 0

Acalypha.

Anthei cells oblong-paiallel oi globose, lateially attached to the connective; trees oi shiubs:—

Anthei -cells 2 ; btamens many.—

Leaves opposite ; floweis lathei laige, dioecious; maleb in lax, lateial lacemes, one to each biact, females solitaiy, on a long peduncle oi lace-mose; anthei cells oblong; fruit diupaceous ; dibk nevei piesent. **Trewia.**

Leaves alternate or opposite; floweis small or minute, monoecious oi dioecious, in axillary oi teiminal, bimple oi paniced spikes oi lacemes ; •anther-cells globose on the sides of a usually widened connective; fiuit capsulai; disk sometimes piesent in female floweis. . . . **Mallotus.**

Antheis 3-4-locellate, the cells globo&e, stamens many or few; disk 0; tiees or shiubs; lea\es alternate; fiuit capsulai —

Styles veiy long, 2-fid; floweis monoecious oi

BENGAL PLANTS.

dioecious; males in long axillary racemes,
females 1-2 on a long axillary peduncle

Cleidion.

Styles entire, short or long; flowers usually
dioecious, in axillary racemes or branched
panicles; males many, clustered, females soli-
tary or few under each bract; bracts often large

Macaranga.

•Filaments connate in bundles or branched; disk 0,
fruit capsular:—[p. 919]

Flowers dioecious, male and female in axillary or
infra-axillary spikes; shrubs with lanceolate, penni-
nerved leaves; seed with a thin, fleshy coat

Homonium.

Flowers monoecious, in terminal, subpanicle
racemes, upper male crowded, lower female; tree-
like, annual herbs, with palmate, serrate-lobed
leaves; seeds with a firm coat.....**Ricinu**^s.

^Styles connate; twining herbs with alternate leaves;
racemes always axillary, androgynous; stamens always
1-seriate; disk 0 or obscure; fruit always capsular:—
[p. 919]

Styles connate below, spreading above; male calyx 3-
partite; stamens 1-3; seeds with a firm coat...**Tragic**

Styles united below in a fleshy column, incurved
above: male calyx 3-partite; stamens 3; seeds with a
fleshy coat.....**Cnesmone**

^Calyx of male flower open in bud; styles entire, free or
shortly connate at the base; stamens always 1-seriate; disk 0
trees, shrubs, or erect herbs; leaves alternate :—[p. 919]

Trees or shrubs; stamens 3; filaments free:—

Calyx 2-3-lobed; flowers monoecious, in terminal,
simple or paniced spikes or racemes; males several,
females solitary in each bract; females in lower part
of spike or in separate spikes; fruit fleshy or pulpy
rarely woody.....**Sapiu**^{m#}

Calyx deeply 3-partite; flowers in lateral axillary or
terminal, spiciform, unisexual (dioecious or monoecious)
or androgynous racemes or spikes; males 1-3 in each
bract, 2-bracteolate; females at the base of raceme or
in separate racemes; fruit crustaceous.....**Excoecaria.**

Herbs; stamens 2-4; filaments connate at the base;

male calyx minute; flowers monoecious, in slender terminal, axillary, or lateral racemes; males minute, 1-3 in each bract; females solitary at base of raceme or lower and long-pedicelled on the stem; fruit crustaceous

Sebastiania.

811. Euphorbia Linn.

Herbs, shrubs, or small trees; stems slender, leafy, or thick, ^{le}%, and sometimes leafless or nearly so; *leaves* below or all alternate, or upper or all opposite, entire or rarely toothed; ^{sti}pules various; juice copious, milky, usually acid. *Flowers* combined in an inflorescence of many male florets surrounding a solitary female, within a small, 4-5-lobed, turbinate or campanulate, regular perianth-like involucre; lobes of involucre with thick ^{la}ands at the sinuses, the glands with often a petaloid, spreading, white or coloured limb; bracts below the cymes or involucre ^opposite; bracteoles within perianth under the male florets setaceous or 0. *Perianth* 0, or of minute scales, *d Stamen* solitary; filaments jointed on a pedicel; anther 2-celled, erect; cells usually ^{sub}globose, opening longitudinally. * *Carpels* 3, connate in a ⁴-celled ovary on an ultimately exerted pedicel in the centre of ^{the} involucre; ovules in each cell solitary; styles 3, free or connate; stigmas simple or 2-fid. *Fruit* a capsule of three 2-valved ^{Co}si, separating elastically from a persistent axis and dehiscing centrally or both ventrally and dorsally. *Seeds* albuminous; ^c%ledons broad, flat.

"Perennial shrubs or small trees; leaves scattered, at least below; glands ^{of} toe involucre without any petaloid appendage :—[p. 922]

1 Stems thick and fleshy; leaves all green, alternate, deciduous, floral ^{non}e:—[p.922]

Stem reduced to a longish, stout, cylindrical underground stock, ⁶~10 in. long; leaves all radical, subsessile, obovate or oblanceolate; cymes after leaves from the crown of the stock . . . *Jusiformis*. Stem above ground well developed :—

{Branches ascending, armed with paired, short, stipulary thorns:—[p. 922]

Styles 2-cleft; branches prominently 3-, sometimes 4-6-angled, the angles fleshy, sinuately repand; leaves few, small, very deciduous. *antiquorum*.

Styles simple, thickened at the base; branches terete or slightly 5'angled; leaves many, large, 6-12 in. long:—

Blanches with stipular thorns arising from thick, subconfluent
 tubercles arranged in 5 more or less regular rows, leaves
 subterminal, ovate oblong or subspathulate, acute *iiinfoi¹¹¹*
 Blanches with stipular thorns arising from low, distant
 tubercles, spirally arranged on the cylindrical branches, leaves
 scattered, linear or obovate oblong rounded at apex

viulin

{Blanches spirally, unimod cylindrical scattered or whorled
 clustered, leaves few, small, linear or oblong, or none, **tyic^h*
 2 lobed, short, leucoid [p 921] *luuutlU*

Stems slender, woody, unturned, branches below, leaves above
 persistent, the lower alternate green, the upper opposite, blight
 colored, anthesis occasionally white [p 921] *pulthiiuM^a*

•Annual herbs with slender, erect, ascending or prostrate stems and
 branches, leafy throughout — [p 921]

Leaves alternate below and opposite above, or all alternate except the
 uppermost floral leaves —

Floral leaves surrounding the involucre peltate colored at their
 bases, glands of the involucre without any appendage, erect herbs
 with petioled leaves —

Leaves of stem alternate in the lower, opposite in the upper part
 ovate oblong, acute, entire or obscurely toothed, floral leaves
 narrow, green towards apex, pale near the base *yenicilaw¹*

Leaves of stem all alternate, ovate oblong, sinuate pinnate, narrow
 leaves similar but opposite, green towards apex, scarlet, anthesis,
 or rose near the base *hctiophylU¹*

Floral leaves green —

Leaves exstipulate, all sessile linear lanceolate, subacute entire,
 floral leaves 2, shorter and broader, glands of the involucre two
 horned, without a petaloid appendage *ihacunculouh¹*

Leaves stipulate, all long petioled, rounded or ovate or oblong,
 entire or pinnate, upper elliptic or lanceolate, glands of the invo-
 lucre with a petaloid appendage *qi aM¹iea^a*

Leaves all opposite, oblique or unequal at the base, stipulate, or
 stipules absent the leaf attachments connected by a transverse
 petiole line —

^Glands of the involucre with a prominent membranous, petaloid
 limb, erect or decumbent, biinching herbs — [p 923]

% Floral leaves distichous, secund, imbricating and concealing the
 involucre, erect, dichotomously branching herbs — [p 923]

Glabrous, stipules small, fimbriate, limb of involucral glands
 entire *zo) moides*

- Hirsute with long, flexuous hairs; stipules short, subulate; limb of glands pectinate..... *crinata*.
 TOoral leaves not distichously imbricating, 2 or solitary, entire, glabrous; stem-leaves obtuse, serrulate towards apex, glabrous or sparsely pubescent:—fp. 922]
 seeds more or less furrowed..... *hyperkifolia* var. *indka*.
 .. Seeds papillose..... *hyperkifolia* var. *parvijlora*.
 glands of the involucre narrowly winged or wingless:—[p. 922]
 Erect or ascending herbs; leaves of stem hispid, with copious ensped hairs, distinctly nerved, -75-1-5 in. long; floral leaves minute..... *pilulifera*.
 Prostrate herbs; leaves all small, nerveless, -15--3 in. long:—
 leaves crenulate; stems usually hispidly hairy; capsules pubescent; seeds furrowed..... *thymifolia*.
 Leaves entire or serrate at the wide end only :—
 Leaves entire; stems hispid; capsules hispid; seeds pitted
gramdata.
 Leaves sometimes serrate at the wide end; stems usually glabrous; capsules glabrous; seeds smooth *mkrophylla*.

- ¹811. EUPHORBIA FUSIFORMIS Ham.; F. B. I. v. 257. *E. acaulis*
 P - 1 . ii. 472.
 Tirhut; N. Bengal.
 A dwarf, glabrous plant, with only the scarred tip of the
 1Q buried stem showing aboveground.
- ¹² - EUPHORBIA ANTIQUORUM Linn.; F. I. ii. 468; F. B. I.
 v - 255; E. D. E. 496.
 A hedge-plant in all the provinces.
 A small tree, 15-25 feet high. *Hind.* Tidhara-sehnd;
Beng. Bajvaran; *Santal.* Etkcc'; *Uriya* Dokana-
 siju.
- ¹³ - EUPHORBIA NERIIFOLIA Linn.; F. B. I. v. 255; E. D.
 E- 520. *E. ligularia* F. I. ii. 465.
 Orissa, in rocky places, wild; occasionally planted near
 villages in all the western provinces.
 A small tree, 15-20 feet high. *Beng.* Mansa-sij; *Hind.*
 Sehnd.
1814. EUPHORBIA NIVULIA Ham.; F. B. I. v. 255; E. D. E. 527.
***E. nereifolia* F. I. ii. 467.**
 In villages, cultivated.
 A small tree, 20-25 feet high. *Beng.* Sij.

1815. EUPHORBIA TIRUCALLI Linn.; F. I. ii. 470 ; F. B. I. v. 25⁴ ;
E. D. E. 553.
A hedge-plant in most of the provinces, now quite
naturalised in the western parts.
A small tree, 12-20 feet high ; native of Africa. *H*nd.*
Sehnd; *Beng.* Lanka-sij; *Santal.* Siju.
1816. EUPHORBIA PULCHERRIMA Willd.; F. B. I. v. 239; E. V-
E. 536.
Cultivated in European gardens.
A favourite shrub on account of its showy floral leaves.
Poinsettia; native of America.
1817. EUPHORBIA GENICULATA Ortega ; F. B. I. v. 239.
In gardens, occasionally.
An annual herb.
1818. EUPHORBIA HETEROPHYLLA Linn.
In gardens generally, and often also subsponaneous iⁿ
waste places in C. Bengal.
An annual, bushy herb.
1819. EUPHORBIA DRACUNCULOIDES Lamk; F. I. ii. 474; F. ~~Dr~~^T
v. 263; E. D. B. 505.
Tirhut; Behar ; W. Bengal; Chota Nagpur.
An annual herb, in cultivated ground. *Beng.* Jy^{chi},
Chagul-puputi; *Santal.* Parwa.
1820. EUPHORBIA GRAMINEA Jacq.
C. Bengal, naturalised.
An annual herb. A recently introduced American weed,
not yet very common.
1821. EUPHORBIA ZORNIOIDES Boiss.; F. B. I. v. 246.
W. Behar, rare.
An annual herb, in cultivated ground.
1822. EUPHORBIA CRISTATA Heyne ; F. B. I. v. 247.
W. Behar, rare.
An annual herb, in cultivated ground.
1823. EUPHORBIA HYPERICIFOLIA Linn. var. INDICA F. B. I. v. ⁰
E. D. E. 512. *E. uniflora* F. I. ii. 473.
*n all the provinces.
★^{wv}ed of waste places and fields.
- 1823/2. Var. P*_{RV}IFLORA F. B. I. v. 250. *E. parviflora* F. I. I-
ii. 472.
W. Bengal; Orissa.
A weed of wast*, places and fields.

1824. EUPHORBIA PILULIFERA Linn.; F. B. I. v. 250; E. D. B- 531. *E. hirta* F. I. ii. 472.

In all the provinces.

A very common annual weed of waste places, fields, and gardens. *Hind.* Dudhi; *Beng.* Bara-kerui; *Santal* Pusi-toa.

- 1825" EUPHORBIA THYMIFOLIA Burin.; F. I. ii. 473 ; F. B. I. v- 252; E. D. B. 549.

In all the provinces.

A prostrate weed of waste places. *Hind.* Chhota-dudhi;

- 1826" EUPHORBIA GRANULATA Forsk.; F. B. I. v. 252; E. D. E. 508.

Chota Nagpur.

^ prostrate weed. *Sanlal.* Kantha arak'.

- 1827 EUPHORBIA MICROPHYLLA Heyne; F. B. I. v. 252; E. D. E- 518. *E. Chamcesijce* F. I. ii. 473.

Tirhut; Behar; N.Bengal; W. Bengal.

A prostrate weed of waste places. *Beng.* Chota-kerui; *Santal.* Dudhia-phul.

812. Pedilanthus Neck.

Sh¹ (u) S; finches somewhat fleshy; leaves of stem alternate, ^{ves} ^{PP} ^{Ol} ⁱⁱⁱ te; stipules various: juice copious, milky, ^{ri} ^{Flowers} combined in an inflorescence of many male florets ^{5.1} ^{r011n} ⁱⁿ g a solitary female, within a conspicuous, slipper-shaped, ^{col} ^{bed,} ^{irre} ^S ^{ular} » perianth-like involucre, with a large, sometimes ⁰ ^{Ure} ⁱ posterior appendage; glands within the appendage 2-6 ⁰ ^r ⁰ ^cteoles under the male florets setaceous or 0. *Perianth* [>] or of minute scales, *t Stamens* solitary; filament very short, ^{jo} ^{inf} ^G ³ ^{OU} a ^P ^{edicel}; anther 2-celled; cells subglobose, opening **longitudinally.** ? *Cartels* 3, connate in a 3-celled ovary, sessile **on its** Pedicel; ovules in each cell solitary; styles connate in a **longish** column; stigmas short, free, entire or 2-fid. *Fruit* a [^] ^{bul} of three 2-valved, often keeled or horned cocci, separating ^{astically} from a persistent axis. *Seeds* albuminous; cotyledons ^{bro} ^{ad,} flat.

1828. PEDILANTHUS TITHYMALOIDES Poit.; F. J[^]. I. v. 239.

A hedge plant, especially in the central and eastern provinces; introduced.

A succulent shrub. *Venutc.* Belati-sij.

813. Bischofia Bl.

A large tree; *leaves* alternate, 3-foliolate; leaflets often crenate. *Flowers* minute, dioecious, in axillary or lateral paniced racemes; males scattered or clustered, females longer pedicelled. $\langle ? \text{ Sep}^{\wedge s}$ 5, concave, obtuse, imbricate, hooded over the anthers. *Petals* 0. *Disk* 0. *Stamens* 5; filaments short; anthers large; cells parallel. *Pistillode* short, broad. $\langle ? \text{ Sepals}$ 5, ovate, caducous. *Stair nodes* 5, small or obsolete. *Carpels* connate in an exserted, 3-4-celled ovary; ovules 2 in each cell; styles long, linear, stout, entire, stigmatic throughout on inner face. *Fruit* a globose, fleshy berry, with 3-4 cells lined with a parchment-like, 2-valved endocarp. *Seeds* turgidly oblong; testis crustaceous; albumen fleshy; cotyledons broad, flat; radicle straight, elongate.

1829. BISOHOFIA JAVANICA Bl.; F. B. I. v. 345; E. P. B. 520.

***Andrachne trifoliata* F. I. iii. 728.**

N. Bengal, Duars; Chota Nagpur; in other provinces sometimes planted.

A medium tree, 30-50 feet high. *Hind.* Kein.

814. Bridelia Willd.

Shrubs or trees; *leaves* alternate, quite entire, sometimes with strong, straight nerves, and prominent cross veins. *Flowers* monoecious or dioecious, small or minute, in axillary or spicate clusters, sessile or shortly pedicelled; bracts small, scale-like. & numerous. *Perianth* double. Ca^{\wedge} -segments 5, valvate. $\text{P}^{\wedge \text{als}}$ 5, short, scale-like, stalked or spatulate. *Disk* broad, pulvinate or adnate to calyx-tube. *Stamens* 5; filaments connate below in a column which bears a terminal pistillode, free and spreading above; anther-cells 2, parallel. $? \text{ few or solitary. Calyx-segments}$ narrower than in $c?$. *Disk* double, the inner forming *membranous, central, truncate cone, often enclosing the young ovary. *Carpels* connate in a 2-celled, rarely 3-celled, glabrous ovary; ovules 2 in each cell; styles free or shortly united below, forked or subentire. *Fruit* a small drupe with 1-2 usually single-seeded cocci or pyrenes. *Seed* with usually fleshy, sometimes membranous albumen; cotyledons thin or fleshy.

•Flowers dioecious; leaves deciduous, coriaceous, elliptic, oblong, ovate or obovate, rounded or obtuse, margin faintly crenulate, 3-5 in. long; nerves 15-20 pairs, strong, straight, parallel; calyx in fruit hardly altered; drupe pisiform; erect trees:—[p. 927]

Shoots and leaves beneath glabrous ; branches with stoutish, more or less persistent spines..... *reticulata*
 Shoots and leaves beneath tomentose; branches with a few sharp
 spines which disappear with age..... *retusa* var. *Roxburghiana*.
 Flowers monoecious ; leaves persistent; nerves more or less arching :—
 [p. 926]

Leaves glabrous beneath or only very slightly tomentose, not glaucous, margins repand or sinuate ; calyx in fruit unaltered ; drupe fusiform ;
 erect shrubs or small trees, with short trunk and spreading branches:—

Leaves 2-3 in. long; nerves 6-10 pairs..... *montana*.

Leaves 4-7 in. long; nerves 10-15 pairs..... *Montana* var. *communi**.

Leaves pubescent or tomentose beneath, or if at length glabrous then glaucous beneath :—

Subscandent shrubs; calyx in fruit distinctly enlarged; spikes and clusters usually subtended by long, stipular bracts; leaves subcoriaceous, elliptic, obovate or orbicular-oblong, obtuse or acute, margins entire or undulate or repand, 2-8 in. long; nerves 6-9
 pairs, slender ; drupe oblong..... *Htipulari**.

Erect trees or shrubs; leaves thin ; nerves 8-12 pairs; stipular
 bracts, if present, small; calyx in fruit unaltered :—

Leaves elliptic, obovate or oblong, acute or acuminate, tawny-
 pubescent beneath, 3-8 in. long; flowers pubescent; calyx-lobes
 lanceolate ; petals of male 3-lobed, of female obovate ; drupe oblong
pubeacens.

Leaves lanceolate or linear-lanceolate, acute or obtuse, undulate,
 1-3 in. long, glaucous and finely pubescent, but soon glabrescent
 beneath ; flowers glabrous; calyx-lobes ovate-acute ; petals of male
 retuse, of female rounded or eremite ; drupe globose..... *tomentosa*.

1830. BRIDELIA RETUSA Spreng.; F. B. I. v. 268; E. D. B. 868.
 -5. *spinosa* F. I. iii. 735.

In all the western provinces.

A considerable tree. *Hind.* Kijj, kdja; *Kol.* Kuril™; *Santal.* Kadrupalu..

1830/2. Var. KOXBURGHIANA F. B. I. v. 268. *B. crenulata* F. I.
 iii. 784.

In most of the provinces, except the Sundribuns and
 Chittagong.

1831. A considerable tree.
 BRIDELIA MONTANA Willd.; F. I. iii. 735. *B. Hamiltoniana*
 F. B. I. v. 271.

Beluir.

A shrub.

1831/2. Var. COMMUNIS. *B. montana* F. B. I. v. 269; E. P. B. 863.

N. Bengal; Tirhut; Chota Nagpur.

A small tree. *Hind.* Kargualia.

1832. BRIDELIA BTIPULARIB BL.; F. B. I. v. 270; E. D. B. 8*.
2?. *scandens* F. I. iii. 736.

In all the provinces.

A scandent shrub. *Beiuj.* Harinhiira; *Uriya* Gaurkass.

1833. BRIDELIA PUBESCENS Kurz; F. B. I. v. 270.

N. Bengal, Duars.

A considerable tree.

1834. BRIDELIA TOMENTOSA BL.; F. B. I. v. 271; E. D. B. 8*.

***B. lanceefolia* F. I. iii. 737.**

In all the provinces.

A large shrub or small tree. *Beng.* Mindri, sirai.

815. *Cleistanthus* Hook, f.

Trees or shrubs; *leaves* alternate, bifarious, entire. *Flowers* monoecious, small or minute, in axillary clusters or *spi** sessile or the females shortly pedicelled. *s* Segments of *caly** valvate. *Petals* 5, short, scale-like, stalked or spatulate. *Pistils* broad, entire or sinuate. *Stamens* 5; filaments connate below a, central column, bearing a pyramidal or 3-lobed pistilloae, and spreading above; anther-cells parallel. ? *Calyx* less lobed than in *e*, cupular under the ovary. *Dish* double, the inner conic or turbinate, more or less enclosing the young ovary. *Pistils* connate in a 3-celled ovary, usually covered with long hair; ovules 2 in each cell; styles 3, free, 2-fid. *Fruit* a sessile or stipitate, subglobose or depressed capsule, with three 2-valved cocci. *Seeds* without arillus or caruncle; albumen copious or scanty; cotyledons thin or fleshy, often folded.

Leaves broad with apex rounded or retuse; flowers silky; ovary *gilt* rous; capsule obscurely 3-lobed; seeds globose..... *collinti*[^]
Leaves narrower with apex bluntly acuminate or caudate; flowers sparsely hairy; ovary hirsute with long erect hairs; capsule deeply 3-lobed; seeds obovoid, plano-convex..... *collinti*[^]

1835. CLEISTANTHUS COLLINUS Benth.; F. B. I. v. 274. *Lebi-*
***deriopsis orbicularis* E. D. L. 219. *Cluyia collina* F. I. iii. 732.**

Behar; Chota Nagpur; Orissa.

A small tree; fruit extremely poisonous. Hind. Garrar, 1836 r< garari, Urh^a Karada; Kol. Parasu; SantaL Kargalli.

• UEISANTHUS PATULUS Muell.-Arg.; F. B. I. v. 279.

Cluytia patula F. I. iii. 783.

Orissa.

A tree with dense horizontal branches.

816. Actephila Bl.

Tr ees tipul es c. T shrubs; leaves alternate, usually large, quite entire
a*illar c. idu US* Floivers monoecious or casually dioecious, in
or few 3^ (c-u SterS) males several, short-pedicelled, females solitary
5-6, sub long Gr pedicelled, * Perianth usually double. Sepals
small, 8 a.e-like, 01' on DUh broad } entire Or 5-lobed. Stamens
3-6, ins^o rted on th e disk; filaments free or nearly so; anther-cells
Para. ei i>stillode 3-cleft. ? Perianth as in male. Carpels
entire t' m a ^-celled ovary, sessile on the 5-lobed disk; ovules 2
inToV cctcjj cell. + les
hard' 1 li. 'S ^ snoi, t, free or connate, entire or 2-fid. Fruit a
tary i no U cidal capsule of three 2-valved cocci. Seeds usually soli-
pr ittle, a. Occus, *ar g> 3-gonous; arillus or caruncle 0; testa thin,
1837 a. en scan ty or 0; cotyledons fleshy, plicate or corrugate.

• ACTEPHILA EXCELSA Muell.-Arg.; F. B. I. v. 282.

^nittagong.

A small tree or large shrub.

817. Glochidion Forst.

Evergreen tree ies or shrubs; leaves alternate, bifarious, shortly
notia... e utte< Flowers small, monoecious or dioecious, in
axillHry cl US terS r perianth simp le- c? Sepals 6, rarely 5, spread-
in j | n ell, Series, imb ricate. Petals 0. Disk 0. Stamens connate
^ore - Vii? 0^ or oblon S' y sessile column; anthers 3-8, sometimes
free points linear; dehiscence extrorse; connectives produced as
minute, and m idden between the anthers. ? Sepals 6, short, free
and nb ricate or shortly connate, tubular and unequally toothed
oi c/ff Pealeo 0. Dish 0. Carpels connate in a 3-15-celled
ovary; ovules 2* in each cell; styles connate in a globose,
columnar, conic c>r subclavate column, lobed or toothed at the tip.
Fruit a 3a sut o ^ 3 or niore 2-valved cocci, often with twice as
many ob e? as cells, globose or orbicular and depressed or intruded
at he bas © and apex, crowned by the often enlarged style; cocci

conaccous 01 ciustaceous, epicaip sepaiaable 01 not *Seeds* hemi spheric 01 laterally compressed, testa crustaceous, with often a succulent coit, albumen copious, fleshy, cotyledons fl<*

Antheis always 4 01 moie than 4 — * led

Cipsule depiessed globose, distinctly lobed, base and ipex in qu<- , leives glibious oi nearly so —

Ovaiv and capsule 10 15 celled, style a low \eiy ^{bioad>} shallow glabious cone with a hollowed apex, leaves puiphsh, ^{glucous} beneath, antheis 4 12

Ovaiv and capsule 0-8 celled , style conic il from a ^{thick} lance ^{th f} long as ovaiv, tomentose, 5 6 lobed tiuncate , lea'les gien benea . **antheis 4 6** *lanceolanin*[^]

Cipsule globose, obscuely lobed, not deeply intiuded at base a apex, leaves beneith densely, softly white oi lusty tomentose, ^{style} shoitly conical, capsule 6 celled *husutum*

Antheis 3, oi if (*G asmmicuni* occasion illy) 4 5, then the style ^{column} columnxi, and the leaves quite glabious —

Leaves glabious beneath —

Capsule faintly 4 lobed , antheis 3 sometimes 4 oi 5 , ^{columnna} style ^{assa)} leaves puiphsh beneath

Capsule deeply 8-12 lobed, antheis always 6 , style subglobose, ^{vel} laige entne, leaves gien beneath *sphaiooWium*

Leaves spaiselj pubescent oi tomentose beneath, antheis always 3 , capsule depies&ed distinctly lobul — •

Male and female floweis both shoitly pedicelled, oi the females ^{sessile} sessile , style stout, enlai^ed at the tiuncate, toothed tip , ^{0%} **lobed** 4 7 celled, capsules ilmo^t sessile, pubescent, 4 7 celled and 4-7 *lelutimuw*

Mile floweis shoitly, female always moie distinctly pedicelled , ^{style} slendei, cla\ite, tiuncate ovaiv 4 5 celled , capsules distinctly pedicelled, glabious oi pubeiulous, 4-5 celled and 8-10 lobed

Heymanum

1S38 GLOCHIDION MULTILOGUIARF Muell Aig , *T B I* \ 307 *Bradleia multiloculatis* *T I m* 696

Tnhut, N BengaL, E Bengal, Chittagong, **Chota** Nagpur, Paiasnath, lare An e\ergreen tree

1839 GLOCHIDIOV LVNCEOLARILAI Dalz , *F B I* ^ 308, **E D** G 238 *Bi adleia lanceolaria* *F.I m* 697

Chota Nagpur, Behar, W Bengal, Chittagong A tree, 25-30 feet high *Vemac*, Anguti.

1840. GLOCHIDION HIRSUTUM Muell.-Arg.; P. B. I. v. 311. *Brad-leia hirsuta* F. I. iii. 699.
N. Bengal, Duars ; Chittagong.
A shrub.
1841. GLOCHIDION ASSAMICUM Hook, f.; F. B. I. v. 319.
Tirhut; N.Bengal; E.Bengal; Chittagong.
A small, spreading tree.
1842. GLOCHIDION SPHEROGYNUM Kurz ; F. B. I. v. BIT.
Chittagong.
A small tree with weeping branches,
1843. GLOCHIDION VBLUTINUM Wight; F. B. I. v. 322; h. v. G. 240.
Tirhut; N. Bengal, Duars ; Chota Nagpur.
A tree, 20-30 feet high.
1844. GLOCHIDION HEYNEANUM Wight; F. B. I. v. 323.
N.Bengal; E.Bengal; Chittagong.
A tree, 30-40 feet high.

818. *Flueggea* Willd.

Sl *ttaba*, unarmed or spiny; *leaves* small, alternate, distichous,
en* *Flotoers* dioecious, minute, pedicelled, axillary; **many** males
5, clustered, females subsolitary; perianth simple, *i bepan*
glan almost petaloid, imbricate. *Petals* 0. *Dish* of 5 or 4 or 6
menis f alternate with stamens. *Stamens* 5, rarely 4 or 6; **ma-**
Pist *illode* 2-3-fid. ? *Sepals* as in male. *Petals* 0. *Duk* flat;
an nular, toothed. *Carpels* connate in 3-celled, rarely 1- or 2-celled
ov ary; ovules 2 in each cell; styles free, recurved, 2-fid. *Xruit*
***>** *bobe*, coriaceous, or outside fleshy, bursting irregularly or
separating into distinct, 2-valved cocci. *Seeds* triquetrous, with
convex backs and acute faces ; testa crustaceous; albumen scanty;
embryo curved; cotyledons flat, broad.

1845. FLUEGGEA MICROCERPA Bl.; F. B. I. v. 328. *Phyllanthn*,
virosus F. I. iii. 659. *P. retusus* F. I. m. w7.

In all the provinces.

A deciduous large shiub, or " tree-weed.

819. *Agryneia* Vent.

Annual or perennial, glabrous herbs; stem, diffuse, **cMen**
angular or compressed; *leaves* small, alternate, entire *Mown**
monocious, minute; males in axillary clusters, females larger,

solitary; perianth simple; bracts usually numerous, stipuli^{on}*¹⁻
 * *Sepals* 6, gland-dotted, thickened except the white, membranous margins. Disk 6-lobed. *Stamens* 3, central, connate; anthers sessile on the column; cells parallel; dehiscence extrorse. *Pistillode* 0. *Sepals* 6, acute, not margined. *Disk* 0. *Carpels* connate in an ovoid, truncate, 3-celled ovary; ovules 2 in each cell; styles very short, sunk in the top of the ovary, 2-fid. *Fruit* a capsule, splitting into three 2-valved cocci. *Seeds* slender, curved, with an elongated hilum; albumen copious, fleshy; cotyledons flat, broad.

1846. AGYNEIA BACCIFORMIS A. Juss.; F. B. I. v. 285. *Phyllanthus bacciformis* F. I. iii. 661.

C. Bengal; Sundribuns.

A glabrous annual or biennial herb.

820. Sauropus Bl.

Small shrubs or undershrubs; *leaves* alternate, distichous? membranous, quite entire; stipules minute. *Flowers* monoecious, minute, axillary, clustered or solitary; perianth simple; pedicels distinct. *Sepals* connate in a disk-like, urceolate or turbinate, 6-lobed or 6-cleft calyx; mouth small, with superficial thickenings that meet round the stamens. *Petals* 0. *Disk* 0. *Stamens* 3; filaments connate in a short, truncate, 3-gonous column; anthers sessile on the angles; cells linear or subglobose, parallel; dehiscence extrorse. *Pistillode* 0. *Sepals* connate in a 6-cleft, accrescent calyx. *Petals* 0. *Disk* 0. *Carpels* connate in an ovoid or globose, 3-celled ovary, with rounded or concave apex; ovules 2 in each cell; styles 3, very short, spreading, 2-nd order 2-partite. *Fruit* globose or depressed, fleshy or coriaceous, 6-valved or breaking up irregularly, containing 6 indehiscent 8-gonous, crustaceous or bony cocci. *Seeds* with fleshy albumen; embryo straight or nearly so; cotyledons flat, broad.

1847. SAUROPUS QUADRANGULARIS Muell.-Arw : F. B. I. v. 335.

Phyllanthus rhamnoides F. T. iii. 663.

Behar; Chota Nagpur.

A dwarf, glabrous undevahrub.

821. Breynia Forst.

Shrubs or small trees; *leaves* small, alternate, petioled, entire, often distichous. *Flowers* monoecious, minute, axillary; perianth simple; pedicels (distinct, solitary, or the males fascicled, the fas-

dehiscence extrorse, vertical or transverse. Pistillode 0. ?
 Sc; e. Vret < ^ 0. Disk *>*»»»« * * * « .te
 celled ova, sometimes and « Kirganelin) 4-more-
 Sd wTh </ T S 2 !n Caoh CCU ; s ^ es fr < * « connate, usually
 coriaceous, rarely (§ Emblica) flesh* ePioarP' sometimes W » -
 ganelia) a 4-8-celled berry or « Cicra) a «TMP« with a 8-4-celled
 bony endocarp. Seeds 8-gon««; testa crnstalus; hihun ri&
 out strophiole; albumen fleshy; cotyledons flat or flexuous.

*Se
 sEr? itSfir t w 5i a 3: s 3 : Cp 9r i
 erect dit, TM* - < hree inner laments connate; anthers
 o 2 £ L T f 1. S 2 6 S ve 1 7 » inute; stigmas 2-lobed; frmit a 4-8-
 ZI* MOL? Se eded> the Seeds ^ P TM* ' » e pendulous from
 hmnihes ; -ea ^ m i d d l e of ce » « r < / « « d ; « ; a d J n b with slender
 Stamens
 (\$ Euphy Bunz fus me n t S UnUed in a 3 h M t or ^ n g column, n w U
 S o T M « T M S) free and recurved :-

Antthers
 Fruit erect, sHts vertical, connective usually produced .-
 below T e ^ flesh ^ W, h 3 bony, 2-valved « « « « » : ^ l e 3 united
 below, each tw. ce. b. fid; disk absent from male flower (| KnMka);
 a tr T i l l r i ! 6 1 7 S M 1 C 1 0 1 s e y p n n a t e l y s t o n p h e s l e n e r
 bran Emblica.
 ru t a
 free' diZy " 1 6 1 ? crustaceous, 2-valved cocci ; ' ' 3 s once bifid,
 A 'shr b lei' ' r
 late, v...y p...ly p...ed, close-set, distichous; nerves obscure;
 stipules minute, setaceous..... Lawii.
 Herbs; l or sessile, glaucous beneath; nerves
 distinct ;

Leaves scattered, 2i I : n. long, cuneately obovate; sepals
 margins maderaspatisis.

or lir ISS ^ S S J , o s e - s e t , 2 - 6 i n . l o n g
 Amhei-sdidymousorrenfTm e n
 that when the cells J Z ^ t . f . ^ I ^ T M * ^ " ?
 filaments more or less united ^ L ? " S 6 e m S ^ " ^ '
 s'le of 3 crustaceous or thin-valtd 7 7 T T M * " f T M " ' * *
 connate below, once bind (, ^ ^ T M « ' ^ * " o l r
 ate, subsagittate; annual or perennial herbs or under-
 compressed branches and distichous leaves 3-1 in.

- A herb, usually annual, sometimes perennial. *Hind*¹ and *Beng.* Hazar mani; *Santal.* Badar, shapni-
1835. *PHYLLANTHUS SIMPLEX* Retz; F. I. iii. 654; F. B. I. v. 29a; E. D. P. 668.
In all the provinces.
A herb or undershrub. *Santal.* Tanda meral.
1856. *PHYLLANTHUS PENDULUS* Koxb.; F. I. iii. 663; F. B. I. v. 298.
W. Bengal.
A biennial undershrub, 2-3 feet high.
1857. *PHYLLANTHUS NIRURI* Linn.; F. I. iii. 659; F. B. I. v. 298; E. D. P. 657.
Iii all the provinces.
An annual weed. *Hind.* Jar-amlā; *Beng.* and *Unya* Bhui-amlā.
1858. *PHYLLANTHUS DEBILIS* Ham.; F. B. I. v. 299.
Orissa; ChotaNagpur; Behar; Tirhut; N.Bengal.
An annual or perennial herb or undershrub.
1859. *PHYLLANTHUS DISTICHUS* Muell.-Arg.; F. B. I. v. 304, E. D. P. 627. *P. longifolius* F. I. iii. 672.
In gardens in most of the provinces.
A deciduous tree, 20-30 feet high. *Beng.* Noari, loda, hariphul; *TJriija* Narkuli; *Hind.* Chalmeri.

823. Putranjiva Wall.

Trees; *leaves* evergreen, entire or serrulate, penninerved and reticulate. *Flowers* monoecious Or (in our species) dioecious, axillary, pedicelled, males clustered, females subsolitary; perianth simple. *Sepals* connate in an unequally 3-6-lobed calyx; lobes imbricate. *Petals* 0. *Bisk* 0. *Stamens* 2-4 in the centre of the flower; filaments free or partially connate; anthers erect; cells parallel. *Pistillode* 0. *Calyx* as in male. *Petals* 0. *Disk* 0. *Carpels* connate in an ovoid, 2-3-celled ovary; ovules 2 in each cell; styles short, spreading, dilated into broad, fleshy arms. *Fruit* an ovoid or globose drupe; endocarp hard, 1-celled. *Seed* solitary, ovoid; testa crustaceous; albumen fleshy; cotyledons broad, flat.

1860. *PUTRANJIVA KOXBURGHII* Wall.; F. B. I. v. 336; K. V-P. 1433. *Nageia Putranjiva* F. I. iii. 766.

In all the provinces, wild or planted.

An evergreen tree, 30-40 feet high. *Hind,* and *Beng** Jia-puta, putranjiva; *Santal.* Pitoj.

824. Cydostemon Bl. creWuate, base

Trees; *leaves* alternate, coria* eouS, entU6 Jelled, clustered; often unequal. *Flowers* dioecious, axillary, } bri oate) the buds perianth simple. *Sepals* 4-6, broad, in giamens many globose. *Petals* 0. *Disk* globose or depressed hort fr ^, anthCRS or few, inserted round the disk; filaments te -n • ^^ ^ & ^ erect; cells parallel. *PisUllode* 0, or wn ^ on-ate or 0, gtiguias male. *Petals* 0. *Disk* annular or 0. Fruil BUbgloboso or celled ovary; ovules 2 in each cell; style led dilated, fleshy, or connate in a peltate disk. ^^ goUtary ovoid, indehiscent; pericarp thick, hard, 2-celled in each cell; albumen fleshy; cotyledons broad, flat.

Leaves broadly elliptic or ovate-oblong, abruptly l btusely caudate-acumi- nate, 2-8 in. long; female flowers ^ B' P^6" P68 "obtusely caudate-acuminate, 4-6 in. long; or Leaves elliptic-oblong or linear-oblong, acute axsamiciis. female flowers very short-pedicelled.

1861. CYCLOSTEMON EGLANDULOSUS K. UIZ, v • F B • I • v. 341. Ho/"*
eglandulosa F. I. «⁶¹¹»

Tippera; Chittagong.

An evergreen tree, 40-50 feet high. ^ ^ ^ ^

1862. CYCLOSTEMON ASSAMICUS Hook. ^, • al Duars.
 Chittagong; Sundbuns; N. Beng eng. ^ . takal.
 An evergreen tree, 25-30 feet high. * eng.

825. Antidesma Linn.

BZD. »»»•••»_____ . tinules narrow-

Trees or shrubs; *leaves* alternate, ^ " ^ J ^ y or terminal, *Flowers* dicecious, small or minute, in stamth, ^^ g Sn>(lb simple or branched spikes or racemes; *petals* alyx. PelaU 0. connate in a 3-5-, rarely 6-8-lobed, or g ^ , m inserted on or Dwfc entire or lobed. *Stamen** 2-0, **** filaments jnflcx ed in bud, around the disk, often irregularly, n approximate or didymous; ^ . ^ T njnute, anthers Crete; connective thickened. ^ » o de occasionally globose, rarely 2-fid, glabrous or nular or oush ion-like. * Calyx as in males. *Disk** ^ ^ ^ ^ , ov ules 2, pendulous; *Carpels* usually forming a 1-odW oyttj stigmas 2-4, usually short, 2-fid or rtit by ^ suUlv teral or drupe, more or less compressed, crow

terminal stigmas. *Seed* small; albumen fleshy; cotyledons broad, flat.

Ovary tomentose or pubescent; leaves 2-3 in. long, obtuse, orbicular, obovate or oblong, tomentose or glabrous beneath, dull above; flowers sessile* calyx 5-7-partite; stamens 4-7.....*Ghasebill*"-

Ovary glabrous:- -

Male flowers sessile, female flowers shortly pedicelled \—

Calyx cupular, male very shortly 4-lobed, female truncate; leaves 3-6 in. long, elliptic, oblong-lanceolate, obovate or oblanceolate, obtuse or acute or acuminate, glabrous, shining above; stamens 3

Bunjus.

Calyx of 3-4 orbicular, villous sepals; leaves 3-5 in. long, **elliptic**, oblong or oblong-lanceolate, acuminate, more or less pubescent on both surfaces or dull glabrous above; stamens 3-4.....*velutinunu*

Male flowers as well as female distinctly pedicelled:—

Calyx spreading, obtusely 4-lobed or 4-toothed; leaves 1-5 in. long, obovate-oblong, obovate-elliptic or -lanceolate, obtuse or acute or acuminate, dull glabrous above, glabrous or slightly pubescent beneath; stamens 2, very rarely 3.....*d'utndrum*.

Calyx of 4 broadly ovate sepals; leaves 3-12 in. long, obovate-oblong or obovate-elliptic or -lanceolate, caudate-acuminate, shining and glabrous above except the tomentose midrib; stamens 3-4

acuminatum-

1863. ANTIDESMA GH&SEMBILLA Gaertn.; F. B. I. v. 357 ; E. & A. 1219. *A. paniculatum* F. I. iii, 770. *A. pubeseens* F. I. iii. 770.

In all the provinces.

A small tree. *Beng.* Khudi jamb, timtôa; *Hind.* Umtoa.

1864. ANTIDESMA BUNIUS Spreng.; F. B. I. v. 358 ; E. D. A. 1212-*Stilago Bicnius* F. I. iii. 758.

Tirhut, northern parts; N. Bengal, Duars; Chota Nagpur, Parasnath.

A small evergreen tree.

1865. ANTIDESMA VELUTINUM Tul.; F. B. I. v. 361.

Chittagong.

An e^l* ergreen tree, 25-30 feet high.

1866. ANTIDESMA DIANDRUM Roth; F. B. I. v. 361; E. D. A. 1215. *Stilago diandra* F. I. iii. 759.

In most of the provinces.

<? *Sepals* 4-5, usually unequal, imbricate. *Petals* 0. *Disk* 0, or obscure, glandular. *Stamens* 4-8; filaments short, free; anthers small, didymous. *Pistillode* pubescent, orbicular, sessile or stipitate, rarely in an irregular cleft column. ? *Sepals* 4-6, linear or oblong, much larger than in males. *Petals* 0. *Disk* 0. *Carpels* connate in a 2-5-celled, ovoid or globose ovary; ovules 2 in each cell; stigmas 2-5, small, sessile, free or connate in a short style, each 2-lobed or 2-cleft, arms wide or narrow, papillose, rarely connate in one peltate stigma. *Fruit* a tardily dehiscent capsule, ovoid, globose, obovoid or fusiform, 2-4-celled; pericarp thick or thin, coriaceous, crustaceous or woody. *Seeds* broad, usually dorsally compressed or flattened; testa with a thick, fleshy covering; albumen fleshy or hard; cotyledons broad, flat.

1870. *BACCAUREA SAPIDA* Muell.-Arg.; F. B. I. v. 371; E. D. B. 4.

***Pierarclia sapida* F. I. ii. 254.**

N. Bengal, Buars; E. Bengal; Tippera.

An evergreen tree, 40-50 feet high. *Vernac.* Látká.

828. *Manihot* Adans.

Tall herbs or shrubs, rarely trees; *leaves* alternate, petioled, entire or digitate; segments entire or lobed, free or united. *Flowers* monoecious, in terminal or axillary, simple or somewhat paniculate, rather lax racemes, males short-pedicelled, females lower in the raceme, longer pedicelled; perianth simple; bracts small, or large and leafy, entire or fimbriate. * *Sepal* connate in a usually coloured, campanulate or urceolate calyx, limb more or less lobed; lobes imbricate, contorted. *Petal** 0. *Disk* glandular or lobed. *Stamens* 10, 2-seriate, attached between the disk-glands or lobes; filaments free, slender; anthers oblong; cells parallel, contiguous. *Pistillode* 0, or 3-fid. ? *Sepal** as in males. *Petal** 0. *Disk* hypogynous, entire or glandular. *Carpels* connate in a 3-celled ovary; ovule in each cell solitary; stylos shortly connate below, spreading above, dilated or lobed. *Fruit* a capsule, separating into three halved cocci. *Seed** ovoid or oblong; testa crustaceous; albumen fleshy; cotyledons broad, flat.

1871. *MANIHOT UTILISSIMA* Pohl; F. B. I. v. 239; E. D. M. 216.

N. Bengal, Duars, cultivated in clearings!

A. tall, herbaceous plant with tuberous root: nathe of 8. America. Cassava, Tapiocu.

829. *Jatropha* Linn.

H_{erbs} » shrubs, or trees, often glandular or prickly; *leaves* alter-
nat_e, entire or digitately lobed or pinnate; stipules often ciliate.
Flo_T ^Λ monoecious, in terminal cymes, the central flowers in the
cyn_o or ^Λ _S for ^Λ _S usually female; perianth usually double. <r
J_{spals} 5, often coloured, imbricate. *Petals* 5, contorted, free or
ann_{ate}. *Dz* & entire or of 5 glands. *Stamens* numerous; fila-
ment_{al} * innate, or those of the outer series free; anthers erect,
ov_{at} * or ^o _{blon} S; cells parallel, contiguous. *Pistillode* 0. ?
Calyx as in the male. *Petals* often absent. *Cartels* connate in a
2-4-celled ovary; ovules solitary in each cell; styles connate
below ⁴ ~ ^{na} above; lobes entire or again 2-lobed. *Frit it* a capsule
of ² ⁴ 2-v ^a * ^{ve} _c cocci; endocarp crustaceous or hard. *Seeds*
ovoid or ^o _t long; testa crustaceous; albumen fleshy; cotyledons
broad, flat.

Flow_{61S} ^{SCai} > let or **P**^u **r**^p **l**^e; petals united at their bases only, glabrous;
margins f
Leave_s of stipules capillary-multitid :—
ent_e Palmately multifid; lobes narrow, usually lobulate, sometimes
o ^{le} > glabrous, eglandular as are the bracts, sepals, and stipules;
leaves ⁶ ₁₀ ^{le} smooth..... *multijida*.
tooth_e ^d ; bracts, sepals, and stipules glandular; petiole glandular-
mariculate .. <..... j..... o..... s m..... d..... i..... f..... o..... t..... i..... a
Flowers yellow; petals united to the middle; tube of male villous
with st ⁱ ^P ^u ^{le} s entire; leaves with 5 or 3 palmate angular lobes, or
occns ^{io} > ally entire..... *Curcas*.

¹⁸⁷² ^{JA} TROPHA MULTIFIDA Linn.; F. B. I. v. 383.

In gardens and near temples, general.

A- large shrub. Native of S. America.

¹⁸⁷⁸ ^{JA} TROPHA GOSSYPIFOLIA Linn.; F. B. I. v. 383. *J. glandulifera* E. D. J. 52.

In all the provinces, in waste places.

A small shrub, a common weed of roadsides. Native of Brazil. *Beng.* Lal-bherenda.

^{IR} ⁻⁷⁴ < ^J ^A ^T ^R ^O ^P ^H ^A ^C ^U ^R ^C ^A ^S Linn.; F. I. iii. 686; F. B. I. v. 338; E. D. j . 41.

In all the provinces, cultivated and in village thickets.

A large shrub or small tree. *Vernac.* Bâg-bherenda.

Physic Nut.

830. *Aleurites* Forst.

Trees with simple or stellate pubescence; *leaves* alternate, long-petioled, entire or 3-7-lobed, digitately 3-7-nerved from the base, petiole 2-glandular at apex. *Flowers* monoecious or subdioecious; in lax terminal, paniced cymes; perianth double. *Sepals* connate in a closed calyx, bursting irregularly into 2-3 valvate lobes. *Petals* 5, exceeding the calyx. *Stamens* 8-20 on a conical torus, the outermost 5 alternating with small glands and opposite petals; filaments short or long, all free; anthers erect, adnate; cells parallel. *Pistillode* 0. *Perianth* as in male. *Carpels* connate in a 2-5-celled ovary; ovules solitary in each cell; styles with 2 stout, linear arms. *Fruit* a large drupe with a hard, 1-celled stone. *Seed* with a thick, woody testa; albumen thick, embryo straight; cotyledons broad, flat.

1875. ALEURITES MOLUCCANA Willd.; F. B. I. v. 384; & D.

A. 737. *A. triloba* F. I. iii. 629.

In gardens, especially in C. Bengal.

An evergreen tree, 40-60 feet high. *Vernac.* Akro.

831. *Croton* Linn.

Trees or shrubs, rarely herbs; *leaves* alternate, rarely opposite or whorled, 2-glandular at the base. *Flowers* monoecious, (not in our species) dioecious, solitary or clustered on the rachis a terminal raceme; bracts small, *Sepals* connate in a 4-6-partite calyx; segments imbricate or subvalvate. *Petals* 5, rarely 4-6, never exceeding, sometimes smaller than the disk of 4-6 glands opposite the sepals. *Stamens* many on the hairy receptacle; filaments free, inflexed in bud, anthers straight; anthers adnate; cells parallel. *Pistillode* 0, usually more ovate than in males, rarely accrescent in fruit, smaller than sepals or obsolete. *Disk* annular or of 4-6 glands opposite the sepals. *Carpels* connate in a 3-celled, 2-4-celled ovary; ovules solitary in each cell; style usually 2-4-cleft. *Fruit* a subequally 6-valved capsule, or of 2-4-celled, 2-valved cocci. *Seeds* smooth; caruncle crustaceous; albumen copious; cotyledons broad.

•Inflorescence and young leaves lepidote; leaves penninerved, oblong, elliptic-oblong or elliptic-lanceolate, when old quite glabrous; stamens

"hwtn., j # UPH.OBBIA OEM.

Capsule globose, «* in. long ; leaves serrate or closely **repand-toothed oblongifolius.**

Capsule ovoid, 1-1.5 in. long; leaves entire or remotely **repand-toothed Joufra.**

inflorescence and leaves never lepidote; leaves palmately nerved from ^{the} base; stamens 15-30 :—[p. 942]

leaves 3-5-nerved, ovate-cordate, stellately hairy; branches and ^{the} ~~denies~~ densely, scurfily stellately hairy; stamens ^{1W0" \ ^ J W >} scabridly rusty-pubescent.....V""ITaTMI

leaves 3-nerved, ovate-acuminate, very thin, glabrous ; branchesian ~~kernes~~ glabrous, except the stellately hairy female flowers; ~~Stamens~~ ¹⁵-20; capsule glabrous or slightly hispid.....

1876. CROTON OBLONGIFOLIUS Roxb.; F. I. iii. 685; F. B. I. v. 386; E. D. C. 2180.

In all the provinces.

A small, deciduous tree. Vernac. Chucka.

"77. CROTON JOUFRA Roxb.; F. I. iii. 685; F. B. L v. 38/ , E. D. o. 2175.

Chittagong.

A small, deciduous tree. Vernac. Joufra

HW. CROTON CAUDATUS Geisel; F. B. I. v. 388; E. D. C. 21 a. C. *drupacaus* F. I. iii. 688.

In most of the provinces.

A ^Bscandent or ^Sscandent shvub. Beng. Nan bhonfaw.

^Tg. CROTON Train* Linn.; P. L Hi. 682; P. B. L v. m , E. D. C. 2192.

Cultivated in most of the provinces.

A small evergreen tree. Vernac. Jayapala, jeypal.

8S2. Codlaeum Juss.

Glabrous shrubs or trees; *leaves* alternate, entire, penninerved. *flowers* monoecious, in usually 1-sexual racemes; male*; small, ^f«clad; females larger, soUtary, rarely a female at the base of th« male racemes; perianth double. ^r *Sepals* 8-6, usual^j ⁶ Membranous, imbricate, free or connate below. *Petals* a or ^s ^ler than sepals. *DM* of *M* glands, alternate with petals *Stamens* 15-30, crowded on a low torus; filaments free; anthesis *erect*, < m the margins of a large connective, cells at length con[^] *fluent* at the apex. *Pistillode* 0. » S<J"»fe connate in a 5-lobed *calyx*. Pefa?, a D^subentire. 0«wy* connate in a S-ceUea

ovary ; ovules solitary in each cell; styles entire, elongate, slender, incurved. *Fruit* a globose capsule of three 2-valved, parchnient-like cocci. *Seeds* strophiolate; testa shining, crustaceous; albumen fleshy ; cotyledons broad, flat.

1880. CODLEUM VARIEGATUM Bl.; F. B. I. v. 399. *Croton hr[^]tiferus* F. I. iii. 680.

In gardens everywhere.

An evergreen shrub with brightly coloured, variega^{ted} leaves. « Croton " of English denizens.

833. Chrozophora Neck.

Diffuse, densely hispid or stellately tomentose herbs or under-shrubs; *leaves* alternate, sinuate-toothed or lobed, wavy ^f plicate, 2-glandular at the base. *Flowers* monoecious, in sessile, axillary, bracteate racemes; perianth double; males crowded in upper part of raceme, females solitary, pedicelled; bracts one under each flower. * *Sepals* connate in a globose or ovoid calyx, splitting in 5 valvate segments. *Petals* 5, short. *Disk* obscure *Stamens* 5-15; filaments connate below in a column in 1-3 series; anthers oblong; cells parallel, contiguous. *Pistillode* O. ? \$[€]*P^{al}* 5, narrow. *Petals* very narrow, sometimes setaceous or obsolete-*Disk* of 5 short, broad glands, alternate with petals. *Carpels* connate in a 3-celled ovary ; ovules solitary in each cell; styles 2-fic³, erect or spreading. *Fruit* a capsule of 3 hispid, tomentose or lepidote, 2-valved, almost fleshy cocci. *Seeds* without strophiole; testa shining; albumen fleshy; cotyledons broad, flat.

1881. CHROZOPHORA PPLICATA A. Juss.; F. B. I. v. 409; B. D-C. 2211. *Croton plicatus* F. I. iii. 681.

In most of the provinces.

A coarse annual weed. *Hind.* Souballi; *Bang.* KhAdi okra; *Santal.* Pango nari.

834. Gelonium lloxb.

Evergreen glabrous shrubs or small trees; branches with stipularlmes at the nodes; *leaves* alternate, rarely opposite, peUucid-dotted, enkre or serrate; stipules connate/sheathing, caducous. *Mowers* dioecious, small, in _{sessile} or shortly pedunoled ax. Uary clusters; perianth simple. , *Sepals* 5, orbicular!concave, imbricate. *Petals* 0. *Dish* obsolete. *Stamens* 10-60, crowded on a convex receptacle; filaments filiform, free; anther, oblong,

Baliospermum.]

EVPHOBBIACHJE.

dorsifixed; cells parallel; dehiscence introrse. *PMV* 0. J
V* 5-6, narrower than in the males, imbricate. W
"»* cup-shaped, rarely enlarged and with staininodes. Col
innate in a 2-4-celled ovary; ovules solitary in each cell, sty
"»* mte, depressed, reniform semi-lunar or 2-M. trnt a tar<iuy
discing capsule, globose or 3-4-angled or 2-4-lobed, fleshj.0
coriaceous or crustaceous. *Seeds* subglobose, arillate; testa cms
'aceous; albumen fleshy; cotyledons broad, flat.

1882. GKLONIUM MULTIFLOBOM A. Juss.; F. B. I. v. 45». *. D.

G. 1S8. *G. fasdeuUtum* F. I. iii- 832.

Orissa; Chota Nagpur; N. Bengal; C. Bengal, u.

Bengal; Chittagong.

A tree, 30-40 feet high. *Hind.* Ban nannga.

83S. *Chatocarpus* Thw.

Shtnba or trees; ?ca«es alternate, coriaceous, entire, iwnn-
nerved. *Floxoen* aious, small, in axUlary clusters; pemnth
simple. & *Sepals* 4-6. imbricate. PrfhO 5 fentire O A X
10^d. Sfamen, 5-20; filaments combined below in a slender
col«nm, spreading above; anthers oblong, dorsifixed; cells parallel
Pitillode 8-fld, villous, crowning the staminal column. ? . w J
as in the males. Petete 0. Disi entire or lobed . Ca ^ e f s c o n ,
ate in a 3-celled ov ary p VUIeB solitary in each cell; . «*»» s
ai«tinct, meurxed, 2-partite. Fr»i« a subglobose capsule 01 Q
sP"y or tubercled, 2-lahcd cocci; endocarp hard. beel^ ovoid
or subglobose, with a large 2-lobed, coloured caruncle; testa black,
sh: iny, crustaceous; albumen fleshy; cotyledons broad, «at.

1888. CHIKTOUABFOS CASTANOCAEPUS Thwaites! ^ . » . ^ . » . *60 ;

E. D. C. 987. *Adelia ciutanicarpa* F. I. ii. 848.

Chittagong.

An e\ergreeu tree. *Deng.* Biilkokra.

836. *Baliospermum* Bl.

Mwct shmbs; *leave** alternate, sinuately lobed or toothed,
Penninerved or 3-5-nerved from base; base 2-glandular. *lowe r s
• oneciou (not in our species) dtacious, small, P a n l ~ or
racemose; perianth simple. * *Sepals* 4-5, fomung a globose
calyx, membranous, orbicular, concave, imbricate. rela ls 0.
Disk of 4-6 glands. *Stamen*, 10-30; filaments f. ender, free ;
nthers terminal; cells adnate throughout to the vroad connec-

ti d sc in sei th. chinks ultimately lateral
 ps « ofa T 4 t 1 e T
 times, accrescent hf fruit P. Tn iXi* entir ee- cal; s con-
 note in a S 11 T *ZZ: ^.: ; 7 ^ v, ui o ary n each
 2-valved, crustaceous coed f " " T ^ ' ^ of f r
 alburn fleshy, ^ broad, flat. testa crustaceous;
 1

Chota Nagpl. Re-ar; t ^ ^ " " " F. L iiL 682>
 A leafy P? * Tirhut; N_Ben e al; Chittagong-
 afy> Sto Ut " " dershrub. Beng. Danti, hakun.

Tree.. • 7 W1n Endos P M n > um Benth.

*-reeb, leaves entire-
 date or truncate often Pooled, coriaceous, ovate, cor-
 Petiole with usually 2 tu SU peltate, 3" 5-nerved at base; apex of
 W axillary or lateral. " i glands> Flowers dioseious, small, va
 males clustered, 9, J, sessu? Spikes or racemes; perianth simple;
 oelled in the bractg * on the rachis; females solitary, pedi,
 and unequally v o i i, * 8el?als 4, connate in a globose, shortly
 ^ O . o n a c o ^ tely lob « d calyx. DUk shortly lobed. Stands
 «dymon« ean air? om Cal reoe P tacle; filaments short; anthers
 obsolete ' r Cepais eUed and 4-valved. P Millode minute of
 obscure ' car i oonnate in a 5-toothed calyx. Petal* 0. ^
 in each" ce U; s. J, es ^ ^ ^ in a * ± * fo A ovary; ovules solitary
 3-lobed di* n Connate, formin g a flat, spreading, enfore or
 cocci' or td. Lt "" didymous, separating into 2 indehiscent
 columella o Sec T. Dt and Globed; endocarp crustaceous,
 ^ 5. ENnn, MVE g h o s e ; testa reticulately rugose.
 S 2 7 CHI " ^ SK Benth.; F. B. I. v. 458.
 nittagong.
 A tree.

838. *Claoxylon* A. Juss:

Evergre waoxylon A. Juss:
 W C S B of Shrubs » rarel y annual herbs; leaves alternate,
 Penninened r r v y, eu, oblong, entire, or ^ uately toothed, usually
 sln*U, in axiil J. ower * dicecios or (« « ^ species) monoeciou ^
 « « subglo' y or lateral « T M T M spikes or racemes. — s S i p u . ^ 7 . ^ connate
 Disk 0- « S 1 calyx; limb 3-4-lo bed; lobes valvate. P***
 central ** £ % nuie, rous, rarely few, inserted on or around •
 Ptacle With or without intermixed glands or lo»8-

linear, ciliate scales; filaments free; anthers erect; cells connate at base only but not confluent, free above and erect; dehiscence extrorse. *Pistillode* 0. ? *Calyx* as in the males. *Petals* 0. *Disks** 0 or of 3 petal-like, hypogynous scales, alternate with the carpels. *Carpels* connate in a 3-celled ovary; ovules solitary in each cell; styles short, rarely long, entire, fringed, spreading. *Fruit** a capsule of three 2-valved cocci, or indehiscent and concave. *Seeds* subglobose, with or without an arillus; testa crustaceous; albumen fleshy; seeds broad, flat.

1886. CLAOXYLON MERCURIALIS Thwaites; F. B. I v. 42. *Tragia Mercurialis* F. I. iii. 576.

Behar.

An annual herb.

839. Acalypha Linn.

Shrubs or herbs; *leaves* alternate, toothed or crenate, rarely entire, penninerved or 3-5-nerved. *Flowers* monoecious, minute, axillary or terminal racemes, or the females 1-2 in a peduncled, solitary bract, or casually dicecious; perianth simple; males without bracts, females often at the base of large, accrescent, leafy bracts, low on the male spikes or on separate spikes, *Sepals** valvate, more or less connate in a membranous calyx. *Petals* 0. *Disk* 0. *Stamens* usually 8, sometimes numerous, on a convex receptacle; filaments short, free; anther-cells distinct, divaricate, often at length twisted or flexuous. *Pistillode* 0. ? *Sepals* 3-4, minute, imbricate. *Petals* 0. *Disk* 0. *Carpels* connate in a 3-celled ovary; ovules solitary in each cell; styles filiform, often very long and laciniate or fimbriate. *Fruit* a small capsule of 3 minute, 2-valved, crustaceous cocci. *Seeds* subglobose; testa crustaceous; albumen fleshy; cotyledons broad, flat.

Bracts rather shorter than capsules, 1-flowered, toothed.....fallax.

Bracts longer than capsules :-

Bracts distant, broad, 3-5-flowered, truncate, crenate.....*Mercurialis*

Bracts crowded, 1-2-flowered, with many nerves ending in long, serrulate, hispid teeth.....*ciliata*

1887. ACALYPHA FALLAX Muell.-Arg.; F. B. I. v. 416.

C. Bengal.

An annual weed, 6-18 in. high, recently introduced to our area, but now quite common, especially near Cal-

1888. ACALYPHA INDIOA Linn.; F. I. iii. 675 ; F. B. I. v. 416; E. 1). A. 306.

N. Bengal; C. Bengal; E. Bengal.

An annual weed, 1-3 feet high. *Vernac.* Khokli.

1889. ACALYPHA CILIATA Forsk.; F. I. iii. 676; F. B. I. v. 417; E. D. A. 303.

Behar.

An annual weed, 1-2 feet high.

840. *Trewia* Linn.

Soft-wooded trees ; *leaves* opposite, broadly ovate or orbicular ; base cordate, 3-5-nerved; margins entire. *Flowers* dioecious, rather large, developed before the leaves; perianth simple; males in lax lateral racemes, one to each bract, females solitary, long" peduncled or racemose, *s Sepals* connate in a globose calyx, separating into 3-4 broad, concave, often reflexed segments. *Petals* 0. *Disk* 0. *Stamens* numerous, on a concave receptacle ; filaments free; anthers dorsifixed, oblong, the cells parallel, contiguous. *Pistillode* 0. ? *Sepals* 3-5, broad, imbricate, caducous. *Petals* 0. *DisJc* 0. *Carpels* connate in a 2-4-celled ovary ; ovules solitary 4n each cell; styles connate below, long, terete, entire, papillose throughout. *Fruit* fleshy, 2-4-celled, indehiscent or dehiscing loculicidally; endocarp crustaceous. *Seeds* ovoid; testa hard ; albumen fleshy; cotyledons broad, flat.

1890. TKEWIA NUDIFLORA Linn.; F. I. iii. 837 ; F. B. I. v. 423 ; E. D. T. 525.

N. Bengal; C. Bengal; E. Bengal; Sundribuns ; Chittagong.

A large, deciduous tree. *Hind.* Kamhasa, ganihar; *Being.* Pit'ali; *TJriya* Monda; *Kol.* Gara lohadaru.

841. *Mallotus* Lour.

Trees or shrubs; *leaves* opposite or alternate, entire, toothed or 3-lobed, penninerved or 3-7-nerved, sometimes peltate, often gland-dotted beneath, and sometimes with glandular spaces at the base above. *Flowers* dioecious or monoecious, small or minute, in axillary or terminal, simple or branched spikes or racemes; perianth simple; males fascicled, females solitary in the bracts. <? *Sepals* connate in a globose or ovoid, 3-5-partite calyx; lobes valvate. *Petals* 0. *Disk* 0. *Stamens* numerous, crowded on the

In all the provinces.

A large, scandent shrub, stem weak, sometimes 6 feet long. Vernac. Akus, nan bhantiir.

1894. MALLOWUS PHILIPPINENSIS Muell.-Arg.; F. B. I. v.

E. D. M. 71. *Bottlera tinctoria* F. I. iii. 827.

In all the provinces.

A small evergreen tree, 20-30 feet high. Kamala; *Santal*. Rora.

842. Gleidion Bl.

Glabrous trees; leaves alternate, usually sinuate-toothed, nerved. Flowers monoecious or dioecious, small; males in axillary racemes; females 1-2, on a long, axillary peduncular perianth simple. *Sepals* connate in a globose calyx, into 3-4 valvate segments. *Petals* 0. *Stamens* numerous, globose mass on a common receptacle; filaments free; anthers dorsifixed and 4-celled or 2-celled, the cells transversely didymous on a wide connective. *Pistillode* 0. ? *Sepals* 3-5, imbricate. *Petals* 0. *Carpels* connate in a 2-3-celled ovary; ovules solitary in each cell; styles 2-3-fid, connate below, arms long. *Fruit* a capsule of 1-3, 2-valved cocci. *Seeds* subglobose; testaceous; albumen fleshy; cotyledons broad, flat.

1895. CLEIDION JAVANICUM Bl.; F. B. I. v. 444; K. D. C. 13-48.

Chittagong.

An evergreen tree.

843. Macaranga Thouars.

Trees or shrubs; leaves alternate, often large and peltate, entire or lobed, more or less glandular beneath, 3-5-nerved at base. Flowers usually dioecious, in axillary racemes or panicles; perianth simple; males many, clustered, females one or few to each bract; bracts often large, entire or toothed, *Sepals* 3-5, valvate, forming a minute globose or obovoid calyx. *Petals* 0. *Stamens* central, sometimes 1-3, oftener 10-30; filaments short, free; anthers terminal, short, 2-celled and 4-valved, or 3-celled and 3-valved. *Pistillode* 0. ? *Sepals* connate in a 2-4-lobed calyx. *Petals* 0. *Disk* 0. *Carpels* connate in a 2-6-celled, rarely by abortion 1-celled ovary; ovules in each cell solitary; styles entire* short or long. *Fruit* a small capsule of 1-5 naked or echinate, 2-valved cocci, often glandular or with a waxy coat. *Seeds* glabrous.

J° »! testa crustaceous or bony; albumen fleshy; cotyledons broad, flat. flat.

*>° «i bmcts of male panicles very small, not concealed; capsule didylus, black, with scattered yellow glands; the clusters of stamens o-

J«*1 bmeteofmaiepanicles'bro'ad, toothed, concealing the stigma; capsule globose, densely glandular, with the percent peltata. one side; stamens 2-5

1896. MACARANOIA WSNTICULATA Muell.-Arg.; F. B. I. v. 4 E. D. M. 9.

Chittagong.

Small evergreen tree, with entire, deltoid-ovate, peltate leaves. Beng. Buma; Magh- Pawaing.

1897. MACARANOIA SELTATA Muell.-Arg. v. 448 B. D. M. 155 Ojiris peltata F. I. ni. loo.

Orissa, Khurdas. A small evergreen, resinous tree.

844. Homonoia Lour.

Small shrubs; leaves alternate, narrow entire, or short and toothed, glandular-lepidote. Flowers usually dioecious, in many-few-flowered axillary spikes or from the old wood. Sepal, connate in a globose calyx, 6 lobes. Petal, globose cluster of repeatedly branching filaments; anthers globose cells, sessile on the filament-branches, connective obscure. Putillode 0. ? S*«* S narrow, unequal, caducous, flattened. Carpels connate in a 3-celled ovary; ovules solitary in each cell; style slender, spreading papillose. Fruit a small capsule of 3 smooth, 2-valved ovoid; testa crustaceous, hard, with a thin, fleshy coat, lined fleshy; cotyledons broad, flat.

W98. HOMONOIA UMBIA Lour.; F. B. I. v. 415; B. D. H. 311. -4^e^a neriifolia F. I. iii- 849.

Chota Nagpur; N. Bengal; Chittagong. An evergreen shrub, on rocky river-banks and in incursions.

845. Ricinus Linn.

... tall, glabrous, glaucous annual, sometimes shrubby or tree-like; leaves alternate, broad, palmately lobed; lobes 3 or more,

Sapium.]

EUPHORBIACEÆ.

A perennial evergreen twiner. *Beng.* Biohati; *Hind.* Barhanta; *Santal.* Sengel sing.

847. Cnesmone 131.

Climbing, villous shrubs; *leaves* alternate, oblong from a broadly cordate base, margin toothed; stipules wide, persistent. *Flowers* monoecious, in terminal or leaf-opposed, androgynous racemes; perianth simple; male flowers uppermost, lower female; *Stamens* 2. * *Sepals* connate in a globose calyx, splitting into 6 valvate lobes. *Petals* 0. *Disk* 0. *Stamens* 3, alternate with calyx-lobes; filaments stout, free; anthers dorsifixed; connective produced into a reflexed lamina; cells subparallel, discrete. *Pistillode* obscure or 0. ? *Sepals* 3, enlarging in fruit. *Petals* 0. *Stamens* 0. *Carpels* connate in a strigose, short, 8-celled ovary; ovules solitary in each cell; styles or stigmatic arms 3, connate at the base in a fleshy mass, free, incurved above and fimbriate with the style. *Fruit* a 3-dymous capsule, separating into three 2-valved cocci. *Seeds* globose; testa crustaceous, with a fleshy coat; albumen fleshy 5 cotyledons broad, flat. •

¹⁹⁰¹. CNESMONE JAVANICA Bl.; F. 13.1. v. 466.

E. Bengal.

An evergreen, perennial twiner.

848. Sapium P. Br.

Trees and shrubs; *leaves* alternate, entire serrate or toothed, pinninerved; petiole often 2-glandular at the apex. *Flowers* Monoecious, in terminal, simple or branched spikes or racemes; perianth simple; males above, several in each bract, females in lower part of spikes or in separate spikes, solitary in the bracts. « *Sepals* connate in a membranous calyx, shortly 2-3-lobed or toothed, or splitting to the base into 2-3 valvate segments. *Petals* 0. &*k 0. *Stamens* 2 or 3; filaments free; anthers with ovoid, distinct but contiguous, parallel cells. *Pistillode* 0. ? *Sepals* connate in a 3-fid or 3-partite calyx. *Petals* 0. **DM0**. *Carpels* connate in a 2-3-celled ovary; ovules solitary in each cell; styles 2 or connate at the base, spreading and recurved, entire. *Fruit* a subglobose capsule, fleshy or pulpy, rarely woody, ultimately 3-valved. *Seeds* globose; strophiole 0; usually long-cached to the columella; testa crustaceous; albumen fleshy; cotyledon, broad, flat.

Spikes androgynous; evergreen trees :—
 Leaves short-petioled, serrate, green beneath ; ^{ijw. i;Jit'«"} woody» 8 lobose,
 tardily dehiscent capsule, 1 in. wide; spikes solitary.
 Leaves long-petioled, entire, glaucous beneath :— ^{iscenij berry*1* a}
 Leaves ovate or ovate-lanceolate; fruit ^{roden. haCC«^{tinl}k}
 globose, -35--5 in. wide ; spikes paniced. "j'Ascent cap^{sule} *
 Leaves orbicular-ovate or subrhombio ; fruit a den^{.....*ebip^l^}
 large as a pea; spikes solitary. i" led serrate' 8 t
 Spikes -1-sxual, solitary ; leaves deciduous, long-petio ^ t^ J I .
 beneath ; capsule -5 in. wide, tardily dehiscent 47 ^,

1902. SAPIUM INDICUM Wilm.; F. I. w- ^{6bZ, x}
 E. D. S. 833.
 Sundribuns. batul*
 A glabrous, evergreen tree. Beng. Hurua, ^ ^ ^ ^ 470;
 1903. SAPIUM BACCATDM Hoxb.; F. I. iii- ^{694;}
 E. D. s. 830.
 Chittagong.
 A glabrous, evergreen tree. T? U. I- v. 470;
 1904. SAPIUM SEBIFERUM Hoxb.; F. I. m- ^{693;}
 E.D.S.842. northern parts.
 Cultivated occasionally, especially in the n
 A small, glabrous tree. Beng. Mom-chin & D. g. 838.
 1905. SAPIUM INSIGNB Benth.; F. B. I. v. 471; ^
 Chittagong.
 A stout, deciduous tree. Hind. Lendwa.

849. Excoecaria Linn.

Glabrous trees or shrubs, with acrid, milky juice ; ^ . ^ g or
 nate or opposite, entire or subserrate. Flowers ^{1-gexUBl} or
 monoecious, minute, in lateral, axillary or terming ^ ^ \b'
 androgynous racemes or spikes; perianth simple, ^ ^ or
 in each bract, each 2-bracteolate; females at base o^t ^ ^ Bide
 in separate racemes; racbis with large glands beneath ^ ^ p^k
 of bracts, c? Sejmls 3, rarely 2, small, subequal. P^{tal} ^ ^ g^{io}bose,
 0. Stamens 3; filaments free ; anthers didymouB; c ^ f t t 0 in a
 distinct but contiguous. Pistillode 0. ? Sepals c^{onna} ^ in a
 3-fid or 3-partite calyx. Petals 0. D« 0. Carpels c^{ut} ^ ^ y
 3-celled ovary; ovules solitary in each cell; styles \$ o ' ^ ut a
 connate below, spreading and recurved above, eili^{ire} i^{ire} with elas-
 capsule of three cocci, separating from the columUa,

sebastianiaj

URTICACEM.

twisted valves Seeds globose or subglobose; trophiole 0;
crustaceous; albumen fleshy; cotyledons broad, flat.

1906. EXCCBCAMA AGALLOCHA Linn.; F. I.

v. 472; E. D. E. 593.

Sundribuns.

A small, poisonous evergreen tree. Beng. Gengwa, geoghéria; Tjrija Gnuu.

880. Sebastiania Sprang.

Shrubs, rarely herbs; leaves alternate, penninerved. in terminal, axillary, and lateral, slender. Petal simple; males minute, 1-8 in each bract, females at the base of the raceme. Sepals connate in a membranous, unequally 5-lobed or 5-partite calyx. Stamens 5M; filaments short, free or nearly so; anthers contiguous, but distinct, parallel. PMiUode 0. Petals 0. Ovary connate in a 3-lobed or 3-partite calyx. Petals 0. DuhO. Cinnate in an exserted, 3-celled ovary; ovules sessile; styles free or connate at the base, entire, revolute or 8- Fruit a globose capsule of 3 cocci, separating from the endocarp crustaceous. Siliqua oblong or subglobose, 1-2 cm long; testa smooth; albumen fleshy, cotyledons broad, flat.

1907. SBBASTIANU CHAMELEA Muell.-Arg.; F. I. Behar; Chota Nagpur.

Behar; Chota Nagpur.

An erect, slender, much-branched weed.

Order CXVI. URTICACEÆ.

Herbs, shrubs, or trees. Leaves alternate, rarely opposite, often oblique; stipules lateral, distinct or interpetal connate, often sheathing the bud. Woven cymose or diffuse; flowers axillary or rarely polygamous, often crowded on the rachis. Vase hyaline, flat or globose receptacle, sometimes hollow and woody; bracts usually small or 0, sometimes 2-4 or more conspicuous; bracteoles usually small or 0, sometimes conspicuous. Simple calyx regular or irregular, equally or unequally toothed, lobed or partite, segments imbricate or valvate.

BENGAL PLANTS.

Dish hypogynous, obscure, or 0. Stamens as many as an opposite the perianth-lobes, sometimes adnate to their base, rarely fewer or rather more; filaments free or rarely connate base; anthers ovate or oblong, basifixed or dorsifixed near base cells 2, distinct; dehiscence longitudinal, extrorse. lateral introrse. Pktillode small or 0. ? Staminodes very rare. one fertile, one sterile, connate in a superior, rarely in 1-celled ovary, or carpel solitary; ovule solitary or rarely with second abortive ovule; style often excentric, simple or 2-fid, stigmatic arms, or stigma sessile, plumose, or penicillate. simple, indehiscent, a drupe or samara, or of free achenes, or oopound in a confluent mass of perianths and pericarps. Seed lateral, or pendulous; testa membranous; albumen copious, scanty or 0; embryo straight or curved.

Plants with watery juice : [p. 957]

Anthers in bud erect; style 2-fid; ovule pendulous:-

owers usually 2-sexual or polygamous; ovule anatropous; with penninerved leaves;—

Fruit dry, wide-winged; leaves deciduous; flowers appearing when branches are bare;—

Leaves serrate; perianth campanulate; cotyledons flat. —

Leaves entire; perianth cleft to the base; cotyledons

Leaves persistent; stipules free:-

Male sepals imbricate; cotyledons broad

Male sepals induplicate-valvate; cotyledons narrow. **Celtis. rema. digitate. Cannabis.**

ovule erect, orthotropous:-

Woody stems beset with stinging hairs; herbs with alternate leaves and connate stipules :-

Ovary oblique; style obliquely ovoid or linear, hooked, sometimes 2 basal arms.

Ovary straight; stigma umbonate

Leaves and stems with no stinging hairs.-

Female perianth 3-5-partite, or obsolete; stigma penicillate; flowers in cymes or clustered on a fleshy receptacle

Leaves opposite; flowers cymose or capitellate.

Woody stems alternate, flowers on a fleshy receptacle; perianth very small or none.

Pilea. female. W. tostema.

†Female ^{peuanth} tubulai, shoitly toothed 01 subentne, enclosing
the achene ~-[p 956j

Fructing ^{peuanth chy, membiinous, stigma hhfoim —}
Shrubs, stigma peisistent **Bcehmeria.**

H eibs, stigma jointed, deciduous **Pouzolzia.**

Imting ^{peuanth moie 01 less fleshy -}
Ovary ^{fiee , stigma penicillate, leaves nanow} **Sarcochlamys.**

Ovary ^{adnate, leaves bio id -}

Stigma ^{se&bile, bubpeltite ciliate} **Yillebrunea.**

Stigm ^{penicillate} **Debregeasia •**

*Plant. with ^{... n} **W** ^{UICe [p 950]}

Ant ^{C in bu.}

an*tion ^{onc sh} ^{levised >} ^{stamens inflexed, ovule pendulous}

b ^{We u diled,} ^{elons ated,} ^{malefloweis spicate, femilein globose}

heads, achen ^{stlpitate >} ^{diccoious ties} **Broussonetia.**

Style ^{2 hi} ^z ^{stlpitate}

Female sepals ^{01 paitite ~} ^{fleshyinfluita nd} ^{enclosing the achenes, floweis}

numerous, ^{both male ancl f} ^{female spicate, 01 mile spicate md} **Mus.**

female sub **T Ae**

Female sepals ^{fl nOf fleshy femalefl} ^{oweib few or solitary —}

Male ^{floweis lacemose , biacts minute , female sepals veiy shoit} **Taxotrophis.**

Male ^{flow*s auhoapitate-}

Bi ^{AC's of male} ^{floweib many, lai^e , female sepals foliaceous} **Phyllochlamys.**

Bi ^{llt} ^{^of male floweis 2, female sepals conaceous, clasping} **Streblus**

th

Anthers ^{ieict, style undivided 01 2nd, floweis 1}

Se*ual

Ovule ^{ieict,} ^{shubs} ^{nohopous, floweis m 1 sexual heads, climbing} **Conocephalus.**

Ovules ^{rend J} ^{US, anatlo} ^{POUb, 01 somewhat amphitiopous —}

Howi ^{is all exposed -}

Inflor ^{eS Cence e^ongdt} ^{ed , floweis monacious, male in cylmdiic}

&Pk ^{rema} ^{6 m flceines >} ^{small ties} **Balanostreblus.**

Inflo ^{ff,}

Flowers ^{few} ^{nce contacted in globose oi oblong heads —}

scandent, ^{^dioecious, in small, naked, globose heads , stamens 4,} **Cudrania.**

Fl ^{spinescent shiubs}

ele ^{luwexs} ^{monoecious, in laige, oblong heads, stamen 1,} **Artocarpus.**

Flowers ^{Ct) unai^ed ties} **Artocarpus.**

Flowers ^{monce} ^{JloUS 01 dioecious on *Ae innei wallb of a closed}

le ^{cepta} ^{le , ties oi ieict climbing shiubs} **Ficus.**

851. *Ulmus* Linn.

Trees; *leaves* deciduous, alternate, distichous, penning^{ed,} margins serrate; stipules lateral, scarious. *Flowers* polyga^{mous} or hermaphrodite, males without rudimentary ovary, in fasci^{cles} or short racemes, axillary or at scars of the previous year's s^{hoots,} which are scaly but leafless. *Perianth* simple, calycine, loos^{ely} campanulate, usually 5-fid; lobes imbricate. *Stamens* 4-8, usually 5; filaments erect, ultimately exerted; anthers glabi^{ous.} *Ovarij* sessile or stipitate, compressed; ovule solitary, pendu^{lous} style short, 2-fid or 2-partite, arms stigmatic within for^{tk} their whole length. *Fruit* dry, indehiscent, samaroid and flat, the nucleus expanded as an orbicular, obcordate or obovate, reticu^{late} wing. *Seed* flat; albumen 0; cotyledons flat, equal; radic^{le} small, superior.

1908. *ULMUS LANCIFOLIA* Roxb.; F. I. ii. 66; F. 11. I. v. 48 0;
E. D. U. 2.

Chittagong.

A tree, 70 feet high.

852. *Holoptelea* Planch.

Trees; *leaves* deciduous, alternate, distichous, penning^{ed,} margins entire; stipules lateral, scarious. *Flowers* polyga^{mous} or hermaphrodite, males without rudimentary ovary, in fascic^{les} at scars of previous year's shoots, which are scaly but leafless^{s.} *Perianth* simple, calycine, 4-8-parhite; lobes imbricate, oiteⁿ unequal. *Stamens* 4-8, usually 7 or 8; filaments erect, ultimate^y exerted; anthers hairy. *Ovary* stipitate, compressed; ov^{ule} solitary, pendulous; style short, 2-fid, arms stigmatic with^{*or} their whole length. *Fruit* dry, indehiscent, samaroid and flat* *h* nucleus expanded as an obliquely ovate, reticulate wing. %^f d flat; albumen 0; cotyledons longitudinally complicate; radic^e small, superior.

1909. *HOLOPTELEA INTEGRIFOLIA* Planch.; F. B. I. v. 4 81.
Ulmus integrifolia F. I. ii. 68.

Orissa; ChotaNagpur; Behar; W.Bengal.

A large, spreading tree. *Hind.* Papri, chilmil.

853. *Celtis* Linn.

Trees or shrubs, sometimes evergreen; *leaves* alternate, ovate, entire or serrate, bifarious, base 3-nerved; stipules lateral, free

Trema.]

URTICACEÆ.

flowers small, polygamous, cymose, male and androgynous cymes at the base of shoots, female in the upper axils; perianth simple. Sepals 4 or 5, imbricate. Petals 0. Stamens 4 or 5, erect, inserted round a woolly torus. Ovary sessile; pendulous; style central, arms simple or lobed, plumose. Fruit a small ovoid or globose drupe; endocarp hard, smooth or rugose, covered with membranous testa; albumen scanty or 0; cotyledons broad, inflexed, flab or replicate, enclosing the upcurved radicle.

6 Solitaria, globose, apex obtuse..... tetrandra.
-Perispermated, ovate, narrowed to the apex..... cinnamoma.

1910. CKLTIS TETRANDBRA Roxb.; F. I. ii. 68; F. B. I. v. 482; E-1>. C. 900.

Orissa; Behar ; N. Bengal, Duars; Chittagong.

A tree.

1911 - CELTIS CINNAMOMKA Lindl.; F. B. I. v. 482; E. 1). C. 893.

Chittagong.

A tree.

854. Trema Lour.

Shrubs or trees; have* alternate, serrate, base 3-7-nerved; flowers lateral, caducous. Flowers monoecious, subdicecious or polygamous, in small axillary cymes; perianth simple. 3 Sepals even, valvate or subimbricate. Petals 0. Stamens 4-5, small or 0. Sepals as in male when stamens are present, flat and subimbricate if stamens 0. Petals 0. Lineage pendulous; style central, 2-armed, arms 2-3-nerved. Fruit a small, straight, ovoid or subglobose drupe, usually bipartite; endocarp hard. Seed small; testa membranous; albumen fleshy; cotyledons narrow; radicle ascending.

Lineage distinctly unequal at base, softly pubescent beneath:—
Branchlets closely or sparingly adpressed-pubescent; leaves beneath very silky with adpressed pubescence, above scabrid; cymes lax, spreading, usually longer than the petioles.....orientalis
Branchlets villous or tomentose, with spreading pubescence; leaves beneath silky-tomentose, velvety or villous, above scabrid or pubescent; cymes dense, compact, longer than the petioles.....amboinensis
Branchlets equal at base, very scabrid on both surfaces; branchlets pubescent.....politoria

1912. TREMA ORIENTALIS Bl.; p. B. I. v. 484; E. D. T. 522.
Celtis orientalis F. I. ii. 65.

In all the provinces.

A small, rapidly growing »tree-weed." Beng. Chikun.

1913. TREMA AMBOINENSIS Bl.; p. B. I. v. 484; E. D. T. 520.
Celtis tomentosa F. I. ii. 66.

Chota Nagpur; N. Bengal, Duars; Chittagong.

A small tree, much like the preceding. Santal Jhawa*.

1914. TREMA POUTORIA Planch.; P. 13.1. v. 484.

Chota Nagpur.

A small tree.

855. Cannabis Linn.

A tall, erect annual; *leaves* opposite below, alternate above, upper 1-3-, lower 5-11-partite, penninerved; lobes lanceolate, serrate; stipules 2, lateral. *Flowers* small, dioecious, males in axillary, paniced cymes, females in axillary racemes; bracts in females convolute, leafy, *i Sepals* 5, imbricate. *Petals* 0. *Stamens* 5, erect in bud; filaments filiform; anthers oblong-Pistilode 0. ? *Perianth* hyaline, embracing base of ovary within the embracing bract. *Staminodes* 0. *Ovary* sessile, of 2 carpels, 1 fertile, 1 sterile, Mocular; ovule pendulous, reversed camp^lotropous; style central, arms 2, filiform, caducous. Kr«* a somewhat compressed, crustaceous nut. *Seed* somewhat flattened; albumen Materal, fleshy; embryo curved; cotyledons broad, thick, subequal; radicle incumbent, upcurved.

1915. CANNABIS SATIVA Linn.; F. I. m m ; F> R L Vi 487.

Cultivated in the Khurdas of Orissa and in the Ganja mahals of N. Bengal (Bajshahi division); elsewhere a prohibited plant, though occurring as a roadside weed in most of the provinces; only the female plant is cultivated.

A tall, erect, annual woody herb. *Vernac.* Bhang-siddhi, ganja.

856. Pleupya Gaud.

Annual herbs with stinging hairs; *leaves* alternate, toothed, 3-nerved; stipules connate in opposite pairs, or 0. *Fb*e»*
X 7 o U S - » r ^ ^ oUl* SpedeS) di(£cious, ^ ^ ered, clusters in solitary, axillary cymes or spikes, 1-sexual or androgynous; bracts

^f*W* * *Sepals* 4 or 5, ovate-lanceolate, subvalvate or imbricate. ^B ⁷<< 0. *stamens* 4 or 5, inflexed in bud. *Pistillode* globose or ^{Clav}*. ? *Sepals* 4, free, imbricate, or connate in a 4-lobed, ^P-shaped calyx, equal or unequal, with the upper hooded and th* anterior minute or obsolete. *Ovary* oblique; ovule solitary, ^ t ; style obliquely ovoid or linear, ultimately hooked, sometimes with 2 basal arms. *Fruit* an oblique, compressed, membranous, exserted achene. *Seed* with very scanty albumen, ^{Co}*<yedons broad.

¹⁹*6. FLBURYA INTERRUPTA Gaud.; F. B. L. v. 549. *Urtica interrupta* F. I. iii. 585.

Behar; C. Bengal; very occasional.

An annual weed with stinging hairs. *Vernac.* Lai bichiti.

857. Girardinia Gaud.

^{Hei}bs or undershrubs with stout, stinging hairs; *leaves* alternate, 3-nerved, entire or lobed, serrate; stipules connate, foliaceous. *Flowers* dioecious or (in our species) monoecious, clustered, ^fUst<*s in simple or paniced spikes or heads, armed with stinging [^]1r s ; perianth simple. *Sepals* 4 or 5, valvate. *Petal** 0. st<***ns 4 or 5, inflexed in bud; filaments free. *Pistillode* globose or cup-shaped. ? *Stamens* connate in a tubular-ventricose, 2-diothed perianth, ultimately splitting, spathaceous. *Ovary* straight; ^o ^e solitary, erect; stigma subulate, papillose. *Fruit* a broad, ^pressed achene, with thickish pericarp, resting on the perianth. [^]l with membranous testa ; albumen scanty ; cotyledons broad.

¹⁹17. GIRARDINIA ZBYLANICA Decaisne. *G. heterophylla* var. *zeylanica* F. B. I. v. 551. *Urtica heterophylla* F. I. iii. 586; E. D. G. 213.

Chota Nagpur.

A tall, stout herb or undershrub, with very stout, stinging hairs. *Vernac.* Bichua, chichr.

858. Pilea Lindl.

^{He}bs, rarely undershrubs; *leaves* opposite, those of a pair ^e ^al or unequal, entire or serrate, 3-nerved at base or very rarely P<minerved; stipules connate, intrapetiolar. *Flowers* minute, ^monocious or dioecious, in long- or short-peduncled, dichotomously branching, axillary cymes; bracts small or 0. < *Sepals* 2-4, free

or connate in a cupukr calyx, often gibbous or horned dorsally.

iWa&Q. Stamen 2-4. PitUhde conical or oblong. ? S«w'»

SbbouLV?/ "1.11 aUd Une^, do^ 1«8«*. ^ etoes
? » TM ^ minute or scale-like or 0. Ovary

or oblor : o erect; stigma sessile > P^HM*. * > «« an ovoid

ti ; L r T... ^ membl TM o r crus Wua acheng, some
eXtlt, I T... ^ by the p r s t e n t » I ^ «
testa thw, I albumen vevy scai%; cotyledons J ^ «

Stout unfehmb; baves 3-nerve.l, neve* and cros, nervnle, strong

Minute annua, h,bs , w s p ^ ^ but » - ^ * ^ '
b s c u r e
m i c r o p h y l l a

19W. ftm. HMuciwtu wedd.; p. B. I. v. 553; K. V. P. 725.
kmttagong.

1919 Prf Woody Undershrob - stems robust.
9> TM* MIC ««TM^tA Lieb. P. nmcosa F. B. I. v. 551.
vrtica minima F. I. iii. 58j_

C.Bengal; E.Bengal.

A very m i M t e w e e d i e x t r e m e l y e Q m m o n t t o u s e a
S S K ? p a t h s m i o n d h p v i a T e G a

869t **Elatostema** Forst.

ri 's or und b ;
minute subo^d'to^r & l t e r n a t e i O r s o m e t i l n e S ^ *

subsesaile, dually P v e T * o * . n o n n a l » « « , d i s t i c h o u s , s e s s U e o r
the base or shottlv ii T i f a i l d i n e e q u i l a « *
Flower* very min., J o v e 14 ; stipules k t e r a l o r i n t r a p e t i o t a l -

or peduncled, U e x ' f ^ t " 1 8 o r d i < E o i o U 8 , C T O w d e d o n s e S S " !

the involucre rounTi, U c o a l l y i n v o l " « r a t e r e c e p t a c l e s ; b r a c t s o f
dorsal spur or h n m k , o v o n g o r o v a t e - T M r e i - a t t i m e s w i t h a

a fleshy circukr T i v T " e a r l y f r e e o r m o r e o r l e s s o o n f l u e n t i n

r ^ l y t h e 1 - 1 g i n F o v e u d i S k > * " t i p 9 P " 6 0 * * f r o m i t S m a r g i 0 ,
heads usually M * n . r e ; b r a c t e o l e s d e n s e l y c r o w d e d , t h o s e o f J

dusters in thl u A , o f J h e a d s s P a t h u l a t e ; f l o r e t s o f t e n > «

« * * h e h e a d t h T w ^ o i U 8 t e r s u r r o u n d e d b > a p a r t i a l b , f
tubercled of T ^ * « < 3 « ' » 4 o r 5 , 2 o r m o r e u s u a l ! ')

bud. Pistillode on the back. **Stamens 4 or 5, inflexed** u

shorter than fte W i n U t e r , ? S ^ a i s 3 " 5 , T e r y m i n n t e > m U C b
ovary, persistent. **Staminodes** minute or 0.

Ovary straight; ovule erect; stigma penicillate. *Fruit* a minute, $\frac{1}{2}$ soid or fusiform, usually ribbed achene, subtended by the very ^ u t e perianth. *Seed* with a membranous testa; albumen usually ¹ c o tyledons ovate or semi-cyHhtric.

Ws small, short, sharply serrate nearly throughout, tips rounded;

TM* receptacles sessile....."***".

Le*^{Ves} *ar^{ge}, tips acuminate or caudate :—

Male receptacles sessile or subsessile :—

Leaves serrate from beyond the middle forwards..... *rupestre*.

Leaves quite entire..... *lesquifoliu**-

Male receptacles peduncled; leaves crèate or serrate :—

Peduncles stout; stems tomentose^pwards..... *papdlosum*;

Peduncles slender, short; stems quite glabrous..... *Clarkei*.

¹⁹20. ELATOSTEMA REPTAJJS Hook. f.; P. B. I. v. 567.

Chittagong.

A herb with slender, creeping stems, rooting throughout their length.

¹⁹21. ELATOSTEMA RUPESTRE Wedd.; F. B. I. v. 564.

Chittagong.

A herb with stout, rigid, erect stems.

¹⁹22. ELATOSTEMA SESQUIFOLIUM Hassk.; F. B. I. v. 564.

Chittagong.

A branching undcrshrub or shrub, 2-6 feet high.

¹⁹23. ELATOSTEMA PAPILLOSUM Wedd.; F. B. I. v. 569.

Chittagong.

A herb with stout, erect stems.

¹⁹24. ELATOSTEMA CLARKEI Hook. f.; F. B. I. v. 569.

E. Bengal, Mymensingh.

A herb with creeping base, erect above.

860. Boehmeria Jacq.

Shrubs or small trees; *leaves* alternate or opposite, toothed, W 3-nerved; stipules free or rarely connate, deciduous. *If lower* s monoecious or dioecious, both sexes in axillary or spiked, racemea spanieled clusters; bracts small, scarious. 3 *Sepah 2r-o*; con- nate in a valvately lobed or partite calyx. *Stamens* 8-o, milexea in bud. *Pistillode* clavate or globose. ? *Sepals* connate in a tubular, ^-4-toothed calyx, sometimes angled or winged or ventn- c o se in fruit. *Ovary* included; ovule erect; stigma filiform, pei-

sistent. *Fruit* a crustaceous achene, at first closely covered by the perianth, ultimately free. *Seed* with a thinly membranous testa; albumen copious or scanty; cotyledons ovate.

Flower clusters axillary; leaves all alternate.....malaharictt.

Flower clusters in simple or paniculate spikes :—

Leaves all alternate, scabrid above, snow-white except the nerves beneath.....wren.

Leaves mostly opposite, pubescent, tomentose, scaberulous or glabrate on both surfaces, green beneath.....mibrelhi.

1925. BOEHMERIA MALABARICA Wedd.; F. ?». T. v. 575; E. D-B. 574.

Chittagong.

An erect shrub or small tree.

1926. BOEHMERIA NIVEA Hook. & Arn.; F. B. I. v. 576; E. D-B. 576. *Urtica tenacissima* F. I. iii. 590.

N. Bengal, cultivated.

A shrub with herbaceous shoots. Beng. Kankhura.

The Rhea plant.

1927. BOEHMERIA SCABRELLA Gaud. *B. platyphylla* Don var. *scabrella* F. B. I. v. 578; E. D. B. 612. *Urtica scabrella* F. I. iii. 581.

Orissa; ChotaNagpur; N.Bengal.

A shrub.

861. Pouzolzia Gaud.

Herbs, undershrubs, or shrubs; *leaves* alternate, or the lower, rarely all, opposite, usually entire, 3-nerved at base, smaller upwards, with the uppermost often reduced to bracts; stipules free, often persistent. *Flowers* minute, usually monoecious, in 1-sexual or androgynous clusters, sessile in axils of leaves or bracts, individual florets pedicelled; bracteoles small. 3 *Sepals* connate in a 4-5-partite or -lobed, rarely 3-partite calyx; lobes valvate, with concave or abruptly inflexed tips and transversely plicate backs. *Stamens* 4 or 5, rarely 3. *Pedillode* clavate or oblong. ? *Sepals* connate in a tubular perianth, often beaked; mouth contracted, 2-4-toothed. *Ovary* included- ovule erect; stigma filiform, jointed to apex of ovary, soon deciduous. *Fruit* a small achene with brittle, shining pericarp, enclosed in but usually free from the marcescent perianth. *Seed* with membranous testa; albumen very scanty or 0 ; cotyledons ovate.

Lobes of the male perianth convex or gibbous on the back :—
 leaves opposite or alternate, nerves 1 pair above the basal, spanngiy
 branched; stamens 4, rarely 5 :—
 Leaves mostly alternate, base cuneate
 Leaves mostly opposite, base rounded
 Leaves all alternate, nerves many, branching ; stamens always D

^ e s of the male perianth abruptly inflexed about the middle, tñns-
 Ver*ely folded at the flexure, hence the buds truncate; leaves with 3
 sample primary nerves running nearly or quite to left apex: ~" ~^ , </w> , mi
 Stem terminating in a bracteate spike pen tn |
 Stem not running out into a bracteate spike hirta.

1928. POUZOUA INDICA Gaud. ; F. B. I. v. 581. *Urtia suffruti-*
cosa F. I. iii. 584.

In most of the provinces.
 A perennial herb.

!WW. Var. ALIENATA Wedd.; F. B. I. v. 581. *Vrhca ahenata*
 F. I. fii. 582.

In all the provinces.
 A perennial herb.

!929. POUZOLZIA AURICULATA Wight; F. B. I. v. 582.

Chota Nagpur.
 A tall perennial herb.

W80. POUZOLZIA PENTANDRA Benn.; F. B. I. v. 583; E. D.
 P. 1214. *Urtia pentandra* F. I. iii. 583.

Orissa; Chota Nagpur.
 A tall, stout annual, 2-3 feet high. *Hind.* Kpansan.

!931. POUZOLZIA HIRTA Hassk.; F. B. I. v. 586.

Chota Nagpur.
 A slender, decumbent, or suberect herb.

862. Sarcochlamys Gaud.

A shrub; *leaves* alternate, petioled, narrow, toothed, finely
 *>go*e, 3-nerved at base, white beneath ; stipules connate at base?
 In trapetioilar. *Flowers* dioecious, clustered, male clusters in ratpei
 lender, more or less interrupted, female clusters in stouter? cyiin-
 ^, almost continuous axillary spikes; bracteoles minute. *
 S Wal8 5, connate in a 5-partite perianth; lobes **imbricate**, some-
 what concave. *Stamens* 5. *Pistillode* small. ? *Sepals* connate
 n> an ovoid, campanulate perianth, with constricted, unequally

4-lobed limb, ultimately accrescent, gibbous, with the mouth pushed to one side. *Ovary* oblique; ovule erect; stigma small, sessile, penicillate. *Fruit* an oblique achene, enclosed in the fleshy perianth; pericarp membranous. *Seed* with hard testa; albumen obsolete; cotyledons ovate.

1982. SARCOCHLAMYS PULCHEBIMMA Gaud.; F. B. I. v. 588; K. D. S. 869. *Urtica pulcherrima* F. I. iii. 588.

E- Bengal, Mymensingh; Tippera ; Chittagong.

An evergreen large shrub or small tree.

863. Yillebrunea Gaud.

Trees or shrubs; *haves* petioled, alternate, entire or crenulate, penninerved or 3-nerved at base; stipules partly connate, intrapetiolar. *Flowers* dioecious, densely, capitately fascicled, fascicles solitary or laxly cymose ; bracts small or linear; bracteoles sometimes connate, cupular. *Sepals* 4, connate in a 4-partite perianth, segments ovate-acute, valvate or slightly imbricate, subglobose in bud. *Stamens* 4. *Pistillode* obovate-clavate. *Sepals* connate in a tubular perianth, adnate to the ovary; mouth narrowed, minutely toothed. *Ovary* erect, covered by the adherent perianth; ovule erect; stigma sessile, small or discoid, with penicillate margin. *Fruit* a crustaceous achene, closely adnate to the slightly fleshy perianth. *Seed* straight, often acuminate ; testa thinly membranous; albumen distinct or scanty; cotyledons ovate or broad.

1933. VILLEBRUNEA INTEGRIFOLIA Gaud • F B I v, 589; E. D-V. 133.

Chittagong.

An evergreen tree. *Vernac.* Ban rhea.

864. Debregeasia Gaud.

Shrubs; *leaves* alternate, petioled, serrate-crenate, 3-nerved; stipules connate, intrapetiolar, 2-fia. *Flowers* monoecious <* durao,, in dense, globose, paniced or spicate, sessile clusters; bracts of male clusters scarious. * *Sepah* connate in a 4-p*** rarely 3- or 5-partite perianth; lobes valvate. *Stamen* 4, rarely 3 or 5. *Fruit* globose or woolly at-base. * *Sepals* connate

toothed mouth, succulent in fruit. *Ovary* straight, included; ovule erect; stigma sessile penicillate, *Fruit* an achene, at first

adnate to fleshy perianth. Seed with membranous testa; albumen copious or scanty; cotyledons short, broad.

^934. DEBREGEASIA DENTATA Hook. f.; F. B. I. ^ 91.

Ghittagong.

A much-branched bush, 10 feet high.

865. Broussonetia Vent.

Trees or shrubs; juice milky; leaves alternate, serrate or lobed; stipules lateral, deciduous. Flowers* dioecious, males in solitary, axillary heads, with persistent bracts. Sepals connate in a 4-lobed 4-partite Perianth; lobe, valvate. Stamens 4, inflexed in bud. Ovary 3-lobed. Persistent perianth. Ovary, included, stipitate; style subulate, 2-partite. Fruit of many exserted, saccate achenes, aggregated in small heads, surrounded by the bracts and perianths, fleshy below, crustaceous above. Seed with thin coat; radicle incumbent, ascending.

1935. BROUSSONETIA PAPYRIFERA Vent.; F. J. i. \.

"Purged occasionally and wherever planted sprouting up spontaneously. The

A tree; native of Borneo, Malaya, and Polynesia. Paper Mulberry.

866. Morus Linn.

Trees or shrubs; juice milky; leaves alternate, 3-lobed, base 3-5-nerved; stipules small, lateral, caducous. Flowers monoecious or dioecious, 5-merous, male spikes elongated, catkin-like, female long cylindrical, or short oblong or sub-globose. Stamens 4, imbricate. Sepals 4, imbricate and succulent in fruit. Ovary included, straight, the style central, 2-partite or 3-lobed. Perianth succulent perianths, which are aggregated in the embryo leads. Seed subglobose; albumen copious, fleshy, incurved; cotyledons oblong, equal; radicle ascending.

.....indica.

"Female spikes short, ovoid [p. 968].....

•Female spikes long, cylindrical:—[p. 967]

Leaves cuspidate.....l(rvi<l«^(l)
 Leaves rounded at the top.....Uongata var. virUU*.

1936. MORUS INDICA Linn.; F. I. iii. 596 ; F. B. I. v. 492; E. P-M. 757.

Cultivated for silkworm feeding, on high ground, in Behar, Tirhut, and N. Bengal.

A shrub or small tree. Vernac. Tút, Tutri.

1937. MORUS URVIGATA Wall.; F. B. I. v. 492; E. M. 772.

Cultivated in Behar and Tirhut.

A medium tree. Vernac. Tút.

1937/2. Var. VIRIDIS F. B. I. v. 493.

Cultivated in Behar.

A medium tree. Vernac. Tút.

867. Taxotrophis Bl.

Armed trees or shrubs ; spines axillary; leaves alternate, pinnately-nerved; stipules small, connate, caducous. Flowers dioecious; males in short spikes, racemes, or follicles, females 1-4 on a long peduncle. *d Sepals* 4, valvate. *Stamens* 4, inflexed in bud. *Pistillode* dilated at apex. ? *Sepals* 4, imbricate, persistent and shorter than the fruit. *Ovary* ovoid, at first straight, ultimately oblique; ovule pendulous; style ^-partite, at length lateral. *Fruit* obliquely subglobose, fleshy on one side and at the base, thin at the apex. *Seed* oblique; albumen 0; cotyledons broad, fleshy, corrugate ; radicle ascending.

1938. TAXOTROPHIS ZEYLANICA Thw.; F. B. I. v. 488.

N. Bengal, Duars.

A small evergreen tree.

868. Phyllochlamys Bur.

Armed trees or shrubs; spines axillary; juice milky; leaves alternate, pinnately-nerved ; stipules lateral, free. Flowers dioecious ; males in short, axillary, involucre spikes or clusters; females solitary, peduncled. *d Sepals* connate below in a 3-4-partite perianth; lobes ovate, imbricate. *Stamens* 3 or 4, inflexed in bud. *Pistillode* dilated at apex. ? *Sepals* 3 or 4, accrescent and leafy in fruit. *Ovary* at first straight, ultimately very oblique; ovule pendulous; style 2-partite, at length lateral. *Fruit* small, shorter than the sepals, obliquely globose or ovoid, somewhat/

fleshy below, apex thin and scanty; embryo globose, one

the other; radicle ascending.

1939. PHYLLOCHLAMYS SPI...
pinom F. I. iii-762.

Orissa.
A small, gnarled, evergreen tree.

869. Streblus Lour.

soabrid; stipules small, very rarely mon...
females bracteate, solitary or 2-4...
4, indexed in bud...
4, hubricate, embracing the...
pendulous; style central, arms very...
&W globose, with...
globose, one cotyledon very...
ascending radicle.

1940. STRBBLUS ASPBB Lour.

Troj...
In all the provinces...
A rigid shrub or gn...

870. Conocephalus Bl.

L...e clinging st...
penninerved and sometimes also...
petiolar, connate...
mente valvate...
ovule erect...
or recurved. Fruit w...
branous; albumen scanty or...
fleshy or thin, equal; radicle sup...

1941. CONOCEPHALUH

naucleiflora F. I. m-...
Vernac. Dolia sat.

An extensive climber.

871. *Balanostreblus* Kurz.

Small evergreen trees; leaves alternate, penninerved, margins spinescent; stipules small, caducous. Flowers monoecious, axillary; males in cylindrical catkins, females racemed, all bracteate.

Stems 4, erect in bud, thick; Valvate, Stamens 4, erect in bud, Sepals connate in an utricular perianth, adnate to the ovary, free above; limb minute. Ovary included, half-inferior, pendulous, style short, 2-fid, arms thick, enclosed in the fleshy perianth.

***. *BALANOSTREBLUS ILICIFOLIUS* Kurz; F. B. I. V. 544.

Chittagong.

A small evergreen tree.

872. *Cudrania* Tree.

Scandent or penninerved, alternate, entire, lateral, bracteate. Stamens 4, erect, more or less adnate to the ovary. Ovary straight; enclosed in the globose, fleshy heads. Sepals 5, forming a membrane; ascending radicle.

Young branches pubescent; leaves 3 in 1, long or less, nerves slender. Young branches glabrous; leaves 4-6 in. long, nerves stout beneath.

194y *CUDRANIA JAVANICA* Treou; F. B. I. v. 588. Onssa; N. Bengal; Chittagong.

1944 *CUDRANIA PINY* shrub. *"

1944. *CUDKANIAFRUHCOSA* Wight? 1? 15 T Chittagong. * " F. B. I. - v. 539.

A large scandent, spiny shrub.

873. *Artocarpus* Foist.

Evergreen trees; leaves often wavy, alternate, coriaceous, entire or pinnately lobed, penninerved, lateral. Flowers monoecious.

cious, densely crowded on globose or oblong, 1-sexual, solitary, usually axillary receptacles, often mixed with peltate bracts. *
^{Se}pal_s connate in a 2-4-lobed or -partite perianth; lobes obtuse, concave, valvate or slightly imbricate. *Stamen* solitary, erect.
*Pi*tillode* O. ? *Sepals* connate in a tubular perianth, confluent
^{b e} W with the receptacle ; limb minute. *Ovary* straight; ovule
 Pendulous; style central or lateral; stigma entire, rarely 2-3-fid.
Fruit a greatly enlarged, fleshy, oblong cylindrical or globose, entire
 or j^oked receptacle, clothed with the gr^eatly accrescent, fleshy
 Perianths and carpels, which have hardened spinescent, or trun-
 cate, or pyramidal, or flat apices. *Seed* pendulous; testa meiu-
 ^^{ra} nous; albumen 0; embryo straight or incurved; cotyledons
 -^{ej}% > equal or unequal; radicle short, superior.

¹_huit large, oblong or clavate, anthocarps pyramidal; leaves and
 *^hpules glabrous.....*integrifolia*.

¹_huit small, globose ; leaves and stipules hairy or scabrid :—

^{Le}aves scabrid on both surfaces; stipules large, strigose; fruit
 tubercled *Chaplashu*.

^{Lea}ves glabrous or puberulous above, softly pubescent beneath;
stipules small, pubescent; fruit smooth or wrinkled, not tubercled

Lahoocha.

¹⁹45. ARTOCARPUS INTKGRIFOLIA Linn, f.; F. I. iii. 522; F. B. I.
 v. 541; E. D. A. 1489.

Cultivated.

A large evergreen tree, 40-60 feet high. *Hind.* Kanthal,
 panas ; *Beng.* Kathal; *Uriya* Panasa ; *Santal.* Kanthar;
Kol. Poros. The Jack-Fruit.

¹⁹46. ARTOCARPUS CHAPLASHA Roxb.; F. I. iii. 525; F. B. I.
 v. 548 ; E. D. A. 1479.

Tippera; Chittagong.

A large deciduous tree, reaching 150 feet. *Beng.* Chap-
 lash.

¹⁹47. ARTOCARPUS LAKOOCHA Roxb.; F. I. iii. 524; F. B. I.
 v. 543; E. D. A. 1511.

In most of the provinces.

A large deciduous tree, 50-60 feet high. *Hind.* Barhal,
 lakuch.

874. Ficus Linn.

Trees or shrubs, sometimes scandent or epiphytic, at least
 Primarily; juⁱcc milky, *leaves* alternate, rarely opposite, entire,

lobed, serrate or toothed; stipules clothing the bud, caducous. *Flowers* minute, 1-sexual, monoecious, very rarely dioecious, the inner walls of a fleshy receptacle, the mouth of which is closed by imbricate bracts; florets often mixed with bracteoles, of three forms: male, female, gall and, rarely, neuter; receptacles sometimes 1-sexual, but usually androgynous, the males nearest the nodes, males, females, and galls may occur in same receptacle, or males and galls may be in one set, females and neuters in another, or males and galls in one set, females only in another, c? *Sepals* connate in a 2-6-fid or -partite perianth. *Stamens* 1 or % rarely 3-6, erect in bud. Neuters; *Sepals* as in males. ? *Sepals* as in males, or imperfect or obsolete. *Ovary* straight or oblique; ovary pendulous; style excentric; stigma entire or 2-angled, acute or obtuse. Gall florets; *Sepals* as in females. *Ovary* containing pupa of a *Hymenopterous* insect; style short, often dilated upwards. *Fruit* an enlarged, hollow, cup-shaped, closed receptacle, its inner wall studded with crustaceous or fleshy achene. *Seed* pendulous; testa membranous; albumen scanty; embryo curved; cotyledons equal or unequal; radicle ascending.

Pseudo-hermaphrodite, male flowers with one stamen and a rudimentary pistil in one series of receptacles; fertile female flowers in a different series (§ *Pahcomorphe*):—

Stipules at least twice as long as the petioles, subulate, more than 1/2 inch long; leaves with apices abruptly caudate; female perianth gamophyllous..... *siibid*^{ta}—

Stipules not longer than the petioles :—

Stipules -3--5 in. long, ovate-lanceolate; female perianth partite to the base:—

Leaves elongate, ovate-lanceolate, acuminate, minutely tubercled beneath; nerves lucid..... *yihhom* var. *cusj* *idift*^{ta}•

Leaves broad, rhomboid, scabrid on both surfaces; nerves opaque..... *yibbosa* var. *parasitic*[^]—

Stipules very minute, subulate; leaves ovate-elliptic, abruptly caudate; female perianth gamophyllous..... *urophijll*^{iu}>

Unisexual or asexual, male flowers without rudimentary pistils :—

*Male, gall, and fertile female flowers in the same receptacle (§ *Uroxtyma*):—[p. 975]

Petioles -2.5-1.5 in. long, rarely (*F. bemjalensis* occasionally) as much as 2 in. long, and then with petiole stout, stiff, and leaf horizontal, rigid; receptacles in pairs, axillary or from scars of fallen leaves :—[p. 974]

Receptacles sessile 01 laiely (*glatella* sometimes) with short peduncles 1-2 in long -[p 974]

Stipules always longer than the petioles —

Leaves broadly elliptic or subobovate elliptic, apex shortly cuspidate, petiole 75-15 m, stipules 1-175 in long, young parts and leaves beneath at first pubescent, base of leaf 3-5 nerved, rounded *aUnimauu Uteafua*

Leaves narrowly elliptic or oblanceolate, apex obtuse, petiole 5-75 in, stipules 75-1 in long, all parts glabrous, base of leaf faintly 6 nerved, cuneate *ohtunfolia*

Stipules never longer than the petioles, rarely (I ^ " W " ' ^ *ictusn*) equalling the petioles, usually considerably shorter -

Receptacle large, 75 in across or more, leaves acute —

Leaves less than 5 in long, lateral nerves very numerous, primary and secondary subequal, all slender, close, straight, petiole 5-1 in, stipules 5 in long, all parts glabrous, receptacles 75 in across with small basal bracts

Benjamnm vai comow

Leaves 5-8 in long, lateral primary nerves 12-20 pairs, prominent below*, much stouter than secondary, somewhat ascending, base 7-9 nerved, petiole 75-125 in, stipules 25-5 m long, young shoots lusty tomentose, receptacles 1 25 in across, with large basal bracts

mytoienstb v.u biibiepanda

Receptacles smaller, 5 in across or less —

Leaves obtuse, pubescent beneath when young, at length pubescent, young shoots grey pubescent, basal nerves 3-7, primary lateral about 5 pairs, much stouter than secondary, petiole 5-15, rarely 2 in long, stipules 5-1 in long, receptacle 4-5 in long, basal bracts large

henqalenw

Leaves shape pointed —

Leaf base rounded or somewhat cordate, 5-7 nerved, persistently tomentose beneath, young shoots and receptacles lusty grey pubescent, primary lateral nerves about 5 pairs, much stouter than secondary, petiole 75-1 m long, stipules 3-5 in long, receptacle 5 in across, basal bracts large

Leaf base cuneately narrowed towards the petiole, 3 nerved, glabrous beneath, primary lateral nerves, hardly appreciably stouter than secondary, receptacle smooth, 3 in across, basal bracts small —

Keceptacles blueish purple sessile oi with ^{hoit} _^ ^{o o 10 ^} _^
 peduncle, 1 2 in long, leaves obovate ^{us,} _^
 oblanceolate, pnmai lateial nerves 7 10 ^{75-1 in} _^
 young pait pubescent oi glabious, petiole ^{glabella} _^
 stipules din long ^{lateifl} _^

Receptacles yellowish or leddish, pnmai ^{etio} _^
 neives of leaves 5 b pans, ill pait ghbious, p
 25-5 in stipules 25-5 in long— ^{ctusa} _^

Leives subiotund 3-4 m long
 Leaves olate oi rhomboid elliptic, 2-3 in long ^{itida} _^
^{utu a vai »} _^ leaves

JRecepticles on distinct, slendei peduncles, 25-5 in long, ^{leaves} _^
 elliptic oblong oi ovate lanceolate or oblanceolate, lathernai ^{^^} _^
 acuminate, base n an owed, pnmai lateial neives 7 ^{10 1} _^
 stiongei than the secondaiy — [p 97 -Vj ^{w 7* in} _^

Petiole lathei long 75 1 25 in stipules glabious 5 [>] _^
 long, lceptxcle 25 in xcioss with d basal bixcls ^{O(lhei>l} _^

Petiole shoit, 25 5 in , stipules pubescent, 5 in long, ^{all} _^
 tacle 5 75 in acioss without basal biacts but with ^{neriosa} _^
 free biacts low down on the peduncle

fPetioles raiely less than 2 in , usually 2 5 in long oi ^{longer if} _^
 15-2 in long (I *infectona* onlj) the petiole slendei and ^{flexible,} _^
 and the leaf pendent aspen like — [p 72]

Leaves 5-7 nei ved at the base, bioadly ovate, stipules o ^{glabious —} _^
 Apex of leaf nanowed into i till half as long as the ^{main} _^
 poition of the lamina, base lounded oi tiuncite, ^{lilvd ^} _^ coi
 dite, stipules minute petiole i 4 in long, leceptacles ^{ssile} _^
^{to a} _^

Apex of leaf n mowed into a cusp only one fifth the leir. ^{orth of} _^
 main poition ot lunini, stipules lai^e, 5-1 in long —

Base of leaf tiuncate oi slightly nanowed into the peti ^{ole} _^
 bxsal nenes 5, with laiely 2 small lateial*ones, leceptac ^{les} _^
 sessile, always in pans axillaiy oi fion leaf scais, p ^{petiole} _^
2 5 3 5 in long ^{limmP 70} _^

Base of leaf tiuncate emarginate to deeply coidate, ^{bas} _^
 nenes always 7, all stiong, leceptxcles usually shoi ^{tl-} _^
 peduncled in pans oi groups fion tubeicles most below ^{the} _^
 leaves , petiole 2-6 in long ^{^nottiap*1} _^

Leaves 6 neived at the base, apex xbiuptly nanowed into a ^{an} _^
 tail — ⁰¹ _^

PetLole 2 5 4m long, stipules pubescent, 3 in long, leaves ¹² _^
 bioadly elliptic oi olate lounded , pnmai lateial neives 8-

Pairs; receptacles sessile, in groups of 2-4 from axils of fallen leaves; sepals of male flowers connate.....*gmiculata*.
Petiole 1.5-2 in. long; stipules glabrous, 5 in. long, ovate or ovate-oblong; primary lateral nerves 5-7 pairs; receptacles in axillary pairs; sepals of male flowers free:—

Leaves almost membranous, base emarginate, subcordate or slightly narrowed; receptacles sessile, .25 in. across

infectoria.

leaves coriaceous, base broad, rounded, emarginate or subcordate; receptacles pedicelled, .35-.45 in. across

infectoria var. *Lambertiana*.

*Male and all flowers in one set of receptacles, fertile female flowers in another set:— [p. 972]

Flowers.

Receptacles in male receptacles with one stamen:— [p. 970]

Small leaves in Part if not wholly axillary:— [p. 97G]

shrub shrubs creeping on the ground or over rocks, or if erect more s, then the leaves always all alternate; leaves alternate, few or less ovate or oblong; receptacles only in leaf-axils or in axils of scars of fallen leaves (§ *Sycidimn*):—

Receptacles usually solitary by abortion of one of a pair, all axillary peduncled; leaves with irregularly toothed or repand margin, base rounded, truncate or cordate, 3-5-nerved:—

Petioles under an inch long, less than half the length of the more or less scabrid lamina:—

Leaves variously broad and lobed, or broad or narrow and unlobed on the same plant.....*heterophylla*.

Leaves all rather narrow, never lobed

heterophylla var. *scabrella*.

Petioles over an inch long, quite half the length of the more or less hairy lamina or longer; leaves lobed or not

lobed.....*heterophylla* var. *repens*.

Receptacles in axillary pairs or clustered; leaves with cuneate, 3-nerved base \—

A scandent or creeping, rarely erect shrub; receptacles sometimes clustered, always sessile; leaves narrowly oblong, elliptic or lanceolate, abruptly caudate, entire or subsinuately toothed.....*rostrata*.

A small, erect tree; receptacles always in axillary pairs and peduncled; leaves oblong to elliptic, obovate or lanceolate,

acute or cuspidate, entire.....*lepidosa*.

Erect or spreading shrubs or trees; leaves some, if not all, opposite; receptacles both in the axils of leaves or of scars of

fallen leaves, and tubercles on the stem and older branches 01 on shoot, leafless branches from the old wood in the same millividal (& *Coielha* in part) —

Elect small trees 01 shrubs, leaves sparse, sometimes ^{il} opposite, sometimes all alternate, rather broad, more 01 ~~l~~ ovate 01 oblong, to ovate 01 obovate lanceolate, leptaacles never ^{il} nbed, sometimes axillary, sometimes clustered on the stems and branches —

All parts glabrous except the young shoots, which are beset with a few stiff, adpressed hairs, stipules scarious, leptaacles dimorphic, in some individual all axillary and shoot peduncled, in others all fascicled on stem and lateral branches and long peduncled, the last usually containing only fertile female flowers *fi^Utlu^*

All parts more 01 less hispid pubescent, stipules membranous, often in whorls of 4 on leafless first ^{il} branches, leptaacles all similar in some individuals all axillary, in others all on branches from stem near the shoot, in still others occupying both situations, leaves usually ^{il} opposite, but in some individuals all quite alternate *hW^**

Spreading shrubs, leaves crowded, always all opposite, narrowly lanceolate 01 oblanceolate, young parts densely but deciduously hirsute, leptaacles 8-10 nbed, shoot by abortion of one of a pair, in the axils of leaves or of fallen leaves, or on short, leafless branches from the old wood *Utmwow*

Leptaacles confined to specialised branches bearing scales, but very rarely leaves, issuing from the base of the stem near the ground and from the lateral branches, small, erect trees with alternate leaves (§ *Coielha* in part) — [p 975]

Flint bearing branches shoot, much ramified, leptaacles long peduncled, nearly smooth, leaves broadly ovate, equal or very slightly unequal at the base, petiole, long, 1 5-6 in

conglobate

Fruit bearing branches long, little branched, leptaacles shoot peduncled, hispid, leaves long, rather narrowly lanceolate, very unequally subauriculate, cordate at the base, petioles shoot, 3- 6 in . . . *Cunla*

Flowers in male leptaacles almost always with 2 stamens, rarely ^{il} {*F Itiis*) with sometimes 2, sometimes 3 stamens, or (*F lanceol*) sometimes 2 stamens, sometimes 1 stamen if with 1 stamen the leptaacles on tubercles on stem and branches, but never in leaf axils nor on specialised branches near the base of the stem - [p 975]

Leptaacles all axillary or occasionally (*Uimentaua*) both

axillary and from small scaly tubercles in the leaf-axils, or in the axils of scars below the leaves (§ *Eusyce*) :-[p- 978]

-fScandent or creeping and rooting shrubs:—[p. 978]

Leaves dimorphous, those of the receptacle-bearing, spreading, non-rooting branches distinctly petioled, 2-5-3 in. long, larger than those of the barren, clinging, and rooting branches which are 1 in. or less in length, and have very short petioles; receptacles solitary, axillary, pyriform, 2 in. long, 1*5 in. across

pumila.

Leaves all similar or subsimilar :—

Leaves almost sagittately cordate at the 5-7-nerved base, the narrow sinus and subauricled lobes as long as the petiole, elliptic ovate or oblong, acute, 5-10 in. long; nerves silky beneath; stipules -75-1-3 in. as long as the petioles; receptacles short-peduncled, solitary or in pairs, -3--5 in. across; branches rooting at the nodes.....*crimnervia.*

Leaves cuneate or rounded at base, or if cordate the sinus very wide and shallow : -

Receptacles on peduncles as long as their width, solitary or subsolitary by abortion of one of an axillary pair:—

Leaves orbicular or broadly ovate, or elliptic, cuspidate, 4-7 in. long, base rounded to cordate, 5-7-nerved, usually glabrous ; petioles 1-5-2-5 in., stipules -S-'o in. long; receptacles -5-1 in. across; peduncles -6-1 in. long; an epiphytic climber, becoming ^{^TMWJ} _{lit} small tree....."

Leaves ovate or elliptic ovate, acute or subacute, 2-3-5 in. long, base rounded, strongly 3-nerved, SUD-scabrid; petioles -25--5 in., stipules -25 in. long; receptacles -3 in. across ; peduncles 3-'5 in. long; ^{^TM} _{l' s} often rooting at the nodes.....*ntint in* -

Receptacles sessile or subsessile, on peduncles shorter than their own diameter; leaves ovate-elliptic or oblong, rarely lanceolate :—

Receptacles usually solitary, always axillary; leaves 1-25-6 in. long, base 3-nerved; petiole -2-5 in. long, never exceeding the -5 in. long stipules; a creeper 01 lofty climber.....,

Receptacles partly solitary or paired axillary' or in clusters from axillary or rameal, small, scaly tubercles, leaves 2-5-8 (sometimes on young shoots 11) m. long, base 5 7-nerved; petiole -75-1-3 in. long, always

exceeding the 5 in. long stipules; a large, epiphytic climber, becoming at length a tree. *ramentacea*.

-Erect shrubs or small trees:—[p. 977]

Leaves polymorphous, ovate, elliptic, rounded or oblong lanceolate, 5-12 in. long, acuminate, entire, serrate or lobed, base rounded or cordate, 3-7-nerved; stipules ovate-lanceolate, usually shorter than petiole, 3-1 in. long; receptacles globose with ? , ovoid with s and gall-flowers, 75-1 in. long sessile or subsessile.

Leaves similar, linear-lanceolate or oblong-lanceolate, 3-4 in. long, acute, entire, base cuneate, 3-nerved; stipules subultrinate about as long as petiole, 25-5 in. long; receptacles pyriform, 5-75 in. long, on peduncles 35-5 in. long

*pyriformi** var. *ischnoj*>oM-

Receptacles all in fascicles from the stem and branches, very rarely (*F. glomerata* occasionally) also a few in axillary pairs (§ *Neomorpha*); all peduncled:—[p. 976]

Receptacles 2-5 in. across or larger; leaves broadly ovate or rounded, 5-15 in. long, base rather deep cordate, 5-7-nerved; stipules 5-1 in., always shorter than the petioles, 1-4 in. long.

fioxburfflM'

Receptacles 1-25 in. across or smaller; leaves not or only slightly cordate at the base:—

+ Stipules 5-8 in. long, always shorter than the petioles; leaves ovate or elliptic to oblong or broadly lanceolate, 4-8 in. long; considerable trees:—[p. 979]

Receptacles 4-6-grooved, sometimes waited, on tubercles or on short, leafless branches on the stem and large branches; leaves acute, coarsely serrate, base rounded or subcuneate, 3-5-nerved; petiole 1-5-3-5 in. *poniifo*'*-

Receptacles smooth; leaves acuminate; petiole 1-2 in. :—

Leaves 5-nerved at the rounded, notched, or slightly cordate base, margins subrepand or denticulate; receptacles all on tubercles on stem and branches ... *varied*¹¹ •

Leaves 3-nerved at the obtuse, rarely cuneate base, margins entire; receptacles on short, very scaly branches from the stem and large branches :—

Receptacles subglobose, some of them occasionally in axillary pairs. (*lomei*'tita*

Receptacles pyriform :—

Leaves ovate to obovate *glomerata* var. *Chittagon*(f<

Leaves oblong-lanceolate ... *glomerata* var. *c. oph*'a'

+Stipules -5 in. long, always as long as the petiole, -35-0 in. long; leaves narrow, lanceolate, 4-8 in. long, base cuneate, 3-nerved; receptacles warted; a much-branched, glabrous shrub [p. 978]..... *lanccolata*.

194^a *Ficus* SUBULATA Bl.; F. B. I. v. 497. I⁷, *acuminate* F. I. ni. 538.

Chifctagong.

1949 V^A Straggling or semi-scandent, dioecious shrub.

• *Ficus* GIBBOSA Bl. var. CUSPIDIFERA King; F. B. I. v. 497 ; E. D. p. ni.

Chittagong.

A tree.

1949^r Var. PARASITUA King; F. B. I. v. 497. *F. Amjpeios* F. I. iii. 553. *F. sclerophylla* F. I. iii. 546.

ChotaNagpur; Behar; W.Bengal; Orissa.

A tree.

19^{oo} *Picus* UROPHYLLA Wall.; F. B. I. v. 498. _

Chittagong.

An erect Shrub or small tree

1951. *Ficus* ALTISSIMA Bl. var. LACCIFERA F. B. I. v. 504; E. D. F. 11S. *F. laccifera* F. I. iii. 545.

Chittagong.

A large, spreading tree, with few aerial roots. Vernac.

Kath al bat#

1952. *Ficus* OBTUSIFOLIA Koxb.; F. I. iii. 546 ; F. B. I. v. 507 ; E. D. F. 228.

Chittagong.

1953 F^A large tree, epiphytic when yowg- Magh. Date.

• *Ficus* BENJAMINA Linn. var. COMOSA Kurz ; F. B. I. v. 508; E. D. p. 145. *F. comosa* F. I. iii. 552.

Chota Nagpur; Chittagong : often planted elsewhere.

^ large, spreading tree, with drooping branches and

1954 7? aerial roots⁸⁴ Hind, Jili; *santaL* Sunonijar.

• *Ficus* MYSORENSIS Bl. var. SUBREPANDA King; F. B. I. v. 508; E. D. F. 223.

Chittagong.

1955 V^A large, spreading tree, with few aerial roots.

• *Ficus* BENGALENSIS Linn.; F. B. I. v. 499; E. D. F. 129.

"• W, V, , r r. iii. 129.

Generally planted, but also appearing spontaneously oⁿ tombs and other buildings.

A large tree, with rooting branches, the roots forini^{ng} accessory trunks. *Hind.* Bor, bargat; *Beng.* Bar, Uriya Boru; *Santal.* Baré; *Kol* Bai. The Banyan.

1956. *Ficus* TOMBNTOSA Roxb.; F. I. iii. 550; F. B. L. v. 50. Chota Nagpur; Behar.

A large, spreading tree, emitting aerial roots from branches.

1957. *Ficus* GLABELLA Bl. var. AFFINIS King; F. B. I. v. 50. Chittagong.

A tree.

1958. *Ficus* RETUSA Linn.; F. B. I. v. 511; E. D. F. 253. Chota Nagpur; Behar.

A large, wide-spreading tree.

- 1958/2. Var. NITIDA King; F. B. I. v. 511. *F. Benjamina* Is iii. 550.

In most of the provinces.

A large, spreading tree, with some aerial roots.

Kamrup, zir; *Kol.* Butisa; *Santal.* Sunumjon.

1959. *Ficus* GLABERRIMA Bl.; F. B. I. v. 506. *F. angustifon* F. I. iii. 554.

Chittagong.

A tall tree.

1960. *Ficus* NERVOSA Roth; F. B. I. v. 512.

Chota Nagpur, Singhbhum; Chittagong.

A tree.

1961. *Ficus* RELIGIOSA Linn.; F. I. iii. 547; F. B. I. v. 513.

In all the provinces.

A large tree, almost always at first epiphytic^r commencing life on buildings. *Hind.* Pipal; *B* Asvattha; *Santal* Hesak; *Uriya* Jari; *Kol* Hesar, pipar. The Pipal.

1962. *Ficus* RUMPHII Bl.; F. B. I. v. 512; E. D. F. 265. *F. c^{orr}* difolia F. I. iii. 548.

In all the provinces.

A large tree, usually at first epiphytic. *Hind.* Khabar; *Beng.* Gaiasvattha; *Kol.* Sumanpipar; *Santal.* Sunanv jor.

1963. *Ficus* ARNOTTIANA Miq.; F. B. I. v. 513.

- Behar; Chota Nagpur; N.Bengal.
 1964 ^Ablad tree or large shrub;
 77 *ttus GKNICULATA Kurz; F. B. I. N. 516.
 Chittagong,
 1965. ^{Aj}arget tree.
 FICUS INFECTORIA Roxb.; F. I. iii. 530; F. B. I. v. 515;
 E - D. P. 216.
 N. Bengal; Tirhut; Chota Nagpur; Chittagong.
 A small deciduous tree. tfiwrf. Pilkhan, pakur; Bauj.
 Pak ^TKOL Baswa
 1965/2. Var. T
 LAMBERTIANA King; F. B. I. v. 516.
 Chota Nagpur.
 1966. P r i ^ uous tree.
 v. ILUS HETEROPHYLLA Linn. f.; F. I. iii. 532; F. B. I.
 Tirhut; E. D. F. 194
 N. Bengal; E. Bengal,
 A scabrid or pubescent, creeping shrub, growing usually
 near Wafcer* B^{en}9- Gaori-sheora, ghoti-sheora.
 1966/2 Var. SUABRELLA King; F. B. I. v. 519. F. scabrella
 F - I. iii. 532.
 N - Bengal; E. Bengal; Chittagong.
 1966/*i \ SCal)ri(i, cre)eping shrub. Bern/. BalJam-dumar.
 /J- Var. REPENS King; F. B. I. v. 519. F. repens F. I.
 iii. 535.
 N. Bengal; C. Bengal; E. Bengal; Chittagong.
 A- pubescent, creeping shrub, near banks of ponds and
 1967 di tehe8i £TM<7. Bhui-dumar.
 p • *wcs ROSTRATA Lauik.; F. B. I. \. 520. F. radicana
 II • I. iii. 536.
 Chittagong.
 A scandent or creeping, rarely erect shrub. Veruac.
 19fi i Jura ruha *
 8- PICUH LEPIDOSA Wall.; F. B. I. v. 522.
 Chittagong.
 rect tree.
 1969 Ficus ^{A s m a l l e} FISTULOSA Keinw.; F. B. I. v. 525.
 Chittagong.
 A shf
 1 r o - ub or small tree.
 Ficus HISPIDA Linn. f.; F. B. I. v: 522; E. D. P. 202.
 F, ° PpotiUfoUa F. I. iii. 561. F. dicmomun F. I. iii. 562.

- In all the provinces.
A shrub or small tree. *Hind.* Kagsha, koneḡ-duino
Beng. Dumar, kak-dumar; *Santal* Sita pordoh'
1971. *Ficus* LAMINOSA Hardw.; F. I. iii. 531. *F. squamosa*
F. I. iii. 531. *F. scemocarpa* F. B. I. v. 523.
Tirhut, Bettiah; N. Bengal, Duars.
A low shrub, in beds of rocky or sandy streams.
1972. *Ficus* CONGLOBATA King; F. B. I. v. 522.
Chittagong.
A small tree.
1973. *Ficus* CUNIA Ham.; F. I. iii. 561; F. B. LA • 523; E. D.
F. 156.
In most of the provinces.
A low tree. *Hind.* Khewnau, khurkur; *Beng.* Dumar,
jajya-dumar; *Santal.* Horpodo.
1974. *Ficus* PUMILA Linn. e oi
In many of the provinces, planted to take the plac
ivy as a creeper on walls. h
A clinging creeper; native of Japan and China*
Ivy-Fig. usually
As grown on walls, the receptacle-bearing branches arc
kept trimmed off.
1975. *Ficus* CRININKRVIA Miq.; F. B. I. v. 529.
Chittagong.
A clinging creeper.
1976. *Ficus* LAEVIS Bl.; F. B. I. v. 526. *F. vagans* F. I. m ... 537.
Chittagong.
A small tree, often epiphytic. 526.
1977. *Ficus* SCANDENS Iloxb.; F. I. iii. 536. F. B. I. s-
F. fruticosa F. I. iii. 533. *F. hederacea* F. I. iii. 538.
Chota Nagpur; Chittagong.
A large rooting climber. *Beng.* Parkat dumar.
1978. *Ficus* FOVEOLATA Wall.; F. B. I. v. 528; E. 1>. F. 168-
Chittagong.
A \ery large climber.
1979. *Ficus* RAMENTACKA Itoxb.; F. I. iii. 547 • F. B. I. v. 528-
Chitfcagong.
A large epiphytic climber, at length a tree.
1980. *Ficus* HIRTA Vahl; F. I. hi. 531; F> Vit L ., 531. *F. hirt-*
su/a F. I. iii, 528,

- N. Bengal, Duars.
A shrub or small tree, deciduously strigose or hirsute.
Beng. Ban-dumar, khana-dumar, dangra.
- 1981 • *Ficus* PYRIFORMIS Hook. & Arn. var. ISCHNOPODA King;
• F. B. I. v. 533.
Chittagong.
A shrub.
- 1982 - *Ficus* ROXBURGHII Wall.; F. B. I. v. 534; E. D. F. 260.
F. macrophylla F. I. iii. 566.
Orissa; Chota Nagpur; Chittagong.
A small, spreading tree. *Hind.* Timla; *Kol.* Kotang J
Magh. Sapai.
1983. *Ficus* POMIFERA Wall.; F. B. I. v. 535; E. D. F. 235.
Chittagong.
A tall tree.
- 1984, *Ficus* VARIEGATA Bl.; F. B. I. v. 535. *F. racemifera*
F. I. iii. 560.
Chittagong.
A tall, spreading tree.
- 1985 - *Ficus* GLOMERATA Eoxb.; F. I. iii. 558; F. B. I. v. 535;
E. D. F. 179. *F. goolerea* F. I. iii. 538.
Chota Nagpur; W. Bengal; C. Bengal.
A tree. *Beng.* Gular; *Hind.* Jayga-dumar, yajna-
dumar; *Kol.* and *Sanial.* Loa; *Uriya* Dimeri.
- 1983/2. Var. CHITTAGONGA King; F. B. I. v. 536.
Chittagong.
A tree.
- 1985/3. Var. ELONGATA King; F. B. I. v. 536.
Chittagong.
A tree.
1986. *Ficus* LANCEOLATA Ham.; F. I. iii. 557; F. B. I. v. 536.
Chittagong; Chota Nagpur.
A much-branched shrub, fruit very palatable.

Order CXYII. JUGLANDEAE.

Trees usually large, wood hard, juice watery or resinous. *Leaves*
* *ternate*, unequally pinnate; stipules 0. *Flowers* monoecious;
Perianth 0 or simple; males in catkins, females in pen-

dulous, fewer-flowered spikes ; bracts distinct. <f *Perianth* 0 or of 3-6 scales on the margins of the bract. *Stamens* 2 or more on the bract; anther-cells parallel; filaments short. *Pistil* usually 0. ? *Perianth* adnate to ovary, shortly free above, 4-toothed or shortly 4-lobed, sessile on the rachis in the axil of a bract, often 2-bracteolate. *Ovary* inferior, 1-locular; ovule solitary, basal, erect, orthotropous ; style short, 2-fid, arms stigmatic withm. *Fruit* a drupe or nut, naked or clothed by the marcescent bract and bracteoles ; pericarp fleshy or succulent; endocarp hard, bony, or crustaceous, sometimes dehiscent, with sinuously inflexed inner walls, and with 2-4 basal pits within. *Seed* basifixed, 2-4-lobed at the base; albumen 0; cotyledons equal, sinuous or subfohaceous and contorted; radicle superior.

875. *Engelhardtia* Leschen.

Trees; *leaves* large pinnate, leaflets entire or serrate, usually glandular-punctate beneath; stipules 0. *Flowers* monoecious; males in slender, simple or branched, erect or pendulous lateral spikes, females in pendulous spikes. <? *Perianth* connate with the simple, lobed, or laciniate, usually very unequal bracts or scales, sometimes irregularly 4-lobed at the margin. *Stamens* 4-12, subsessile on the scales. ? *Perianth* adnate to ovary, solitary and sessile on a 3-4-lobed bract; limb 4-lobed or -toothed. *Ovary* inferior, 1-locular; ovule erect, anatropous; stigmas 2, short sessile, or long laciniate. *Fruit* a small, globose nut, adnate to the much-enlarged, scarious, 3-lobed, reticulately nerved bract, with mid-lobe exceeding the lateral; epicarp or calyx-tube thin, glandular or hirsute; endocarp 2-valved. *Seed* 2-4-lobed at the base ; cotyledons mgosclly folded or crumpled.

Leaflets petiolulate

Leaflets sessile

spicata

acerifolia

1987. ENGELHARDTIA SPICATA Bl.; R. B. I. v. 595 ; E. D. E. 210.
Juglans pterococca P. I. iii. 631 partly.

Chittagong.

large tree. *Hind. Silapoma* ; *Beng. Bolas*.

1988. ENGELHARDTIA ACERIFOLIA Bl. ; F. B. T. v. 596.

Chittagong.

A large tree.

Involucre of many imbricating or zonally connate, adpressed bracts, usually open at the top, if closed unarmed; nut solitary. *Castanopsis*.
 Involucre entire, closed at the top, armed externally with clusters of spines; nuts 1-4. *Castanopsis*.

877. *Quercus* Linn.

Trees or shrubs, deciduous or evergreen; leaves simple, alternate, entire, toothed or lobed, penninerved; stipules fugacious. Flowers small, monoecious, spicate; males in pendulous or erect spikes, bracts small; females erect, bracts involucrate, spikes usually 1-sexual, rarely androgynous. *Sepals* connate in a campanulate, 4-7-lobed or -partite perianth. *Stamens* 6-12; filaments slender; anthers erect, ovate; cells contiguous; dehiscence longitudinal. *Pistillode* small, hairy, 0. ? *Sepals* connate in a perianth-tube, adnate to the ovary enclosed in imbricate bracts; limb very minute, lobed or toothed. *Staminodes* minute or 0. *Ovary* after fertilisation more or less perfectly 3-celled, rarely 4-5-celled; ovules in each cell 2; style short. *Fruit* an ovoid, globose, or depressed 1-celled nut, seated on or enclosed in and attached by its broad base or by its whole surface to an involucre of imbricating, hardened bracts. *Seeds* 1 or 2; testa membranous; albumen 0; cotyledons plano-convex, thick, fleshy, smooth, grooved, lobed, or ruminant; radicle minute.

Male spikes lax-flowered, pendulous, deciduous, simple: bracts of the shallow, cupular involucre connate in concentric belts; leaves serrate towards the apex. *velutina*.

Male spikes dense-flowered, erect, stout, more or less persistent, simple or paniculately branched; leaves always quite entire:—

Involucre cupular, open, upper part of nut uncovered:—

Bracts of the involucre imbricate, with tips free:—

Leaves elliptic-lanceolate, 7-12 in. long, rounded - cuneate in lower fifth; nut abruptly contracted to the apex. *acuminata*.

Leaves lanceolate, 5-7 in. long, gradually cuneate in lower third, nut gradually narrowed from middle towards apex

apicata var. *Chittagonga*.

Bracts of the involucre connate in concentric belts. *Thomsonii*

Involucre closed at the apex, concealing the nut, zoned with 3-4 broad, wavy, often interrupted ridges *lanceifolia*.

Chittagong.

A deciduous tree, 60-80 feet high.

- ¹⁹91. QUERCUS ACUMINATA Roxb.; F. I. Hi. 636; F. B. I. v. 607 ;
E. D. Q. 6.

Chittagong.

A large timber tree. Vernac. Kanta gola batana.

- *992. QUERCUS SPICATA Smith var. CHITTAGONGA F. B. I. v. 609.

Chittagong.

A small tree.

1993. QUERCUS THOMSONI Miq.; F. B. I. v. 615; E. D. Q. 85.
Q. turhinata F. I. iii. 636.

Chittagong.

A tree, 80-100 feet high, wood only of use as fuel.

Vernac. Bansua batana. •

- ¹⁹94. QUERCUS LANCKIJFOLIA Roxb.; F. I. iii. 634 ; F. B. I. v. 616;
U- D. Q. 52.

Chittagong.

A small or large tree, timber useful. Vernac. Shingm.

878. Castanopsis Spach.

Thes, rarely shrubs, deciduous or evergreen; leaves simple, alter-
ate» entire, toothed or lobed, penninerved; stipules fugacious.

Slower* small, monoecious, spicate; males in erect spikes, bracts

Small; females erect, bracts involucre; spikes usually 1-sexual,

very rarely androgynous, Sepals connate in a campanulate,

6-lobed or -partite perianth. Stamens usually 10-12 ; filaments

slender; anthers small; dehiscence longitudinal. Pistillode

Small hairy. ? Sepals connate in an urceolate perianth, adnate

the ovary, enclosed in imbricate bracts; limb very shortly

6-lobed. Ovary after fertilisation 3-celled ; ovules in each cell 2 ;

lobes usually 3, linear. Fruit of 1-4 nuts, covered by the closed

fruiting involucre, beset with clusters of spines or tubercles, often

irregularly dehiscent. Seeds usually by abortion solitary in each

nut 5 testa membranous; albumen 0; cotyledons thick, fleshy,

equal; radicle minute.

*outer wall of involucre concealed by the crowded subulate spines :-

[P. 988]

Leaves sinuate-toothed or serrate, finely pubescent beneath, nerves

15-20 pairs.....indica.

- Leaves entire, glabrous on both sides, nerves 10-12 v&hs...castanicaarpa.

[*Castanopsis*.

•Outer wall of involucre not completely concealed by the ^Eubstellately branched spines, disposed in irregular ridges ; leaves with 6-10 pairs of nerves:—[p. 987]

Leaves always entire, glabrous; branches of the spines not ^f ^QT ^o ^o than their bases, whole spine never exceeding 25 in., rarely as o

Leaves usually entire, sometimes serrate towards apex, usually ^f ^o ^o ^o pubescent beneath, sometimes quite glabrous; branches of the spines ^f ^o ^o ^o always longer than their bases, whole spine never under 25 in. rarely so short:—

- Spines 25-35 in. long *tribnhwUs* ^{va} ^f ^U ⁿ ^r [.]
- Spines 4-12 in. long *tnhnhhle** var. ^{longispina}.

1995. CASTANOPSIS INDICA A. DC.; F. B. I. v. 620; E. D. O. «1-
***Quercus serrata* F. I. iii. 641.**

Chittagong.
A small or large tree.

1996. CASTANOPSIS CASTANICARPA Spach.; F. B. I. v. 621. ^{Quercus}
***castanicarjpa* F. I. iii. 640.**

Chittagong.
A large evergreen tree.

1997. CASTANOPSIS ARMATA Spach.; F. B. I. v. 622. ^{C. tribu-}
hides E. D. C. 818 partly. ^{Quercus armata} F. I. iii ^{640.}

Tippera; Chittagong.
A considerable timber tree. Vernac. Kant a lal ^{batana}
{Chittagong}; Singhara (Tippera).

1998. CASTANOPSIS TRIBULOIDES A. DC. var. FKROX King; F. B. I. v. 623. ^{Quercus ferox} F. I. iii. 639.

Chittagong.
A medium tree, 40-60 feet high.

1998/2. Yar. LONGISPINA King; F. B. I. v. 623.
Chittagong.
A considerable tree.

Order GXX. SALICINEJE.

Trees or shrubs. *Leaves* deciduous, alternate, 3-5-nerved at the base; stipules free. *Flowers* dioecious, in catkins, one under each bract; bracteoles 0. *Perianth* 0. *Disk* of 1 or more scales or glands, or cup-shaped. *Stamens* 2 or more; filaments ^h*^{ee} or connate; anthers ovate or oblong; dehiscence longitudinal.

♀ **Ovary** sessile or stipitate, 1-celled; ovules few or many, on 2-4
subbasal Or **Parie*** al placentas, erect, anatropous; style short or
 2 Lj^{Λ m a s shorf} » notched or lobed. *Fruit* an ovoid or lanceolate,
 Ion ^{Ved caP^{sul}e.} *Seeds* few or many, funicle with a tuft of
 shn^g **Silky** hairs » albumen 0; cotyledons plano-convex; radicle
 -or &, inferior.

879. Salix Linn.

Tre ^{Λ or s Λ r u Λ s} sometimes small and prostrate ; *leaves* usually
 nar **row** ^{of Slua Λ} » en tire or serrulate, penninerved; stipules various,
 Fin ^{we} ^{Λ Sma Λ} dioecious, sessile, in erect, usually dense catkins;
 bra ^t ^{c-s Small, 6ntire Or rarel} y toothed. *Perianth* 0. *Bisk* of 2
 seal ^{es a nte} rior and posterior, or of one posterior scale, fleshy or
 #la ^{ndul**} * *Stamens* 2, rarely 'b or more; filaments filiform,
 free ^{an} th ^{ely} ^{Um} ted, and resembling one filament with 2 anthers;
 an th ^{eilS usu} ally small. ? *Ovary* sessile or stipitate ; placentas 2;
 0Yul ^t ^{* on GaCh 2"seriate} » usually 4-8; style usually short, with 2
 show ^{pen!} ^j » ret use or 2-fid arms. *Fruit* a 2-valved capsule. *Seeds* with
 inf ^{icillate} ^{fu} nicle; albumen 0 ; cotyledons plano-convex ; radicle
 erior.

1,, 9 - SALIX TETRASPERMA Koxb.; F. I. iii. 573; F. B. I. v. 626;
 E - D. s. 579.

Chota Nagpur; Behar; Tirhut; N. Bengal; W. Bengal.
 A small tree, 20-40 feet high. *Hind.* Baishi, bet;
*Ben.*7- Pani jomá ; *Kol.* Nachal; *Santal.* Gada sigrik.

Order CXXI. CERATOPHYLLEJE.

Slender, fra gile, branched, submerged herbs. *Leaves* whorled,
 di ¹ ^o ^f ^{Λtoi} nously cleft into filiform, minutely toothed lobes ; stipules
 0 ^Λ ^{lowers} minute, monoecious, axillary, sessile. 6 *Perianth*
 ^ ⁻¹¹¹ ^{Volucere of} 6-12 narrow, subvalvate, 2-fid segments. *Stamens*
 2o ⁻³ J filaments very short; anthers erect, extrorsc ; connective
 tru ^{cate} or 2-toothed at apex; dehiscence longitudinal. ?
 p ^e ^{anth} of the male# *Ovari*J sessile » ovoid, 1 celled » ovule
 so ^l ^{ar} > pendulous, orthotropous; style subulate, stigmatic on
 on ^e ^{ISc*} ^e *Fruit* a small coriaceous, ovoid or ellipsoid, somewhat
 c ^{lnP^{resj}} sed nutlet, terminating in a long, subulate style, with a
 l ^{Ur} ^{P^{ro}} Jecting from above the base on either side. *Seed* pendu-
 thick ^{teStamemoranou} s ; albumen 0 ; embryo straight; cotyledons
 , ril ^{dicl} bhort, inferior ; plumule many-leaved.

880. *Ceratophyllum* Linn.

The only genus. Characters those of the order.

2000. CERATOPHYLLUM DEMERSUM Linn.; F. B. I. v. 639.

ticillatum F. I. iii. 624.

C. ver-

In all the provinces, in ponds and ditches.

A submerged aquatic of still waters. Beng. Jhangi.

V. GYMNOSPERMEIÆ.

Perianth 0 or rarely (*Gnetaceæ*) 2-lobed or utricular. *Flowers* always 1-sexual. *Stamens* few or many. *Ovary* and *style* 0; ovules naked; cotyledons 2 or sometimes 3 or more.

Order CXXII. GNETACEÆ.

Trees or shrubs; branches jointed at the nodes. *Leaves* opposite, large and green, or minute scale-like; stipules 0. *Flowers* monoecious or dioecious, in axillary or terminal spikes or cymes. *Bracts* close-set or distant, *Sepals* 2-4, forming a valvately 2-lobed or spathaceous perianth. *Stamens* connate in a column of the united filaments; anthers 2-8, subglobose, 1-3-celled, sessile or subsessile on the column. *Ovule* erect, with 2-3 coats, of which one is produced into a styliform tube with a discoid mouth. *Seed* dry or drupe-like; albumen copious or scanty; embryo straight; cotyledons adpressed; radicle long, superior.

881. *Gnetum* Linn.

Evergreen climbing shrubs or erect trees; branches jointed, *leaves* opposite, entire, penninerved. *Flowers* monoecious or dioecious, whorled in the axils of the cupular bracts of axillary or terminal, solitary or paniced spikes, often surrounded by jointed hairs. *Perianth* narrowly clavate, entire or valvately 2-filamentary. *Stamens* adnate to base of perianth; filaments connate in a column exerted from the mouth of the perianth; anther-cells distinct, sessile on the top of the column, opening by terminal slits. *Ovule* ovoid or globose, the inner integument produced

as slender > exserted tube, with often a toothed or fimbriate .
i» ^ slender > exserted tube, with often a toothed or fimbriate .
Iu**h. Seed drupe-like.

Male b stout
stout
jj. ^ 1 never
b yacts hardly imbricated; seeds glabrous, the stipes slender, 25-
in. longer
.....junivuUire.

2^{oo} 1. GNETUM SCANDKNS Roxb.; F. I. iii. 518; F. B. I. v. 642 ;
K - B. G. 310.

Chittagong ; Chota Nagpur, Singbhum.

2009 * ^ large dioecious climber.

*' GNKTUM FUNICULAKE Bl.; F. B. I. v. 648.

Chittagong.

A large dicecious climber.

Order CXXIII. CONIFERS.

alt. einat. G, r * ^, ^near
cicled in mem ^ l f c l
nate S m d
Q obion* Stame
nn4i or c
axis f ^ or inore - ce
tropou S on a SCa ^ e (^ P en
(brac y of a COne, Seeds of ten win ^ ed; testa thick or thin; albu,
u, nd
i" ad o e 6 n S e, ^ e s ^ » em ^ l * y o axial, straight; cotyledons 2 or more;
terete, often attached to a crumpled, thread-like suspensor.
Scale S of + \
each, ine
Scale of the S e l e r e v e r s e d ; l e a v e s l i U, g ePodocarpus.
each S ^ e m i ;
i n scale, erect; leaves very small.....Thuya.

882. Podocarpus L'Herit.

Evergreen trees or shrubs; leaves opposite or alternate,
a in ^ r e d a U (* ^ n c a r » or distichous or broad and oblong, with
i u i l - c r i b (o n w ^ ^ l)
or late, tt
y v a n c h . Flowers monoecious or dicecious; males solitary, fas-

cicled, or spicate, with imbricate bracts; females solitary, 01^{few} and spicate, bract large. <? *Anthers* sessile, spirally crowded on^d the column; cells 2, parallel, slits extrorse or lateral; connectiv^{iv} with an apical claw or appendage. ? *Bract* forming a pedunc^{dun} to the fleshy, ovuliferous scale; *ovule* solitary, adnate to the^{the} scale, reflexed. *Seed* small, globose or ovoid, seated on[^] enlarged, fleshy peduncle, composed of scale and bract; te^{te} hard, often fleshy externally; albumen fleshy; cotyledons 2[^] ^.

2003. *PODOCAKPLUS NKRIIFOLIA* Don; F. B. I. [^] 649; L. [^] P. 1006.

Chittagong.

A glabrous evergreen tree, 30-50 feet high.

883. *Thuja* Linn.

Evergreen trees or shrubs; *leaves* small, opposite, scale-like^{like} adpressed, imbricate in 4 series, all subequal, or often on the^{the} branchlets flattened, with the lateral series keeled, the facial^{facial} series rather smaller. *Flowers* monoecious; males terminal, soli-^{solitary} tary; females in ovoid or oblong cases. <? *Anthers* decussately^{ately} opposite, shortly stipitate on the column; cells 2-4, subglobose^{bose} slits subbasal. ? *Bracts* decussately opposite, many-seriate, 1 or rarely 2 lowest pairs, and 1 or rarely 2 inmost pairs emp^{tj} intermediate 1-8 pairs fertile, each adnate within to the ovulifero^{us} scale; *ovules* 2-3, rarely 5 at the base of the scale, erect. Fruit^{fruit} an ovoid or oblong cone, scales coriaceous, long persisting, be^{eds} eds^{eds} ^2-3, rarely 4-5; testa coriaceous, oblong, expanded or not in^{to} lateral narrow or wide wings; albumen fleshy; cotyledons usually 2.

2004. *THUYA ORIENTALIS* Linn. *Thuja orientalis* F. I. iii. ⁶¹³ F. B. I. v. 644. *Biota orientalis* E. D. B. 518.

Often planted.

A small tree.

Order CXXIY. CYCADACE[^]L

Shrubs or small trees, with a thick, simple, rarely forking stock* and a terminal crown of leaves, or sternless, with leaves arisen^{fr} from a simple or branched rhizome. *Leaves* in alternate series of short, coriaceous scales, and of palm-like, pinnately, rarely 2-3' pinnately divided leaves, with membranous or coriaceous pinn#< *Flowers* dioecious; males in one or more terminal cones, formed of numerous fleshy, flat, or variously peltate scales, crowded

beneath with 1-celled *anthers*; females of flat carpellary leaves (*carpophylls*) crowded round apex of stem, or in cones of flat or thickened, variously peltate scales. *Ovules* large, orthotropous, sessile, either erect in notches on either margin of the carpophyll, or ... Peltate scales. *Seeds* outer coat more or less fleshy, inner crustaceous or ... copious, fleshy, ultimately horny, and with one ... cavities; embryo usually single by abortion, superior, attached to the corrugate suspensory cotyledons 2.

684. *Cycas* Linn.

Shrubs or trees, with a single or rarely branched, cylindrical caudex; the woody bases of the petioles; *leaves* in terminal linear, 1- ... oblong, pinnately divided; segments to ... entire, involute in bud, lowest often reduced to ... ones apparently terminal, peduncled; scales cuneate, **loosely** imbricate; apex often long-acuminate; *anthers* elliptical, densely woolly, adpressed in an apparently terminal ... spreading, elongate, flattened, dilated above in an ... or pectinate blade. *Ovules* 1-5, in notches on either side of the stalk of the carpophyll, distant, alternate or opposite, nearly erect. *Seeds* ellipsoid or globose.

- Margins of leaf-segments flat :-
- Margins of carpophyll-blade pectinate.....*pectinata* *Ui.*
- Margins of carpophyll-blade spinous-toothed *Rumphii.*
- Margins of leaf-segments revolute *revoluta.*

2005* *CYCAS PECTINATA* Griff.; F. B. I. v. 657; E. D. C. 2534. ChittagoHg.

A small palm-like tree.
 2006- *CYCAS RUMPHII* Miq.; F. B. I. v. 657; E. D. C. 2538. *C. circinalis* F. I. iii. 744.

In gardens, occasionally.
 A. small, palm-like tree; native of the Andaman? and Malaya.

2007- *CYCAS REVOLUTA* Thunb.; F. I. iii. 746; P. B. I. v. 656 E. D. C. 2537.
 In gardens, frequently. each <z
 A small, palm-like tree; native of Japan.

VI. MONOCOTYLEDONES.

Sepals and *petals* usually similar, forming a generally 2-seriate rarely 1-seriate perianth, rarely perianth 0. *Stamens* 1-2-seriate. *Carpels* usually connate. *Floral* segments in each series usually 8, sometimes 2, rarely 4 or more, or more rarely variously reduced. *Embryo* with one cotyledon. Herbs, rarely shrubs or trees, with rhizomes produced in shrubby or arboreous stocks or culms; vascular bundles scattered in the ground tissue. *Leaves* parallel-veined, the veins sometimes united by transverse nerves; rarely pinnate or palmate and reticulated.

Order CXXY. HYDROCHARIDEE.

Aquatic, usually submerged herbs. *Leaves* radical, clustered or cauline, alternate or opposite; lamina undivided. *Flowers* regular, monoecious or dioecious, rarely 2-sexual, enclosed in entire or 2-leafed spathe; females solitary; perianth superior. *Sepals* 3, green or petaloid. *Petals* membranous or 0. cf *Stawsonia* 3-12, 1-4-seriate; anthers 2-celled. ? *Carpels* connate inferior, 1-celled ovary; placenta 3-6, parietal or intruded, sometimes almost meeting in the axis; ovules numerous on each placenta, anatropous or orthotropous; styles or style-arms 8-12. *Fruit* globose or ovoid, dry or pulpy, rarely dehiscent. *Seeds* few or many; albumen 0; embryo smooth or lineate.

Stems branching, leafy; leaves small; spathes small, sessile:—

Leaves whorled; styles undivided; ovules anatropous.....**Hydrilla***

Leaves scattered; styles cleft; ovules orthotropous ...**Lagarosiphon**^{on#}

Stems none, or with stolons only, or a creeping rootstock:—

Leaves all long and narrow, sessile; male scapes several-flowered:—

Perianth single.....**Yallisneria**.

Perianth double.....**Blyxa**.

Leaves mostly or all petioled:—

Ovary beakless; fruit wingless; leaves all petioled; male scapes several-flowered.....**Hydrocharis***

Ovary beaked; fruit winged; the submerged leaves narrow, the others long-petioled; flowers solitary.....**Ottelia**.

885. *Hydrilla* Bich.

A submerged herb; *leaves* short, usually opposite below, 3-4-nately whorled above. *Flowers* dioecious; males short-pedi-

solitary in a subglobose, muricate spathe; females sessile, in a tubular, 2-toothed spathe. 3 Sepals 3, ovate or obovate, green. Petals 3, oblong or cuneiform. Stamens 3; anthers large, reniform, opening elastically. Pistillode minute. ? Sepals 3, Inear & ree. Petals 3, narrow. Carpels 3, connate in a 1-celled Ovary, produced beyond the spathe in a filiform beak; ovules Anotropous; styles 2-3, linear, undivided; stigmas fimbriate. Fruit subulate, smooth or muricate. Seeds 2-3, oblong; testa Portly produced at each end.

2008. HYDRILLA VERTICILLATA Casp.; F. B. I. v. 659; E. D. H. 484. *Serpicula verticillata* F. I. iii. 578. *Vallisneria Verticillata* F. I. iii. 751.

In all the provinces.

A submerged, leafy, dioecious herb. Vernac. Jhangi, kureli.

886. Lagarosiphon Haiv.

Submerged herbs; leaves scattered, fascicled or subverticillate, lower opposite, serrulate. Flowers dioecious; males minute, many, in an ovoid, 2-fid, axillary, sessile spathe; females solitary, sessile, in a narrow, oblong spathe. Sepals 3, petaloid. Petals 3, shorter, <? Stamens 3, perfect, opposite the sepals; filaments short; anthers ovate, with often 2-3 staminodes. Pistillode ? Staminodes 0. Carpels 3, connate in an oblong ovary, prolonged into a filiform beak; ovules many, orthotropous; styles 3, stout, notched. Fruit ovoid, oblong, or linear; pericarp membranous. Seeds numerous, covered with a thin pulp.

2009. LAGAROSIPHON ROXBURGHII Benth.; F. B. I. iii. 659. *Vallisneria alternifolia* F. I. iii. 750.

In all the provinces.

A submerged, leafy, dioecious herb. Beng. Rasnjangi.

887. Yallisneria Linn.

Submerged, tufted, stemless, stoloniferous herb; leaves very narrow, linear. Flowers dioecious; males many, minute, in an ovoid, shortly peduncled spathe; females solitary, in a tubular, 2-toothed spathe, terminal on a very long, filiform, spiral scape. Sepals 3. Petals 3. Stamens 1-3; filaments thickish; anthers 10. Pistillode 0. ? Staminodes 3, each 2-fid. Carpels connate in a narrow ovary, not produced upwards; ovules numerous;

stigmas 3, broad, notched. *Fruit* linear, included in the *spatha* wed to the base. *Seeds* numerous, oblong; testa membranous, slightly narrow

2010. VALLISNERIA SPIRALIS Linn. ; F. B. I. iii. 660; E. D- V. *V. spiraloïdes* F. I. iii. 750.

In all the provinces.

A submerged, stoloniferous, dioecious herb.

Syala.

Hind.

888. *Blyxa* Thouars.

Annual submerged, tufted, scapigerous herbs; leaves linear, acute, entire or minutely serrulate. *Flowers* hermaphrodite or dioecious; scapes long or short; males several, in 2-toothed spathe, long-peduncled; hermaphrodite or solitary, sessile, within a tubular, 2-toothed spathe. *Stamens* linear, 3-serial, often with 1, sometimes more than 1, reduced staminode; anthers narrow, erect. *Staminodes* 0, or minute. *Carpels* 3, connate in a very linear, 1-celled, beaked ovary; placenta parietal; ovules many; style very short; stigmas 3, filiform. *Stamens* 1-3-serial, *Carpels* 3, connate in a normal ovary. *Fruit* linear, enclosed the ribbed, narrow, ventricose spathe; pericarp membranous. *Seeds* very many, oblong, within a thin, mucilaginous testa smooth or tubercled, often tailed.

Leaves not serrulate :—

Flowers dioecious; stamens of male flower 8; seeds distinctly tubercled shortly tailed..... *Roxburgh*

Flowers hermaphrodite:—

Stamens 9; seeds faintly tubercled, without tails..... *Griffith*

Stamens 3 ; seeds spinescent, with long tails..... *echinospenna*.

Leaves serrulate ; flowers hermaphrodite; stamens 3 ; seeds sparse y tubercled, tails short or 0..... *oryzatoruffl*.

2011. BLYXA ROXBURGHII Rich.; F. B. I. v. 660. *Vallisneria octandra* F. I. iii. 752.

In most of the provinces.

A submerged, tufted, aquatic annual. *Hind.* Syala.

2012. BLYXA GRIFFITHII Planch.; F. B. I. v. 661.

E. Bengal; Chittagong.

A submerged, tufted, aquatic annual,

Ottelia.] B URMANNIA OEM.

2013. BLYXA ECHINOSPERMA Hook. f.; F. V, I. v. 661.

E. Bengal; Tippera.

A submerged, tufted, aquatic annual.

2014. BLYXA ORYZKTORUM Hook. f.; F. B. I. v. 661.

Tirhut; Behar; Chota Nagpur.

A submerged, tufted annual, in rice swamps.

889. Hydrocharis Linn.

Aquatic, floating herbs; leaves orbicular or reniform, entire. Flowers monocious; males 2-3 in a peduncled, 2-florescent spathe; females solitary in the spathe. Style 3, herbaceous, white, membranous, Stamens 6 or 9, with 6 or 3 filaments forked; anther-cells basifixed. Staminodes 6, perianths connate in a 6-celled ovary; ovules numerous; stigma linear, 2-fid. Fruit an ovoid or oblong, fleshy berry, 6-lobed. Seeds numerous; testa pulpy, filled with spiral vessels; embryo void.

2015. HYDROCHARIS CEIXULOSA Buch, Ham. *H. Morsus-Ranae*

F. B. I. v. 662 partly.

Tirhut; N. Bengal; C. Bengal.

A floating herb.

890. Ottelia Pers.

Submerged or partially floating herbs; the submerged narrow, the floating long-petioled, ovate, oblong or cordate. Flower solitary, hermaphrodite, within a tubular, long-petioled spathe. Sepals 3, imbricate, oblong. Petals 3, larger obovate or orbicular, with appendages. Stamens 6-15, 2-5-seriate; anthers erect, connate in an oblong, beaked, almost 6-celled ovary. Placentas diffuse; styles 6, linear, 2-fid. Fruit in the spathe, 3-6-winged. Seeds many, enclosed in a pulpy, fleshy, 3-lobed fruit.

2016. OTTEHA AUSMOIDBS Pers.; F. B. I. v. 662.

indicum F. I. ii. 216.

In all the provinces.

A submerged or partly floating aquifer. Beng. Bhamkalla.

Order CXXVI. BURMANNIACEAE.

Erect herbs, annual or with a perennial rootstock, sparingly branched. Leaves linear, chiefly radical or reduced to

scales. *Flowers* hermaphrodite, regular, solitary, terminal or unilaterally spicate or racemose on a forked rachis, with a bract opposite each. *Perianth* superior, corolline, persistent, 6-lobed or 6-cleft, or rarely 3-lobed; lobes valvate. *Stamens* 3 or 6, included, adnate to perianth-tube or throat; filaments very short; anthers 2-celled; cells distinct; dehiscence transverse or longitudinal. *Carpels* 3, connate in an inferior ovary, 3-celled with axial placentas, or 1-celled with 3 parietal placentas; ovules many, minute; style simple; stigmas usually 3, short. *Fruit* a loculicidal capsule, or opening vertically. *Seeds* many, minute, reticulate; albumen 0; embryo homogeneous.

891. *Burmanna* Linn.

Annual herbs; stem simple or divided; *leaves* ensiform, acuminate, radical, sometimes reduced to scales or obsolete, regular, hermaphrodite, solitary or few or several, secund on branches of a forked cyme. *Perianth* segments 2-seriate, connate in a winged or angled tube; segments of outer series 3, of inner also 3, smaller, sometimes obsolete. *Stamens* 3, sessile or subsessile; anther-cells short, separated by a broad connective, crested dorsally; dehiscence transverse. *Carpels* 3, connate in a 3-celled ovary; ovules many; style short; stigma 3-lobed. *Fruit* a capsule, tipped by the persistent perianth, more or less 3-winged, opening loculicidally between the wings or sometimes rupturing transversely. *Seeds* minute, oblong or subglobose; testa thin, reticulate or striate, usually closely adpressed, sometimes lax and produced at both ends of seed.

2017. BURMANNIA CO&LESTIS Don; F. 1). I. v. 665. J5. *triflora* F. I. ii. 117.

Chota Nagpur; Behar; Tirhut; N. Bengal; Chittagong—
A slender weed of damp places.

Order CXXYII. ORCHIDACE/E.

Herbs, very rarely shrubby, usually either terrestrial, often tuberous-rooted, with annual, herbaceous, simple stems, leafy or leafless, and with solitary or spicate or racemose flowers, or epiphytes with perennial stems or branches, usually leafy, variously thickened, and often forming a pseudobulb, flowering from the top sides or base of the pseudobulb; bracts usually

ORCHIDACEM.

Present. *Flowers* often showy, hermaphrodite, irregular. *Perianth* superior, of 6 free or variously connate segments, 2-seriate; 3 outer (*sepals*) more or less similar, the 2 lateral sometimes connate in a short or long sac or spur-like base (*mentum*); 3 inner (*petals*) similar, the 2 lateral alike and often resembling the sepals, the remaining petal (*Up*) usually very differently shaped. *Stamens* adnate to style and forming with it a column opposite the lip; anthers usually 1, sometimes 2, on the front, top, or back of the column, and free or adnate to it, 2-celled or, by subdivision, 4-celled, top of the column sometimes produced towards the lip into a beak (*rostellum*); pollen-grains usually coherent in each cell into 1, 2, or 4 pairs of oblong or globose or pyriform waxy or powdery masses (*pollinia*), which are free or adnate by pairs or fours immediately, or by a stalk (*caudicle*) to a gland. *Carpels* 3, connate in an inferior, 1-celled, usually linear or twisted ovary; ovules very many, minute; stigma, one or two viscid spots on the top or concave face of the column, opposite the lip and below the anther; rarely discoid and above the two anthers. *Fruit* a capsule, usually opening by 3 or 6 longitudinal fissures, rarely fleshy and subindehiscent. *Seeds* very many, minute, with a lax hyaline testa enclosing a homogeneous nucleus.

*Ovary and fruit 1-celled; seeds minute; sepals and petals usually very unlike the modified lip:— [p. 1003]

I Anther single:— [p. 1003]

J Pollinia waxy:— [p. 1002]

§ Pollinia free, or those of each cell held together at the base by a viscid appendage, not attached by their bases or by a caudicle to the rostellum:— [p. 1001]

1. Pollinia 4:— [p. 1000]

Leaves sessile, equitant, fleshy, congested on short or distichous on elongated stems, with the vaginal portion much shorter than the main leaf; inflorescence terminal; flowers minute, racemose or spicate; column very short, with no appendages or foot; epiphytic herbs.....Oberonia. Leaves membranous or coriaceous or chartaceous, not equitant, or if, very rarely (*Dendrobium* \$ *Aporum*), equitant and fleshy, the flowers axillary and the vaginal part of the leaf nearly or quite as long as the main portion, and with the column prolonged below into a foot:—

- Terrestrial herbs; leaves membranous, rarely (*hipam* sometimes) coriaceous, usually sessile; inflorescence ter-

BENGAL P I i \ i s .

minal; fioweis lather small, in lacemes 01 spikes, co
piolonged below as a foot —

Lip with basal auncles, column veiy shoit, with
arms **Microsty**

Lip without basal auncles, column long, with callow
ties or wings 01 both, lostellum sometimes double

Epiphytic, occasionally casually epig8B.il, but ne\ei tiuj
teiestii.il heibs; leaves chaitaceous 01 coiuccous, coin
moie 01 less piolonged below as a foot —

Stems solitaiy 01 ccespitose, 01 composed of discie
pseudobulbs basally attached on a shoit 01 1^ong
lhizome —

Floweis horn the stems 01 pseudobulbs temunal oi
•ixilliuuj, sohtaiy 01 on few floweied peduncles, 01
few 01 many floweied lacemes, usually laige an
showy, stems ccespito&e with leaves chutaceous oi
coiuceous, moie than 2, laiely a cieeping ihizome
with distant pseudobulbs and binaiy oi solitaiy ap
leaves, polluin dll subequal, always fiee, hp
mobile **Dendrobiuffi.**

Floweis fion lateial scapes using fion the base of
the pseudobulbs oi fion the ihizome between them,
solitaiy oi m heads, umbels, oi incomes, leases «ol*
taiy and coriaceous oi binaiy and chaitaceous, ub
fion the apices of pseudobulbs on a geneially pi
ionged income, but occasionally the ihizome and less
otton the pseudobulbs inconspicuous oi absent,
Pollmia fiee oi occasionally attached by then bases
to a small spehie of translucent tissue, the mnei pan
^ a sy^s smaller than the outei -

Lateial sepals maikedly exceeding the doi*1.
noweis (in oui species) umbellate **Cirrhopetalum.**

Lateial sepals not gieatly exceeding the doisal -
i-ateial sepals alongside oi undei the lip, «owers
(m oU1 specie s) lacemose oi spicate

Bulbophyllum.
Stem loti/^^^weissohtaiy **Thas**
OT::oR elongated pseudobulb
chaitaceous * core, leaves solita * oi binaiy,

¶Pollnia 8 - [P 999]

Pholidota.

Epiphytic heib_{S,P}seudobulbous oi not, leaves chaitaceous,

jm

19. OBERONIA GAMMIEI King & Pantl.
Sundribu'ns.'

A small epiphyte, leaves 3-6 in. long.

20. OBERONIA BOTILABKIS Lindl.; F. B. I. v. 683.

N. Bengal, Dua'sr.

A small epiphyte, leaves 1-1*5 in. long.

893. Microstylis Nutt.

Microstylis rarely epiphytic, pseudobulbous herbs; leaves one or more, membranous, plicate, continuous with their bases. Bracts small, resupinate, in terminal racemes. Sepals spreading or curved, subequal. Petal* narrower than the sepal* but of the same length; Uvula adnate to the base of the column. The basal lobes large, sagittate and produced upwards, or with small lobes, or without basal lobes. The apex [2-8-lobed, erose or entire. Column usually very long, sometimes rather long, with two short, spreading arms. Labellum 2-locular; pollinia 4, ovoid or obovoid waxy.

not auricled; leaves 2 or more:—

- » •; lip ovate, with a 3-lobed apex congesta,
- » •; lip reniform, pectinate liliifolia,
- » •; lip 2-lobed; leaves 2 ^ ^ ^ ^

21. MICROSTYLIS CONGESTA Reichenb. f. j F. B. I. v. 689. *Malaxi**
pi in, hi V. 1 i 456.

Chota Nagpur, Parasnathi, Sirguja.

A small herb, stem stoutish, 2-3 in. high.

22. MICROSTYLIS RHEBDEI Wight; F. B. I. v. 690.

Chota Nagpur, Sirguja.

A herb, with stoloniferous stems.

23. MICROSTYLIS CARBORI Prain.

Chota Nagpur

A small herb; flowers white.

894. Liparia Rich.

Liparia rarely or epiphytic, pseudobulbous herbs; leaves one or more, membranous, plicate, continuous with their bases. Bracts small, resupinate, in terminal racemes. Sepals spreading or curved, subequal. Petal* narrower than the sepal* but of the same length; Uvula adnate to the base of the column. The basal lobes large, sagittate and produced upwards, or with small lobes, or without basal lobes. The apex [2-8-lobed, erose or entire. Column usually very long, sometimes rather long, with two short, spreading arms. Labellum 2-locular; pollinia 4, ovoid or obovoid waxy.

Stigma single, antecum, pollinia 2, or 4 in two pairs:—
 Pollinia narrow, clavate, 2, produced and united below by
 single caudicle, inserted on a long, narrow gland; leaf
 plicate, chartaceous or subcoriaceous:—

spurred or saccate, and with no **olaw** Trop
 Lil
 Lip long V-clawed, not spui: ...Gory
 Pollinia inserted directly on the g...

flut, nicinljuanous:—
 J, Up m. Uhe I r.oo

Pollinia 1, lip not saccate or curved, Spupr
 Stigmas 2, lateral, distant; pollinia 2, **bipari** ito; lP
 leaves flat, membranous:—

Bas **eoflip** produced as **alongspur--** Vrydag
 Base of lip saccate but not spurred

Anthers 2, each with 1 perfect cell; cells sessile on the column,
 or contiguous, discrete, the outer empty; pollinia 2,
 times 2-part **MM**, adnate with or without caudicles to separate gl
 leaves flat, **4mbmnous**; terre **Lviai h<wl>{p- 999** Habena
 Ovary and fruit 3-celled; seeds conspicuous; sepals, petals, and
 similar; anthers I, **feh** with both cells perfect; terrestrial herbs
 narrow, **mju«corineno us, strong:** y nerved leaves [p. 999] A postar

892. Oberonia Lindl.

Epiphytic herbs, w IL h uaunlly very short, often tufted
 leaves coriaceous or fleshy, usually cutdforin, always dist
 and equitant. Flowers minute, uuiucrou s, sometimes w
 a long, erect or deflexed, spicate or racemose inflorescence,
 panding centrifugally. Sepals subequal, ovate or d> long. Petal
 as wide as or narrower than the sepals; lip larger than the sepals;
 sessile, rarely entire, **W** lobed and often cross, the hypochile
 more or **kae** conce **W** or with a nectar-secreting pit near its base.
 Column very short rarely winged. Anther terminal or
 incumbent; pollinia 2, cohering in pairs, waxy.

Petals broad, ovate or globose-oblong:—
 Tip oulong or subquadrate, with small, rounded, or tooth-like side
 lobes, its tip with 2 small lobes separated by a wide sinus... Fulconeri
 Lip 3-lobed, cross, with large, rounded side lobes and a 2-lobed mid
 lobe Gasprieti
 Petals narrow, **W**; lip oulong with filiform lateral lobes near the
 base; **W** her and two **W** or not; **W**

thickened and jointed at the base. *Flowers* small, 'in terminal racemes, resupinate or not. *Sepals* spreading or recurved, the margins usually re^ olute. *Petals* much narrower than the sepals; *Up* adnate to "the base of the column, usually >road, flat, or deflexed from the middle, sometimes concave, often with calh near the base. *Column* elongate, often arched, usually winged near the apex and tumid or dilated and compressed at the base. *Anther* terminal; pollinia 4, waxy.

Scape cylindric licged and fluted ; ridges several *bitubercuUita*.

Scape trigonous *paradoaa*.

2024. LIPARIS BITUBERCULATA Lindl.; 1\ R I. \ • 696

Chota Nagpur.

A soft, tall herb.

2025. LIPARIS PARADOXA Reichb. f.; F. B. I. A. 697.

E. Bengal, Mymensingh ; Chota Nagpur; Chittagong.

A soft herb, stems 6-8 in. high.

895. Dendrobium Swartz.

Epiphytic herbs ; pseudobulbs bhort and fleshy or elongated and stem-like, usually tufted; *leaves* sessile, never plicate, bases sheathing. *Flowers* solitary or in fascicles or racemes, often large and showy. *Sepals* subequal, the lateral pair obliquely adnate to the foot of the column, and forming with it a sac or mentum. *Petals* usually like the sepals; *Up* sessile or clawed at the base, adnate to and incumbent on the foot of the column; side-lobes embracing the column, or spreading, or absent; the terminal lobe broad or narrow, flat, convex, concave or saccate, its disk sometimes lamellate. *Column* short, its foot long or short, with usually a nectar-secreting depression or cavity at its extremity, the apex angled or 2-toothed. *Anther* 2-celled; pollinia 4, equal in length, sometimes in free pairs, but usually all slightly coherent, the 4 never all quite free, o^id or oblong, slightly compressed, waxy.

Leaves equitant, fleshy, distichous, lanceolate or ovate-lanceolate, acute; flowers axillary, very shortly pedicelled; mentum longer than the sepals; lip cuneate-oblong, obscurely 3-lobed, margins crisped; flowers •5 in. long, uniformly greenish-yellow..... *anccpa*.

Leaves never equitant nor fleshy :—

Stems pseudobulbous erect, oblong oval cylindrical, leaves 2, terminal, opposite, coriaceous, sheath, orbicular, oval elliptic obtuse, flowers solitary, terminal between the leaves, pedicel large, obtuse, incurved, lip oblong oval oblong, with 2 rounded, connate, terminal lobes, flowers 1 in long white *pumihtm*

Stems not or rarely pseudobulbous, pendent or erect, slender or stout, terete or clavate, leaves more than 2, scattered along the stem, chalcidaceous or coriaceous, persistent or deciduous —

flowers small, in short terminal racemes, stems slender, much blanching, leaves linear lanceolate, acuminate, chalcidaceous, very deciduous, pedicel very short, rounded, sepals very small, narrow, side lobes narrow, tips obtuse, mid lobe sheath-like, ovate, glabrous, flowers 3 in long, yellow *heihnceum*

Flowers lateral on the stem, if terminal (2) *fort motion* sometimes) large and showy, stems stout or slender, little blanching, or usually not blanching —

stems with 2-3 internodes above the base much swollen into a fusiform, tuberculous section, elsewhere slender, rigid, and polished, leaves linear oblong, obtuse or emarginate, subsistent, pedicel short, incurved, obtuse, longer than the lateral sepals, lip obovate from a narrow base, with rounded side lobes and small rounded mid lobe, flowers 5 in long, solitary axillary, or on bracteate tubercles at the upper nodes, white with pink veins on the sepals *podacfkuaia*

Stems uniformly terete or clavate, or sometimes with the apices of each internode swollen, short or long, slender or stout, never much dilated as a fusiform tubercle just above the base —

Flowers small, dingy yellow, with lead specks on the lip, 3 in long, crowded on a short sheathed peduncle, pedicel uiceolate, lip wide cuneate, truncate, with small, acute, spreading side lobes, and a small, fleshy, callused mid lobe, leaves linear lanceolate, coriaceous, oblong 2 hd, stems clavate or fibiform *hicametatum*

Flowers large and showy, in lateral, rarely (*fort* *fonnosum* sometimes) terminal panicles fascicles, or racemes, rarely solitary, pedicel never uiceolate —

*Mentum at least half as long as the dorsal sepal [p 1007]

Flowers from leafy stems very large, white, with yellow on the lip, pedicel half as long as dorsal sepal, lip obovate, entire *fonnosum*

Flowers from leafless stems medium, sepals and petals greenish, sometimes pinkish near the tips, lip oblong,

acute, fringed, marked with purplish veins ; mentum more than half as long as dorsal sepal.....*macrostachyum.*

*Mentum less than half as long as dorsal sepal:—[p. 1006]

tStems terete or slightly compressed, cylindric or subfusiform, but not clavate :—[p. 1008J

‡Lip either trumpet-shaped or explanate, the margin not incurved:— [p. 1008]

§Flowers from leafless stems, 2-nate, rarely solitary, sometimes in 3-G-flowered racemes, always white or more or less marked with purple or mauve:—[p. 1008]

¶Internodes cylindric; lip more or less trumpet-shaped, the basal portion convolute, the anterior portion expanded as a more or less open, recurved or cucullate mouth :—[p. 1008]

Stems slender, pendulous, terete, cylindric; leaves chartaceous, acute or acuminate :—

Lip longer than broad; leaves linear-lanceolate; flowers in pairs, white or pink, 1*5 in. across; bracts very large; sepals lanceolate, acute; petals ovate; lip with a broad, purple, single or double blotch, elliptic-oblong from a cuneate base, obtusely lobed, recurved, pubescent

tramparcm.

Lip as broad as long or broader; sepals linear-oblong, subacute:—

Lip deep-purple within, with a broad white ring inside the purple margin; mouth large, orbicular, from a wide base, margin recurved ; petals broadly elliptic; leaves linear-lanceolate ; flowers 1-5 on a very large, bracted, short peduncle, each 2-2*5 in. wide. . . . *litmflorum.*

Lip pale - yellow; mouth cucullate, not recurved, from a tubular base; petals oblong; leaves lanceolate; flowers 2-3 on a short, small, bracted peduncle, each 1-2 in. across

Pierardi.

Stems stoutish, erect or suberect; leaves narrow, thinly coriaceous:—

©Stems terete, cylindric; leaves acute; flowers 1-3-nate on the leafless stems, waxy white flushed with pink, on pink pedicels; each flower under 2 in. wide [p. 1008]. *crepidatum.*

©Stems slightly compressed, subfusiform; leaves obliquely retuse at the apex; flowers 3-3'5 in wide :—[p. 1007]

Sepals linear-oblong; petals obovate, neither undulated nor twisted, both uniformly magenta; lip trumpet-shaped, with clear yellow tube and magenta entire limb, racemes 2-3-flowered.....W^wW^w

Sepals and petals both oblong, undulated and twisted, pale purple; lip cucullate, pale yellow, with dilated, everted, erose limb; racemes 3-6-flowered.....''''*''

^Internodes turbinate, each swollen at the top; s^{telT1} stout, decurved; leaves linear-lanceolate, ohfirta- ceous; flowers 1-3-nate, stout-pedicelled, white or the tips purple, 2-2-5 in. across; sepals linefti'' oblong, subacute ; petals broad-oblong; lip orbiculft*.

subcordate, with a yellow disk [p. 1007].../*''''1''1''''''

§Flowers from the leafy stems orange-yellow or with a deep reddish-brown or blood-red blotch on the disk of the lip ; leaves thinly coriaceous ; stems more or less pendulous :—[p. 1007]

Flowers 2-nate, on a leaf-opposed peduncle; sepals oblong, obtuse ; petals larger, quite entire; lip ^{wifch} a convolute claw and orbicular, concave blade, margin revolute, erose; flowers 3 in. wide

ochreatum.

Flowers in 7-12-ilowered, pendulous racemes; sepals and erose petals subequal; lip with a truncate base and orbicular, explanate blade, margin equally and deeply fringed ; flowers 2-3 in. wide... *Jimhriatum.*

JLip calceolar, hemispheric, with incurved, fimbriate margin ; stems erect, terete; leaves ovate-oblong, coriaceous; flowers 2-5-3-5 in. wide, in C-15-flowered racemes from the leafy stems, golden-yellow, cream-coloured, or pinkiBh-white[p. 1007]..... *moselmtum.*

tStems distinctly clavate ; leaves towards apex oblong-lan- ceo^{ate} coriaceous; flowers many, in J^{oose}, lftteral, slend^o, decm^{ved} racemes; flowers ^{^ ^ ^} w^{Me}; — [p 10Q7]

÷Sⁱ o Ved; kaVes 2 & with 2 ^ apices; flowers gold... Je...W HP orange, Steaked or blotched with ied, orbicular, ma*B¹ⁿ Pectinately fringed [p. 1009] *chrysotoxwn.*

Stems 4-angled; leaves 3-5, acute; flowers white or pale rose, the lip with an orange disk, oblong, margin villously fringed [p. 1008]. *palpebnc*

2026. DENDROBIUM ANCEPS Swarfcz; F. I. iii. 487 ; F. 13.1. v. 724.
Sundribuns.

An epiphyte with flattened stems,

2027. DENDROBIUM PUMILUM Roxb.; F. I. iii. 479 in part; F. B. I. v. 713.

Chittagong.

An epiphyte, with tufted, grooved pseudobulbs, 1-1*5 in. long.

2028. DENDROBIUM HERBACEUM Lindl.; F. B. I. v. 719.

Chota Nagpur.

A pendulous epiphyte, with much-branched stems, 2-3 feet long.

2029. DENDROBIUM PODAGRARIA Hook. f.; F. B. I. v. 728.

Chittagong.

An epiphyte, with rigid, branched stems, 1-3 feet long, much swollen just above the base.

2030. DENDROBIUM BICAMERATUM Lindl.; F. B. I. \. 729.

Chota Nagpur, Parasnath; Orissa.

An epiphyte, with rigid, fusiform or clavate stems, 1-1 5 feet long.

2031. DENDROBIUM FORMOSUM Roxb.; F. I. iii. 485; F. B. I. v. 721.

Chota Nagpur; Chittagong.

A stout, tufted epiphyte; stems 1-1"5 feet; leaf-sheaths pubescent; flowers 3-5 in. across.

2032. DENDROBIUM MACROTAPHYUM Lindl.; F. B. I. v. 735.

Chota Nagpur.

A pendulous epiphyte, with slender stems, 8-15 in. long.

2033. DENDROBIUM TRANSPARENS Wall.; F. B. I. v. 738.

Chota Nagpur; Chittagong.

A pendulous epiphyte, with stems 1-1*5 feet long.

2034. DENDROBIUM LITUIFLORUM Lindl.; F. B. I. v. 740.

Chittagong.

A pendulous epiphyte, with stems 1-2 feet long.

2035. DENDROBIUM PIERARDI Roxb.; F. I. iii. 482; F. B. I. \. 738.

Sundribuns; Chittagong.

2036. [^]A pendulous e^oT^ohyte, with stems 2-3 feet long.
DENDROBIUM REGIUM Prain.

Chota Nagpur.

2037. ⁿA n⁶reCt or suberect epiphyte, stems 9-18 in. long.
DENDROBIUM CREPIDATUM Lindl.; F. B. I. v. 740.
Chota Nagpur.

2038. [^]A n^{er6}Ct e^pi^hte, with stems 6-15 in. long.
DBNDBOBIUM TORTILE Lindl.; F. B. I. v. 744.
Chittagong.

An epiphyte, with rigid, subcompressed, stoutish stems,
"5-1 foot long.

2039. DENDROBIUM PENDULUM Eoxb.; F. I. iii. 484; F. B. I-
v. 741.

Chittagong.

A pendulous epiphyte, with turbinate internodes, stems
1-2 feet long.

2040. DENDROBIUM OCHREATUM Lindl.; F. B. T. v. 747.

Chittagong.

A pendent epiphyte, with short, stout stems, 6-9 in-
long.

2041. DENDROBIUM FIMBRIATUM Hook.; F. B. I. v. 745.

Chittagong; Chota Nagpur, Sirguja.

A pendulous epiphyte, stems 4-5 feet long, a 'little

- 9049 - @^Wollen at the v^{ery} base. \

- J< ^NDROBIUM MOSCHATUM 'Wall. *D. calceolaria* F. B. . ,
v. 744.

Chittagong; Chota Nagpur.

2043. ⁿAn epi^hte» wi*^h erect, stoutish stems, 3-5 feet long.
DENDROBIUM CHYSOTOXUM Lindl.; F. B. I. v. 750.

Chittagong.

2044. ^TAn erect eⁱh^t s^fcms 3-15 in. long.

DENDROBIUM PAU-KBR* Lindl.; F. B. I. v. 750.

Onittagong.

An erect epiphyte, stem 6-9 in. long.

Epiphytic herbs; with ^{M6< Cirrho} ^{Petal} ^{al} ^{«m} Lindl.
times tufted; pseudobulbs ^{usually} ^{rarely} ^{Creeping} rhizome, but some-
times usually coriaceous and [?] ²⁴ eaved, leaves when soli-
and persistent, when geminate usually

membranous and deciduous. *Flowers* usually in whorled umbels, sometimes capitate, rarely racemose, often dorsally coinpressed, on scapes rising from the base of a pseudobulb. *Mj dorsal*, short, concave, rarely half as long as the lateral, usually much shorter; lateral usually much elongated and acuminate, oblique, often connate by their inner edges, their bases adnate to the sides of the column or of its foot. *Petals* shorter than the dorsal sepal, ftp small, tumid, usually entire, always shorter than the dorsal sepal, jointed to the end of the foot of the column and more or less mobile. *Column* short, its apex with 2, rarely 4, tooth-like appendages, the foot more or less produced. *Anther* 2-locular, Pollinia 4, waxy, cohering in one mass and sometimes attached by their lower ends to a mass of viscid tissue, the two inner usually small and lamelliform.

flowers usually solitary; lateral sepals 3-4 in. long, linear-lanceolate with filiform tips; dorsal sepal and petals with apical tufts of purple pathulate plate; column with 2 decurved arms; pseudobulbs ovoid *ornatissimum*.
 ^ ^ S l i S s e p ^ u n d e r l i n e l o n g subfalcate,
 obtuse; dorsal sepal and petals oiliate; column unarmed; pseudobulbs
 globose *Roxburghii*.

2045. CIRRHOPETALUM ORNATISSIMUM Reichb. f.; F. B. I. v. 773.

Chota Nagpur.

An epiphyte, with ovoid pseudobulbs.

2046. CIRRHOPETALUM ROXBURGHII Lindl.; F. B. I. v. 774.

Erides radiatum F. I. iii. 476.

Sundribuns.

An epiphyte, with small, subglobose pseudobulbs.

897. *Bulbophyllum* Thouars.

Epiphytic herbs; pseudobulbs from a creeping rhizome, rarely 0; *leaves* solitary, coriaceous, and persistent, rarely binary, membranous, and deciduous. *Flowers* on scapes from the usually close to pseudobulbs, racemose, spicate, capitate, umbelied or solitary. *Sepals* subequal or the lateral rather longer than dorsal, and free or connate under the lip. *Petals* usually smaller than dorsal sepal. *Lip* articulate with foot of column, mobile, small, usually much recurved. *Column* very short; apex often 2-aristate. *Anther* 2-celled; pollinia 4, the two inner smaller, rarely obsolete.

2047. BULBOPHYLLUM TRISTE Reichb. f.; F. B. I. v. 768. B. micranthum F. B. I. v. 768.

Chota Nagpur, Sirguja.

A small 2-foliolate epiphyte, leafless when in flower.

898. Trias Lindl.

Small pseudobulbous epiphytic herbs, leaves solitary on the pseudobulbs coriaceous. Sepals subequal, spreading, lateral adnate to the foot of the column. Petals broad, inflexed, incumbent, or fleshy, waxy, broad, spreading or angled. Lip small, coriaceous, mobile. Ovary 2-lobed, pairs in each cell.

2048. TRIAS OBLONGA Lindl.; F. B. I. v. 780.

Sundribuns.

An epiphyte, with small, subglobose pseudobulbs.

899. Pholidota Lindl.

Epiphytic herbs with branched pseudobulbs; leaves in pairs or solitary, membranous, narrow, downwards, racemose on subglobose, expanding peduncles, terminal at the base of the pseudobulb, usually drooping and concave. Sepals concave, cymbiform and saccate, usually without side-lobes. Column short, the apex shortly hooded or winged. Anther more or less subglobose; pollinia 4, waxy, subglobose or clavate, 2-angled, pairs to one or two membranes.

2049. PHOLIDOTA IMBRICATA Lindl.

imbricatum F. I. iii. 460.

Chittagong; Chota Nagpur.

A pendent epiphyte, with pseudobulbs 1-3 in. long, each with a petioled leaf, 6-12 in. long.

900. Eria Lindl.

Epiphytic, usually pseudobulbous herbs; pseudobulbs often elongated and stem-like; leaves very variable. Flowers never large, rarely showy, often ascending or terminal, in racemes.

spikes -r heads» or on 1-2-tflowered pedicels. *Sejmh* free from
 each o^lh^{er} adna* e to the elongated foot of the column, and form-
 ing wit^h it a Short or long & and spur-like or saccate mentum,
 Petals n^e seP^al; lip sessile on the foot of the column and
 iuCumb⁶nt* Column short and straight, or long and little curved,
 **ike^Ul^le, or occasionally all attached together to a single viscus.
 or b r J "A^lly obov^{oid}. attached in fours by their bases to a granular
 me^{mb}, Uille, or

Flc^{rs} glabroUs eternally :-
 iCnt^s Small> not excee(ling 2 in_ in hei^ht, scaves from among
 the leav^{es} J bracts minute; leaves submembranous, apiculate

muscicola.

P^r h Z t nevesy tl^{wn} 4 in. in height; scapes from below the leaves;
 lowev^{arg}G; lea m firm, obliquely 2-fidbracteHceu.
 fiom b^S Woolly^{ase} externally; plants never less than 9 in. in height; scapes
 of pseudobulbs; leaves firm, acuminate.....fl^{ava}>

2⁰⁰⁰- ERU MDSCICOLA Lindl.; F. B. I. v. 789.

Chota Nagpur.

A small epiphyte, pseudobulbs subglobose, crowded,
 about -5 in. long, nodes 1-2.

2⁰- JERU BRATESCENS Lindl.; F. B. I. v. 796.

Chittagong.

An epiphyte, with crowded, oblong, pseudobulbous stems
 of 2^or 9^y nodes, 1-1.5 in. long.

2⁰²- EHU FLAVA Lindl.; F. J I. v. 801.

Chota Nagpur.

An epiphyte, with large, flattened, pseudobulbous stems
 of 4-6 nodes, 3-5 in. long.

901. Pachystoma Lindl.

Terrestrial herbs, with rather thick rootstocks; leaves solitary
 or in Pairs, following the flowers, long, narrow, many-nerved.
 Fl^o^8 rather small, puberulous, white or pale purple, in racemes
 on l^y pale scapes, with striate, clasping sheaths. Sepals un-
 the dist but the basal state; Petal^U narrow
 Pathulate; lip sessile on the footless column, erect, with oblong,
 e^{ut} side-lobes, and a small, terminal lobe. Column short, its
 a^lex dilated. Anther dorsal; pollinia 8, waxy, pyriform. adhering
 10 a single membrane.

2053. PACHYSTOMA SENILE Reichb. f.; F. B. I. v. 812.

Tirhiit; N. Bengal, frequent; C. Bengal, very rare. . .
An erect, terrestrial herb ; leaf solitary; scape 8-15 in.»
rhizome 1-2 in. long, often intimately associated with
roots of grasses.

902. Phajus Lour.

Terrestrial, less often epiphytic herbs, usually large, pseudo-
bulbous or not; *leaves* membranous, usually plicate. *Flow****
large, showy, in a raceme, on a scape rising from the base of ^{the}
stem or pseudobulb, or from the axil of a leaf, or at the apex ^f
of the stem. *Sepals* subequal, erect, rarely spreading. *Petals* like
sepals; *lip* adnate to the base of the footless column, erect,
gibbous or spurred. *Column* long. *Anther* incompletely 4-celled,
pollinia 8, waxy, attached in fours to a granular membrane.

Scapes terminating the leafy stems; pseudobulbs 0.....*tilbu***
Scapes from the side of the pseudobulbs : —

Scapes less than 6 in. long*nannq.*
Scapes more than 18 in. long.....*Vallich"-*

2054. PHAJUS ALBUS Lindl.; F. B. I. v. 818. *Limodorum brae-*
teatum F. I. hi. 466.

Chota Nagpur.

A tufted herb, with stout stems, 6-18 in. high.

2055. PHAJUS NANUS Hook. f.; F. B. I. vi. 192.

N. Bengal, Duars, in grassy savannahs.

A dwarf terrestrial herti.

2056. PHAJUS WALLICHII Lindl.; F. B. I. v. 816.

Chota Nagpur.

A tall terrestrial herb.

903. Acanthephippium Bl.

Terrestrial herbs, with large pseudobulbous stems, shortly leafy
above ; *leaves* thickly membranous, plicate, petiolate, few. *Flower**
large, fleshy, few. in a short, lateral, sheathed raceme. *Sepals*
fleshy, connate, the lateral pair also adnate to the foot of the
column, and together forming a wide, cupular mentum. *Petals*
erect, narrowed, included in the sepaline cup ; *lip* small, stipitate
at end of foot, mobile, with broad, incurved lateral, and a small,
triangular mid-lobe. *Column* short, stout, with a long foot.
Anther 2-celled; pollinia 8, cohering by means of a granular mass.

Eulophia.]

ORCHIDACEAE.

2057. ACANTHEPHIPIUM STRIATUM Lindl.; 1^o. B. I. v. 816.

Chota Nagpur.

A large, terrestrial herb, with longish, o
pseudobulbs; flowers 1-25 in. long-

904. Calanthe Lindl.

Terrestrial, usually pseudobulbous herbs; ^aVarious stems various
length, often tall, sometimes absent; leaves TM f [>], TM ^
Of less elliptic-oblong, plaited. Flower, usually rath* ^{om}
sometimes mail, in erect racemes, on *TMf ^ f ^g 5 J or
a^rongst the leaves and axillary, or from the side of th « J ^{vent},
Pseudobmb. Sepals subequal. u s u a l l y ^ " ^ r j ^
J » ° « or less lanceolate or oblong. Petals usua Uy » arr ° wer *
ft e sepa ls; j y, variously adnate to the ^{columnin} > f l ^ ar ! L n 2-flid,
or
the di at
the base or apex. Anther usually ^{columnin} lip,
2-celled; pollinia 8, waxy, clavate or elliptic, often unequal,
cohering in fours to a granular caudicle, or the whole 8 inserted on
a single caudicle and attached to a gland.

2058. CALANTHE ANGUSTA Lindl.; F. B. I. v. 849. C. odora
F. B. I. v. 853.

N. Bengal, Duars. i m . > scapo
A terrestrial herb, with short, thickened stem. seal
6-18 in. high; flowers/white, sweet-scented.

905. Eulophia K. «r- hizomes

Terr-esti-iaJ, glabrous herb., with fleshy tubers; or-rjzo ^
rarely PS eUdobUIBOUS; T T h l ^ S r racemed, rarely
flower, long, narrow, usually plicate. Flowered ra iats
W. on a tall, erect, sheathed, usually lateral scape ^ J ^
flee > spreading, subequal. Petals like sepals o, r nearl ^ ^ ^ Qr
a d « e to the base of the column or to its foot D ^ ^
W a short spur, usually 3-lobed; t l ^ l T al lobes
gracing the column; the disc usually ndgedoi
With or without a foot, its apex entire and °TM of-lique, 1 . ^ ^ .
gills sometimes winged or lobed. Anther TM 2-celled; pollinill
two apical processes, its lip often J » < *TM* f the rofltcUuin.
SJobosc, attached by a caudido to the nut gl ^ d of

Flowers and leaves appearing almost simultaneously; column not produced into a foot:—

Pseudobulbs large, green, above ground; leaves grass-like; bracts small; scape often branching. *gymnea*.

Pseudobulbs 0, roots tuberous, buried; leaves elliptic \ bracts large; scape unbranched. *bracteosa*.

Flowers appearing long before leaves | scape unbranched !^

Column not produced into a foot. *campestris*.

Column produced into a foot -

Lateral sepals inserted on the spur of the lip. *nuda*.

lateral sepals inserted on the foot of the column, free from the spur of the lip or nearly so :—

Flowers purplish-brown. *bk(in nclUI,*
flava.

2059. *EULOPHIA GRAMINEA* Lindl.; F. 13. I. vi. 2.

C Bengal; E. Bengal; Chittagong.

A terrestrial herb, with a conspicuous green pseudobulb.

2060. *EULOPHIA BRACTEOSA* Lindl.; F. B. I. vi. 3.

N. Bengal, Duars; Chittagong.

A terrestrial herb, with a sheathed stem, 4-6 in. long.

2061. *EULOPHIA CAMPKSTMS* Wall.; F. B. I. vi. 4; E. D. B. 467§

Limodomm rumentaccum F. I. Hi. 467.

Tirhut; N. Bengal; Chittagong.

A terrestrial herb; scape 6-18 in. long, rising from a deformed tuber. *Beng.* Sang-misri; *Sanial* Bong* taini.

2062. *EULOPHIA NUDA* Lindl.; F. B. I. vi. 5.

Chota Nagpur.

A terrestrial herb, with a large tuber; scape 1-2^{et} high.

2063. *EULOPHIA BICARINATA* Hook. f.; p. B. I. vi. 6.

N. Bengal, Duars.

A terrestrial herb; scape 1-3 feet long, rising from a large tuber.

2064. *EULOPHIA FLAVA* Hook, f.; F. B. I. vi. 7

Chota Nagpur.

A tall, robust herb, with large yellow flowers; scape 2-5 feet long.

906. Geodorum Jacks.

Terrestrial herbs with underground, subglobose rhizomes; **leaves** elliptic, plicate, their sheaths Arming a pseudo-stem, **Flowers** rather crowded and narrow, forming a decurved, corymbose umbel on a stout, erect, sheathed scape from the base of the pseudo-stem. **Sepals** equal, oblong, subacute, erect. **Petals** as long as the sepals, but broader and blunt; **lip** sessile on the base of the column, broadly ventricose at the callus-bearing base; **W. lobes** half the length of the lip, 2-nd or emarginate, **Column** slender, dimidiately ovoid, attached by a tapering, caudicle to a small orbicular gland. **Lip** of a white with pink lines or faintly uniformly flushed with pink; **disk** not yellow. *dilatatum* **Lj** deeply sacculate, more or less streaked with purple or red; disk yellow *citrinum*.

¹Dy. GKODORUM DILATATUM R. Br.; F. B. I. vi. 17. G. AM¹-
Pureum F. B. I. vi. 16 partly. *Limodorum recurvum*
 F - 1. iii. 469.

ChotaNagpur; Behar; W. Bengal; C.Bengal.

2066 0 A terrestrial herb.

• GBODORUM CITBINUM Jacks.; F. B. I. vi. 17.

Chittagong.

A terrestrial herb.

907. Thecostele lieichb. f.

Epiphytic bulbous herbs; **leaf** solitary, short-petioled on a slender basal scape. **Flowers** & racemed, on slender basal scapes. **Petals** narrower than sepals; **Upper** part of the column, 3-lobed, its base forming with erect, ventricose tube, perforate in front; side-lobes small, arched, velvety. **Column** slender, with incurved apical wings. **Anther** 2-celled; pollinia 2, separately stipitate on a scale-like gland.

• *HECOSTBLE ALATA Par. & Eichb. f. *T.Zollingeri* F.B.L

VI *n* *Cy* *ilhidil* *alatmn* F. I. iii. 459.

Chittagong.

A paebulbous epiphyte.

908. Doritis Lindl.

Epiphytic herbs with short stems; pseudobulbs 0; *leaves* flat, coriaceous. *Flowers* medium, in loose racemes, on erect or pendulous peduncles, axillary or from the side of the stem. *Sepals* wide-spreading. *Petal** like sepals; *Up* adiate by its base to the sides of the long foot of the column, and forming a conical sac with the lateral and terminal lobes at its mouth. *Column* narrowly winged; foot long. *Anther* 2-celled; pollinia 2, attached* by a flat caudicle to a small triangular gland.

2068. DORITIS WIGHTII Benth.; F. R. I. vi. 32.

Chittagong; Chota Nagpur.

A leafy epiphyte, with broad, tortuous, tufted roots.

909. Luisia Gnod.

Epiphytic herbs, with rigid, sheathed, usually erect, sometimes pendulous stems, woody below; *leaves* terete, fleshy, distant, spreading. *Flowers* usually small, dull-coloured, in short, extra-axillary spikes, with stout rachis; floral bracts short, scarious, persistent. *Sepals* subequal, or the dorsal depressed, smaller. *Petal* equal to sepals or much longer, spreading; *Up* sessile on the base of the column, with a distinct saccate, concave or flat hypochile, and a decurved, broad and ridged, entire or crenate, undulate, more or less blunt epichile. *Column* stout, much shorter than the lip; stigma usually large. *Anther* broad, 2-celled; pollinia 2, ovoid or subglobose, attached to a subquadrate or elongate gland. *Capsule* narrow, ridged, suberect.

•Petals not much-longer than the lateral sepals :—[p. 1019]

Sepals and petals pale yellowish-green, rarely with a few purple lines; lip with a saccate hypochile, constricted at its junction with epichile:—

Lip not longer than sepals or petals; epichile subreniform, notched at apex, green; hypochile green with purple spots; column purple; slender plants; leaves never exceeding 2-5 in. long; flowers very small, -15 in. long..... *inconspicua*.

Lip longer than sepals and petals; stoutish plants; leaves never less than 3 in. long:—

Epichile broadly cordate, tapering to the subtruncate, minutely emarginate apex; flowers -4 in. long; whole lip dark purple with faint green lines..... *trichorhiza*^(U)

Epichile rhomboid, with broad, subtruncate apex; flowers -25 ^ long; whole lip uniformly purple..... *teretifolia*TM

Sepals green externally, rose-purple within; petals rose-purple, wi

green base and apex ; lip with almost flat hypochile, hardly constricted at base of wide ovate epichile.....*hrachyttachy**

* Petals twice to thrice as long as the lateral sepals [p. 1018].....*voluvis*.

2069. LUISIA INCONSPICUA Hook. f. *Sacrolabium inconspicuum*
F. B. I. vi. 56.

Chota Nagpur, Manbhum.

A small, slender epiphyte.

2070. LUISIA TRICHORRHIZA BL.; F. B. I. vi. 23.

Chota Nagpur, Sirguja.

A rather stout-stemmed epiphyte.

2071. LUISIA TERETIFOLIA Gaud.; F. B. I. vi. 22. *Cymbidium triste* F. I. hi. 461.

Sundribuns; Chittagong.

A rather stout-stemmed epiphyte.

2072. LUISIA BRACHYSTACHYS BL.; F. B. I. w. 23.

E. Bengal; Sundribuns.

A slender epiphyte.

2078. LUISIA VOLUCRIS Lindl.; F. B. I. vi. 25. *L. Grovcsii*
F. B. I. vi. 25.

Chittagong.

A rather stout-stemmed epiphyte.

910. Ornitharium Lindl.

Epiphytic herbs ; stems long, leafy; *leaves* coriaceous, narrow-oblong, with notched tips. *Flowers* rather small, in long, pendulous, extra-axillary racemes. *Sepals* oblanceolate; the dorsal connivent, the lateral spreading. *Petals* oblanceolate, spreading. *Lip* jointed to the foot of the column, fleshy, spur-like, with a narrow cavity and with minute side-lobes and an apical lobe at its mouth; cavity without callus or septum. *Anther* depressed, shortly beaked; *ovary* 2, ovoid-globose; caudicle lanceolate; gland small.

2074. ORNITHARIUM STRIATULUM Lindl. *JErides suaveolens* F. I. iii. 473. *Sarcochilus suaveolens* F. B. I. vi. 33.

Chittagong.

A slender, pendulous epiphyte.

911. ASrides Lour.

Epiphytic herbs with leafy stems; *leaves* coriaceous, terete or linear. *Flowers* usually numerous and showy, in decurved

racemes, sometimes solitary; floral bracts minute. *Sepals* broad, spreading; lateral adnate to base or foot of column. *Petals* like sepals; *Up* adnate to column, spurred; side-lobes large or small, sometimes obsolete; mid-lobe larger than side-lobes, or smaller and incurved. *Column* short, with a short or long foot; rostellum short, or long and 2-nd. *Anther* 2-celled, beaked or not; pollinia 2, globose, sulcate, with a short or long caudicle attached to a gland.

Side-lobes of lip very small; mid-lobe large :—

Spur short, straight; mid-lobe of lip hastate-ovate, tip rounded; racemes rather dense, rarely branched..... *multijtontm*.

Spur slender, uncinat; mid-lobe of lip broad, obtuse or retuse, margins undulate; racemes lax, often branched..... *macuJwtim*.

Side-lobes of lip larger than the incurved mid-lobe; racemes rather lax, opening both centrifugally and centripetally..... *otloratum*.

2075. BRIDES MULTIFLORUM Roxb.; F. I. **iii**- 475; F. B. T. vi. 44.

Chota Nagpur, common; N. Bengal.

A showy epiphyte.

2076. BRIDES MACULOSUM Lindl.; F. B. I. vi. 45.

Chofca Nagpur, rare.

A showy epiphyte.

2077. JERIDES ODORATUM Lour.; F. B. I. vi. 47. *M** *cornutum*

F. I. **iii**. 472.

Chota Nagpur, not common.

A showy epiphyte.

912. *Rhynchostylis* Bl.

Epiphytic herbs with elongated, stout, leafy stems; *leaves* very coriaceous, truncately or bluntly 2-lobed at the tip. *Flowers* showy, numerous, in pendulous, cylindric racemes. *Sepals* broad, obtuse, spreading. *Petals* rather narrower than sepals; *Up* adnate to the short foot of the column, the hypochile forming a deep, wide, compressed, pubescent sac without side-lobes; the epichile obovate, acute, concave, with erect margins. *Column* short, stout, dilated at base, foot very short; stigma small. *Anther* terminal, rounded; pollinia 2, elliptic, adnate by a slender long caudicle to the small, oblong gland.

2078. RHYNCHOSTYLIS RETUSA Bl.; F. B. I. vi. 32. *JErudes guttatum* F. I. **iii**. 471.

Chota Nagpur; N. Bengal.

A showy epiphyte, with dense, usually long racemes.

913. Yanda B. Br.

Epiphytic herbs, with leafy stems; leaves thickly ^{« ^ «} flesh, flat and keeled, or terete. *Flowers* large and often very showy, axillary, in simple, lax or dense racemes, or sometimes solitary; floral bract much shorter than the *W-9*J?%* ^{ing or connivent}, narrowed at the base. *Pf^J^JZ* large, with its base usually saccate or spurred ^{I ^ f ^ to} small, rarely obsolete, adnate to the short foot of the, ^{column*fo} its disc usually ^{of the sep or spur}

pollinia 2, didymous, globose ovoid or mde-ovoid; caudicle short and usually large.

Leaves ^{of lip 2-fidteres.}

Leaves flat; mid-lobe of lip with a truncate, 2-lobed tip:—

Flowers less than an inch across, yellow except the blue fleshy ridges ^{parviflora.}

the lip ^{ers 1.5-2 in. across; sepals and petals greenish with brown} nerves; mid-lobe of lip violet ^{Roxburghii.}

2079. VANDA TERES ^{F. I. - p i i T, v i. 49.} *Dendrobium teres* Lindl.; *K. O. i. vi. w.*

F. I. iii. 485.

E. Bengal; Tippera; Chittagong.

A large, much ^{and Ap f ^}

2080. VANDA PARVIFLOKA Lindl., *li P. ^ L vi. 50.*

Chota Nagpur.

An epiphyte, stem 4-6 in. long.

2081. VANDA ROXBURGHII Br.; *F. B. I. vi. 52; E. D. V. 17.*

Cymbidium tessalatum F. I. iii. 462. *C. tessaloides* F. I.

iii. 463.

In nearly every province.

An epiphyte, stem 1-2 feet long. *Hind.* Vanda, rasna;

Beng. Nái, rasna; *Santal.* Daré banki.

914. Saccolabium Bl.

Epiphytic herbs; leaves coriaceous, flat or conduplicate, often keeled. *Flowers* in leaf-opposed or supra-axillary racemes, corymbs, umbels or panicles; floral bracts very short. *Sepals*

adnate to column, subequal, spreading or reflexed. *Petals* like sepals; *Up* sessile on the footless column, forming a cylindric or saccate spur, with an open lumen, or rarely with a horizontal septum, with or without small lateral lobes, the apical lobe small, often hairy. *Column* short, broad, truncate. *Anther* 1-celled or incompletely 2-celled; pollinia 2, entire or 2-partite.

Flowers in panicles :—

Panicles longer than the leaves, many-branched *ochwicum*.

Panicles shorter than the leaves, few-branched *lonyifolium*.

Flowers in dense, subumbellate corymbs, with simple peduncles :—

Spur rounded, saccate ; mid-lobe of lip wide-ovate or rounded

pnemorsum.

Spur conical; mid-lobe of lip narrow-ovate *papillosum*.

2082. SACCOLABIUM OCHRACEUM Lindl.; F. B. I. vi. 62.

Sundribuns.

An epiphyte, stem 1-2 feet; peduncle 9-12 in.

2088. SACCOLABIUM LONGIFOLIUM Hook. f.; F. B. I. vi. 62.

Sundribuns.

A stout epiphyte ; peduncle 6-7 in.

2084. SACCOLABIUM PRAMORSUM Hook, f.; F. B. I. vi. 62. *Cym**

bidium pramorsum F. I. iii. 465.

Chota Nagpur.

A small epiphyte ; peduncle 1-2 in.

2085. SACCOLABIUM PAPILLOSUM Lindl.; F. B. I. vi. 63.

Chota Nagpur; VJ. (j and E. Bengal; Sundribuns; Chittagong.

An epiphyte, stem 2-3 feet; peduncle 1-2 in.

915. Cleisostoma 131.

Epiphytic herbs, stems more or less elongated; *leaves* coriaceous or fleshy, flat or semi-terete. *Flowers* in leaf-opposed racemes or panicles. *Sepals* adnate to column, subequal, spreading. *Petals* like sepals; *lip* sessile on the footless column, the base with a large saccate or funnel-shaped spur, sometimes dilated at the apex, its lumen more or less occluded by 2 calli, of which the posterior is frequently 2-lid, and also sometimes by a dorsal scale, but never septate; the lateral lobes small or obsolete; the apical lobe thickened, concave. *Column* short, thick, footless, *Anther* depressed ; pollinia 2, often 2-lid; caudicle single.

Flowers in branched panicles; spur occluded by 2 calli and with a a scale.....*ramosum*.
 Flowers in simple racemes; spur occluded by 2 calli only ...*micranthum*.

2086. CLEISOSTOMA RAMOSUM Hook. f. ; F. B. I. vi. 72.

C. Bengal; Sundribuns.

A small epiphyte, stem 1-3 in.; flowers paniced.

2087. CLEISOSTOMA MICRANTHUM King & Pantl. *Saccolabium micranthum* F. B. I. vi. 59.

Chota Nagpur.

A small epiphyte, stem 8-8 in.; flowers raceined.

916. Saroanthus Lindl.

Epiphytic herbs ; steins usually elongated; *leaves* fleshy, terete or flat. *Flowers* in extra-axillary racemes or panicles. *Sepals* subequal, spreading or reflexed, or the dorsal concave and connivent over the column. *Petals* smaller than the sepals, spreading ; *Up* adnate to the base of the column or to its foot, rarely jointed, the base with a funnel-shaped spur sometimes dilated at its apex, the lumen more or less occluded by calli on its anterior and posterior walls, and always divided into two lateral compartments by a vertical, antero-posterior septum ; lateral lobes small, more or less triangular and acute; apical lobe small, triangular or hastate. *Column* short, stout, often with a foot as long as or longer than itself. *Anther* depressed; pollinia 2, bifid.

Leaves terete *l.*.....*appendiculatits*.

Leaves flat or channelled :—

Leaves few, sparse, narrowly linear-lanceolate, acuminate; racemes slender, peduncled..... *secundits*.

Leaves many, subimbricate, oblong, amplexicaul, obtusely 2-lobed ; spikes short, stout, sessile.....*insectifer*.

2088. SARCANTHUS APPENDICULATUS Hook. f.; F. B. I. vi. 67.

Sundribuns.

A slender, rigid epiphyte.

2089. SARCANTHUS SECUNDUS Griff.; F. B. I. vi. 67.

Chittagong.

An epiphyte.

2090. SARCANTHUS INSECTIFER Reichb. f.; F. B. I. vi. 68.

Behar; Chota Nagpur; Sundribuns; Chittagong.

A scandent epiphyte.

917. *Camarotis* Lindl.

Epiphytic herbs; stems elongated; *leaves* distant, coriaceous, keeled, obliquely 2-fid at the tip. *Flowers* numerous, in lax, extra-axillary racemes. *Sepals* subequal, spreading or reflexed. *Petals* like sepals; *Up* sessile on the column, forming a thick-walled sac, its lumen narrowed by 2 calli, and partially or completely divided by a septum into an upper and lower chamber; *ofide-lobes* small, obscure; apical lobe small, thick, concave, entire, inometimes nearly obsolete. *Column* twisted, footless; *rostellum* /ery long, narrow-subulate, curved, twisted to one side. *Anther* ^dorsal, depressed; *pollinia* 4, in two pairs, attached by their bases to a long, narrow caudicle, tapering to a minute gland.

Flowers purple; lip without bide-lobes; sac with an included spine

rostrata.

Flowers cream-white; lip with large, rounded side-lobes; sac with an exserted spine*pallida*.

2091. CAMAROTIS ROSTRATA Reichb. f. *Mrides rostratum* F. I. iii. 474. *Sarcochilus purpureus* F, B. I. vi. 36.

Chittagong.

An epiphytic herb, stem 2-3 feet long.

2092. CAMAROTIS PALLIDA Lindl. *JErides pallidum* F. I. iii. 475. ***Sarcochilus Boxburghii* F. B. I. vi. 36.**

Tippera; Chittagong.

An epiphytic herb, stem 2-3 feet long.

918. *Vanilla* Swartz.

Climbing, ro'oting, branched shrubs; stems terete or angled; *leaves* subsessile, coriaceous or fleshy, sometimes 0. *Flowers* usually large, on short, axillary peduncles. *Sepals* subequal, spreading. *Petals* like sepals; *lip* with its base adnate to the column, which is embraced by its broad, convolute limb. *Column* long. *Anther* incumbent, its cells separate; *pollinia* granular. *Capside* long, fleshy.

2093. VANILLA PARISHII Reichb. f.; F. B. I. \i. 90.

Chittagong, forest near Burkal.

A climbing, rooting, leafy epiphyte.

919. *Didymoplexis* Gliff.

Terrestrial, leafless, saprophytic herbs, with tuberous roots. *Scape* simple, bearing a scanty raceme of white flowers, the

Pedicels in fruit greatly elongating. *Sepal** connate by their margins with the petals to form a short, 4- or 5-toothed tube, the lower sepal with the petals forming an upper, 3-lobed lip, the lateral sepals a lower, entire, or 2-fid lip; *Up* proper shorter than the Perianth-tube, inserted on the very short foot of the column, broad, its disk dotted with many minute callosities. *Column* nearly straight, narrowly winged in the upper part and 3-toothed at the tip; stigma broad. *Anther* 2-celled, depressed; *Pollinia* 4, unequal, in 2 pairs, powdery. *Capsules* elliptic, tumid, ribbed, with long, accrescent pedicels.

2094- DIDYMOPLEXIS FALLENS Griff.; F. B. I. vi. 122.

N. Bengal; C. Bengal.

A saprophyte, with branching and tuberous roots; in shady thickets.

920. Pogonia Juss.

Terrestrial, uni-foliolate, tuberous herbs; tuber giving off below the surface of the ground two or three stolons, each producing at the apex a tuber smaller than that of the parent; leaf broadly cordate or orbicular, strongly plicate, from the same tuber as the flowers, but usually subsequent to the appearance of the flower-stem, occasionally contemporaneous with flowers. *Flowers* solitary or few, or several racemose, often pendulous, on scapes rising from the tuber. *Sepals* subequal, narrow, connivent or spreading like sepals; *lip* sometimes slightly saccate at the base, connate to the base of the column, rather narrow, the lower portion convex round the column; the lateral lobes small, usually triangular; the apical lobe flat, ovate or orbicular, entire or nate. *Column* elongate, clavate upwards, the stigma antical, oblong or orbicular. *Anther* more or less incumbent, substipitate, *Pollinia* 2 or 4, elongate, powdery, often coherent, without caudicle or gland.

"Scapes very few-(1-3-)flowered:—[p. 1026]

^LP without side-lobes, slightly emanate at the apex; sepals and petals narrowly oblanceolate; flowers 1-3.....

^LP 3-lobed, the side-lobes falcate:—
Terminal lobe of lip acuminate; sepals and petals " " " ^ ^ ^
oblanceolate: flowers 2.....

Terminal lobe of lip obovate-obtuse; sepals and petals to
flower solitary.....

•Scapes many-flowered (ending in a 7-15-flowered raceme); hp^{3,10}b^el
the side-lobes obtuse :—[p. 1025]

Leaf 7-9-nerved, the margin not waved ; mid-lobe of lip ovate-acute,
crenate, white with red or purple veins. *C(n)ina a.*

Leaves 18- or more-nerved, the margin waved :—

Mid-lobe of lip ovate-acute, crenate, pure white. *flabelliform**.

Mid-lobe of lip suborbicular, yellowish with purple veins. . . . *Scottn.*

2095. POGONIA PLICATA Lindl.; F. R. I. vi. 119. *Epipactis*
plicata F. I. iii. 454.

C. Bengal, in thickets.

A small terrestrial herb, flowering stem 4-6 in.

2096. POGONIA JULIANA Wall.; F. B. I. vi. 119. *Epipactis*
Juliana F. I. iii. 453.

N. Bengal; E. Bengal.

A small terrestrial herb, flowering stem 3-5 in.

2097. POGONIA FALCATA King & Pantl.

N. Bengal, Duars.

A small terrestrial herb, flowering stem 1*5-2'5 in.

2098. POGONIA CARINATA Lindl.; F. B. I. vi. 121. *Epipactis*
carinata F. I. iii. 452.

N. Bengal; C. Bengal; E. Bengal; Chota Nagpur.

A terrestrial herb, flowering stem 6-12 in. high.

2099. POGONIA FLABELLIFORMIS Lindl.; F. B. I. vi. 121.

Behar, Eajmahal hills ; Chota Nagpur.

A terrestrial herb, flowering stem 6-12 in. high.

2100. POGONIA SCOTTII Reichb* f.; F. B. I. vi. 120.

Chittagong.

A terrestrial herb, flowering stem 18 in. high.

921. *Tropidia* Lindl.

Terrestrial herbs with erect, often branching stems; *leaves* with sheathing petioles, glabrous, membranous, plicate, usually many-nerved. *Flowers* small, resupinate, in terminal or leaf-opposed bracteate spikes. *Sepals* connivent, the lateral pair more or less connate, the odd sepal free. *Petals* like sepals but usually smaller; *Up* superior, adnate to the column, cymbiform or produced into a cylindrical, blunt spur, oblong; side-lobes obsolete; apical lobe reflexed, the disk with short or long intramarginal ridges or lamellae. *Column* short or long; the rostellum very long, erect, often 2-fid; stigma single, anticous. *Anther* erect, dorsal, acute

(Goodyera.)

ORCHIDACEÆ

or acuminate, the cells contiguous; pollinia 2, granular or sectile, ^roAv-clavate or cylindric, grooved or 2-fid, adnate by a single, **& slender caudicle to a narrow gland. *Capsule* cylindric-
cWate.

²¹01. TROPIDIA CURCULIGOIDES Lindl.; F. B. I. vi. 93.

Chittagong.

A terrestrial herb, stem 1-2 feet high.

922. Corymbis Thouars.

Terrestrial, rigid, erect herbs, with tall, leafy stems and fibrous [°°ts; *leaves* broad, sheathing, plicate. *Sepals* narrow. *Petals* *** sepals, and at first connate with them in a tube, with the tips of all five alone free, ultimately all quite free and spreading; *hp* Mallei to column and adnate to its base, narrowly linear, chan-
nele<*; side-lobes obsolete, apex abruptly dilated and decurved.
Cotomn long, but not equalling the perianth, straight, terete, with
a clavate, 2-auriculate tip and a 2-fid rostellum; stigma single,
arcticous, 2-lobed. *Anther* dorsal, vertical, 2-celled, with an
**minate lip; pollinia long, narrow, deeply grooved, tapering
fightly to the thin caudicle; gland peltate. *Capsule* linear or
fusiform.

²¹02. CORYMBIS VERATRIFOLIA Bl.; F. B. I. vi. 91.

Chittagong.

A rigid terrestrial herb, stem 4 feet high.

923. Goodyera R. Br.

Terrestrial, leafy herbs, stem decumbent below; *leaves* usually
***<* thick, with wide sheaths, and often also distinct petioles.
*toners small, numerous, in terminal, sometimes secund, aptfes
or /acemes. *Sepals* subequal, often pubescent outside; lateral
p a » ^ee, subconnivent or spreading; dorsal concave. *Petals* UKe
doirs al sepal, and forming with it a hood over the column; *Up*
adn*** to base of column, entire, saccate or cymbiform at the
base J apical lobe small, usually acute or decurved; basal sac with
set» calli or ridges inside, rarely smooth. ^TM f* ^J
pro/coungrostellum; stigma anticous, undivided. f ^ TM f *
pyriform, with a long, erect beak; pollinia 2, clavate, sessile on a
lar &e or smaU gland.

²¹03. GOODYERA PROCERA Hook.; F. B. I. vi. 111.

Chittagong, at Demagri; Chota Nagpur.

A tall herb, 10-30 in. high, very leafy below.

92*. *Spiranthes* Rich.

Terrestrial, leafy herbs, with tuberous or fibrous roots; *leaves* linear. *Flower** small, secund, in spiral spikes. *Sepals* subequal, the lateral pair gibbous at the base. *Petals* like dorsal sepal, sometimes connate with sepals to form an erect hood; *Upper* ^{er} ^{ec} ^d, entire or 3-lobed, the base concave but neither saccate nor spurred, the disk bearing lamellae or calli. *Column* short, terete; *stigma** ^l ^d single, broad, anticous; rostellum erect obtuse, or elongate and 2-fid. *Anther* erect, 2-celled; pollinia 4, united in pairs, sessile on a small gland.

2104. SPIRANTHES AUSTRALIS Lindl.; F. B. I. vi. 102.

N. Bengal, Duars, in grassy savannahs; Chittagong, ^h.
A slender or stoutish terrestrial herb, 6-18 in. nig.
This species has been found near Chittagong, floating in ponds at sea-level.

925. *Yrydagzynea* 61.

Terrestrial, leafy herbs, stem creeping below, roots fibrous. *leaves* petioled, ovate. *Flowers* small, suberect, spicate. *Sepals* free, dorsal rather smaller than lateral. *Petals* like dorsal sepal, and with it forming a hood over the column; *lip* included, sessile at the base of the column, membranous, concave, entire; *spur* ^r ² large, inflated, exerted beyond the base of the sepals, with stipitate calli in its lumen. *Column* short, inappendiculate, *stigmatic** lobes lateral; rostellum short. *Anther* short; cells distant; pollinia 2, sessile on a large gland.

2105. VRYDAGZYNEA VIRIDIFLORA Hook, f.; F. B. I. vi. 96.

E. Bengal.
A leafy, terrestrial herb.

926. *Zeuxine* Lindl.

Terrestrial herbs, with succulent, glabrous stems; *leaves* membranous, sometimes withering at flowering-time. *Flowers* small* in racemes or spikes. *Sepals* subequal, the lateral pair free, the dorsal concave. *Petals* like dorsal sepal, and with it forming a hood to the column; *lip* adnate to base of column, cymbiform or saccate, the apical lobe shortly clawed or sessile, divided into two oblong, subquadrate, more or less truncate, diverging lobules, or entire, or with narrow, decurved lobules; the basal sac with calli or lamina within. *Column* very short, its anterior face with

lamellar or conical processes; stigmas two, lateral, distinct.
Anther membranous, sometimes ridged, its cells contiguous;
pollinia pyriform, attached by an oblong gland to the erect
rostellum

Leaves linear, sessile; apical lobe of lip suborbicular, erose; lip not
longer than sepals; pollinia sessile on an oblong gland..... *sulcata*.
Leaves ovate, petioled; apical lobe of lip winged; lip longer than
sepals

Lip twice as long as sepals, wings of terminal lobe elongated, toothed;
Pollinia adnate for two-thirds of their length to the linear appendage
of the gland..... *longilabris*.

Lip a little longer than the sepals, wings of terminal lobe entire :—
Petals subrotund, dimidiate, abruptly apiculate on one side; pollinia
obovoid, bifid, attached to a broad, oblong caudicle..... *nercosa*.
Petals subobliquely elliptic, acute; pollinia clavate, subsessile on the
narrowly elliptic gland..... *agnis-*

2106. ZEUXINE SULCATA Lindl.; F. B. I. vi. 106; E. D. Z. 188.
Pterygodium sulcatum F. I. iii. 452.

In all the provinces, in open, grassy places.
An erect, terrestrial, grassy herb, 2-16 in. long, varying
with the length of the grasses among which it grows.
Bvng. Swet-huli.

2107. ZEUXINE LONGILABRIS Benth.; F. B. I. vi. 107.
C. Bengal; E. Bengal; Chittagong.

2108. ZEUXINE NERVOSA Benth.; F. B. I. vi. 108.
N. Bengal, Duars; E. Bengal, Mymensingh; Tippera.

2109. ZEUXINE AFFINIS Benth.; F. B. I. vi. 108.
N. Bengal, in *Sal* forests.
An erect, terrestrial herb, stem slender, 6-12 in. long.

927. Habenaria Willd.

Terrestrial, leafy herbs, with undivided or lobed tubers, or fleshy
root fibrous; *leaves* flat, with sheathing bases. *Flowers* small or
larger in racemes or spikes. *Sepals* subequal, the lateral pair
Reading, reflexed or deflexed, or sometimes erect. *Petals* smaller
larger than the sepals, entire or 2-cleft, often connivent with
the dorsal sepal to form a hood over the column; *Up* adnate to

base of column, entire, 3-lobed or 3-partite, its base spurred, *Column* short, usually broad; stigmas 2, distant, or conjoined across the face. *Anther-cells* adnate to the front of the column, discrete, rarely touching, parallel or divergent below, their bases often prolonged into tubes containing the caudicles; staminodes rugulose, one on the outer side of each anther-cell; pollinia A clavate or pyriform, usually grooved, sometimes 2-partite, caudicles long or short or obsolete; glands exposed, flat and discoid or elliptic and globular, or elongate with truncate ends.

•Flowers green, white or yellow, small or large, in the axils of bracts in terminal racemes; lip 3-partite or 3-lobed :—[p. 1032]

Petals 2-partite; lip 3-partite, with filiform segments; lateral sepals spreading or deflexed; spur as long as the ovary; racemes many-flowered ; stem leafy upwards ; flowers greenish :—

Sepals with filiform tips nearly or quite as long as their blades; bracts membranous, not longer than the ovary; spur filiform

stenopetaUi-

Sepals acute but not filiform at their tips; bracts subfoliaceous, as long as the flowers or longer ; spur subclavate.....*dijito. ta.*

Petals entire:—

fSide-lobes of lip petaloid, much wider than the narrow, linear mid-lobe ; racemes lax, few-flowered ; flowers white:—[p. 1031]

Lip not longer than the sepals; side-lobes truncate, the outer margin pectinate to the middle ; spur twice as long as the ovary ; petals small; stem tall, leafy upwards; leaves ovate-oblong; flowers large.....*Sit*ann(t'*

Lip much exceeding the sepal? ; stem short :—

Stem leafy upwards; side-lobes of lip longer than the mid-lobe :—

Spur thickened at the tip, not longer than the ovary; petals shorter than the dorsal sepal; side-lobes of lip semi-oblong» outer margin crenate; leaves short, sheathing, oblong; flowers large.....*triflora.*

Spur slender, twice as long as the ovary; petals as long as the dorsal sepal; side-lobes of lip semicircular, entire; leaves long, linear; flowers medium.....*lon(jifol^{na},*

Stem scapigerous; scape slender; flowers medium; leaves radical; side-lobes of lip not or hardly exceeding the mid-lobe :—

Spur thickened below the middle, several times as long as the ovary ; sepals broad, obtuse; petals oblong-lanceolate; acuminate.....*longicalcarata.*

Spur slender, as long as the ovary; sepals small; petals linear-lanceolate.....*plantaginea.*

Side-lobes of lip never wider than the mid-lobe; racemes many-flowered, usually dense :—f p. 1030]

Spur filiform, fusiform or long clavate, as long or, rarely. (*H.* <*ffinu only), at least half as long as the ovary and then filiform; lateral sepals spreading deflexed or reflexed, larger than the petals :—

^Tubes of the anther-cells very long; flowers white; lateral sepals very gibbous; spur equalling or exceeding the ovary; stem leafy upwards; segments of lip very long, subequal, filiform.....*commelini/olia.*

Tubes of the anther-cells very short; flowers usually green or greenish-yellow :—

Leaves 4 or more than 4, clustered towards the middle or at the base of the stem :—

Bracts as long as or longer than the ovary; lateral segments of lip narrower than the central linear lobe :—

Spur longer than the ovary, very slender, involute; lateral segments of lip filiform, longer than mid-lobe
furcifera.

Spur not longer than the ovary; lateral segments of lip slender but not filiform, not longer than mid-lobe :—

Spur slender, incurved, only half as long as the ovary; leaves green throughout, placed near the middle of the stem.....^{"ffl" ">*}

Spur stout, fusiform, nearly or quite as long as the ovary; leaves with narrow yellowish margins, placed near the base of the stem.....*marginata.*

Bracts much shorter than the ovary; segments of lip subequal, linear; spur as long as the ovary, thickened below; leaves green throughout, placed near the base of the stem
viridijtora.

Leaves 2, rarely 3, radical, closely adpressed to the ground, orbicular-cordate; bracts shorter than the ovary; spur as long as the ovary, inflated, acute; segments of lip all filiform, the lateral longer than central.....*Uphjlla.*

^Spur small, globose, ellipsoid, or shortly clavate, not one-fourthth the length of the ovary; lateral sepals narrower than the petals, erect or ascending parallel to the dorsal sepal and petals, and with these forming a hood to the column; leaves clustered about toe middle of the stem; bracts as long as or longer than the ovary;_

Spikes elongated, dense, many-flowered; stems stout; lip 3-fid,

without a claw; side-lobes slender, rather narrower than the mid-lobe; flowers greenish-yellow :—

Lip not longer than the obtuse lateral sepals; bracts ^r _n never quite as long as the flowers, which do not exceed -3 m. * diameter.....*goodyerioule**.

Lip somewhat exceeding the linear-lanceolate, lateral sepals ^t bracts as long as or longer than the flowers, which are no less than -6 in. across.....*constricta*.

Spikes lax-flowered; flowers usually many, sometimes ⁱ _n small, yellow; stems slender; lip with a concave claw and ^{ft} _d broadly, obtusely, equally 3-fid lamina.....*Lawii*.

•Flowers pale-purple, large, in the axils of sheathing leaves ; lip ^{en} _{rfl} broad, petaloid; spur conical, funnel-shaped; lateral sepals ascending [p. 1030].....*Galeandra*.

2110. HABENARIA STENOPETALA Lindl.; F. B. I. vi. 134.

Orissa; Chota Nagpur; E. Bengal, Mymensingh.

A stoutish herb, 1-2 feet high.

2111. HABENARIA DIGITATA Lindl.; F. B. I. vi. 134.

E. Bengal; Chota Nagpur.

A leafy herb, 1-2 feet high.

2112. HABENARIA SUSANNA R. Br.; F. B. I. vi. 137.

Chota Nagpur.

A tall, leafy herb, 3-5 feet high; flowers 3-4 in. across.

2113. HABENARIA TRIFLORA Don ; F. B. I. vi. 142.

Chota Nagpur, Singhbhum, on banks of muddy streams; E. Bengal, Mymensingh.

A leafy herb, with rather slender stems, 8-12 in. high ; flowers 1*5-2 in. across.

2114. HABENARIA LONGIFOLIA Ham.; F. B. I. vi. 141.

N. Bengal, Nathpur in Purnea.

A slender herb, 10-18 in. high.

2115. HABENARIA LONGICALCARATA A. Rich.; F. B. I. vi. 141.

Chota Nagpur, Sirguja.

A subscapigerous herb, 10-18 in. high.

2116. HABENARIA PLANTAGINEA Lindl.; F. B. I. vi. 141. *Orchis platyphyllos* F. I. iii. 450.

Behar; Chota Nagpur; C. Bengal, rare.

A slender herb, 8-12 in. high.

2117. HABENARIA COMMELINIFOLIA Wall.; F. B. I. vi. 143. *Orchis commeUnifolia* F. I. iii. 451.

- Chota Nagpur.
A strong herb, 2-3 feet high.
2118. HABENARIA FURCIFERA Lindl.; F. B. I. vi. 149.
Orissa; Chota Nagpur; E. Bengal.
A stoutish herb, 1-1* feet high.
2119. HABENARIA AFFINIS Wight; F. B. I. vi. 149.
Chota Nagpur.
A stoutish herb, 1-2 feet high.
2120. HABENARIA MARGINATA Colebr.; F. B. I. vi. 150.
Chota Nagpur; Behar; W. Bengal; C. Bengal.
A small herb, scape 4-10 in. high.
2121. HABENARIA VIRIDIFLORA B. Br.; F. B. I. vi. 150.
E. Bengal.
A slender herb, scape 4-14 in. high.
2122. HABENARIA DIPHYLLA Dalz.; F. B. I. vi. 151.
E. Bengal, Dacca; Chota Nagpur.
A very slender herb, seape 4-10 in.; leaves close to ground.
2123. HABENARIA GOODYERIOIDES Don; F. B. I. vi. 161.
Chota Nagpur; Chittagong.
A stout herb, 1-2 feet high.
2124. HABENARIA CONSTRICTA Hook. f.; F. B. I. vi. 161.
Chittagong; Chota Nagpur.
A stout herb, 2-3 feet high.
2125. HABENARIA LAWII Hook. i.; F. B. I. vi. 162.
Chota Nagpur, Parasnath.
A short, slender herb, 6-10 in. high.
2126. HABENARIA GALEANDRA Benth.; F. B. I. vi. 163.
Chota Nagpur.
A short, slender, leafy herb, 6-8 in. high; flowers pale-purple.

928. Apostasia Bl.

Terrestrial herbs, with short rootstock and rigid, leafy stems;
leaves narrow, nerves strong. Flowers small, terminal.
W, simple or lobed, often decurved spikes. Perianth
Serrate, of 6 equal, free, spreading or recurved segments.
Lamens 2 2 perianth lobes; alepigynous, the posterior
staminal or obsolete filaments very short; anthers narrow
«***, 2-celled; cells parallel. Carpel* 3, connate in a completely

3-celled ovary; style short; stigma terminal, discoid. linear, 3-locular capsule. *Seeds* large.

2127. APOSTASIA NUDA K. Br.; F. B. I. vi. 175.

Chittagong.

A rigid, leafy herb, 10-ir. liigh; panicles decun

Order CXXYIII. SCITAMINE^E.

Herbs, often large, frequently with a pseudostem of convo^{lute} leaf-sheaths, rarely with a woody caudex. *Leaves* radica^l cauline, usually membranous; sheaths generally large, ^{spin} the stem; petiole short or 0; lamina with strong central^v secondary nerves pinnate, close, parallel. *Flowers* hermap^{br} rarely 1-sexual, irregular, solitary or spicate; bracts mem^{erianth} or herbaceous; bracteoles membranous, sometimes 0. ^{etaloi} 2-seriate, superior; outer segments 3, calycine, rarely ^{thaceous} free and imbricate or connate in an entire, toothed or spa^{corolla-} tube; inner segments petaloid, connate in a long or shora^{artite,} tube, free or adnate to the petaloid staminodes; limb ^{fect} the segments free or connate. *Stamens* only 1 P^{er} remainder replaced by petaloid staminodes, or 5 perfect, wi^f sixth imperfect or obsolete; anthers linear, 2-celled, rarely ^{te in a} cell on the margin of a petaloid connective. *Carpels* connat^{ually} 3-celled, rarely 2-celled or 1-celled, inferior ovary; style us^{ually} slender, with 2 short stylodes crowning the ovary; stigma us^{axial,} entire or subentire; ovules many, rarely few, anatropous, ^{his-} rarely parietal. *Fruit* a loculicidally 3-valved capsule, or i^{nc*} cent and membranous or fleshy, usually crowned by the ^{renl} of the perianth. *Seeds* often arillate; albumen floury; em^J small.

* Stamen only one perfect, others reduced to staminodes or 0:—^{1036]} t Anther 2-celled; calyx tubular or spathaceous; style slender, exn^{ed} below the stigma by the anther; placentas many-ovuled; ^{emwv} central, straight:—[p. 1035]

Ovary 1-celled; placentas 3, parietal; corolla-tube long; ^{stigma} turbinate:—

Scape leafless; flowers lilac **Mantisia.**

Stem leafy; flowers yellow **Globba.**

Ovary 3-celled; placentas axial:—

Lueial staminodeb bioad:—

Connective not spuned at the base; coiolla-tube long, slendei —

filament shoit.—

Connective bioad, ciested ; stigma tuibinate...**Kampftria.**

Connective not ciested; stigma subglobose ...**Gastrochilus.**

Filament long, nanow; connective veiy nanow, not ciebtel; stigma subglobose.....**Hedychium.**

Connecti>e spuned at the base; coiolla-tube funnel-bhaped, stigma 2-hpped, the lips cihate, biacts forming a cone-like spike.....**Curcuma.**

Ldtei.il stammodes small 01 0, laiely nanow and adnate to the ¹¹P , coiolla tube cylindnc .—

Floweis in a dense, cone-like spike .—

Anthei-cells divaucate, on a shoit, aicuate filament, with or without a petaloid ciest; stigma small subglobobe, 01 laiger *nd gibbous on the back, spikes almost always pioduced dnect from the lootstock, iniely from the top of a leafy spike

Amomum.

Anthei cells contiguous, paiallel —

Filament shoit; connective pioduced ab a nanow appen- dage as long as anthei; stigma small, subglobose; spikes usually pioduced dnect from the rootbtook, sometimes at the top of a leafy stem..... **Zingjoer.**

Filament foiming with the pioduced connective an oblong, petaloid piocess, with the contiguoub hneai anthei-cels placed in its middle; btigma mth a sennlunai pit ciliate lound the maigm ; spikeb usually at the top of leafy btems, laiely pioduced dnect from the lootstock. . . . **Costus.**

l'loweib m lacemes or panicles at the top of leafy btems, nkniert long, anthei-cells diveigent at apex; stigma sub globose. ^{A 1 * i m a}

f Anthei 1-celled, hiteially adnate to a petaloid filament, calyx of fieo ^pal_b -Lp· 10 a 4]

»t*nunal tube *ith 5 subbimihu, bhghtly unequal petaloid segmentb' ^{the} 1 celled anthei adnate to one of the small* segmeutb! o^aiy ^{3 c} * d , placentas man)-ovuled; style flattened ; btigma teijnmuU,

U t e; embiyo stiaight "'''''' . V^KI ^-minal tube ve_{ly} megular, 5-6-lobed, 1 or 2 lobes lateia and ¹ (HP) anteiioi, with 6 oi 2 lobes dorsal, of which 2 oi 1 aie hood like ^ another beais the anthei-cell; placentas 1-ovuled; btigma Clique, dilated oi 2-labiate; embi}0 cuived:—

Ovary apparently 1-celled and 1-ovuled, with 2 small, rudimentary empty cells; stem leafy, with a terminal, few-flowered inflorescence and convolute sheathing bracts.....Maranta.

Ovary 3-celled, 3-ovuled :—

Stems leafy, with terminal, panicle, scattered flowers ; panicle with convolute, deciduous sheathing bracts at the forks and deciduous bracteoles.....Clinogyn^{ch}

Stems with brocid, solitary leaves, and lateral, clustered heads of flowers; bracts and bracteoles persistent.....Phrynium.

•Stamens 5 perfect, free, the sixth imperfect or absent; stigma more or less distinctly G-lobed:—[p. 1034]

Sepals free ; petals long, narrow, free; capsule loculicidally 3-valved I leaves distichous. RaYenala*

Sepals united in a split, spathaceous tube; 'corolla' short, included, enveloping the stamens and style; fruit fleshy, indehiscent; leaves spiral. Musa.

929. Mantisia Sims.

Leafy herbs; rootstock creeping; stem short; *leaves* oblong-lanceolate, caudate. *Flowers* laxly panicle on a short scape, sheathed below; bracts membranous, coloured. *Sepals* connate in a short, campanulate, obtusely 3-lobed calyx. *Petals* 3, connate in a corolla with slender tube; lobes subequal, ovate; dorsal erect, concave. *Stamen* 1 perfect; filament long, curved; anther-cells linear-oblong, broadly winged; lateral staminodes at or below the middle of the exerted filament, slender, spathulate or subulate ; lip deflexed, 2-fid. *Carpels* 3, connate in a 1-celled ovary; style filiform, lying in a groove on the filament; stigma turbinate; placentas parietal; ovules numerous. *Fruit* a globose capsule, dehiscing at the apex. *Seeds* many, minute, oblong.

Staminodes linear, subulate. *saltator'ut-*
Staminodes with a narrow claw and flattened, petaloid blade...*spathulata*.

2128. MANTISIA SALTATORIA Sims; F. B. I. vi. 200. *Globba subulata* F. I. i. 81.

Chittagong.

A herb with perennial rootstock and annual leafy stems 1-2 feet high ; panicle 3-6 in.

2129. MANTISIA SPATHULATA Schult.; F. B. I. vi. 201. *Globba spathulata* F. I. i. 83.

Chittagong.

A herb very like the preceding, but panicles larger and more branched.

930. Globba Linn,

Herbs with creeping rhizomes and erect stems; *leaves* oblong or oblong-lanceolate. *Flowers* in terminal panicles, rarely in ^{or} *bracts* usually deciduous; buds often replaced by bulbils. *Bracts* connate in a funnel-shaped, 3-lobed calyx. *Petals* 3, connate in a corolla with tube longer than the calyx; lobes ovate, ^{or} *lobes* equal. *Stamen* 1 perfect; filament long, incurved, with 2 ^{or} *anthers* appendages; anther oblong; connective simple, winged or spurred, produced beyond the cells; lateral staminodes petaloid, contiguous to the corolla-segments; lip deflexed. *Carbels* 3, connate in a 3-celled ovary; ovules many, on 3 parietal placentas; *Style* filiform, lying in a groove of the filament; stigma turbinate. *Fruit* a globose capsule, tardily dehiscent. *Seeds* many, small, ^{or} *old* with a small, white, lacerate arillus.

Anther not winged:-

- Leaves glabrous beneath.....*orixensis*.
- Leaves finely pubescent beneath.....*ophioglossa*.
- Anther** winged on each side by a bifid, quadrate membrane....*bulbifera*.

2130. GLOBBA ORIXENSIS Eoxb.; F. I. i. 78; F. B. I. vi. 201.

Chota Nagpur ; Behar; E. Bengal, Mymensingh.

A herb with perennial rootstock and annual leafy stems, 1-2 feet high.

2131. GLOBBA OPHIOGLOSSA Wight; F. B. I. vi. 202.

Chota Nagpur.

A herb with leafy stems > 2, 3 feet high.

² ^{is} 32. GLOBBA BULBIFERA Eoxb.; F. I. i. 78 ; F. B. I. vi. 206.

Chota Nagpur.

A herb with leafy stems, 1 foot high; lower bracts bulbiferous.

931. Kaempferia Linn.

Herbs with short stems or stemless; rootstock often tuberous; *leaves* few. *Flowers* spiked, on radical scapes or at the apex of th *leafy* stem. *Sepals* 3, connate in a short, cylindrical calyx, ^{wh} *which* splits spathaceously. *Petals* 3, connate in a corolla with a ^{lon} *slender* tube; lobes equal, usually spreading. *Stamen* 1

perfect; filament short, arcuate; anthers 2-celled; cells discrete; on a wide connective, produced above as a petaloid crest, not spurred below; lateral staminodes broad, petaloid; lip broad, usually 2-fid. *Carpels* 3, connate in a 3-celled ovary; ovules many, on 3 axial placentas; style long, *filiform*; stigma turbinate. *Fruit* an oblong capsule with thin pericarp. *Seeds* subglobose, with a small, lacerate arillus.

Leaves contemporary with the flowers, sessile :—

Leaves suborbicular; corolla segments lanceolate; staminodes obovate-cuneate; lip white with lilac throat.....*QaUmra*.

Leaves lanceolate; corolla segments long, linear; staminodes oblong; lip lilac.....*anjmtifolia*.

Leaves petioled, not produced till flowering is over, oblong; corolla segments long, linear; staminodes oblong, acute; lip lilac or reddish *rotunda*.

2133. *KJEMPFERIA GALANGA* Linn.; F. I. i. 15; P. B. I. vi. 219; E. D. K. 3.

In gardens in most of the provinces.

A stemless herb, leaves 3-6 in. long, spreading flat on the ground. *Hind.* Chandra mûla; *Beng.* Chandu mûla, humiila.

2134. *KKMPFERIA ANGUSTIFOLIA* Roscoe; F. I. i. 17; F. B. I. vi. 219; E. D. K. 1.

N. Bengal.

A stemless herb, leaves many, ascending, 6-8 in. long, an inch or less wide. *Vernae.* Kanjan-bura, mudu-nirbisha.

2135. *IOEMPFERIA ROTUNDA* Linn.; F. I. i. 16; F. B. I. vi. 222; E. D. K. 8.

Chota Nagpur, Parasnath; Chittagong: elsewhere cultivated.

A stemless herb, leaves erect, with short, channelled petioles. *Bhu.* *V* *n.* long, 3-4 in. wide. *Vernac.*

932. *Gastrochilua* Wall.

Perennial herbs; rootstock weeping or 0-...
or *F* slender; stem long or short *J* * fibres cylindrical

Se. *U* 3, connate » a short, apathaceo *Ti* *U* imbricate.
Petals 3, con-

^{na*}e in a slender corolla-tube; lobes equal, connivent, lincar-
^{obl}ong, ascending. *Stamen* 1 perfect; filament very short;
Kanther-cells **parallel**; connective neither crested **nor spurred**;
Klateral staminodes **petaloid, broader than the corolla-lobes**, oblan-
^{N°}ceolate-oblong; lip oblong, longer than the corolla-lobes, entire.
^C«*rpeh* 3, connate in an oblong, 3-celled ovary; ovules few or
^{ma}ny, superposed on axial placentas; style filiform; stigma sub-
globose. *Fruit* an oblong capsule. *Seeds* ovoid, with a small
basal arillus.

2136. GASTROCHILUS LONGIFLORA Wall.; F. B. I. vi. 217.

Chota Nagpur.

A stemless herb, with perennial rootstock; leaves
tufted, 3-4 together; petiole long, erect, channelled.

933. Hedychium Koenig.

I Herbs with perennial, horizontal, tuberous rootstocks; root-
fibres hardly thickened; stem elongated, leafy; *leaves* distichous,
oblong or lanceolate. *Flowers* usually in terminal spikes; bracts
, oblong, subcoriaceous, 1- or more-flowered. *Sepals* 3, connate m
[^]tubular, 3-dentate calyx. *Petals* 3, connate in a corolla with
long, slender tube; lobes equal, linear, spreading. Perfect **tamen*
1 •; filament long, slender; anther-cells contiguous; connective
not produced; lateral staminodes linear or oblong-cuneate; hp
1 We, 2-fid. *Carpels* 3, connate in a 3-celled ovary; ovules many,
1 superposed on axial placentas; style long, filiform; stigma sub-
1 obose. *Fruit* a globose, 3-valved capsule. *Seeds* many, small,
Iith a lacerate arillus.

Flowers white or nearly so:—

Lip broad, shallowly 2-fid, distinctly clawed; stamen as long as
rather longer than the lip; flowers white or yellowish. . . . *coronarwm.*

Lip narrow, 2-partite, segments narrow; stamen longer than the
lip:—

Flower greenish-white; filament bright red; stamen half as long
again as the lip. . . . [^]

Flowe* **pure white**: filament whitish; stamen twice as long as the
lip. . . . *thyrsiforme.*

1°wer brick^ed^iip'ovbicuiar^eepiyl-nd; stamen twice as long as
the lip. . . . *coccinemn* var. *anguslijolia.*

2137. HEDYCHIUM CORONAIUM Koenig; F. I. ** 10 * F1 B. I.
vi. 225.

(hota Nagpur; Behar; N. Bengal; Chittagong-^{^^}
A tall her)., leafy stem 4-6 feet high. *Bcng.* <*^o
natha, **dulala-ohampa**.

²188. HEDYCHIUM OHACILK Eoxb.; F. I. i. 14; F. B. I. vi. 230.
Chittagong.

A tall herb, leafy stems 2-3 feet high.

2139. HEDYCHIUM THYRSIFORME Ham.; F. B. I. vi. 230.
Chittagong.

A tall, leafy herb; leaves 3-4 in. wide.

2140. HEDYCHIUM cornxKUM Ham. var. ANGUSTIFOLIA Bak. \
F. B. I. vi. 231. *H. angustifolium* F. I. i. 13.

Chittagong.

A tall, leafy herb; leaves 1*5-2 in. wide. *Bcng.* Bhui-
ada.

934. Curcuma Linn.

Stemless herbs with tuberous rootstocks, bearing sessile and
long-stipitate tubers; *leaves* usually oblong, often very large.
Flowers in dense, compound spikes, vernal or estival and pre-
ceding, or autumnal and contemporaneous with, the leaves,
crowned by a coma of enlarged, coloured bracts; lower bracts
which open in succession, enclosing several bracteolate fugitive flowers
minutely toothed calyx
funnel-shaped tube; lobes
longer and somewhat
short; anthers uncrested
base; lateral stamens
ment; lip orbicular, with a
3-celled ovary; stigma
globose, membranous, 3-valved
usually arillate.

•Flowering spike lateral, apart from the leafy spike:—[p. 1041]

Rootstock small, emitting only
oblong, pendulous tubers; sheaths of the
flowers longer than the bracts, appearing
only shortly before the green leaves.

Rootstock large, with sessile palmate
well as fleshy fibres,

that may or may not terminate in oblong, pendulous tubers;; flowers appearing in the hot weather, usually distinctly antenoi

leaf :

LetveT uniformly green in all their parts ; flowers not longer than the bracts:— *

Spikes short, few-flowered, with barren pink apical as the green, fertile base ; leaves glabrous beneath; tow long as the bracts ; tubers pale-straw coloured or whitejns.

Spikes long, many-flowered, with barren apical shorter than the green (faintly pink fertile base; leaves silky beneath; flowers shorter than tubers yellow inside.

Leaves or their sheaths more or less tinged or clouded with or red, glabrous beneath ; apical purple barren fertile base, the bracts of which are pinkish towards their margins *

Leaves' with a large, persistent, purple cloud the blade ; flowers not longer than the bracts, the sheaths of pseudostem and the leaf-stalks green :—

Tubers yellow within

Al Tubers bluish-grey within

Leaf-sheaths and sheaths of the pseudostem red

A flowers longer than the bracts:—

Leaves with a faint rusty tinge down the centre of surface, that passes off as the blade matures green; barren apical coma bright-red; fertile bracts with rusty-red ; tubers pale, yellow.

Leaves with dark-red midrib beneath, blade dark-green; barren apical coma pale-pink; uniform pale-green; tubers pearly white

•Flowering spike central, rising in the late rains in the middle of a pie viously formed tuft of leaves:— [p. 1040]

Barren apical coma small, faintly pink; fertile bracts pale-gieen , rootstoeck large, ovoid ; sessile tubers thick, cyhndnc :

Tubers deep orange-yellow within

Tubers pale-yellow within

Barren apical coma reddish; fertile bracts green, tingea rootstock small, oblong, with many subglobose tubers .at fibres; sessile tubers 0

W. Behar, Soane Valley ; Tirlmt.

A smaU herb ; spikes 6-12 in.; leave sparrow, 1-W^{feet} long. *Hind.* Tikhur.

2142. *CURCUMA LEUCORRHIZA* Roxb. ; F. I. i. 30 • F. B. I. vi. 212; E. D. 0.2431.

Behar.

A large herb; spikes 1 foot; leaves broad, 3-4 feet long. *Beng.* Tikhur.

2143. *CURCUMA AROMATICA* Salisb.; F. B. I. vi. 210; E. D. 0.2407. *C. Zedoaria* F. I. i. 23.

Cultivated and as if wild in most of the provinces.

A large herb; spikes 1 foot; leaves broad, large. *I Vernac.* Jangli-haldi, ban haldi. Wild Turmeric.

2144. *CUECUMA ZKDOARIA* Roscoe; F. B. L vi. 210; E. IX C 2499. *C. Zerumbet* F. I. i. 20.

Chittagong, wild ; elsewhere generally cultivated.

A large herb; spikes 1 foot; leaves large, broad. *Vernac.* Kachura.

2145. *CURCUMA CAESIA* Roxb.; F. I. i. 26 ; F. B. I, vi. 212 ; E. IX C. 2422.

W. Bengal; Behar ; Chota Nagpur.

A large herb; spikes 1 foot; leaves large, 3 feet long. *Bern/.* Nilkantha, kala haldi.

2146. *CURCUMA FERRUGINKA* Roxb.; F. I. i. 27 ; F. B. I. vi. 211 C. Bengal; Behar.

A large herb ; spike 8-10 in.; leaves large, 4-5 feet long.

2147. *CURCUMA RUBESCENS* Roxb.; F. I. i. 28; F. B. I. vi. 213. E. D. c. 2497.

C. W. and E. Bengal; Chota Nagpur.

A large herb; spike 5-6 in.; leaves large, 4-5 feet long).

2148. *CURCUMA LONGA* Linn.; F. I. i. 32; F. B. I. vi. 214; E. D C. 2433,

In all the provinces, cultivated; perhaps wild in Chott Nagpur.

A large herb; leaves 2-3 feet long. *Vernac* Haldi' Turmeric.

2149. *CURCUMA AMADA* Roxb.; F. I. i. 33. p B. j. vi. 21a; E. D. c. 2381.

In the western provinces, wild; cultivated in these and all the other provinces.

A large herb ; leaves 2-3 feet long. *Hind.* Am-haldi;
Beng. Am-ada. Amada or Mango Ginger.

2150. CURCUMA RECLINATA Roxb.; F. I. i. 36; F. B. I. vi. 214.

Chota Nagpur, Singhbhum; on shady banks.

A smallish herb; leaves 6-8 in. long.

935. Amomum Linn.

Herbs with elongate, leafy stems, and perennial, extensive rootstocks ; leaves usually oblong-lanceolate. Flowers in dense spikes, direct from the rootstock; bracts imbricate. Sepals 3, connate in a cylindrical, 3-toothed calyx. Petals 3, connate in a corolla with cylindrical tube; lobes oblong or linear-oblong, the upper often broader and more convex. Stamen 1 perfect; filament short, arcuate; anther 2-celled ; cells divaricate, sometimes hairy, often with a petaloid crest; lateral staminodes minute or obsolete; lip broad or ligulate. Carpels 3, connate in a 3-celled ovary ; ovules many, superposed; placentas axial; style filiform; stigma small subglobose, or larger and dorsally gibbous. Fruit indehiscent or bursting irregularly, sometimes beaked or winged or cchmate. Seeds globose or truncate.

Anther not crested; lip narrow, margins incurved ; spike oblong
* *liiguifonn.*

Anther crested; lip broad; spike globose :-

Anther-crest small, subquadrate; capsule globose..... *deqbatu.*

Anther-crest large, tritkl, with rounded lobes ; capsule oblong, tngonoub
; *aromaticum.*

2151. AMOMUM LINGUIFORME Benth.; F. 13.1. vi. 235. *Alpinia*

linguiforme F. I. i. 75.

N. Bengal.

A herb, with a stout rhizome and a leafy stem, 4-6 feet high.

2152. AMOMUM DEALBATUM Roxb.; F. I. i. 43; F. B. I. vi. 239 ;

E. D. A. 967.

E. Bengal; Tippera; Chittagong; Behar; Chota Nagpur.

A herb, with a leafy stem, 4-5 feet high.

2153. AMOMUM AROMATICUM Roxb.; F. I. i. 45; F. B. I. vi. 241;

E. D. A. 965.

N. Bengal.

A herb, with a leafy stem, 2-4 feet high. *Vernac.*

Morang-hac i.

[Zingiber.

936. Zingiber Adans.

Herbs with elongated, leafy stems, and horizontal, rootstocks; *leaves* oblong-lanceolate. *Flowers* in spikes, radical, less often terminal, very rarely lateral on the leafy peduncle short or long; bracts persistent, usually 1-flowered. *Sepals* 3, connate in a cylindric, shortly 3-lobed calyx. *Petals* connate in a corolla with cylindric tube; lobes lanceolate, upper concave. *Stamen* 1 perfect; filament short; anther 2-celled; cells contiguous, with a narrow crest as long as themselves; lateral staminodes 0, or adnate to the obovate-cuneate lip. *Carpels* 3, connate in a 3-celled ovary; ovules many, superposed; placentas axial; style filiform; stigma small, subglobose. *Fruit* an oblong capsule, tardily dehiscent. *Seeds* large, globose, arillate.

Spike produced direct from the rootstock :—

Spike very short and dense; leaves pubescent beneath :—

Lip spotted and streaked with red; corolla-lobes red *rubens*.

Lip whitish, unspotted; corolla-lobes whitish *roseum*.

Spike terminating an elongated peduncle beset with sheathing, scarious bracts:—

Leaves pubescent beneath; bracts reddish, ovate; lip and stamen yellowish-white; corolla-lobes white *Casumunar*.

Leaves glabrous beneath; bracts green:—

Bracts ovate; corolla-lobes white; lip and stamen pale-yellow

Zerumbet.

Bracts suborbicular, cuspidate; corolla-lobes green; lip and stamen purple *offdnak*.

Spike terminal on the leafy stem; corolla-lobes and lip pale-yellow :—

Spike sessile on the mouth of the sheaths of the upper leaves

capita turn.

Spike on a stem prolonged somewhat beyond the sheaths of the upper leaves; taller and larger in all its parts than the type

capitatum var. *data*.

2154. ZINGIBER RUBENS Roxb.; F. I. i. 53; F. B. I. vi. 243.
N. Bengal.

A herb, with stout, leafy stems, 6-8 feet high

2155. ZINGIBER ROSEUM Roxb.; F. I. i. 50; F. B. I. vi. 244.
Behar; W. Bengal; Orissa; Chota Nagpur.

A herb, with slender, leafy stems, 3-4 feet high

2156< ZINGIBER CASUMUNAR Eoxb.; F. I. i. 49; F. B. I. vi. 248 ;
E« B. z. 199.

Cultivated and as if wild in most of the provinces.
A herb, with rather stout, leafy stems, 4-6 feet high.
Vernac. Ban-ada.

21 57< ZINGIBER ZERUMBET Smith; F. I. i. 48; F. B. I. vi. 247 ;
E- B. z. 225.

Cultivated and as if wild in most of the provinces.
A herb, with rather stout, leafy stems, 3-4 feet high.

215ft Vernac > Maha bari bach, nar kachur.

ZINGIBER OFFICINALE Koscoe; F. I. i. 47; F. B. I. vi. 246 ;
E- D. Z. 201.

Cultivated sparingly,
A herb, with slender, leafy stems, 3-4 feet high, very
rarely found in flower. Vernac. Ada, adrak.

2j.5Q. ZINGIBER CAPITATUM Roxb.; F. I. i. 55; F. B. I. vi. 248.
Chota Nagpur.

A herb, with slender, leafy stems, 2-3 feet high. Hind,
J an eadrak.

Xi\ 'Q/2. Var* ELATA Bak _; F _ B _ L vi _ 249 _ z,elatum Roxb.;

F. I. i. 57#
In mo^ of the provinces.

A herb, with rather stout, leafy stems, 4-5 feet high*

937. Costus Linn.

with long leafy stems J root tuberous, horizontal;
leaves long, with broad sheaths - Flowers in dense, globose or
Pvoid* terminal heads. Sepals 3, connate in a short, funnel-
shaped tube; lobes large. Petals 3, connate in a corolla
with short tube; lobes large. Stamens 3, oblong, subequal. Stamen 1 perfect;
the connective an oblong, petaloid process,
contiguous linear anther-cells situated in its middle ;
staminodes minute or obsolete; lip large, obovate, with
incurved margins - Carpels 3, connate in a 3-celled ovary; ovules
many, superposed; Placentas axial; style filiform; stigma with a
semi-lunar or sublobose foveola. Fruit a globose or ovoid
capsule opening on one side between the ribs. Seeds
obovate or sublobose; arillus short.

COSTUS SPECIOSUS Smith; F. I. i. 58; F. B. I. vi. 249;
E- D. O. 2013.

In all the provinces, except the Sundribuns.

A herb, with stout, leafy stems, 6-9 feet high,
and *Hind*, *Kúst*, *kéu* ; *Santal*. Orop.

Beng.

938. *Alpinia* Linn.

Herbs with tall, leafy stems, and horizontal rootstocks; ^{leaf} *leaves* oblong or lanceolate. *Flowers* in terminal racemes or panicle^s; bracteoles large, sometimes enveloping the buds. *Sepals* 3, connate in a loosely tubular, 3-toothed calyx. *Petals* 3, connate in a corolla with cylindric tube, rarely exceeding calyx; lobes linear-oblong or oblong, the upper broader and more convex than laterals. *Stamen* 1 perfect; filament flattened; anther-cells diverging at the top, occasionally with an orbicular crest; lateral staminode: minute or obsolete; lip spreading, often orbicular, with incurved margins, sometimes with 2 subulate processes at the base of the claw. *Carpels* 3, connate in a 3-celled ovary; ovules few or many on each placenta; style filiform; stigma subglobose. *Fruit* usually a dry or fleshy berry. *Seech* globose or angled.

Buds enclosed in large membranous bracteoles; racemes term). simple; ovules many in each cell of ovary; lip with a white centre variegated red and yellow :—

Bracteoles green.....*brac*^{en}
Bracteoles white.....*malacco*_r

Buds not enclosed in large bracteoles :—

Racemes simple or slightly branched; ovules many in each cell of ovary; lip oblong, white, spotted with red and yellow, with a small claw. 7

Racemes in compound terminal panicles; ovules few (usually 2) in each cell of ovary :— *calcaratu*_t

Lip with no claw; orbicular, yellowish with red lines and clots

T. . . , *conch* in *era*

Lip with a long claw :—

Lip obovate, white with lilac veins ; capsule orange-red

Lip cuneate-emarginate, pink ; capsule black.....*Gala H if a*
Allughas.

2161. *ALPINIA BRACTEATA* Roxb.; F. I. i. 63; F. U. I. vi. 255.

Tippera.

A large herb ; leafy stems 3-6 feet high.

2162. *ALPINIA MALACCENSIS* Roscoe; F. I. i. 64; p. D. J. vi. 255.

N. Bengal, Duars; Chittagong.

A very large herb; leafy stems 8-10 feet high.

2163

• f^LTM* A CALCARATA Roscoe ; F. I. i. 69; F. B. I. vi. 254; E. D. A. 851.

^ gardens, frequent.

2164. Ar

h6rb, 1Cafy Stems 2,4 feet high*

«Wu CONCHIGBRA Griff.; F. B. I. vi. 253.

gong.

A herb; leafy stems 3^4 feet high.

2165. ALPINIA

GALANGA SW. ; F. I. i. 59; F. B. I. vi. 253; E. D.

A. 853.

*n gardens, frequent.

A herb ; leafy stems 6-7 feet high. Vernac. Kulanjan.

2166. ALPI

NU ALLUGHAS Koscoc; F. I. i. 61; F. B. I. vi. 253;

E. D. A. 849.

N. Bengal; C. Bengal; E. Bengal; Sundribuns.

A herb.

taru ko. ^ ^ St6mS 5u6 fe6t high< Beng, Tal,01

939. Ganna Linn.

Yull

herb

S Wjth >sim plc> leafv stems an<* perennial rootstocks; le(iVe* large, oblong> acute. Flowers in lax, terminal, simple or ^ched r

or la^ceolae, aC6meS, braCtS Small; 0VU(tei Se2>als 3> SmaJ1> ohlong lo^eS lanc, P eia^S 3, connate in a corolla with cylindric tube;

kcloty in a cyli, Stamens, 1 partially perfect, all connate onc Ay: ith a l^ndriC> corolla-like tubo. lobes unequal, all petaloid, sill: ilar but 1 elle d antheradna tc to one of its edges, the others

oVar y; ovule ^argGr and sterile> Carpels 3, connate in a 3-celled

yfcai ninal tub S Jf UmeioUS in each ceU; sfcjle adnafce below to the nate» indeh^* rGG above» sti in a capitate. Fruit globose, echi-

emb^7o str aigt. or tar d^v rupturing. Seeds large, globose;

167. CANNA INDICA Linn. var. ORIENTALIS F. B. I. vi. 260. C. indica F. I. i. 1; E. D. C. 821.

In gardens in all the provinces, and in most of them as an escape.

ier

sarpa: aya stems 3-4 feet high. Vernac. Sabha-jaya;

H. os with sho rt or t 940. Maranta Linn. a tuberous or creeping rootstocks . ; FloT VeSmOre Or less ^tinctly petioled on the sheaths, oVatc: e rs ln I&xly dichotomous, rarely bubbimply, terminal

cymes; bracts narrow, spathaceous; bracteoles u. narrow, subequal. *Petals* 3, connate in a corolla with tube; lobes subequal. *Stamens*, 1 partially perfect, below in a corolla-like tube; lobes petaloid, one having single marginal anther-cell, the rest unequal, 1 or 2 lateral one hood-like, sometimes with an empty anther-cell; the lip or small, crested. *Carpels* 3, two becoming obsolete and forming a 1-locular, 1-ovuled ovary, with 2 small, empty locules; style adnate to staminal tube; stigma oblique, wide, almost 2-lipped. *Fruit* indehiscent, ovoid-oblong, or somewhat 3-cornered, more or less oblique; pericarp fleshy. *Seed* erect; arillus green outside scarious within; embryo curved.

2168. MARANTA ARUNDINACEA Linn.; E. D. M. 267.

Occasionally planted.

A herb, with leafy stems. The rootstock yields Arrow-root starch. *Ver?iac*. Tikhur. Arrowroot.

941. *Clinogyne* Salisb.

Shrubs with leafy, cane-like stems, copiously, dichotomously branched; rootstock tuberous or woody; *leaves* oblong or oblong-lanceolate. *Flowers* in pairs in lax-flowered, terminal panicles; bracts long, firm, narrow. *Sepals* 3, short. *Petals* 3, conniving but hardly connate in a tube below, their tips spreading. *Stamens*, 1 perfect, all connate in a corolla-like tube, segments unequal, one with a single, marginally attached anther-cell. *Carpels* 3, connate in a 3-celled ovary; ovules 1 in each cell; style adnate below to the staminal tube, free, hooked above; stigma capitate. *Fruit* indehiscent, 1-3-seeded. *Seeds* subglobose; arillus lacerate; embryo curved.

2169. CLINOGYNE DICHOTOMA Salisb.; F. B. I. vi.258. *Phrynium dichotomum* F. I. i. 2; E. D. p. 625.

E. Bengal; Chittagong.

A shrub, 12-15 feet high. *Beng.* Mukta-pati, pati-paii, maḍar-pati.

942. *Phrynium* Willd.

Herbs with creeping rootstocks; *leaves* large, oblong, radical; petioles long, simulating stems. *Flowers* in compound spikes, produced from side of petiole or direct from rootstock; bracts 2-more-flowered. *Sepals* 3, narrow. *Petals* 3, connate in a

Ravenala. 1

SCITAMINEM.

1049

corolla with cylindric tube ; lobes linear-oblong, subequal, spreading, g; lobes perfect) all connate in a corolla-like tube below; Carpel's unequal, one bearing a single marginal anther-cell, rarely 2 connate in a 3-locular ovary ; ovules 1 in each cell or tube, free, the cells empty; style adnate below to the staminal-hiscent; ovule above; stigma capitate. Fruit globose, indehiscent. Seeds 1-3, erect; arillus short, J 1 embryo curved.

Flowers with increased length bristly tips.....capitatum. Flowers white or yellow spikes always lateral. Spikes oblong, bracts oblong, with obtuse, minutely toothed tips; Spikes 3-seeded.....imbriatum. Bracts lanceolate, acute ; fruit usually 1-seeded parviflorum.

2170. RAVENALIA CAPITATUM Willd., R. L. 18, G., F. B. 1, J. 259.

Chota Nagpur; N. Bengal, Duars.

2171. PHRAGMATA rigid herb; leaves lanceolate, oblong. Vernac. Kudali. RYNIUM IMBRICATUM Roxb.; F. I. i. 6; F. B. I. vi. 259. Chittagong.

2172. PHRAGMATA rigid herb; leaves large, oblong. Vernac. Pituli-pata. RYNIUM PARVIFLORUM Boxb.; F. I. i. 7; F. B. I. vi. 259. Chota Nagpur. A herb, with perennial, tuberous rootstock.

Stem short or long and tree-like, marked with annular leaf-scars, leaves large, fan-like; petioles long, concave below, hard, spreading, on axillary scapes or peduncles. Bracts, distichous, narrow, the central rather wider than the lateral, sheathed. Petals 3, the inner most shorter than the others, subcom- plicate, lateral valves smaller. Stamens 5, rather shorter than the anthers linear, 2-locular, much exceeding their filaments. Carpel's 3, connate in a 3-celled ovary; ovules numerous in shortly 6-to 10-filiform J stigma oblong-clavate, 3-valved. Fruit an oblong or ovoid-trigonal, loculicid- Psule. Seeds numerous; arillus fimbriate.

2173. RAVENALA MADAGASCARIENSIS Sonnerat; F. B. I. vi. 100.

Occasionally planted.

A small tree, with distichous, plantain-like leaves, and a woody stem; native of Madagascar. Beng. ?^{an} padop. The Traveller's Tree.

944. Musa Linn.

Tree-like herbs, with thick stems, composed of convolute leaf sheaths; leaves very large, oblong. Flowers in an erect, decurved, subterminal spike, practically 1-sexual, the female, the upper male; bracts large, spathaceous, ovate or orbicular. Sepals connate in a spathaceous, 3-5-lobed calyx. Petals connate in a unilateral corolla, as long as the calyx, with 6 stamens and style. Stamens 5 perfect, the six rudimentary or obsolete; filaments stout, filiform; anthers linear, erect, 2-celled. Carpels 3, connate in a 3-locular ovary; ovules many, superposed; style filiform from a thickened base; stigma globose, 6-lobed. Fruit oblong or fusiform, trigonous, fleshy, indehiscent. Seeds subglobose or angled by pressure, in cultivated forms often obsolete.

Stems stout, over 8 feet high; bracts many-flowered; petal shorter than the calyx; fruit usually edible, pulpy:—

Cultivated, fruit with seeds very few or none:—

Fruit with soft, sweet pulp, edible uncooked.....*sapientium*^{ll}

Fruit with firm pulp, only edible when cooked

sapientium var. *paradisialis*^{l'}

Wild, fruit with many seeds, pulp firm.....*sapientium* var. *sylvestris*^{h-}
Stems slender, under 6 feet high; bracts few-flowered; petal as long as the calyx; fruit firm, not edible.....*ornata*^{g.}

2174. MUSA SAPIENTUM Linn.; F. B. I. vi. 262; E. D. M. 811.

In all the provinces, cultivated.

A tree-like herb; stems 8-12 feet high. Beng. Kantalikel. The Banana.

2174/2. Var. PAEADISIACA F. B. I. vi. 262.

In all the provinces, generally cultivated.

A tree-like herb; stems 15-20 feet high. Beng. Kachkel. The Plantain.

2174/3. Var. SYLVESTRIS. *M. sapientium* F. I. i. 663.

Chota Nagpur; Chittagong.

A tree-like herb; stems 8-12 feet high. *Vernae*. Kela.

The Wild Plantain.

2175. MUSA ORNATA Roxb.; F. I. i. 666. *M. rosacea* F. 13. i. vi. 263.

Chittagong; Chota Nagpur, Singbhum.

A small, shrub-like herb, 3-5 feet high. *Vernae*. Bamanigi-kela.

Order CXXIX. BROMELIACEÆ.

Herbs, usually epiphytic; stem usually very short, rarely elongated; leafy. *Leaves* generally densely tufted at the base of stem, often rigid and with spiny edges. *Flowers* regular, hermaphrodite, spicate or paniculate, terminal, rarely lateral; peduncle often elongate and covered with bract-like scales; bracts often large, coloured, imbricate, sometimes small, flowers in each solitary or several fascicled or spiked; bracteoles spatheform. *Perianth* 2-seriate, outer series of 3 sepals, free or rarely connate; inner series of 3 petals with connate or connivent claws erect or spreading laminar. *Stamens* 6, attached within base of corolla; filaments free, or 3 opposite sepals free, 3 opposite petals more or less adnate to corolla, or all adnate; anthers linear, rarely oblong, versatile or basifixed, 2-celled; dehiscence longitudinal. *Carjds* 3j connate inferior or half-superior, jocular ovary; ovules many, axial, anatropous; style long, stigmatic, or short; stigmas 3, short or linear. *Fruit* dry or fleshy, downy by the calyx or the whole persistent perianth, indehiscent woody capsular. *Seeds* oblong, ovate, or linear; testa membranous; a buccinum copious, floury, embryo situated in a small pit or groove near the hilum.

n.

945. Ananassa Adans.

Herbs with short, leafy stems; *leaves* long, with spinous-serrate. *Flowers* in a terminal, cone-like, very dense, globose or spiky; solitary, sessile, or embedded in the axils of each node; only the subsperous tips of the bracts projecting, the uppermost bracts empty, more or less leafy, quinquefid. *Perianth* 2-seriate. *Sepal* 3, wide-acuminate, closely imbricate, slightly connate below to the filaments, often with 2 minute, basal scales.

Stamens 6; 3 alternate with petals, filaments free or ^{sl. j&} ^{btly} adnate by their edges to the petals; 3 opposite and adnate ^{be} ^{low} to the petals; anthers linear. *Carpels* 3, connate in an in ^{f ri} ^{>>} 3-celled, fleshy ovary, embedded in the thick rachis; ovules ⁱ ⁿ each cell several, horizontal or pendulous; style filiform; stig^{ina} linear. *Fruit* fleshy, embedded in the fleshy receptacle, the ^w ^{ole} forming with the bracts, rachis, and receptacles a cone-like, fleshy syncarp. *Seeds* few, ovoid or oblong, somewhat compressed iⁿ testa thinly coriaceous; embryo minute, partially embedded iⁿ the albumen.

2176. ANANASSA SATIVA Linn.; E. D. A. 1045.

Sparingly planted.

A tufted, stemless herb, with a dense, capitate, ^{sp} ^{pl} inflorescence. *Vernac.* Ananas. The Pine-Apple. !

Order CXXX. HJEMODORACEJE.

Perennial herbs, glabrous or finely woolly; rootstock short, tuberous, with usually fascicled root-fibres. *Leaves* usually radical, often distichous, narrow-linear or subensiform, with equitant sheaths; nerves parallel. *Flowers* hermaphrodite, regular or nearly so, in terminal spikes, racemes, or panicles. *Perianth* corolline, persistent, 2-seriate; lobes 6, imbricate or induplicate-valvate. *Stamens* 6, opposite or more or less adnate to the perianth-lobes, all perfect or 1-3 reduced to staminodes, or only 3 opposite the inner perianth-lobes; filaments filiform, discrete or connate in a ring below; anthers ovate, oblong, or linear, often sagittate, erect or versatile; dehiscence longitudinal or rarely porous. *Carpels* 3, connate in a perfectly or ultimately, ^{iff} absorption of septa, imperfectly 3-celled ovary, inferior, half-inferior, or almost superior, with only the wide base adnate to the perianth; ovules 1 or more, attached to inner angle of cells; style ^{hl}iform, rarely short or obsolete; stigma ^{s i m p l e} or 3-notched. *Fruit* a superior or nearly superior, loculicidal capsule, or an inferior, indehiscent berry or capsule tipped by the perianth. *Seeds* in each cell many, few, or single, sometimes solitary in the whole fruit, globose, oblong, angular, or flattened; emb^{* gmall} only partially enclosed in the fleshy albumen. **ryo**

Filaments connate in a ring, closing the mouth of the perianth; ovary

inferior, with a free, conic \wedge » P «; stigma sessile, 3-lobed; ovules in each cell 2 or more Peliosanthes.
 Filament ¹¹⁴⁸ ad \wedge te to "perianth-tube" filiform, not connate; ovary superior; style filiform; stigma simple; ovules in each cell solitary Sansevieria.

946. Peliosanthes Andr.

Herbs with horizontal rootstocks; leaves narrow, linear or lanceolate, subplicately \wedge ved. Flowers small, racemose, on erect scapes. Bracts scarious: Perianth superior; lobes 6, subequal, spread in \wedge and below in a short, campanulate tube. Stamens 6; filaments very short, connate in a \wedge , a \wedge most closing the mouth of the perianth-tube; anthers sessile; dehiscence linear, intro \wedge r, Carpel 3, connate in a \wedge , a \wedge closed ovary, with \wedge apex, ovules 2 or more in each cell, anatropous; Stigilla sessile, 3-lobed. Fruit an imperfect berry. 5 seeds few, bursting through the pericarp during ripening, ana \wedge resting on the base of the \wedge perianth, the tube of High \wedge or succulent* 5 embryo incompletely embedded in the base of the hard, fleshy albumen.

B \wedge \wedge many-flowered Tetra.
 ts 1-flowered violacea.

2177 - PELIOSANTHES TBATA Andr.; F. B. I. vi. 265. Tetra viridiflora p. I. u. 165

Chittagong.

217ft P \wedge P \wedge \wedge \wedge \wedge herb, with a rather large rootstock.

IE, QSANTHES VIOLACEA Wall. J. F. B. I. VI. 266.
 viiittagong.

scapigerous herb, with a rather large rootstock.

W. Sansevieria Thunb.

Herbs with a short, often stoloniferous rootstock; terete, \wedge gmous, flat or terete; nerves hidden; sheath \wedge short. Flowers racemose, \wedge stamens 6, \wedge us. Perianth-segments 6, connate at the bases of the perianth-lobes; filaments filiform; anthers \wedge draifi* 1. O \wedge yfa 8, oon \wedge . t. in \wedge felled ovary, \wedge by \wedge bCOad base *o *h. perianth-tube, elsewhere free \wedge w * \wedge solitary. erect in each cell. Fr \wedge membranous, \wedge hta \wedge

Seeds 1-3, globose, ripening outside the pericarp, all ^{large} or 1 or 2 imperfect; testa lax, fleshy or succulent; embryo P^{artially} enclosed in the fleshy albumen.

Leaves grooved or flat on the upper surface beyond the sheath and with only a short conical tip :—

Leaves narrowly linear-ensiform, semi-terete, channelled above 5 flowers -5 in. long..... ^ " e ^ I U

Leaves rather wide-ensiform, flat, not channelled above j-flower an inch long..... •••";";"; sheathing

Leaves quite cylindric, smooth or sulcate except at the snon, D^{c^}ndric[^] base; flowers about 75 in. long.....

2179. SANSEVIERIA ROXBURGHIANA Schult. f.; F. B. I. ^{vi} 271.
S. zeylanica F. I. ii. 161; E. D. S. 785.

Very frequently cultivated.

A herb, with tufted, linear-ensiform, fleshy, ^{ri}p^{d*}!a[^]p^s,
Vernac. Murva, murba, murga. Indian Bowstring J^{*e} -

This species is apparently indigenous in India, but is no^t wild within our area.

2180. SANSEVIERIA TRIFASCIATA Hort.

Often cultivated ; sometimes as an escape.

A herb, with tufted, linear-lanceolate leaves.

Closely related to W. African Bowstring Hemp (*S. guineensi**, but with narrower, more definitely maculated leaves.

2181. SANSEVIERIA CYLINDRICA BO.,

Occasionally cultivated.

A herb, with tufted, cylindric, pointed leaves.

Order CXXXI. IRIDEJE.

Perennial herbs; rootstock woody, creeping or stoloniferous, or short, corm-like; stems herbaceous, solitary or fascicled, sometimes short or 0. *Leaves* narrow, often distichous and equitant. *Flowers* in a simple or branched inflorescence, terminal or from the axil of a floral leaf; bracts, outer spathaceous, inner 2. *Perianth* superior, petaloid; segments 6, 2-seriate, imbricate. *Stamens* 3, epigynous, or adnate to the outer perianth-segments ; anthers ovate, oblong, or linear; dehiscence longitudinal, extrorse or lateral. *Carpel** 3, connate in an inferior, 3-celled ovary;

ovules many, anatropous, 2-seriate on the inner angles of each cell; style simple; stigmas 3, simple or petaloid or variously cleft. A capsule trigonous, loculicidal, 3-celled. Seeds few or many, rarely solitary in each cell, globose, angular or flattened; testa thin or coriaceous; embryo embedded in the horny albumen.

bulb tunicate; stem below the inflorescence simple, leafless; leaves in the axils of narrow spathes, congested in the axil of a terminal floral leaf. Cipura#

rhizome creeping; stem leafy; leaves ensiform, equitant; flowers in dichotomously branched panicles; floral leaves under the primary branches green, spathaceous, under the upper branches scand. **mcanda.**

948. Cipura Aubl.

Herbs with a tunicate bulb; stem below the inflorescence and leafless; radical leaves few, narrow, or wider and plicate. Flowers in narrow, fascicled spathes, sessile or shortly pedicelled, in the axil of a long, terminal, floral leaf, each flower perianth few or solitary in the axils of individual spathes. Perianth petaloid; tube very short; segments rather broad, flat, clawed. Outer, the outer 3 spreading, inner 3 smaller and more erect. Filaments 3, adnate to base of outer perianth-segments; filaments free, filiform; anthers oblong-linear. Carpels 3, connate in a 3-celled ovary; ovules many in each cell; style filiform, its arms longer than anthers, petaloid at their tips or almost throughout, entire or ciliolate. Fruit an ovoid or oblong, obtuse or truncate, circumscissile 3-valved capsule exerted from the spathe. Seeds globose or narrowed.

2182. CIPURA PALUDOSA Aubl.

O. Bengal; quite naturalised in thickets near Calcutta.

A grassy herb, with a plicate floral leaf and white flowers; native of America.

949. Belamcanda Adans.

Herbs with creeping rootstocks and erect, leafy stems; leaves ensiform, equitant. Flowers pedicelled, many in each spathe, in a dichotomously branched inflorescence with green, spathe-like, floral leaves under the main branches, the upper spathes membranously scarious; bracts scarious, opposite the pedicels. Perianth petaloid; tube very short, rather wide; segments 6,

oblong, spreading, subequal. *Stamens* 3, inserted at ^{h3>se} perianth-tube; filaments filiform; anthers linear, basixed. *Carpels* 3, connate in an obovoid, 3-locular ovary; ovules in each cell numerous; style filiform, with elongated arms, their tips reniform, stigmatic. *Fruit* an obovoid, membranous, loculicidal capsule, the valves 3, reflexed, leaving the seed-bearing axis free and Persistent. *Seeds* subglobose; testa lax, shining, fleshy within.

2183. BELAMCANDA CHINENSIS Leman; F. B. I. vi. 277. »<*<* chinensis F. I. i. 170.

In gardens in all the provinces.

A herb, with creeping rootstock and erect, leafy stem ^s.

Beng. Dasbaha, dasbichandi.

Order CXXXII. AMARYLLIDACEJE.

Perennial herbs, rarely undershrubs or shrubs; rootstock a bulb, tuber, or conn, rarely an erect stock. *Leaves* radical, few or many. *Flowers* few, sometimes solitary, on terminal, leafless scapes, often umbellate; bracts membranous or coloured, rarely herbaceous, the outer under the umbel 1-3, rarely many, involucrate; occasionally the inflorescence racemose or paniculate with scattered bracts. *Perianth* regular or irregular, 2-seriate, 6-lobed or -partite; tube long, short, or 0, sometimes with a corona on the limb. *Stamens* 6, adnate to bases of perianth-segments, rarely epigynous; filaments free or connate; anthers erect or versatile. *Carpels* 3, connate in an inferior, 3-celled ovary; ovules many anatropous, 2-seriate on inner angles of cells; style slender, stigma simple or 3-cleft. *Fruit* inferior, usually a loculicidal capsule, rarely fleshy and bursting irregularly. *Seeds* few or many; albumen fleshy, enclosing the small embryo.

Leaves large, thick, and fleshy, densely clustered at the top of a rootstock or a short, simple stem, spiny at the tip and usually armed along the edge; scape long, terminal, simple or branching towards the apex :-

Inflorescence simple spicate, or compound thyrsoid; " longer than perianth; filaments filiform or flattened at base; stamens shorter than anthers; style thickened in the middle.

Inflorescence laxly paniculate; stamens shorter than anthers; style thickened in the middle. ^{• **a**>-}
 Leaves thin and flat or, if somewhat fleshy, unarmed. ^{PWIfnth; fila}
 Leaves thin and flat or, if somewhat fleshy, unarmed. ^{FilPcrce a.}

d flat or plicate; flowers
Rootstock tuberous ; leaves strongly nerve-
spicate or racemose, very rarely subumbellate, pena

• showy :—
Fruit opening at the top as a circumscis-
ovary not produced above the crown into
ovary not produc.

perianth....."
Fruit indehiscent; often the ovary produce
the crown and the base of the perianth-

Bootstock a tunicated bulb; leaves not sno bl
thinly fleshy; flowers at the apex of a scape, u
sionally sohtary; perianth white or pink, not yel

showy :—
Filaments united towards their base
membrane

930. Agave Linn-

Shrubby herbs, with a usually short, wo
thick and fleshy, densely clustered at W
short, simple stem; with spiny « ? ' and
edges. Flowers solitary, gemmate, or tasc
or thyrsoid, pole-like scape; bracts
tube somewhat funnel-shaped; lobes o,
Stamens 6, adnate to base of and ^
filaments filiform throughout or willn
Ws ; anthers dorsifixed. Carpels 3, «
or oblong, often fleshy ovary, more or les
below the peak; ovules many, 2 * a J
conical, filiform; stigma 8-dymous or ^
globose, ovoid, or oblong-cyhndncloculicdal
Seeds many, flattened obliquely, cuneate,
sometimes replaced by viviparous bulbys-

2184. AGAVE CASTULA Boxb.; * . I . ii .

F. B. I. vi. 277; E. D. A. 603-

In most of the provinces, as a ngst
A large, tufted, fle^JT Venae. Kantala.
leaves with spinous tips and edges.

9S1. Furcroea Vent.

Shrubby herbs, with a short or occas.nally tall, woody sto^{ck};

*km**, large, thick and fleshy, densely clustered at the top of stem, with spiny tip and entire or spinous-serrate edges. *Fto** so, Wary or 2-3-nately fascicled on a large, paniculately branched, SZ like S T ; bmCts Small Perian^ subtrotate; tube very ZZ . C c . P l u u e l m o s t t o t h e b a s e . ! < * < < o b l o n g o v a l , e q u a l , perian...ob; u Wnts thickened bei < TM <>> « shorter than middle apices subulate. ?S,s have aUtWs dorsifixed > their b*" « shortly 2-lobed. t n T f . 4 T i D a n O b l o n & - 3 l o c « l a r o v a r y , o f t e n n a r r o w e d c o l u m n S i c k e n e d b e l o w t h e m i d d l e w i t h 3 p r o m i n e n t a n g l e s ; q n m t l y 3 l o b e d > c i l i o l a t e . F r u i t a n o b l o n g o r o v o i d , S , 1 0 c f d f l y 3 v a l v e d C a ^ . S e e d s m a n y f l a t t e n e d .

Fruit often replaced by viviparous bulbils..

^185. FURCRCEA GIGANTEA Vent.; E. D. F. 749.

Tirhut; not infrequent as a hedge plant.
 A large, short-stemmed shrub, with tufted, fleshy leaves with spinous tips, and unarmed or sparingly armed edges.

952. Hypoxis Linn.

Herbs with a tuberous rootstock or a tunicate, membranous, or nodulous corm; leaves narrow, radical, strongly nerved. Flowers solitary or racemose or umbellate; bracts small linear, or obsolete: perianth rotate, persistent, 6-partite, sessile on the top of the interior ovary. Stamens 6, adnate to base of and shorter than perianth-segments; filaments short; anthers erect, dorsifixed. carpels 3, connate in an inferior, 3-celled ovary; ovules many/ 2-serial i h LOCUIUS; Style short, c o l — i ^ i g m W 3 , e r e c t , stout, distinct or connate. FnUt a r f o b o s e o r o b W c a p s u l e , tipped P e t h > o P e n i n g b y 3 V a l v e s O T e i r c u m s c l i e . Seeds 2 U T

2186. HYPOXIS AUREA Lour.; F. B. I. vi. 277.

Chota Nagpur.
 A small, dioecious herb, with black, tubercled seeds.

933. Curculigo Gaerin.

Herbs, sometimes large, with a tuberous rootstock or reticulate-fibrous corm; leaves often large W ^ * ^ u n i c a t e , or linear and flat. Flowers often l ^ Z i ? u e a n n p l i c a t e , u a r ' s P i c a t , racemose or

Scapitate. *Perianth* 6-partite, separated from the inferior ovary
 * * «hort or long, solid stipe, bearing the rotate limb »
 6, * **W**te to base of perianth-lobes; filaments short jantheis
 lineE*. erect, shorter than perianth, attached basally or between
 Wai lobes. **Carpels** 3, connate in a **8-locular**, beaked ovary, beak
 f^h<*t or long; ovules in each cell 2 or more, with a distinct, often
 JS funiculus; style short, columnar; stigmas 3, oblong, erect,
 ^pressed. **Fruit** a somewhat succulent, indehiscent berry,
 «*«*• subglobose; testa crustaceous, black, often beaked, **l**owe
 lowers usually 2-sexual, with upper flowers often male.

Janth-limb sessile or nearly so on the top of the ovary; large, stout
 ****, with flowers in subcapitate racemes on scapes P^{ectl} " ^ 3 "
 *^he leaf-sheaths 1 pl.
 Pe rianth-limb at the ap« of the long, slender beak of the ovary; BJna
 her bs, with flowers in distichous spikes on scapes hidden by the
 sheaths n^{iuades}.

2187. CURCULIOO KEURVATA Dryand.; P. I. & 145; F. B. I.
 vi. 278.

N. Bengal, Duars; Chota Nagpur, Sirguja.
 A large herb; leaves over 1*5 feet long.

2188. CURCULIGO ORCHIOIDES Gaertn.; F. I. ii 144; F. B. I.
 vi. 279; E. D. C. 2375.

Tirhut; Behar; W. and C. Bengal; Chota Nagpur
 A slender herb; leaves -6-1*6 in. long. *Hind*, Mushah;
Bcng, Tala muli; *Vriya* Talmuli.

954. Zephyranthes Herb.

Herbs with tunicate bulbs; *leaves* few, linear or lorate, appear-
 ing with or after the flowers. *Flower* solitary, pedicelled or rarely
 sessile within an entire or 2-fid, spathe-like bract at the top of a
Qg fistular scape. *Perianth* funnel-shaped, straight or somewhat
 eHnate; tube short or long, dilated upwards; lobes 6, equal or
 2-f newlult unequal, narrowed at the base, suberect above. *Stamens*
B, adnat% to perianth-throat, equal or 3 somewhat shorter than
 the others, erect or somewhat decimate; anthers linear, dorsinixed.
Jarpels 3, connate in a 3-celled ovary; ovules many, 2-senate in
 each locus; style filiform, usually declinate above; stigma more
 or less 3-fid. **Fruit** a subglobose or depressed capsule, ultimately
 3-dymouB or 3-lobed, **loculicidally** 3-valved. *Seeds* oblong, angular
 or flattened; testa black.

2189. ZEPHYRANTHES TUBISPATHA Herb.; F. B. I. vi. 277.

In many of the provinces, in gardens and some ^{times} naturalised.

A bulbous herb ; native of Peru.

955. *Crinum* Linn.

Herbs, sometimes large, with tunicate bulbs ; *leaves* long, ensiform or lorate. *Flowers* large, umbellate, sessile or short-petalled, within 2 spathe-like bracts at the top of a long, solid scape, bracteoles linear. *Perianth* funnel-shaped or almost salverform shaped; tube long, straight or incurved, cylindric or widened at enlarged mouth ; lobes 6, linear-lanceolate or narrowly oblong, recurved or spreading or conniving. *Stamens* 6, adnate to throat of perianth-tube; filaments free, filiform, declinate or diverging in anthers linear or oblong-linear, dorsifixed. *Carpels* 3, connate in a 3-celled ovary; ovules in each loculus few or many, sometimes only 2; style filiform ; stigma very small, subcapitate. *Fruit* irregularly subglobose, membranous or coriaceous capsule, bursting irregularly. *Seeds* few, large, rounded, with a thick testa and very copious albumen.

Perianth-tube straight, erect; lobes stellately patent; stamens spreading:—

Leaves 5 in. wide or wider ; umbels 15-50-flowered; perianth-tube 3-4 in. long, equalling the linear lobes ; neck of the very large bulb 4 in. or more across.....*asiaticum*[^]

Leaves 2 in. wide or less; umbels 6-12-flowered; neck of the bulb 2*5 in. or less across:—

Bulb with a fusiform, stoloniferous base; perianth-tube 2*5-3 in. long, equalling the linear lobes, which considerably exceed the stamens.....*defixum*.

Bulb not stoloniferous ; perianth-tube 3*5-4 in. long ; lobes lanceolate, about as long as the stamens :—

Leaves acuminate; perianth-lobes 2-3 in. long, shorter than the tube.....*amcenum*.

Leaves obtuse or subacute; perianth-lobes 3*5-4 in. long, about as long as the tube.....*pratense*.

Perianth-tube curved, declinate; lobes ascending; stamens declinate:—

•Leaves 3-5 in. wide, obtuse, margin scabrous, hardly waved; perianth-lobes oblong, almost white ; anthers grey [p. 1061].....*latifolium*.

leaves 15-2 in. wide, linear-lanceolate, margin smooth, distinctly adulate; perianth-lobes lanceolate, pinkish; anthers brown [p. 1060]
latifolium var. *zeylanica*.

2190. CRINUM ASIATICUM Linn.; F. B. I. vi. 280. *C. toxicarium* F. I. ii. 134. *C. asiaticum* var. *toxicaria* E. D. C. 2062. Sundribuns; Chittagong, on the coast: elsewhere cultivated.

A very large herb. Beng. Bara kanur.

2191. CRINUM* DEFIXUM Ker; F. B. I. vi. 281; E. D. C. 2068, 2072. *C. asiaticum* F. I. ii. 127.

W. Bengal; C. Bengal; E. Bengal; Chota Nagpur.

A large herb. Beng. Sukh-darshan. Santal. Sikyom baha.

2192. CRINUM AMCENUM Roxb.; F. I. ii. 127; F. B. I. vi. 282; E. D. C. 2061.

N. Bengal, Duars.

A large herb.

2193. CRINUM PRATENSE Herb.; F. B. I. vi. 282. *C. longifolium* F. I. ii. 130.

N. Bengal; C. Bengal.

A large herb.

2194. CRINUM LATIFOLIUM Linn.; F. I. ii. 137; F. B. I. vi. 283.

C. seylanicum E. D. C. 2075.

In gardens generally; wild in Orissa and perhaps in Chota Nagpur.

A large herb. Beng. Sukh-darshan.

2194/2. Var. ZEYLANICA Herb. *C. zeylanicum* F. I. ii. 138.

In gardens; perhaps wild in Orissa.

A large herb.

956. *Pancratium* Linn.

Herbs with tunicate bulbs; leaves linear or lanceolate, often 2-farious. Flowers large, solitary or umbellate, sessile or pedicelled within 1 or 2 membranous spathes; bracteoles few, linear, aiyaline. Perianth funnel-shaped; tube usually long, widened at the mouth; lobes 6, narrow, suberect, subequal. Stamens 6, shorter than perianth, adnate to the throat; filaments filiform, but connate below in a petaloid, membranous cup, the edge of which between the free filaments may be toothed or lobed; anthers oblong or shortly linear, dorsifixed. Cartels 3, connate

in a 3-celled ovary; ovules many, 2-seriate in each loculus; style long, filiform; stigma small, capitate. *Fruit* a considerable, subglobose 3-cornered, loculicidally 3-valved capsule. *Seeds* m^{*11?} angular; testa thick, lax, black.

Scape stout, as long as leaves or longer; spathes 2; perianth-throat dilated, tube cylindrical; staminal cup obconic, with a 2-fid tooth between each pair of filaments.....*verecundum*.

Scape compressed, shorter than the leaves; spathes 3-4; perianth-throat not dilated, tube trigonous; staminal cup funnel-shaped, erose, but not toothed between each pair of filaments.....*biflorum*.

2195. PANCRATIUM VERECUNDUM Ait.; F. B. I. vi. 285.

N. Bengal, Duars.

A bulbous herb.

2196. PANCRATIUM BIFLORUM Roxb.; F. I. ii. 125 ; F. B. I. vi. 285. ↓

Chota Nagpur.

A bulbous herb.

Order CXXXIII. TACCACEJE.

Perennial herbs; rootstock tuberous or creeping. *Leaves* radical, large, long-petioled, undivided and costate, or pinnately lobed and reticulate veined. *Flowers* regular, hermaphrodite, dense; umbellate at the apex of a long, leafless scape; outer bracts few, usually 4, leafy and broad, forming an involucre, sometimes coloured; inner bracts under the pedicels many, long, filiform, pendent. *Perianth* usually lurid, corolline or subherbaceous, superior, urceolate or subcampanulate, 2-seriately 6-lobed; lobes of outer series sometimes the larger. *Stamens* 6, adnate to perianth-tube or to base of perianth-lobes, included; filaments very short, dilated or appendaged laterally at the base, and inflexed, cucullate above the anthers, with 2 ribs or horns on the inner face; anthers sessile under the hood; cells 2; dehiscence longitudinal. *Carpels* 3, connate in an inferior, 3-cornered, 1-locular ovary, with 3 parietal placentas; ovules many, anatropous or almost amphitropous on each placenta; style short, columnar, usually 3-cornered, included; stigmas 3, often petaloid, broad, 2-fid and inflexed like an umbrella above the style. *Fruit* globose, ovoid, turbinate, or oblong, 3-6-ribbed, forming an indehiscent berry, or rarely a 3-valved capsule. *Seeds* many, ovoid, com-

pressed, longitudinally many-striate; albumen hard, solid, carti-
 granular; embryo minute, embedded in the albumen.

957. **Tacca** Forst.

Characters those of the order; fruit always indehiscent.

the segments 2-3-fid or irregularly lobed or cut; bracts of
 usually more than 4. *phmatifolia*.

bracts of the involucre⁴ in two pairs:—

inner pair of bracts of the involucre petioled,
 the outer sessile pair. *inteynifolia*.
 and scape smooth; both pairs of bracts sessile, subequal

lavis,

2197. TACCA PINNATIFIDA Forst.; F. I. ii. 172; F. B. I. vi. 287;
 E. D. T. 15.

Behar; Chota Nagpur; Chittagong; elsewhere some-
 times cultivated.

A large herb, with a globose, tuberous rootstock. *San-
 tal*. Dhai.

2198. TACCA INTEGRIFOLIA Ker; F. B. I. w. 287. *T. aspera*
 F. I. ii. 169.

Chittagong.

A herb, with oblong rootstock.

2199. TACCA UEVIS Eoxb.; F. I. ii. 171; F. B. I. vi. 288.

Tippera; Chittagong.

A herb, with oblong rootstock. *Vernac*. Moti munda.

Order CXXXIY. DIOSCOREACEJE.

Large, slender, climbing, rarely shorter and procumbent herbs,
 with usually a thick, fleshy, tuberous, underground rootstock,
 or rarely a cluster of tuberous roots, sometimes the tuber epigaeal,
 and then often woody. *Leaves* alternate or opposite, simple or
 compound, costate and reticulate; petioles often angled and
 twisted at the base, sometimes articulate. *Flowers* small, usually
 I-sexual, spicate or racemose, dioecious or monoecious in separate
 spikes, regular; bracts small, often minute, sometimes obsolete;
 male racemes simple or paniculate, female single, sometimes
 reduced to 1-2-flowers; perianth superior, regular, 2-seriately
 6-lobed. *Perianth* campanulate or rotate, deeply 6-fid, or

urceolate with narrow mouth and short, spreading lobes. 6, adnate to base of perianth, all perfect, or 3 reduce nodes, or only 3 with no staminodes; filaments free or a short column below, incurved or recurved above; anthers 2-celled, globose, oblong, or didymous, or the cells discrete tips of branches of the filament. *Pistillode* thick, columnar or entire or obsolete. ? *Perianth* smaller than in male, 6-partite, persistent. *Staminodes* 3 or 6 or 0. *Ovary* 3, in an inferior, 3-cornered, 3-locular ovary; ovules 2, superpendulous in each cell, anatropous or subamphitropous; very short; stigmas entire or 2-fid, recurved. *Fruit* a 3-valved capsule. *Seeds* flat or globose; albumen fleshy* hard; embryo minute, enclosed in the albumen.

958. *Dioscorea* Linn.

Herbs with slender, twining, rarely procumbent stems; solitary, often large, underground or, rarely, epigeal, very tubers clustered and long-peduncled at base of stem; leaves alternate or sometimes opposite, entire or lobed or digitately & foliolate. *Flowers* always 1-sexual, usually dioecious. *Stamens* campanulate, rotate, or urceolate; lobes short, spreading. *Stamens* 6, free round a pistillode or connate in a central column; or alternate with 3 staminodes; or 3 without staminodes; anthers small; cells contiguous or discrete. *Pistillode* thick, fleshy, ? *Perianth* segments 6, free, small. *Staminodes* 6 or 3 or *Carpels* 3, connate in a 3-quetrous, 3-locular, inferior ovary; ovules 2 in each cell, superposed, laterally attached near the apex; stigmas 3, short; stigmas terminal, entire or 2-fid, reflexed above the style. *Fruit* a 3-cornered, loculicidal capsule, the angles prominent laterally flattened, almost winged. *Seeds* compressed, sometimes with a unilateral samaroid or a circular, membranous wing, sometimes wingless; albumen compressed, fleshy or hard 2-laminate; embryo between the laminae with a suborbiculate cotyledon,

'Stems twining to the left:—[p. 1065]

Leaves compound; capsules longer than broad; seeds winged at the base only:—[p. 1065]

Leaflets digitately 3-5-nerved, always 3..... *deemona*.

Leaflets pinnately veined:—

Leaflets sparsely pubescent or glabrous beneath, usually 5, often 3, rarely 7..... *peniaphylla*.
 Leaflets softly grey-tomentose beneath, 3, rarely 4, in lower leaves; upper leaves irregularly 2-foliolate, or 2-3-lobed, or entire
tomentom.

Leaves all simple:—[p. 1064]

Capsules longer than broad; seeds winged at base only; sepals narrow-oblong or lanceolate, subvalvate :—

Stem with axillary bulbils smooth..... *bulbifera* var. *sativa*.

Stem with axillary bulbils warted :—

Stem terete, or faintly angled but not winged

bulbifera var. *pulchella*.

Stem with 10-15 small, crispate, longitudinal wings

bulbifera var. *crispata*.

Capsules broader than long ; seeds winged all round :—

Leaves glabrous, hastate- or subdeltoid-cordate, without stipular thorns..... *deltoides* var. *sikkimensis*.

Leaves pubescent, reniform- or orbicular-cordate, with sharp stipular thorns:—

Tubers numerous, subequal; spiny roots 0..... *stuckulata*.

Tubers few, unequal, mixed with many fibrous roots of which the uppermost are spinous..... *fanciculata* var. *spinosa*.

*Stem twining to the right; leaves all simple; capsule broader than long; seeds winged all round:—[p. 1064]

Leaves softly tomentose, with cartilaginous margins..... *angustata*.

Leaves quite glabrous, their margins not cartilaginous: -

Stems terete or compressed, smooth or faintly angled :—

Kachis of flower-spikes straight:—

Leaves green beneath ; pistillode large, globose..... *aculeata*.

Leaves glaucescent beneath; pistillode minute :—

Perianth-segments firm, thick; upper leaves often with bases shallow-cordate or subtruncate..... *nummularia*.

Perianth-segments herbaceous ; all the leaves deep-cordate
nummularia var. *belophylla*.

Eachis of flower-spikes zigzag..... *Hamiltoni*.

Stems 4-gonous, winged or strongly angled :—

Tubers white or yellowish-white without and within :—

Tubers oblong or tapering..... *alata*,

Tubers globose..... *alata* var. *obovata*.

Tubers purple outside, oblong:—

Skin purple but flesh white..... *alata* var. *rubella*.

Skin and flesh both purple..... *alata* var. *purpurea*.

2200. DIOSCOREA DEMONA Roxb.; F. I. iii. 805 ; F. B. I. vi. 289
E. D. D. 500.
In most of the provinces.
A large climber.
2201. DIOSCOREA PENTAPHYLLA Linn.; F. I. iii. 806; F. 3[^]
vi. 289; E. D. D. 522. *D. triphylla* F. I. iii. 805.
In all the provinces.
A considerable climber. *Hind.* Kanta-alu.
2202. DIOSCOREA TOMENTOSA Koenig; F. I. iii. 805; F. [†] ~~†~~
vi. 289; E. D. D. 537.
Orissa, Angul.
A rather small climber.
2203. DIOSCOREA BULBIFERA Linn. var. SATIVA. *D. sativa* F. E- ^T ~~†~~
vi. 295 ; E. D. D. 534.
Very rarely cultivated.
A considerable climber. The Otaheite Potato.
- 2203/2. Var. PULCHELLA. *D. indchella* F. I. iii. 801. *D. bulbi-*
fera E. D. D. 494.
General, but chiefly in the eastern provinces.
A climber. *Vernac.* Rât-alu; *Santal.* Ato sang.
- 2203/3. Var. CRISPATA. *D. crispata* F. I. iii. 802 ; F. B. I-
vi. 296; E. D. D. 499.
In all the western provinces.
A climber. *Hind.* Zamin-kand ; *Santal.* Piska.
2204. DIOSCOREA DELTOIDEA Wall.; F. B. I. vi. 291; E. [†] ~~†~~
D. 503: var. SIKKIMENSIS,
N. Bengal, Duars.
A small climber.
2205. DIOSCOREA FASCICULATA Roxb.; F. I. iii. 801; F. B. I[†]
vi. 296 ; E. D. D. 507.
Cultivated, especially in the northern provinces.
A small climber. *Beng.* Susni-alu.
- 2205/2. Var. SPINOSA. *D. aculeata* F. I. iii. 800; E. D. D. 481.
D. spinosa F. B. I. vi. 291.
Cultivated generally but sparingly.
A large climber. *Hind.* and *Beng.* Mou-alu.
2206. DIOSCOREA ANGUINA Roxb.; F. I. iii. 803; F. B. I. vi. 293 ;
E. D. D. 488.
Chota Nagpur; N. Bengal; E. Bengal.
A large climber. *Beng.* Kukur-alu.

2207. DIOSCOREA ACULEATA Linn.; F. IB. I. vi. 296. *B. glabra*
E. D. D. 510. *D. Wallichii* F. B. I. vi. 295.
Chota Nagpur; Chittagong: cultivated.
A considerable climber. The Chinese Yam.
2208. DIOSCOREA NUMMULARIA Lamk; F. I. iii. 803: E. D. D.
D. 515. *D. glabra* F. I. iii. 804 ; F. B. I. vi. 294.
In all the provinces, never cultivated.
A large climber. *Beng.* Shora-alu; *Santal.* Alto sang.
- 2208/2. Var. BELOPHYLLA Voigt (sp.). *D. sagittata* E. D. D. 532.
D. glabra F. B. I. vi. 294 partly.
Chota Nagpur, Parasnath.
A large climber; probably, as Voigt suggests, quite
distinct specifically from *D. nummularia*.
- Roxburgh has himself left a note in the Calcutta Library
indicating that his 1). *glabra* and 2). *nummularia* are the same
species.
2209. DIOSCOREA HAMILTONI Hook. f. ; F. B. I. vi. 295 partly.
Chota Nagpur ; N. Bengal; E. Bengal; Chittagong.
A considerable climber.
- This is most nearly related, of the uncultivated species, to
D. alata; it differs by its much narrower leaves which always
become brownish when dry, and by its much larger capsules.
2210. DIOSCOREA ALATA Linn.; F. I. iii. 797; F. B. I. vi. 29^u
E. D. D. 484. *D. Hamiltoni* F. B. I. vi. 295 partly.
• Generally cultivated.
A large climber. *Beng.* Khám; Khám-alu.
- 2210/2. Var. GLOBOSA. *D. globosa* F. I. iii. 797; F. B. I. vi. 296
E. D. D. 513.
Generally cultivated.
A large climber. *Beng.* Chupri-alu ; *Santal.* Bengo mi
- 2210/3. Var. RUBELLA. *D. rubella* F. I. iii. 798; F. B. I. vi. 29
E. D. D. 530.
Generally cultivated.
A large climber. *Beng.* Guraniya-alu.
- 2210/4. Var. PURPUREA. *D. piwpitrea* F. I. iii. 799; F. B.
vi. 297; E. D. D. 526.
Generally cultivated.
A large climber. *Vernac.* Lal-guraniya; rakto-guran
alu.

Order CXXXV. ROXBURGHACEAE,

Herbs with twining, rarely erect stems from a perennial rootstock. *Leaves* alternate or opposite, petioled, 3-nerved; cross veins parallel. *Flowers* hermaphrodite, regular, on axillary, filiform, 1-flowered or few- and lax-flowered peduncles. *Perianth* inferior or half-superior, petaloid; segments or lobes 4, 2-seriate, subequal. *Stamens* 4, at the base of the perianth or almost hypogynous; filaments rather thick, free or connate below; anthers dorsifixed; cells 2, parallel or divergent; dehiscence longitudinal, introrse. *Carpels* 2, connate in a superior or half-inferior, 1-locular ovary; ovules 2 or more, erect or pendulous; stigma terminal, sessile, small, entire or didymous. *Fruit* a capsule, at length separating into 2 valves. *Seeds* oblong; testa coriaceous; embryo long, in the axis of the hard albumen.

959. *Stemona* Lour.

Herbs with twining stems; root of fleshy tubers; *leaves* opposite, alternate, or whorled, ovate, 3-9-costate. *Flowers* solitary, or few and subracemose. *Perianth* segments 4, lanceolate, many-nerved, inferior. *Stamens* 4, subhypogynous, more or less connate in a ring; anthers linear, erect; connective produced in a very long, linear-lanceolate, erect appendage. *Carpels* 2, connate in a je, compressed, 1-locular ovary; ovules 2 or more, erect; anthers long or short; stigma small, sessile, pointed. *Fruit* an ovoid or oblong, compressed, few-seeded, 2-valved capsule. *Seed* erect, ovoid or oblong, terete, grooved, beaked; funicle bearded; testa thick; embryo rather long; radicle close to the hilum.

2211. *STEMONA TUBEROSA* Lour.; F. B. I. vi. 298. *BoxburgMagnifloriosoides* F. I. ii. 234.

Orissa; Chittagong.

A considerable climber.

Order CXXXVI. LILIACEAE.

Herbs, very rarely shrubs or small trees, with fibrous roots or a creeping rootstock, or a bulb or corm. *Leaves* cauline or radical, sometimes 0. *Flowers* hermaphrodite, rarely by abortion 1-sexual, axillary or terminal, solitary or geminate or umbellate, spicate, cymose or paniculate or fasciated; bracts usually small, scarious,

sometimes, when the flowers umbellate, spathe-like. *Periant* herbaceous or petaloid, usually 6-merous in 2 series, rarely 4- or 8 or 10-merous, imbricate, rarely valvate in bud, inferior, free or rarely slightly adnate to base of ovary. *Stamens* 6, rarely 3 or fewer, hypogynous or adnate to the perianth; filaments free or connate; anthers oblong or linear, often dorsifixed; dehiscence longitudinal, rarely terminal and porous. *Carpels* 3, connate in a superior, 3-celled ovary; ovules 2 or more from inner angles of cells, anatropous or rarely orthotropous; style usually simple, often long, rarely short or 0, or styles 3. *Fruit* a capsule or berry, usually 3-celled, rarely 1-celled. *Seeds* 1 or more, globose or flattened; albumen horny or fleshy; embryo small, terete.

Shrubs with perennial stems above ground; fruit berry-like:—

Stems leafless, slender, usually straggling; leaves replaced by lineal or acicular cladodes; flowers solitary, fascicled, or racemose

Asparagus

Stems leafy:—

Leaves distinctly 3-5-nerved and reticulately veined, disposed at intervals along the generally climbing stem; flowers in umbels

Smilax.

Leaves closely, numerous parallel-nerved, usually clustered at the apex of a short or long, generally erect caudex:—

Each cell of the ovary 1-ovuled.....**Dracaena.**

Each cell of the ovary 4- or more-ovuled.....**Cordyline.**

Herbs with annual stems or scapes, rising usually from perennial underground rootstocks, corms, or bulbs, rarely (*Asphodelus*) the plant wholly annual:—

•Underground perennial stem large in proportion to the roots:—[p. 1070]

Perennial stem a creeping rootstock; annual aerial stem erect, leafy; leaves broad; fruit a berry.....**Disporum.**

Perennial stem compact, not creeping; fruit a loculicidal capsule:—

Aerial annual stem climbing, leafy; leaves broad, with tendril-like tips; perianth large, showy, its segments distinct; rootstock tuber-like, irregular, naked.....**Gloriosa.**

Aerial annual stems or scapes erect; leaves narrow; rootstock a globose, coated corm or bulb:—

Perennial stem a solid corm covered with brown sheaths; annual stem leafy, with scattered linear or ensiform leaves; flowers solitary or corymbose.....**Iphigenia.**

Perennial stem a tunicated bulb; annual scape simple, naked; leaves radical:—

Flowers racemose on the scape, not surrounded by an involucre of bracts:—

Seeds subglobose ; perianth stellate.....**Scilla.**

Seeds flattened ; perianth campanulate.....**Urginea.**

Flowers umbellate or capitate at the top of the scape, at first enclosed in a spathe-like involucre of membranous bracts

Alii urn.

•Underground perennial stem very small or (*Asphodelus* sometimes) none; root-fibres large, numerous, usually some or all fleshy or tuberous; leaves radical; fruit a loculicidal capsule:—[p. 1069]

Flowers small; perianth-segments distinct; ovules few:—

Each cell of the ovary 2-ovuled; capsule triquetrous; leaves semiterete; plant often wholly annual.....**Asphodelus.**

Each cell of the ovary 4- or more-ovuled ; capsule deeply 3-lobed, the lobes flattened; leaves flat.....**Chlorophytum.**

Flowers very large, showy; perianth funnel-shaped; each cell of the ovary many-ovuled; capsule triquetrous; leaves linear

Hemerocallis.

960. *Asparagus* Linn.

Undershrubs; stems erect, straggling, or climbing, terete, grooved, or angled; rootstock stout, creeping; *leaves* minute, scale-like, with tufts of needle-like or flattened axillary cladodes. *Flowers* hermaphrodite, rarely 1-sexual, small or minute, axillary, solitary, fascicled or racemose, pendulous; pedicels jointed ; bracts minute or obsolete. *Perianth* petaloid, 6-partite, campanulate. *Stamens* 6, adnate to base of perianth-lobes; filaments free; anthers oblong. *Carpels* 3, connate in a sessile, 3-gonous, 3-celled ovary ; ovules 2 or more in each cell; style columnar, short and thick or long and slender; stigmas 3, short, recurved. *Fruit* a globose, pulpy berry. *Seeds* few or, by abortion, solitary, subglobose ; testa black, fragile; embryo dorsal; albumen hard.

Racemes as long as or (usually) longer than the slender, divaricate, falcate cladodes, channelled beneath and only twice as long as the longest spines.....*racemosus.*

Racemes distinctly (usually considerably) shorter than the strong, suberect, strict triquetrous cladodes, which many times exceed the uniform, slightly recurved spines.....*acerosus.*

2212. ASPARAGUS RACEMOSUS Willd.; F. I. ii. 151; F. B. I. vi. 316; E. D. A. 1575.

In most of the provinces.

A tall, climbing, much-branched undershrub. *Hind.* Sada-bori, shakakul; *Beng.* Satamuli.

2213. ASPARAGUS ACEROSUS Roxb.; F. I. ii. 150; F. B. I. vi. 317.
N. Bengal; Chittagong.

A climbing, much-branched undershrub.

961. Smilax Linn.

Climbing shrubs, rarely erect herbs; *leaves* alternate, rarely opposite, persistent, 3-5-nerved and reticulate; petiole with usually 2 tendrils above its base. *Flowers* small, umbellate, dioecious. *Perianth* of 6 free, incurved or recurved, subequal segments, *a Stamens* 6 or more, free from the base of the perianth; filaments erect, free, short or long; anthers oblong, 2-celled, didymous, with contiguous cells or with cells discrete on a forked connective. *Pistillode* 0. ? *Staminodes* filiform, 6 or 3. *Carpels* 3, connate in a 3-gonous 3-celled ovary; ovules in each cell 2, orthotropous, pendulous; style short or 0; stigmas 3, stout, recurved. *Fruit* a globose berry. *Seeds* by abortion solitary globose, or oftener 2 hemispheric, rarely 3; albumen horny; embryo small.

Umbels 2-3, very rarely more, alternate on a common peduncle :—

Petiole stout, always narrowly sheathing but not auriculate below the middle.....*macrophylla*.

Petiole rather slender, with 2 large, thickly coriaceous, indistinctly reticulate auricles below the middle.....*Boxlmrghiana*.

Umbels 7-20, ternate or whorled on a common peduncle; petiole stout, with, in all except the uppermost leaves, 2 large, leafy, distinctly reticulate auricles below the middle.....*prolifera*.

2214. SMILAX MACROPHYLLA Roxb.; F. I. iii. 793; F. B. I. vi. 310; E. D. S. 2252. *S. retusa* F. I. iii. 793. *S. ovalifolia* F. I. iii. 794.

Chota Nagpur; W. Bengal; Chittagong.

A large, prickly climber. *Hind.* Jangli aushbah; *Beng.* Kumarika; *Santal.* Atkir.

2215. SMILAX ROXBURGHIANA Wall.; F. B. I. vi. 311.

Chota Nagpur, Parasnath; Chittagong.

A large, prickly climber.

2216. SMILAX PROLIFERA Roxb.; F. I. iii. 795; F. B. I. vi. 312; E. D. S. 2258. *S. laurifolia* F. I. iii. 793.

In all the provinces.

A large, prickly climber.

962. *Dracaena* Linn.

Shrubs, sometimes climbing, or small trees; *leaves* alternate or crowded and subterminal, sessile or petioled, many-nerved, costate or not. *Flowers* in terminal racemes, panicles, heads or umbels; bracts small. *Perianth* corolline, campanulate, funnel-shaped, or tubular, 6-cleft; lobes narrow. *Stamens* 6, adnate to base of perianth-tube; filaments filiform or flattened; anthers versatile. *Carbels* 3, connate in a 3-celled ovary; ovules solitary, erect in each cell; style filiform; stigma capitate. *Fruit* a globose, didymous, or 3-lobed berry. *Seeds* globose or angled; testa thickened; albumen horny; embryo small.

Stems erect; leaves very broadly, shortly petioled; flowers in fascicles; berry orange-red.....*spicata*.
Stems ascending, weakly branched; leaves narrowly, distinctly petioled; flowers 2-3-nate; berry cherry-red.....*terniflora*.

2217. DRACJENA SPICATA Roxb.; F. I. ii. 157; F. B. I. vi. 328.

Chittagong.

A stout shrub or small tree.

2218. DRAC-KNA TERNIFLORA Roxb.; F. I. ii. 159; F. B. I. vi. 328.

Chittagong.

A straggling shrub.

963. *Cordyline* Gommers.

Shrubs with slender stems and crowded, subterminal, sessile or petioled *leaves*, subcoriaceous and many-nerved. *Flowers* small, paniculate, short-pedicelled; bracts small. *Perianth* corolline, tubular or narrowly campanulate, 6-cleft; lobes narrow. *Stamens* 6, adnate to base of perianth-tube; filaments filiform or flattened; anthers versatile. *Carpels* 3, connate in a short, 3-celled ovary; ovules in each cell 4-16; style filiform; stigma capitate or shortly 3-lobed. *Fruit* a globose or 3-lobed dry berry. *Seeds* in each loculus several or, by abortion, solitary, obovoid or somewhat compressed; testa black, shining; embryo nearly as long as the albumen.

2219. CORDYLINE TERMINALIS Kunth; F. B. I. vi. 331. *Braccena ferrea* F. I. ii. 156.

In gardens everywhere.

A shrub. The garden "Dracaena."

964. Disporum Salisb.

Herbs with erect, angular, leafy stems, rising from a creeping rootstock; *leaves* sessile or subsessile, strongly nerved. *Flowers* in terminal or axillary, few-flowered umbels; pedicels decurved. *Perianth* narrowly campanulate, deciduous; lobes petaloid, subequal, free, erect or spreading at tips, their bases saccate or spurred. *Stamens* 6, hypogynous; filaments filiform or flattened; anthers dorsifixed; dehiscence extrorse. *Carbels* 3, connate in a 3-celled ovary; ovules 2-6 in each cell; style long or short; stigmas 3, short. *Fruit* a fleshy, pisiform, black berry. *Seeds* few, subglobose; testa brown; albumen horny; embryo small.

2220. DISPORUM PULLUM Salisb.; F. B. I. vi. 360.

Chota Nagpur, Parasnath.

A herb, annual leafy stems 2-4 feet high.

965. Gloriosa Linn.

Climbing herbs with leafy stems, springing from a naked, tuberous rootstock; *leaves* alternate, opposite, or 3-nately whorled, lanceolate, strongly nerved, with a long, spiral, tendril-like apex. *Flowers* large, showy, axillary, solitary; pedicels reflexed. *Perianth* petaloid, persistent; segments 6, subequal, spreading or reflexed, margins often undulate. *Stamens* 6, hypogynous; filaments filiform; anthers linear, dorsifixed, versatile; dehiscence extrorse. *Carpels* 3, connate in a 3-celled ovary; ovules in each cell numerous; style filiform, deflexed, with 3 subulate arms stigmatic within. *Fruit* a large, coriaceous, septicidal capsule. *Seeds* subglobose; testa spongy, wing-like; embryo cylindrical.

2221. GLORIOSA SUPERBA Linn.; F. I. ii. 143; F. B. I. vi. 358; E. D. G. 243.

In most of the provinces.

A climbing herb, the leaves with cirrhate tips; rootstock a chain of tuber-like joints, budding from the convex upper side. *Hind.* Langūli, kulhari, kaliari; *Beng.* Bisha-languli, nlat-chandal; *SantaL* Siric' samano.

966. Iphigenia Kunth.

Herbs with small, tunicate corms, and erect, leafy, slender stems; *leaves* few, scattered, linear, the upper bract-like. *Flowers* small, erect, solitary or corymbose. *Perianth* petaloid, 6-partite,

stellately spreading, deciduous; segments equal, narrow, clawed. *Stamens* 6, hypogynous; filaments short, flat; anthers oblong, versatile, introrsely attached. *Carpels* 3, connate in a sessile, 3-celled ovary; ovules in each cell numerous; styles 3, shortly connate below, free above, linear, recurved, stigmatic within. *Fruit* a loculicidal capsule. *Seeds* subglobose; testa thin, brown, adpressed; albumen fleshy; embryo small.

2222. IPHIGENIA INDICA Kunth; F. B. I. vi. 357; E. D. I. 340.

Chota Nagpur ; Behar ; "W. Bengal.

A herb, 3-10 in. high, with a globose, perennial corm. *Santal*. Chutia chandbol.

967. Scilla Linn.

Herbs with tunicate bulbs; *leaves* radical, linear lorate or oblong. *Flowers* racemose, on a simple, leafless scape; bracts small. *Perianth* petaloid, persistent, stellate or campanulate; segments 6, subequal, often recurved. *Stamens* 6, adnate at or near base of perianth-lobes; filaments usually filiform; anthers ovate or oblong; dehiscence introrse. *Carpels* 3, connate in a 3-celled ovary ; ovules in each cell usually few, often 2; style filiform*; stigma small, capitate. *Fruit* a globose, 3-lobed, loculicidal capsule; cells 1-2-seeded. *Seeds* obovoid or subglobose ; testa thin, black; embryo shorter than the firm albumen.

2223. SCILLA INDICA Bak.; F. B. I. vi. 348 ; E. D. S. 968.

Chota Nagpur; Behar.

A small, bulbous herb; flowers appearing with the leaves. *Beng*. Safedi-khus.

968. Urginea Steinh.

Herbs with tunicate bulbs; *leaves* radical, linear or lorate. *Flowers* racemose, on a long, leafless scape, often appearing before the leaves; pedicels short or long, articulate ; bracts small. *Perianth* petaloid, campanulate; segments 6, subequal. *Stamens* 6, adnate at or near base of perianth-lobes, included; filaments filiform or thickened at the base; anthers oblong or linear; dehiscence introrse. *Carpels* 3, connate in a sessile, 3-celled, often 3-gonous ovary; ovules in each cell numerous; style filiform; stigma somewhat thickened. *Fruit* an oblong, 3-quetrous, loculicidal capsule.

Seeds usually many in each cell, compressed; testa black, marginally winged; embryo rather large; albumen fleshy.

2224. URGINEA INDICA Kunth; F. B. I. vi. 347. *Scilla indica* F. I. ii. 147.

Behar; Chota Nagpur.

A bulbous herb; flowers appearing before the leaves.

Vernac. Kanda, kandé, jangli-piyaj, ban-piyaj.

969. *Allium* Linn.

Herbs with tunicate bulbs; odour characteristic, foetid or pungent; *leaves* radical, usually narrow, often fistular, sheath short or long, and enveloping the scape below. *Flowers* rather small, several or many in a terminal umbel, enclosed at first by 2, rarely 3, membranous bracts, sometimes more or less connate, at the top of a simple, leafless scape; pedicels not articulate; occasionally the flowers replaced by bulbils. *Perianth* subcalycine, of 6 persistent segments, free or slightly connate below, subequal, campanulate or stellate. *Stamens* 6, inserted at or near the base of the perianth-lobes; filaments free, filiform, or somewhat dilated below, or sometimes connate at the base; anthers oblong; dehiscence introrse. *Carpels* 3, connate in a sessile or shortly stipitate, more or less perfectly 3-celled ovary; ovules usually 2, rarely 3-6 in each carpel; style filiform; stigma minute. *Fruit* a membranous, loculicidal capsule. *Seeds* few, compressed; testa black; albumen fleshy; embryo rather large.

Leaves fistular:—

Leaves basal only; heads dense, with flowers only.....*ascalonicum*.

Leaves subdistichous; heads dense, with flowers and bulbils.....*Cepn*.

Leaves flat:—

Heads bearing flowers only; bulb long, cylindric, simple:—

Heads lax; filaments simple, linear.....*tuberostim*.

Heads dense; filaments 2-toothed.....*Ampelopraxuw*.

Heads lax, bearing both flowers and bulbils; bulb short, compound
sativum.

2225. ALLIUM ASCALONICUM Linn.; F. I. ii. 142; F. B. I. vi. 337; E. D. A. 767.

Cultivated.

A bulbous herb. *Beng.* Gandhan, piyaj. The Shallot.

2226. ALLIUM CBPA Linn.; F. I. ii. 142; F. B. I. vi. 337; E. D. A. 769.

Cultivated.

A bulbous herb. *Hind.* Piyaj; *Beng.* Piyaj, palandu.
The Onion.

2227. ALLIUM-TUBEROSUM Roxb.; F. I. ii. 141; F. B. I. vi. 343 ;
E. D. A. 786.

Cultivated.

A bulbous herb. *Beng.* Banga gandina. The Indian
Leek.

2228. ALLIUM AMPELOPRASUM Linn.; F. B. I. vi. 337. *A. Por-*
rum F. I. ii. 141; E. D. A. 775.

Cultivated.

A bulbous herb. *Beng.* Gandina, paru. The Leek.

2229. ALLIUM SATIVUM Linn.; F. I. ii. 142; F. B. I. vi. 337;
E. D. A. 779.

Cultivated.

A bulbous herb. *Vernac.* Lasun. Garlic.

970. *Asphodelus* Linn.

Annual or perennial herbs, with slender or fleshy root-fibres; *leaves* radical, linear, 3-cornered or terete and fistular. *Flowers* small, racemose on the simple or sparingly branched leafless scape ; pedicels jointed, solitary in the axils of the small, scarious bracts. *Perianth* petaloid, marcescent; segments 6, free or shortly connate below. *Stamens* 6, hypogynous, shorter than perianth-lobes, erect or somewhat declinate; filaments wide-based, enclosing the ovary, flattened or filiform above; anthers oblong or almost linear, versatile, the filament inserted in a pit on the back of the connective. *Carpels* 3, connate in a 3-celled ovary; ovules 2, collateral in each cell; style filiform; stigma somewhat 3-lobed. *Fruit* a globose, 3-quetrous, loculicidal capsule, with rugose partitions. *Seeds* usually solitary in each cell of capsule ; testa black, usually rugose; albumen cartilaginous; embryo rather large.

2230. ASPHODELUS TENUIFOLIUS Cav.; F. B. I. vi. 332. *A.*
clavatus F. I. ii. 148.

In the western and central provinces.

An annual weed.

971. *Chlorophytum* Ker.

Herbs with a short, hard rootstock, emitting many fascicled roots, often thick and fleshy or tuber-like; *leaves* radical, clus-

tered, often broad, rarely linear or lorate. *Flowers* laxly racemed on a simple or branching leafless scape; pedicels usually fascicled in the axils of small scarious or larger membranous bracts. *Perianth* petaloid, marcescent or persistent, rarely deciduous; lobes free, rotate. *Stamens* 6, hypogynous, free, or the 3 inner adnate to perianth-lobes, included; filaments filiform, often widened above the middle; anthers oblong or linear; dehiscence introrse, the filament inserted in a small pit on the back of the connective. *Carpels* 3, connate in a sessile, 3-quetrous, 3-celled ovary; ovules 4 or more in each cell; style filiform; stigma small. *Fruit* a coriaceous, truncate, 3-quetrous, often 3-lobed, loculicidal capsule. *Seeds* broad, usually compressed, rugose, not angular; testa black; albumen rather hard; embryo often curved, rather large.

Root-fibres fleshy, cylindric • leaves usually contracted near the base into a short petiole.....*arundinaceum*.

Root-fibres partly cylindric, partly tuberous; leaves rarely contracted near the base.....*tuberosum*.

2231. CHLOROPHYTUM ARUNDINACEUM Bak.; F. B. I. vi. 333.

Chota Nagpur; Behar.

A herb.

2232. CHLOROPHYTUM TUBEROSUM Bak.; F. B. I. vi. 334. *Anthericum tuberosum* F. I. ii. 149.

Behar; W. Bengal.

A herb.

972. Hemerocallis Linn.

Showy herbs, with fleshy root-fibres and a short rootstock; *Leaves* long, narrow, often grass-like, strongly ribbed and many-nerved. *Flowers* large, suberect, orange-yellow, in a few-flowered panicle, terminating a long, terete, naked scape; bracts scarious, deciduous. *Perianth* funnel-shaped; segments 6, connate below in a tube, free and recurved above, the 3 inner rather the larger. *Stamens* 6, adnate to mouth of corolla-tube, exserted; filaments filiform, declinate; anthers linear-oblong, the connective with a dorsal pit for the tip of the filament; dehiscence introrse. *Carpels* 3, connate in a subsessile, oblong, obtusely 3-cornered, 3-celled ovary; ovules in each cell numerous; style filiform, declinate; stigma small, capitate. *Fruit* a coriaceous, oblong or subglobose,

3-cornered, transversely rugose, shortly loculicidal, 3-valved capsule. *Seeds* usually few, ovoid, angular; testa black, shining, membranous; albumen fleshy; embryo cylindrical.

2233. HEMEROCALLIS FULVA Linn.; F. B. I. vi. 326.

In gardens generally.

A showy herb, with paniculate scapes, 2-3 feet high.

Order CXXXVII. PONTEDERIACEJE.

Marsh herbs or fresh-water aquatics, erect or floating. *Leafy* stems 1-foliate, springing from the buried rootstock or from the joints of the floating stem; basal leaf long-petioled, blade floating or upraised. *Flowers* hermaphrodite, slightly irregular, racemed or spicate, rarely fascicled or paniculate at the ends of 1-leaved stems or branches, sessile or rarely peduncled; bract under the inflorescence spathe-like; bracts under the flowers minute or obsolete. *Perianth* inferior, petaloid, marcescent, usually tubular; lobes 6, sub-2-seriate, similar, or the 3 inner smaller. *Stamens* 6 or 3, unequally adnate to perianth-tube or base of perianth-lobes, usually declinate, the upper shorter; filaments free; anthers oblong or rarely ovate, dorsally or basally adnate; cells 2, parallel, distinct; dehiscence introrse, longitudinal or porous. *Carpel** 3, connate in a superior, 3-celled ovary, placentas axial; or 1-celled, placentas parietal, each placenta with many 2-seriate ovules, sometimes only one in each cell fertile, anatropous, pendulous or suspended; style filiform or columnar; stigma terminal, entire or lobed. *Fruit* a dry, membranous, loculicidally 3-valved capsule, rarely indehiscent. *Seeds* ovoid or oblong, small; testa longitudinally ribbed; albumen floury or hard; embryo central, cylindrical.

973. *Monochoria* Presl.

Aquatic herbs; rootstock short or long, creeping, clothed with leaf-sheaths; *leaves* radical and solitary at the top of the emerging stem or branches, radical long-petioled, cauline rather shorter-petioled, all cordate-ovate, sagittate or lanceolate. *Flowers* in a raceme, sessile within the axil of the cauline leaf, and fasciculately long-pedicelled, or peduncled and subspicately short-pedicelled; spathe complicate below the raceme. *Perianth* campanulate; tube 0; lobes 6, distinct, subequal. *Stamens* 6, adnate to base of

perianth-lobes or 1^pogynous, one usually largest, with its filament toothed on one side; anthers basifixed; dehiscence by a terminal, ultimately elongated slit. *Carpels* 3, connate in an ovoid, sessile, 3-celled ovary; ovules in each cell many; style filiform; stigma minutely 2-lobed. *Fruit* an oblong, membranous, loculicidal capsule. *Seeds* many, ovoid, obtuse, many-costate; embryo cylindric, in the centre of the floury albumen.

Rootstock elongated, creeping; leaves hastate, sagittate, or cordate; flowers long-pedicelled, subunibellate or racemose.....*hastcefolia*.
Rootstock short, suberect; flowers short-pedicelled, subspicate:—

Leaves ovate or ovate-cordate ; flowers rather numerous.....*vaginalis*.

Leaves linear or narrowly ovate ; flowers few

vaginalis var. *plantaginea*.

2234. MONOCHORIA HASTIFOLIA Presl; F. B. I. vi. 362. *Poniederia hastata* F. I. ii. 121. *P. sagittata* F. I. ii. 124. *P. dilatata* F. T. ii. 123.

In all the provinces.

An aquatic herb.

2235. MONOCHORIA VAGINALIS Presl; F. B. I. vi. 363. *Poniederia vaginalis* F. I. ii. 121.

N. Bengal; E. Bengal.

An aquatic herb. *Beng.* Nukha.

2235/2. Var. PLANTAGINEA Solms-Laubach; F. B. I. vi. 363. *Poniederia plantaginea* F. I. ii. 123.

~n all the provinces.

A small aquatic herb.

Order CXXXVIII XYRIDEJE.

Bigid, cespitose herbs. *Leaves* radical, linear or subulate. *Flowers* hermaphrodite, somewhat irregular, sessile in the rigid, dark-brown, imbricating bracts of a terminal head or spike, on a simple, naked scape. *Perianth* inferior, 2-seriate. *Sepals* 2, lateral, small, like bracteoles, dorsal larger, embracing corolla, or absent, all caducous. *Petals* 3, connate in a slender, short or long tube ; lobes 3, equal, spreading. *Stamens* 3 perfect, shorter than corolla-lobes, and attached near their bases ; filaments short, filiform ; anthers oblong, dorsally attached; cells 2, parallel or divergent below; dehiscence longitudinal; stamens 3, alternate

with corolla-lobes, or 0. *Carpels* 3, connate in a 1-locular or imperfectly 3-locular ovary; placentas 3, each many-ovuled, basal and confluent, or parietal; ovules anatropous; style terminal, entire or with 3 stigmatic arms. *Fruit* a capsule, loculicidally 3-valved, or with a circumscissile top. *Seeds* many, linear; testa longitudinally striate; albumen floury; embryo minute.

974. *Xyris* Linn.

Characters those of the order.

Leaves flat, loriform, obtuse, 1-2 feet long *indica*.
 Leaves narrowly linear, acute, 3-8 in. long *pauciflora*.

2236. XYRIS INDICA Linn.; F. I. i. 179 ; F. B. I. vi. 364; E. D. X. 23.

Tirhut; N. Bengal; Orissa, Khurda.

A tufted, aquatic herb. *Vernac.* Dabi-duba, chiné-ghas.

2237. XYRIS PAUCIFLORA Willd.; F. £. I. vi. 365.

In most of the provinces.

A small, tufted, aquatic herb.

Order CXXXIX. COMMELINACEÆ.

Herbs, prostrate or erect, rarely climbing, very rarely shrubby. *Leaves* costate, with sheathing bases; nerves parallel. *Flowers* more or less irregular, hermaphrodite or, by abortion, polygamous, often cymose; cymes scorpioid, straight, or reduced to one flower, sometimes paniculate, often enclosed in spathe-like bracts ; floral bracts usually small, opposite the pedicels, or obsolete, sometimes herbaceous and distichously imbricate. *Perianth* inferior, 6-partite, 2-seriate; outer segments 3, herbaceous, often persistent, inner segments 3, petaloid, free or connate below in a tube, spreading above, marcescent. *Stamens* 6, adnate to base of perianth-segments, all perfect or 2 or more reduced to staminodes; filaments often bearded with jointed hairs; anthers oblong or globose, often dissimilar; dehiscence introrse longitudinal, or apical porous; cells sometimes discrete. *Carpels* 3, or sometimes 2, connate in a 3- or 2-celled, superior ovary; ovules solitary or few, orthotropous on the inner angles of the cells; style terminal ; stigma small. *Fruit* a loculicidal capsule, or indehiscent, with a thin, fragile, or a succulent pericarp. *Seeds* angled; testa

smooth or rugose; albumen floury; embryo minute, remote from the hilum.

Stamens 3 perfect, with 1-3 staminodes :—

Cymes solitary, enclosed in spathaceous bracts.....Commelina.

Cymes paniculate, naked.....Aneilema,

Stamens (i perfect:—

Petals united below in a tube ; cymes scorpioid, axillary or terminal, with **large**, imbricating, 2-seriate, spathaceous bracteoles, rarely in exposed racemes or included axillary fascicles.....Gyanotis.

Petals free:—

Cymes capitate.....^.....Forrestia.

Cymes secund, in terminal or axillary, thyrsoid panicles.,Floscopa.

973. Commelina Linn.

Herbs, usually slender and creeping below; *leaves* ovate, lanceolate, or linear, with lax sheaths, petioled or not. *Flowers* in usually 2-nd cymes, emerging at one time from a terminal, complicate, or funnel-shaped or hooded spathe; flowers of the upper cyme-branch small, deciduous, of the lower fertile; fruiting pedicel and capsule retracted within the spathe. *Sepals* 3, membranous, the 2 inner often connate below. *Petals* 3, longer than **sepals**, one larger than the others and often clawed. *Stamens* 3 perfect, 2-3 imperfect; anthera oblong, One usually larger than the **rs**. *Carpels* 3, one sometimes abortive, connate in a 3-celkil, a 2-celled ovary; ovules of 2 cells 1 or 2, the third cell, if at, 1-ovukd or empty; style simple. *Fruit* a loculicidal capsule, the posterior cell sometimes indehiscent or obsolete, or the 2 anterior cells empty, indehiscent and connate as a ligulate body, from which the posterior cell falls away. *Seeds* elliptic or angular; testa reticulate, pitted or rugose.

Anterior pair of cells of the ovary 2-ovuled; posterior cell 1-ovuled or obsolete :—[p. 1082] *

[Capsule 3-celled, the two anterior cells loculicidally dehiscent, and each usually 2-seeded; the posterior cell keeled, 1-seeded, and deciduous, at length dehiscent:—[p. 1082]

Leaves lanceolate; spathes complicate, the margins free or connate only at the very base :—[p. 1082]

Seeds reticulate, cylindric; branches of cyme 1-3-flowered; spathe sometimes cordate at base [p, 1082].....**nudiflora**.

§Seeds smooth, truncate at one end; spathe always rounded at base:—[p. 1081]

Branches of cyme equal, 1-2-flowered; seeds appendaged, globose at the unflattened end.....*salicifolia*.

Branches of cyme unequal, upper 2-4-flowered, lower 1-2-flowered ; seeds without appendages, subacute at the unflattened end.....*Hasskarlii*.

{Leaves elliptic-ovate, obtuse; spathe turbinate; capsule always 5-seeded; seeds rugose [p. 1081].....*hengalensis*.

tCapsule 1-celled, with 2 superposed seeds truncate and appendaged at both ends, or with 1 subglobose seed; leaves linear ; spathes deeply cordate at the base [p. 1081].....*attenuate!*.

All the cells of the ovary 1-ovuled :—[p. 1081]

Capsule 3-celled, subequally 3-valved; seeds free in the cells, ellipsoid, compressed, lead-grey with often mottled edges; leaves lanceolate *obliquu*.

Capsule 2-celled, or if 3-celled (*C. appendiculata* sometimes) then only 2-valved, the dorsal cell being indehiscent and the seed being adnate to the cell:—

Leaves linear or narrowly lanceolate, nearly glabrous; capsule often with a smaller, indehiscent, dorsal cell; seeds oblong, smooth blackish, appendaged at both ends.....*appendiculata*.

Leaves large, widely lanceolate, subscabridly pubescent; capsule always 2-celled ; seeds ellipsoid, rugose, straw-coloured, pubescent *suffruticosa*~

2238. *COMMELINA NUDIFLORA* Linn.; F. B. I. vi. 369; E.

C. 1755. *C. ceespitosa* F. I. i. 174.

Throughout the western and northern provinces.

A creeping herb, rooting at the nodes.

2239. *COMMELINA SALICIFOLIA* Eoxb.; F. I. i. 172 ; F. B. I. vi. 370

E. D. C. 1759.

In most of the provinces.

A diffuse, slender herb, with long internodes. *Hinn**

Jalpipari; *Beng.* Pani-kanciiira; *Santal.* Bir kanJ arak'. *

2240. *COMMELINA HASSKARLII* Clarke; F. B. I. vi. 370.

In most of the provinces.

A much-branched herb.

2241. *COMMELINA BENGHALENSIS* Linn.; F. I. i, 171; F. B. I. vi. 370; E. D. 0.1748.

In all the provinces.

- A creeping herb, rooting at the lower nodes. *Hind*, and *Beng.* Kanchira; *Santal.* Kana arak'.
2242. COMMELINA ATTENUATA Koenig; F. B. I. vi. 372.
Chota Nagpur; Behar.
A tufted herb, with much-branched, slender steins.
2243. COMMELINA OBLIQUA Ham.; F. B. I. vi. 372 ; E. D. C. 1756.
C. commitnis F. I. i. 171.
In all the provinces.
A tall, branching herb; stems 2-3 feet high. *Vernac.* Jata-kanchira.
2244. COMMELINA APPENDICULATA Clarke ; F. B. I. vi. 374.
N. Bengal; E. Bengal.
A diffusely branched herb, 1-3 feet high.
2245. COMMELINA SUFFRUTICOSA Bl.; F. B. I, vi. 374; E. D. C. 1761.
In most of the provinces.
A stout, branching herb. *Santal.* Daré orsa.

976. Aneilema R. Br.

^o*>s with simple or branched stems, roots often tuberous; usually alternate, sometimes all radical, occasionally cluster the inflorescence. *Flowers* in axillary and terminal bracts not spathaceous; bracteoles small. *Sepals* 3, 2253, Aous, free. *Petals* 3, obovate, equal. *Stamens* 2 or 3; anthers naked or bearded; anthers oblong, one usually smaller than the others; staminodes 2-4, rarely with minute withers. *Carpels* connate in a sessile, 2-3-celled ovary; ovules *hispid* each cell solitary, two, or more. *Fruit* a loculicidal capsule. *Seeds* 1 or more in each cell, with a thick, hard, rugose or pitted testa.

[Cells of the ovary with " ?r more than 2 ovules, those of the capsule with 2 or more seeds:—[p. 1084]

fSeeds 1-seriate in each cell; flowers in terminal or subterminal panicles:—[p. 1084] •

{Cells of the ovary with 3 or more ovules, of the capsule 3-7-seeded :—[p. 1084]

Panicles terminating an erect, leafless scape with large, sheathing bracts; leaves all radical, narrowly ensiform; root tuberous; seeds 3-6 in each cell.....*scapiflorum.*

Panicles terminating leafy stems :—

- Root tuberous ; tubers slender ; stem stout, erect; leaves large, narrowly oblong or ensiform ; panicles large; seeds 3-4 in each cell.....*lineolatum*.
 Boot fibrous; stems slender, decumbent; leaves small, oblong, sessile, auricled; panicles small, leafy below ; seeds 3-7 in each cell.....*sjriratum*
 Cells of ovary with 2 ovules, of capsule 2-seeded ; panicles subterminal, rarely axillary; leaves linear or lanceolate [p. 1083] *nudiflorum*.
 f Seeds 2-seriate (16 or more) in each cell; pedicels axillary or terminal; stem stout, sparingly branched, creeping and rooting at the nodes, leafy; leaves linear-oblong [p. 1083].....*Hamiltonianum*.
 •Cells of the ovary 1-ovuled, those of the capsule 1-seeded; pedicels 1-♂ in the axils of distant lanceolate bracts; stem decumbent, slender, rooting at lower nodes; leaves long, linear; root fibrous [p. 1083]...*vaginatum*.
2246. ANEILEMA SCAPIFLORUM Wight; F. B. I. vi. 375; E. 1).
 A. 1122. *Commelina scapiflora* F. I. i. 175.
 Tirhut; Chota Nagpur, Parasnath.
 A tufted herb; leaves 4-10 in. long. *Hind*, Siyah-musli; *Beng*. Kureli.
2247. ANEILEMA LINEOLATUM Kunth: F. B. I. vi. 376. *Commelina herbacea* F. I. i. 175. smooth,
 Chota Nagpur. *adiculata*.
 A stout, leafy herb. t; capsule
2248. ANEILEMA SPIRATUM E. Br.; F. B. I. vi. 377. Coubescent
nana F. I. i. 173. *^mticosa*.
 In all the provinces. *E.g* •
 A common field weed. » ,
2249. ANEILEMA NUDIFLORUM R. Br.; F. B. I. vi. 378. *Commelina nudiflora* F. I. i. 173.
 Orissa; Chota Nagpur; Sundribuns, sea-face.
 A slender, diffusely branched herb. *Beng*. Kanduli.
2250. ANEILEMA HAMILTONIANUM Wall.; F. B. I. vi. 380.
 Chota Nagpur; Tirhut; N. Bengal. •
 A sparingly branched weed of wet places.
- 225 ANEILEMA VAGINATUM R. Br.; F. B. I. vi. 381.
 In most of the provinces.
 A weed of wet places.

977. Cyanotis Don.

Herbs, prostrate or creeping; leaves small. Flowers in axillary and terminal scorpioid cymes, formed of large, imbricate, 2-seriate,

porrestia.]

foliaceous falcate bracteoles, the petals and stamens alone
 second, ^ S the corolla-tube exserted; sometimes the
 exserted, r J also or fascioled in t f odie: Li'
 nvers in exposed ru-ueuicn «* ««~» ———
 m eath. *Sepals* 3, subequal, free or connate below. *Petals* 6,
 of .equal, with orbicular limb, often connate below in a tube
Hmens 6, all perfect, subequal, hypogynous or epipetalous nla^
 ri'ents usually bearded, often inflated towards apex; anthers
 \on«. *Carpels* 3, connate in a 3-celled ovary; ovules 2, col-
 Wai, one erect, the other pendulous in each cell. *Fruti* r-
 3-celled, loculicidal capsule. *Seeds* usually 2 in each cell, supe
 »posed, cubical or pyramidal, usually rugose.

Flowers in cymes, enclosed in 2-seriate, falcate, imbricating bracteoles :-

- " *Roots* fibrous; stem and branches slender; leaves ovate ^ ^
 glabrous or with spreading hairs..... ^
- Roots* tuberous; stem and branches stout; radical leaves ensiformi,
 cauline lanceolate, hirsute..... *Derosa* var. «*«»^»J-

x Flowers axillary, enclosed in the sheaths of the leaves j bracteoles small,
 slender, not imbricating

2252. *CYANOTIS CEISTATA* Schult. t; P. B. I. vi. 385. *Tradescantia imbricata* F. I. ii. 120.

Chota Nagpur.
 A. slender, branching herb.

2253. *CYANOTIS TUBEKOSA* Schult. f. var. *ADSCBNDBNS* Clarke; F. B. I. vi. 386. *C. tuberosa* E. D. C. 2525. *Tradescantia tuberosa* F. L. ii. 119-

Chota Nagpur.
 A creeping herb, with proliferous, rooting nodes.
*Santa*L. Merom chunchi, hodo jereng arak'.

2254. *CYANOTIS AXILLARIS* Roem. & Schult.; F. B. I. vi. 388; E. D. C. 2522. *Tradescantia axillaris* F. I. ii. 118.

In all the provinces.
 A common field weed. *Hind.* Soltraj.

978. *Forrestia* Bich.

Erect herbs with simple stems, creeping or rooting ^ below ^
 ^ broad, with tubular sheaths, persisting after the fall of the
 Cade. *Flowers* sessile, bracteate, in subsessile, crowded capitate
 Vglobose fascicles of dense cymes. *Sepal** 3, subequal. *Petals*

3, subequal. *Stamens* 6, all perfect; filaments bearded; anthers ovoid. *Carpels* 3, connate in a 3-celled ovary; cells all 2-ovuled, or the lateral cells 2-ovuled, the dorsal 1-ovuled. *Fruit* a subglobose, oblong or ellipsoid, 3-valved, loculicidal capsule. *See* solitary, or 2 superposed in each cell, oblong, rugose.

2255. FORRESTIA HOOKEKI Hassk.; F. B. I. vi. 384.

Chittagong.

A stout, erect herb; stem unbranched, rooting at base.

979. Floscopa Lour.

Herbs with erect or subscandent stems; *leaves* lanceolate medium or large. *Flowers* in terminal or axillary panicles < secund but not scorpioid cymes; bracts minute. *Sepals* 3, oblong, free. *Petals* 3, free, obovate. *Stamens* 6 all perfect, or 5 perfect 1 obsolete, hypogynous; filaments filiform, glabrous. *Carpel* connate in a 2-celled ovary; ovules solitary in each cell. *Fruit* compressed or didymous, loculicidal, 2-celled capsule; pericarp; crustaceous, shining. *Seeds* in each cell solitary, hemispheric.

2256. FLOSCOPA SCANDENS Lour.; F. B. I. vi. 390. *Tradescantia paniculata* F. I. ii. 119.

Chota Nagpur; N. Bengal, Duars; Chittagong.

An erect or subscandent herb.

Order CXL. FLAGELLARIEJE.

Shrubs with long, usually climbing, leafy stems. *Leaves* many-nerved or plicate, usually long, with sheathing bases. *Flowers* small, regular, hermaphrodite or dicecious, in terminal panicle; bracts often lanceolate; bracteoles minute or 0. *Perianth* inferior, persistent; segments 6, free, small, imbricate, sub-2-seriate, dry or subpetaloid. *Stamens* 6, hypogynous; filaments filiform; anthers ovate or oblong, basifixed; cells 2, parallel dehiscence longitudinal, introrse. *Carpels* 3, connate in a superior 3-celled ovary; ovules in each cell solitary, anatropous, adnate to axis; style short, with 3 stigmatic arms, or styles 3, distinct, linear or depressed. *Fruit* a small berry or a drupe, with 1-pyrenes. *Seeds* laterally attached; testa membranous or thick; albumen floury; embryo lenticular.

980. Flagellaria Linn.

A climbing shrub, with long, slender stems; *leaves* many, lanceolate, with tendril-like tips; nerves many, parallel. *Flowers* many, small, hermaphrodite, fascicled or spicate along the branches of a terminal panicle; bracts small, scale-like. *Perianth* subpetaloid; segments 6, ovate, obtuse. *Stamens* 6, hypogynous. *Carpels* 3, connate in a 3-celled ovary; ovules solitary, laterally affixed; style divided nearly to the base into 3 subentire or 2-partite stigmatic arms. *Fruit* a small globose or ovoid drupe, with a thin, succulent exocarp, and a bony, 1-2-seeded endocarp. *Seed* globose or ovoid; testa adpressed, membranous.

2257. FLAGELLARIA INDICA Linn.; F. I. ii. 154; F. B. I. vi. 391.

Sundribuns; Chittagong.

A lofty reed-like climber, with cirrhose leaf-tips. *Hind.* Harcharal; *Beng** 13an-chanda.

Order CXLI. JUNCACEÆ.

Erect, perennial, rarely annual herbs; stems tufted or with a creeping rootstock. *Leaves* flat, terete, or reduced to sheaths. *Flowers* hermaphrodite, regular, in axillary or terminal cymes, usually small; bracts small, scarious, green, or white membranous, rachis coriaceous. *Perianth* inferior, persistent; segments or lobes 6, free or connate below in a very short tube, persistent, imbricate. *Stamens* usually 6, adnate to the perianth-lobes or hypogynous, occasionally the 3 of the inner series absent; filaments filiform; anthers basifixed. *Carpels* 3, connate in a 3-celled or 1-celled superior ovary; ovules 3, basilar, numerous on inner angles of cells in 3-celled anatropous. *Fruit* a 1-8-celled, loculicidally 3-valved drupe. *Seeds* erect; testa membranous, often produced at each end; embryo small, near hilum.

981. Juncus Linn.

Perennial, rarely annual, glabrous herbs; stems simple under ground. *Flowers* small, usually clustered in cymes, either sessile capitate, or unequally branched paniculate, the whole inflorescence terminal or subter-

minal on the scape-like stems, with 1-3 leafy bracts. *Perianth* with 6 glume-like segments, free, lanceolate or oblong, often with scarious edges, the 3 outer keeled or with a thickened midrib. *Stamens* 6, rarely 3, hypogynous or nearly so; anthers oblong or linear, erect; dehiscence longitudinal, introrse. *Carpels* 3, connate in a 1-celled, or an imperfectly or perfectly 3-celled ovary; ovules many on each placenta; style filiform; stigmatic arms 3, filiform, often spirally twisted. *Fruit* a capsule, dehiscing by 3 valves with mesial placentas, or rarely by 3 valves leaving the placentas persistent or connate in a central column. *Seeds* small, ovoid; testa striate, reticulate or transversely lineate; embryo small, near the base of the fleshy albumen.

Annual; leaves not septate; stems copiously branched; cymes scattered, few-flowered; lateral flowers 6-androus, terminal 3-androus

bufoniitx.

Perennial; leaves indistinctly, distantly septate; cymes terminal; flowers densely clustered in small heads; flowers all 3-androus

peismatocarpus.

2258. *JUNCUS BUFONIUS* Linn.; F. B. I. vi. 392.

N. Bengal; Tirhut.

A local weed, near ditches.

2259. *JUNCUS PEISMATOCARPUS* K, Br.; F. B. I. vi. 395.

N. and W. Bengal; Tirhut.

A common weed, in very wet places.

Order CXLII. PALMES.

Shrubs, sometimes climbing, or trees, solitary or gregarious, naked or prickly; stems simple, rarely branched above. Leaves alternate, usually crowded at apex of stem, plicate in bud, venation pinnate or palmate, rarely entire or 2-pinnatisect; petiole sheathing. *Flowers* small, hermaphrodite or 1-sexual, usually 3-bractiate, in branched spikes or panicles, enclosed in one or more sheathing spathes. *Perianth* inferior, 2-seriate; segments in 2 series 3, usually all free, imbricate or valvate. *Stamens* usually 2-seriately inserted opposite the perianth-segments, sometimes 4 opposite outer series of segments, occasionally many at the base of the perianth, usually included; filaments free or connate, subulate or filiform, rarely flattened; anthers versatile, 2-lobed

dehiscence lateral or extrorse. *Carpels* 3, connate in a 3-1-celled ovary, or free; ovules in each carpel 1-2, anatropous, adnate to wall, base or top of cell; stigmas 3, usually sessile. *Fruit* a 1-3-celled drupe or hard berry, or of 1-3 ripe carpels; pericarp smooth, [rough, or clothed with downward-imbricating, shining scales. *keeds* erect or laterally attached, rarely pendulous; raphe usually **branching** all over the testa; albumen horny or bony, equable or ruminant; embryo small, in a cavity near the surface of the albumen.

Leaves flabelliform, fan-like or orbicular; inflorescence **interfoliar**; fruit not clothed with scales :—

Monocarpic palms, flowering once and then dying; flowers hermaphrodite, in pyramidal panicles; fruit small.....**Corypha**

Polycarpic palms, flowering year after year :—

Flowers hermaphrodite, scattered, small; fruits small:—

Ovary of 3 triangular carpels; spadix sparingly branched or simple.....**Licuala**.

Ovary of 3 globose carpels; spadix loosely paniced ...**Livistona**.

Flowers dioecious; males small, sunk in cavities of thickened, catkin-like branches; female very large; fruit large, 8 in. across

Borassus.

Leaves pinnate:—

*Fruit not clothed with scales; stems erect, unarmed; neither the leaf-rachis nor the spadix produced as an armed flagellum :—[p. 1090]

Leaves twice pinnatisect, the segments very obliquely dimidiate-flabelliform; spadix interfoliar but followed progressively downwards by alternately male and female infrafoliar spadices...**Caryota**.

Leaves completely or partially once pinnatisect:—

Spadix interfoliar, flowering while the leaf in the axil of which it is formed is still green; leaves completely pinnatisect:—[p. 1090]

Segments of leaves with reduplicate sides :—[p. 1090]

Leaf-segments oblong, irregularly toothed; base cuneate > **uc** 1-costate; nerves flabellate; fruit small.....**Wallichia**.

Leaf-segments linear; nerves parallel; fruit large :—

Dwarf palms with prostrate, branching, buried stock; spadix with male flowers on lateral, catkin-like branches; female in a globose, terminal head; fruit a spherical mass of hexagonal 1-celled and 1-seeded ripe carpels.....**Nipa**.

Tall palms with erect, unbranched stem; spadix with scattered female flowers alone or between two males near the bases and with close-set males towards the tips of the

branches; fruit a large, ovoid, terete or trigonous nut with a fibrous husk.....Cocos.

J Segments of leaves with in duplicate sides [p. 1089] ...Phceliix.
f Spadix bnfracoliar, flowering after the fall of the leaf in the axil of which it is formed ; leaf-segments towards apex of leaf more orj less confluent as a plaited limb :—[p. 1089]

Male flowers one on each side of a female along the branches of the spadix.....PinangaJ

Male flowers minute, solitary or 2-nate towards tips of spadix-branches ; female flowers larger, solitary.....ArecaJ

•Fruit clothed with reflexed, shining, closely adpressed, imbricating scales; stems climbing, rarely erect, armed ; leaf-rachis or spadix or sheath produced as an armed flagellum :—[p. 1089]

Spathes tubular, persistent.....Calamus.

Spathes open, usually cymbiform, dehiscent.....Daemonorops,

982. Corypha Linn.

Tall, stout, unarmed palms, flowering after about forty years,] and dying after once flowering and fruiting ; *leaves* huge, orbicular j or lunate, flabellately nvultifid; petiole spinous. *Flowers* small,] hermaphrodite, on a very large, terminal, erect, pyramidally paniculate spadix; spathes many, tubular. *Sepals* connate in a cupular, 3-fid calyx. *Petals* 3, connate below in a stipe, ovate, acute, imbricate or subvalvate. *Stamens* 6; filaments subulate anthers dorsifixed. *Carpels* 3, connate in a 3-lobed and 3-celle/ ovary; ovules baailar, erect in each cell; style short, subulat stigma minute. *Fruit* of 1-3 globose, fleshy drupes, with basil styles. *Seeds* erect, globose or oblong ; albumen equable; embrj spiral.

Trunk distinctly spirally ridged, obscurely annulate; plaits of soriati narrow; panicle obtusely pyramidal, only one-fifth or one-s«s f₁ length of the stem.....> irall<

Trunk obscurely spirally ridged, distinctly annulate; plaits offi • periodic
broad; panicle sharply pyramidal, from one-fourth to one-third tut ate t
of the stem.....mtibrtiw .

2260. CORYPHA ELATA Boxb.; F. I. ii. 176 ; F. B, I. vi. 4S?^{sh} 1-

Bengal generally, but only cultivated. thit-1

A tall, straight tree, 60-70 feet high. Beng, Baji

2261. CORYPHA UMBUACULIFERA Linn.; F. I. ii, 177 ; F

vi. 428*, E. D. O. 1995. *C. Talliera* F. I. ii. 174; F. B. I. vi. 428; E. D. O. 2006.

Bengal occasionally, and always cultivated.

A tall, straight tree, 60-30 feet high. *Beug.* Tali.

983. **Licuala Thunb.**

Low, rarely tall palms; stems annulate; *leaves* more or less orbicular or flabellate, plicate, deeply partite; petiole usually spinous. *Flowers* usually small, scattered, hermaphrodite, often interfoliar, simple or branched, glabrous, tomentose or scurf; spadices, sheathed by tubular, coriaceous, persistent spathes and bracteoles obscure or 0. **Sepals** 3, connate in a **tabula**: *n'* cupular calyx, with 3-fid mouth. *Petals* 3, connate below in a corolla with coriaceous, valvate lobes. *Stamens* 6; filaments subulate; anthers cordate. *Carpels* 3, truncate, free or nearly so; ovules in each carpel solitary, erect; styles simple, filiform. *Writ it* of small drupes, with terminal styles. *Seeds* erect, globose, often hollowed on the ventral face; albumen equable; embryo dorsal.

.62. LICUALA PKLTATA Roxb.; F. I. ii. 179; F. U. I. vi. 430; E. D. L. 343.

Chittagong.

A gregarious shrub; stems 8-15 feet high. *Beng.* Kurud, kurkuti.

984. *Livislija* R. Br.

Tall palms with annulate stems; *leaves* orbicular, flabellate, plicate, split to the middle into slender, 2-fid, narrow lobes; petiole long, with spinous margins. *Flowers* minute, hermaphrodite, loosely panicled on interfoliar, long-peduncled spadices, erect; **pendulous in fruit**; spathes many, sheathing, **tubular**. **Sepals** 3, rounded, imbricate. *Petals* connate in a coriaceous, lobed corolla; lobes valvate. *Stamen* 6; filaments subulate, connate below in a ring; anthers **cowhy**, *tuh\V\^s 3* < nearly free; ovules erect, basilar; styles *sho>*; cymbiform. *Fruit* oil to 3, globose, oblong or **ellipsoid** (-mate in *Writ it*); *Seeds* erect, ventral face dorsal.

- Divisions of the leaves very

Divisions of the leaves -

short > anille ^ large. *PUtilode* 0. *Seeds* posed, subglobose. **Sepals** 3,

2263. *LIVISTONA CHINENSIS* R, Br.; F. B. I. vi. 434.

Cultivated frequently.

A small tree, 20-30 feet **high** ; native of China.

2264. *LIVISTONA SPECIOSA* Kurz ; F. B. I. vi;435 ; E. D. L. 500. i
Chittagong.

A tall tree, 50-70 feet high. *Magh.* Thau.

985. *Borassus* Linn.

Tall palms ; trunk stout, unarmed; *leaves* terminal, fan-shaped]
plieately multifid; petiole spinous; liguleshort. *Flowers* dioecious/
peduncle sheathed with open spathes. j *Flowers* small, mixed
with scale-like bracts, 2-seriately secund on small spikelets, an<j
protruding one by one from the cavities of the stout, cylindriJ
branches of a very large, simply branched spadix, as the raehis cl
the spikelet elongates. *Perianth* glumaceous; segments **imbril**
cate, 2-seriate, outer 3 narrowly cuneate, tips inflexed, truncate,]
inner 3 shorter, obovate-spafchulate. *Stamens* 6; anthers sub^
sessile, oblong. *Pistillodes* 3, setaceous, ? *Flowers* globcr:
larger, few, solitary, scattered on the branches of a sparall,
branched spadix. *Perianth* fleshy, greatly accrescent, 2-serilly
outer series 3, reniform, imbricate; inner 3 smaller, convoha
Staminodes 6-9. *Carpels* 3-4, connate in a globose, entire or 3e,
par^tate, 3-4-celled ovary; ovules erect, basilar; stigmas 3, sesa
recurved. *Fruit* a large, subglobose drupe, with 1-3 obcordu
fibrous pyrenes; pericarp thirty fleshy ; stigmas terminal. *Se*
oblong, with a 3-lobed apex; testa adnate to the pyrene ; album,
hollow, equable ; embryo subapical.

2265 - *BORASSUS FLABELLIFER* Linn. ; F. B. I. vi. 482. *B. flabell*
formis F. I. iii. 790 ; E. D. B. 663.

Cultivated in all the provinces except Chota Nagpm
often subsponaneous near villages.

A tree, 60-70 feet high. *Vernac.* Tal, tari.

pyramida^aryota Linn.

Tall palms

leaf-shea^

o-^

d **^** **T** **te** **pp**
CORYPHA ELATA Koxb.; R I. downwards, alternately male

Bengal generally, but only £^{lie}athed; *leaves* few, very

2261, A tall, straight tree, 60-70 fee? **obliquely**, dimidiately

COEYPHA UMBRACUUFBRA Linn.; ^ded at the tip, their
Flowers mo noécious,

solitary and male, or ternate with the central female on the slender, pendulous branches of interfoliar, short-peduncled, much fastigiately branched spadices; spathes 3-5, incomplete, tubular; bracteoles wide. ♂ Flowers symmetric. Sepals 3, rounded, imbricate. Petals 3, linear-oblong, valvate. Stamens numerous; filaments short; anthers long. ♀ Flowers subglobose. Sepals 3, rounded, imbricate. Petals 3, rounded, valvate. Carpels 3, connate in a 3-celled ovary; ovules erect; stigma sessile, 3-lobed. Fruit globose, 1-2-seeded; stigma terminal. Seed, erect, men ruminant; embryo dorsal.

Trunk solitary, or if with a few basal soboli the shorter than the primary stem; spadix 8-10 feet long; pulp of fruit pungent.....urens.
 Trunk always accompanied by many or few basal soboli, almost or quite as large as the primary stem; spadix 4-5 feet long; pulp of fruit bland.....mitis.

2266. CARYOTA URENS Linn.; P. T. Hi 625 • F. B. I. vi. 422 ;

EGJJ planted, especially in the northern provinces; wild in Eastern Tirhut and N. Bengal. I tree, 30-50 feet high. Hind.Mzn; Unya faalopa, Beng. Gol sago.

* 2267. CARYOTA MITIS Lour.; F. B. I. vi. 423.

Occasionally planted or self-sown, but chiefly in and near European centres; perhaps wild in Southern Chittagong.

A small tree 15-25 feet high; native of Burma, Andamans, Malaya.

987. Wallichia Koxb.

Soboliferous palms; Urns dissect, leaflets linear or oblong, regularly toothed, base cuneate, 1-ribbed, secondary nerves bellate. Flower* monoecious or polygamous, on interfoliar, much-branched spadices; spathes many, tubular, clothing the peduncle of the spadix, upper large, cymbiform. ♂ Flowers very dense, symmetric. Sepals 3, connate in a cylindrical or tubular, membranous, truncate calyx. Foliate 3-lobed corolla; lobes 3-lobed corolla-tube; filaments short; anthers large. Pistillode 0. Flowers smaller, more loosely disposed, subglobose. Sepals 3,

orbicular, coriaceous, imbricate. *Petals* 3, triangular, valvate. *StaminoAes* few or 0. *Carpels* connate in a 2-3-celled, stipitate ovary; ovules subbasilar; stigmas conic. *Fruit* ovoid-oblong, 1-3-celled. *Seeds* 1-3, erect, plano-convex; albumen equable; embryo dorsal.

Female flowers crowded, 2-bracted; male corolla twice as long as the calyx, mouth of calyx quite entire; female corolla shorter than the ovary

<is>rit.

Female flowers distant, 3-bracted; male corolla half as long as the calyx, mouth of calyx 3-toothed; female corolla about twice as long as the ovary
*caryotoidt**.

2268. WALLICHIA DKNSIFLORA Mart.; F. B. I. vi. 419; E. P. W. 5.
Chittagong.

A stemless or short-stemmed palm.

2269, WALLICHIA CARYOTOIDES Roxb.; F. B. I. vi. 419; E. D
W. 6. *Wrightia caryoloides* F. I. iii. 621.

Chittagong.

A stemless or short-stemmed palm.

988. *Nipa* Wurmb.]

Dwarf, gregarious palms of tidal swamps; stock branched[^] leaves pinnatisect; segments lanceolate, plicate. *Flowers* moncei ckras, oh terminal, branched, erect spadices; males on the lateral, catkin-like branches; females in a globose, terminal head, droop/ ing in fruit; spathes numerous, sheathing, j *Flowers* minut* mixed with setaceous bracteoles. *Sepals* 3, linear, glumaceous with broad, truncate, inflexed tips. *Petals* 3, glumaceous, smaller] *Stamens* 3; filaments connate in a column; anthers basifixi<ll linear. *Pistillode* 0. ¥ *Flowers* much larger than male-J *Perianth* of 6 similar, displaced segments. *Staminodes* 0. *Ca pels* 3, their apices free, each with an oblique, stigmatic lineal ovules 3, erect. *Fruit* a large, globose, agglomerate mass of man J obovoid, hexagonal, 1-celled and 1-seeded ripe carpels with pyr, j midal tips and infra-apical stigmas; pericarp fleshy, mixed wit< fibres; endocarp spongy and farinaceous. *Seed* erect, grooved on one side; testa coriaceous, viscid within and adnate to the endo-r carp; hilum broad; albumen hollow, equable; embryo obconic-^e basilar. :y

2270. NIPA FRUTICANS Wurmb.; F. I. iii. 650: F. B. I. vi. 424ly
E. D. N. 163. ar

Sundriuuns; Chittagong, coast,
A stemless palm, with branching rootstock. *Beng.*
Golpati, gulga, gabua.

989. *Cocos* Linn.

Med palms; *leaves* tufted, pinnatisect; segments linear,
Flo ; monoecious, on simply paniced, erect, but ultimately
drooping spadices, the branches bearing scattered female flowers,
often between two males, near their bases, with close-set males
above; spathes 2 or more, the lower short, the upper fusiform or
clavate; bracts various. *Flowers* unsymmetric; *perianth-*
segments coriaceous, 2-seriate; outer series S, small, valvate;
inner 8 oblong, acute, valvate. *Stamens* 6; filaments subulate;
withers linear, erect. *Pistillode* minute or 0. *Flowers* usually
much larger than males, ovoid; *perianth* greatly accrescent;
outer 3 segments imbricate; inner 3, shorter, convolute, with
* imbricate tips. *Disk* 0 or annular. *Carpels* 3, connate in a
celled ovary; ovules usually solitary, subnsilar; style short;
gmas recurved. *Fruit* large, ovoid, terete or 3-gonous, with a
rminal style and a single seed; pericarp thick, fibrous; endocarp
ard, with 3 basal eyes, the remains of the 3 ovarian cells. *Seed*
onnate with endocarp; albumen solid or hollow or merely lining
; the endocarp with a thick, hard coat; embryo opposite one basal
e.

2271. *Cocos* NucFERA Linn.; F. I. iii. 614; F. B. I. vi. 182;
E. D. C. 1520.

Cultivated.

A tree, 40-80 feet high. *Vernae*. Nariyal, narikel, dab.
The Coco-Nut.

990. *Phoenix*. Linn.

Tall or short, simple or soboliferous palms; *leaves* pinnatisect;
gments mceolate or ensiform, with margins induplicate.
Flowers di cious, small, yellowish, coriaceous, on usually several
anehed, [-jerfoliar, erect or drooping spadices; spathe basilar,
mplete, coriaceous. *Sepals* 3, connate in a cupular, 3-toothed
lyx. *Petals* 3, obliquely ovate, valvate. *Stamens* 6; filaments
hort, subulate; anthers erect, dorsifixed. *Pistillode* minute or 0.
Sepals 3, connate in a globose, accrescent calyx. *Petals* 3,
tunded, imbricate. *Staminodes* 6, free or connate in a f>-toothed

cup. *Carpels* 3, free; ovules erect; stigmas sessile, uncinat^a.
Fruit oblong, terete, 1-seeded, with a terminal stigma, a fleshy
 pericarp, and a membranous endocarp. *Seed* oblong, ventrally,
 grooved; albumen equable or subruminate; embryo dorsal or
 subbasilar.

Stems solitary; embryo of the seed ventral; inland species :—

Stems elongated, clothed with persistent bases of leaf-stalks :— ^T

Stems slender, 25-50 feet high ; leaves 10-15 feet long; ripe fruits.
 orange-yellow.....*sylvesiris*.,

Stem very stout, 15-20 feet high ; leaves 3-5 feet long; ripe fruit¹
 brown.....*rchusta*..

Stems very short or none.....*acauli*^*.

Stems soboliferous, 5-25 feet high ; embryo of seed basilar ; species con
 fined to muddy maritime swamps.....*paludosa* .:

2272. PHCENIX SYLVESTRIS Roxb.; F. I. iii. 787 ; F. B. I. vi. 425 ;
 E. D. p. 588.

Generally cultivated, sometimes subsponaneous.

A tall, graceful tree, when not cut for tapping. *Verna* ub[^]
 Khajur. ;

2273. PHCENIX ROBUSTA Hook. f.; F. B. I. vi. 427.

Chota Nagpur, Parasnath. 1

A stout-stemmed, thick-set tree.

2274. PHCENIX ACAULIS Buch.; F. I. iii. 783; F. B. I. vi. 426'
 E. D. P. 551. p

Behar; Chota Nagpur, eastern edge of the plateau, vert
 common. I

A stemless, dwarf palm. *Hind.* Pind Khajur. u-

2275. PHCENIX PALUDOSA Roxb.; F. I. iii. 789 ; F. B. I, vi. 427i',
 E. B. P. 582. • (

Sundribuns.

A gregarious, soboliferous palm. *Beng.* Hital. £

991. PinangaBl.

Slender palms, with erect, annulate stems ; *leaves* pinnatisect^o
 with the upper segments confluent. *Flowers* monoecious, andro
 gynous, ternate, a female between two males, the clusters in 2 to-
 4 or 6 aeries, on infralobar spadices ; spathe solitary. [^] *Flowers*.e
 obliquely 3-quetrous. *Sepals* 3, acute, keeled, not imbricate *y
Petals 3, ovate or lanceolate, valvate. *Stamens* 6 to many ly
 anthers subsessile, basifixed, erect. ? *Flowers* much smaller

than males, ovoid or globose. *Sepals* 3, orbicular, imbricate. *Petals* 3, orbicular, wide-imbricate. *Carpels* connate in a 1-celled ovary; ovule basilar, erect; stigmas 8. *Fruit* ovoid or ellipsoid, with fibrous pericarp. *Seed* ovoid or ellipsoid; albumen ruminant; embryo basilar.

2276. PINANGA GRACILIS Bl.; F. B. I. vi. 407. *Areca gracilis* F. I. iii. 619; E. D. A. 330.

Chittagong.

A slender, graceful palm; stems 8-20 feet high. *Beng.* Gua supari.

992. *Areca* Linn.

Slender palms with erect, annulate stems; *leaves* pinnatisect, distal segments confluent. *Flowers* monoecious, on branched, **infraxiliar** spadices; spathes 3 or more, caducous, the lowest incomplete, the upper often bract-like; males many, solitary or 2-nate, distichous or secund; females near bases of branches, solitary. *Flowers* minute, compressed or 3-quetrous. *Sepals* small. *Petals* 3, obliquely lanceolate, valvate. *Stamens* 3 or 6;thers basifixed, erect. \forall *Flowers* much larger than males; with accrescent. *Sepals* 3, orbicular, imbricate. *Petals* 3, orbicular, imbricate below, their tips acute, valvate. *Carpels* pinnate in a 1-celled ovary; ovule basal, erect; stigmas 3, sessile. *Fruit* ovoid or oblong, with stigmas terminal. *Seed* with a small, uncate base; albumen ruminant; embryo basilar.

[Stem solitary, tall, 40 feet or more in height; stamens 6; fruit ovoid

Catechu.

Stem sending out basal offshoots, 25 feet or less in height; stamens 3;

fruit ellipsoid..... *triandra.*

2277. ARECA CATECHU Linn.; F. I. iii. 615; F. *B. I. vi. 405; E. D. A. 1294.

Cultivated generally in the central and eastern parts.

A tall, slender, graceful tree. *Vernac** Supari, The Betel Nut.

2278. ARECA TRIANDRA Roxb.; F. I. iii. 617; F. B. I. vi. 406.

Chittagong.

A graceful, tufted palm. *Beng.* Ban-gua.

993. *Calamus* Linn.

Armed, erect, or scandent, tufted palms; *leaves* alternate, pin-

natisect; segments acuminate; nerves parallel; rachis often produced as an armed **flagellum**; sheath armed, produced into a **Wule** or ochrea, with or without a lateral, armed flagectum. *Flowers* small, polygamo-dioecious, in usually distichous, often scorpioid spikelets, solitary, either male or female or both in the axils of the bracteoles of axillary usually much elongated ant. much-branched spadices, sometimes produced as a nagelluiu; spathes tubular or open, persistent, sheathing the **peduncle** and brandies ol the spadix, and passing into bracts and bracteoles. j *Sepals* 3, connate in a cupular, 3-toothed calyx. *Petals* 3, acute, coriaceous, valvate. *Stamens* 6; filaments short; anthers[^] dorsinixed. ? *Flowers* slightly accrescent, fruiting pedicelliform (or explanate. *Sepals* connate in a tubular, 3-toothed calyx. *Petah*[3, connate in a tubular, 3-fid corolla; lobes valvate. *Staminodes*, connate in a cu|3. *Carpels* connate in an incompletely 3-celled.[^] ovary, clothed with retrorse scales; ovules basilar, erect; styk_{ie} short or long; stigmas 4. *Fruit* globose or ellipsoid; style teij_b minimal; pericarp thin, clothed with adpressed, denixed, close¹-, imbricate, shining scales. *Seed* subglobose or oblong, smooth « pitted ; albumen equable or ruminant ; embryo ventral or basal. ^

Stems erect, stout, tufted ; leaflets almost equidistant, their margins ^{o&} midrib beneath remotely ciliolate ; petiole and rachis of leaf belo , armed with half-whorls of flat, straight, pale spines..... *erectu*.
Stems climbing, usually slender:—

*Hachis of leaf not flagelliferous ; leaf-sheath flagelliferous :—[p. 109tⁿ
Leaflets fascicled, or if discrete [*viminalis* var. *fasciculata* soixu times) not equidistant:—

Leaflets few, in opposite groups of 3-5 on each side of the slende¹/
rachis, 3-7-costate ; costre very slender, more or less setose abovi t
short petiole and rachis armed with short, hooked spines. .(jraciW

Leaflets numerous, inequidistant or fascicled, all 3-eostatⁿ g
cost* beneath and margins spinulose ; petiole and rachis **arxntf** o
with scattered, long, straight spines..... *viminalis va.t. fasciculath* J

Leaflets discrete, equidistant, all 3-costate ; all the costse setose abovxi •
usually the median only below (in *C. Guruba* the leaflets sometime>-!r
quite naked on both surfaces):— ,[e

Leaflets very many, approximate; short petiole margined with-y
straight spines; rachis with one row of short, recurved **spineffo**

Leaflets few, alternate; long, slender petiole and rachis armec

with long, brown, recurved and short conical spines below and on the margins.....*Gimtba.*

*Eachis of leaf flagelliferous; leaf-sheath not flagelliferous; leaflets few, large, scattered or 2-nate, elliptic or elliptic-lanceolate, 3-9-costate, tips setose, margins aculeolate; cost® naked on both sides; rachis stout, variously armed with scattered spines [p. 1098] *latifolius.*

2279. CALAMUS ERECTUS Roxb.; F. I. iii. 774; F. B. I. vi. 438; E. D. c. 73.

Chittagong.

A densely tufted rattan; stems 12-18 feet high. *Be?uj.* Kadam bent; *Magh.* Kadam kring.

2280. CALAMUS GRACILIS Roxb.; F. I. iii. 781; F. 13. I. vi. 453; E. D. C. 81.

Chittagong.

A very slender "climber; stems hardly thicker than a quill. *Bcng.* Mapuri bent; *Magh.* Kraipang.

2281. CALAMUS VIMINALIS Willd. var. FASCICULATA Becc.; F. B. I. vi. 444. *C. fasciculatus* F. I. iii. 779; E. D. C. 77.

In most of the provinces.

A scrambling or climbing rattan, with stoutish stems; common in village thickets. *Beng.* Bara bent.-

2282. CALAMUS TENUIS Roxb.; F. I. iii. 780; F. B. I. vi. 447; E. D. C. 114.

E. Bengal; Sundribuns.

A very slender climber; stems not much thicker than a quill. *Beng.* Sanchi bent, bandhari bent; *Magh.* Kring.

2283. CALAMUS GURUBA Ham.; F. B. I. vi. 449; E. D. C. 83.

Chittagong.

A tall, slender, climbing rattan.

2284. CALAMUS LATIFOLIUS Roxb.; F. I. iii. 775 F. B. I. vi. 455; E. D. C. 89.

Chittagong.

A large climber. *Beng.* Korak bent; *Magh.* Sain.

994. Daemonorops Bl. ^

Armed, tufted, scandent palms; *leaves* alternate, pinnatisect; segments acuminate; nerves parallel; rachis produced as an inned flagelluni; sheath armed. *Flowers* small, polygamous or Hioecious, in usually distichous, often scorpioid spikelets, solitary,

cither a male or a female, or both in axil of each bracteole of * axillary usually much elongated, branched spadices, sometimes_n produced as a flagellum; spathes cymbiform, the outer at first_a enclosing the inner, soon deciduous, *Sepals* 3, connate in a_u. cupular, 3-toothed calyx. *Petals* 3, acute, coriaceous, valvate._t " *Stamens* 6; filaments short; anthers dorsifixed. ? *Flowers*₂ somewhat accrescent, distinctly pedicelliform. *Sepals* connate in a tubular, 3-toothed calyx. *Petals* 3, connate in a tubular, 3-fid corolla; lobes valvate. *Staminodes* connate, cupular. *Carpels* connate in an imperfectly 3-celled ovary, clothed with retrorse scales; ovules basilar, erect; style short or long; stigmas 3. *Fruit* globose or ellipsoid; style terminal; pericarp thin, clothed with adpressed, deflexed, closely imbricate, shining scales. *Seed*, subglobose or oblong, smooth or pitted; albumen equable or **ruminant**; embryo ventral or basal.

2285. DJEMONOROPS JENKINSIANUS Mart.; F. B. I. vi. 462. *Cala-inns Jenkinsianus* E. D. O. 88.

E. Bengal; Tippera; Chittagong.

A very stout-stemmed, climbing rattan.

Leaflets equidistant, all 3-costate; cost_tB above all very sparsely[^] setose with long bristles, the central only below, margins setulose petiole rachis and flagellum with many marginal and dor_{sa} hooked spines or 3-5-fid claws.

Order CXLIII. PANDANEJE.

Trees or shrubs, sometimes scandent, with stilted or climb_mj aerial roots. *Leaves* usually 3-farious, narrow, acuminate, coria_jl ceous, with margins and keels usually spinously toothed. *Flow&n* **dioecious**, small, crowded or catkin-like, simple or branched_i axillary spadices clothed with leafy spathes; *perianth* 0; bract[^] and bracteoles 0. *c*T *Stamens* numerous; filaments free or con^{*} nate; anthers erect, basifixed. *Pishllode* small or obsolete. ? J *Staminodes* small or 0. *Carpels* solitary, free or connate in phalanges of 2 or more; ovules solitary and suberect or many and_r' parietal; stigmas sessile, papillose. *Fruit* a globose or oblonge mass of free or connate, 1- or more-celled, woody or fleshy angular/ drupes. *Seeds* minute; testa striated; albumen hard and fleshy; y embryo minute.

995. Pandanus Linn. f.

Characters those of the order.

Perianth segments not united in groups :—

Male flowers of free stamens with short filaments; a much-branched bush; leaves 4-6 feet long, marginal spinules usually distant, all strongly incurved; flowers foetid.....*fœtidus*.

Male flowers of numerous anthers umbellate on the connate filaments :—

A tree ; stem 30-40 feet high, 6 in. thick, erect, sparingly dichotomously branched above; leaves 15-20 feet long, marginal spinules large, the lower incurved; aerial roots few, basal.....*furcatus*.

A dwarf **shrub**; stem 2-3 feet long, 1-2 in. thick, prostrate; leaves 1-2 feet long, marginal spinules small, distant.....*minor*.

Perianth segments connate in groups ; male flowers of numerous stamens with connate filaments; flowers sweet-scented; a bush or small tree, much-branched from the base, with numerous aerial roots; leaves 3-5 feet long, marginal spinules small, ascending.....*jascicukeris*,

2286. PANDANUS FŒTIDUS Eoxb.; F. I. iii. 742; F. B. I. vi. 483.

C. Bengal; E. Bengal; in village thickets and hedges.

A bush, with no proper stem. A **common** hedge-plant.

Hind. Keor-kanta ; *Bang.* Keiya-kftnta, kotki-kanta.

2287. PANDANUS FURCATUS Eoxb.; F. I. iii. 744; F. B. I. vi. 484; E. D. P. 21.

Chittagong.

A tree, 30-40 feet high.

[2288. PANDANUS MINOR Ham.; F. B. I. vi. 485.

Chittagong.

A dwarf shrub, 2-3 feet high.

2289. PANDANUS FASCICULARIS Lam.; F. B. I. vi. 485. *P. odoratissimus* F. I. iii. 738; E. D. P. 26.

In all the provinces; in village thickets and hedges; also near temples ; Sundribuns, wild.

A stemless, much-branched bush, or a small tree with suberect stem, 10-12 feet high. *Hind.* Keora, gagandhul; *Beng.* Keiya, keori, kewa-kanta.

Order CXLIY. TYPHACEM.

Aquatic or palustrine, perennial herbs. *Leaves* linear, erect or floating, sheathing below; nerves parallel. *Flowers* small or

minute, monoecious or, by abortion, dicecious, densely crowded globose or cylindrical, 1-sexual, bracteate spikes, of which the un- are males; bracteoles 0. *Perianth* of membranous green soft or slender hairs. * *Stamen** 1-7; filaments free or connate; anthers basined, erect, cuneate or linear-oblong; dehiscence longitudinal; connective sometimes produced. *Puillode* 0. *Ovary* superior; 1-2-celled; cells **1-ovuled**; ovules pendulous from apex; styles free, short or long, persistent lateral, papillosely stigmatic. *Fruit* small, membranous or drupaceous. *Seeds* pendulous; albumen fleshy or floury embryo ^{TM!} in cylindrical, radical end thickened, plumule in a lateral

996. *Typha* Linn.

Marsh herbs; *leaves* erect, spongy. *Flowers* small in dense superposed, cylindrical spikes, often intermixed with dilated tipped hairs. *Perianth* of capillary hairs, or in the male obsolete. *Stamens* 1 or more, tip of connective thickened. often reduced to a hair with clavate tip, long-stalked, narrowed into a capillary style, with a clavate or filiform stigma. *Fruit* very minute; pericarp membranous, indehiscent or follicular, *beed* with stnate testa; albumen noury.

Leaves trigonous above the sheath; pollen 4-globate. . . . *elephantm*
Leaves semi-cylindrical above the sheath; pollen simple. . . . *Langmt*

2290. TYPHA ELEPHANTINA Roxb.; P. I. iii. 566; F. B. I vi 4

N. Bengal, C. Bengal, E. Bengal

2291. TYPHA ANGUSTATA Chaub. & Bory; F. B. I vi 480

angustifolia F. I. tfi. 567; E. D. T. 864.

In most of the provinces.

A tall bulrush, 6-10 feet high. *Hind.* Pater-
Kam, hogla.

it*

Order CXLY. AROIDEJE.

Herbs, usually glabrous, very rarely armed, with watery ac- or milky juice, stemless or with a short stock or corm or tuber shrubs with sympodial branches, climbing by aerial roots m shrubby species alternate, distichous or spiral • in few clustered or solitary, radical, sometimes appearing after the flowers; petiole with sheathing base, lamina

jed or pinnate or perforate, often with cataphyllaries at base of /-sheaths. *Flower* a 1-sexual or hermaphrodite, sessile on a *ulir*, which is more or less completely enclosed in a green or colored *aputhe*, when 1-sexual rarely dioecious, more often "Onoecious, with males towards apex and females at base of *a<lix, often with neuters between, and sometimes with neuters above the males. *Perianth* absent or of a few scales, rarely pular or urceokte. *Stamens* in hermaphrodite flowers 4-8, in ales 1 or more, distinct or confluent; anthers 2-4-celled, free, or i confluent stamens) connate by means of the thickened connee-^re; cells discrete or contiguous, free or buried in the connective d opening by a terminal pore, or dorsally attached and opening • a terminal pore, rarely by a longitudinal chink; pollen globose ellipsoid, powdery or conglomerate. *Carpels* connate in a ssile, 1-3-celled ovary; ovules in each cell one or more, basilar, ^{Ap}pical, axial, or parietal; style short or long; stigma discoid or ^{>c}*Sbed. *Fruit* of many small, free or connate berries or drupes, ^{ma}dnate to the spadix. *Seeds* in each drupe or berry 1 or few. **small** ^{Qt}^r large, rarely many, usually embedded in a mucilaginous pulp; ^{nc}lbumen usually copious, fleshy, rarely hard, sometimes scanty or •; embryo axial, or if albumen absent thick, with the plumule ⁱⁿ ^{CCWt}eral slit,

i a B
urved.weri 1-sexual, monoecious, rarely (*Armenia* often) dioecious
iy-seelO4]
jng; 'ater or marsh plants; leaves entire; barren appendage none; ovules

- letimcthotropous:—**
 Floating, stemless, aquatic herbs; leaves sessile, obovate-cuneate, £{ of tl in a rosette-like tuft; base stoloniferous.....Pistia.
 Submerged aquatic or palustrine herbs; leaves tulted from a buried, ab of creeping rootstock.....Cryptocoryne.
 of sp m-estrial herbs:—

jllate) |L eaves an(j scapes rising directly from a tuber-like, hypogeal
 293. C^{rne} l^{av}e^s usually more or less lobed, sect or partite; if V
 si(T)jphQuittm sometimes) not peltate; connective ^{Ambro}
 anther-cells:—[p. 1104]

{ Spadix with a barren terminal appendage:—£_{cs}
 Male flowers stipitate; flowers often <h'<*< n<rg e j .nerb.
 or pedatisect or segments -whoried; ovulet

Male flowers sessile or nearly so; flowers al

Flowers and leaves present together; leaves undivided more or less 3-lobed or pedati-partite; males and femor remote; neuters present above the females and sometin/ below the males ; ovules orthotropous.....Typhonivt

Flowers appearing without the leaves:—

Males and females remote; neuters present above t females; leaves pedatipartite; edge's of spathe conn below; ovules orthotropous.....Sauromatun

Males and females contiguous or nearly so ; neuters wan ing ; leaves 3-sect; segments pinnatifid; edges of spatf free; ovules unatropous.....Amorphophalh*

jSpadix without a barren appendage; males and females sep rated by a belt of fusiform, pearly-white neuters; flowers appetjT ing without the leaves ; leaves 3-sect; segments pinnatifid ; ovull anatropous [p, 1103].....Plesmoniui

f Leaves and scapes rising horn a short caudex, prolonging a hyp] gaeal rhizome, or if rising direct from a tuber-like, hypogaeal con the leaves peltate and undivided ; connective wider than anther cells; flowers and leaves present together :—[p. 1103]

Leaves peltate:—

Spadix with a barren appendage, not- adnate at its base to th spathe:—

Ovules few, basalAlocr'

Ovules many, parietalColoc

Spadix without an appendage ; ovules many, parietal;—

Spadix quite free from the spatheRemusz

Spadix at base and female inflorescence partially adnat the spatheSteudn*

Leaves not peltate ; spadix without an appendage ...Aglaone'

•Flowers hermaphrodite, rarely a few 1-sexual; spadix without] appendage:—[p. 1103J

Perianth wanting; epiphytic, climbing herbs:—

Berries free; ovules solitary, basalScindap

Berries confluent; ovules many, parietalRhapidophecj

•th of 4-6 segments present; ovules solitary in each cell:—

flowering upwards; ovary 3-celled ; ovule from inner ail

Herbs, usually fe.. epiphytic climbers, unarmed.....pot

or milky juice, stemli^g downwards; ovary 1-celled ; ovule pendulous f shrubs with sympodial'id, prickly, terrestrial or palustrine herbs ...La

in shrubby species alte

few clustered or solitar

after the flowers; pet

Ves sessile, obovate-cuneate, together forming an erect-cup.
 1 (the' small, shortly stalked, tubular below, open above; *spadi*
 .ate to the back of the tube of %pathe, free above. 3 *Injlores-*
l <?e of a few sessile, connate stamens below the apex of the
 ulix; cells opening by vertical slits. *Neuters* minute, connate
 la ring below the males. ? *Infloresc* - a solitary, ovoid-conic,
 jelled *ovary*; ovules nurnero- oasal or " mbparietal, ortho-
 jppous; style conic; Btuw aiscoid. *Fruit* mem< -t-ranoug) few-
 f,ed. 8f I* ^;1 _^ or obovoid; testa ultimately rugose;
)us, floury; embryo minute, apical, cuneiforL n.
 A STRATIOTES Linn.; F. I. iii. 131; F. B. I. vi. '97;
 . D. P. 874.

In all the provinces; in ponds.

A floating, stemless, stoloniferous herb. *Hind.* Jal- •rely
 khumbi; *Beng.* Takapana ; *Uriya* Baujhaughc. nter-

998. *Cryptocor-yne* Fisch.

Aquatic or marsh herbs; stem short or 0 or a creeping root-
 ock; *leaves* nai'row .or broad. *Spathe* tubular, with margins
 onnate and a transverse septum within below. *Spadix* very
 nder, its tip adnate to septum of spathe. <? *Injlore*, *if*nee
 'ndric. *Stamens* 1-2, distinct; anthers short, sessil^t V^1 "n
 2, with conical, perforate tips; pollen vermifc <&
iscence a single -whorl of connate, 1-celled, many-ovv ^
 a few neuters; ovules erect, orthotropous; styles short,
 irvod. *Fruit* a fleshy syncarp of connate, coriaceous, 2-valved,
 ly-seeded cai-pels, the valves stellately spreading. *Seeds*
 jmg; testa rugose; albumen copious; embryo axial; plumule
 etimes germinating in the Fruit-

of the spathe narrow, longer than the lirab:—

ab of spathe densely fimbriate, not twisted..... *ciliata*.

lb of spathe glabrous ami tube both closely twisted ...retrGspirttU*.

, of spathe shorter than the strongly twisted, internally transversely
 Ulatelimb..... *spiralis*.

293. CaYPTocoEYNE CILIATA Fisch.; F. B. L vi. 492. *Amhro-*
sinia ciliata F. I. iii. 491.

C. and E. Bengal, in muddy creeks and ditches.

A tuberous, stoloniferous, usually submerged herb.

Bcng. Kerali,

2294. CEYPTOCOEYNE RETROSPIRALIS **Kunth; F. B. I. vi. 4'**
Ambrosinia retrospiralis F. I. iii. 492.

In most of the provin&js.

A narrow-leaved, usually submerged herb.

2295. CRYPTOCOKYNK SPIEALIS Fisch.; F. B. I. vi. 494. *Ambrosinia, spirali?* ^ I, iii. 492.

In all ^{provinc} small, grass-like ^{on the edges of ponds and}
 ditches, submerged during ^{only/1"}

999. Arissema Mait. <** spat!^{rlin}

r Tuberos herbs, with leaves and flowers conten?J^{lan}
 laves 1-3, trisect or pedate or verticillately 5- or more-
 Flowers 1-sexual, dicecious, rarely monoecious. *Spatke* deciduo[^]
 tube convolute; limb often acuminate or tailed, usually incurved
fopadix included or exserted, always with a barren appendaf
 ce svhich is often long and filiform. <? Flowers numerous, stipitatl
 anthers 2-5, oblong or subglobose; cells distinct or confluenij
 dehiscence by pores or chiiiks. ? Floivers densely crowdet
 ovtry ovoid, oblong, or subglobose, 1-celled; ovules 2 or more
 barlar, orthotropous; style short or 0; stigma discoid. Net^{tera}
 0, AjypW subulate, above the males or the females or on tlv
 apJpadi;age. Fruits of 1- or few-seeded berries. Seeds ovoi¹
 gx Spjfe; testa rather thick; albumen copious; embryo axial.»

2296. ARISJEMA TOETUOSUM Schott; F. B. I. vi. 502; E.
 A. 1381. *Arum curvatum* F. I. iii. 506.

Chota Nagpur, Parasnath. ;

A 2-3-foliate herb; leaves pedatisect.

1000. Typhonium Schott. V

Tuberous **herbs**; leaves entire, 3-5-lobed or pedatisect, Flor ,
 mono3cious; tube of *spatlle* short, convolute, with a constr'iv
 mouth, persistent; limb ovate-oblong, lanceolate or linear t)
 ciduous; *spadix* exserted, with a long, smooth, barren appen<i><
 male and female inflorescences remote, with neuters aboveV
 females, and sometimes also below the males, s *Stamens* 1)_n
 anthers sessile; cells contiguous, opening by pores or chin.>ir"
 pollen globose. ? *Carpels* forming an ovoid or oblong-ov(yle
 1-celled ovary; placenta **basilar**; ovules 1-2, erect; stigma sess ry
 Fruit of ovoid, 1-2-seeded berries. Seeds globose; alburuly
 copious; embryo axial.

aves pedately 5-7-sect or -partite ; petioles green ; limb of spathe broadly ovate, much refracted at base, not twisted at tip; appendage cylindrical, white, not longer than limb of spathe.....*Listera*,

**cordata* or hastate, entire, 3-lobed or sub-3-partite :—

Tube**³ above the females long, filiform, curved ; leaves broader than flowers? petioles green ; appendage cylindrical, expanded at the base, not cylindrical of spathe; limb of spathe acute, not twisted at the tip nor refracted at the base:—

Leaves hastately 3-lobed or sub-3-partite, rarely {in young plants} almost entire ; limb of spathe broadly ovate, dark red-purple, rarely pale-pink within; neuters numerous, closely matted and interlaced :—

Appendage bright red ; neuters pink.....*triloba* *Uim.*

Appendage pure white ; neuters greenish..... *Schottii.*

Leaves cordate, entire; limb of spathe narrow ovate, green with brown streaks and spots within; neuters very few, often 2-fid, greenish-white with pink tips; appendage pale red. *inopinatum.*

Neuters above the females short and stout; appendage longer than limb of spathe :—

Neuters many, close set, deflexed, imbricate, acute, yellow; leaves broader than long, hastately 3-lobed or sub-3-partite; petioles mottled with purple; limb of spathe broadly ovate, red-purple within, **refracted** at base and twisted at tip; appendage stipitate, entire at base, very slender, cylindrical, dark purple, much exceeding limb of spathe.....*Roxburghii* *U.*

Neuters few, scattered, horizontal, those above females cochlearate; concavity downwards, pink, obtuse, those below males subcordate; leaves longer than broad, sagittate, hastate, cordate, ovate or lanceolate; petiole green; limb of spathe narrowly ovate, with long, slender tail; appendage not stipitate, conical,

1/2. *Vai.* rather stout, angular and fluted, greenish-yellow, exceeding limb of spathe.....*citispidatum.*

A 1

ARUM LISTERI Prain.

The *Chittagong.*

is probably tuberous herb.

ARUM TRILOBATUM Schott; F. B. L. vi. 509; E. D.

83. *Arum orixense* F. I. 111. 503.

**Arum orixense*; Chota Nagpur; C. Bengal; E. Bengal; Chittagong.

tuberous herb¹ common among grass in thickets. *Chittagong.* Ghet-k¹. *Chittagong.*

2299. TYPHONIUM SCHOTTII Prain.

C. Bengal, with the preceding, of which it may prove to be a variety.

A tuberous herb, local, but plentiful where it occurs.

2300. TYPHONIUM INOPINATUM Prain.

C. Bengal, introduced.

A tuberous herb; a native, as now appears, of Upper Burma.

Plentiful and rapidly spreading in thickets in and about the Koyal Botanic Gardens. This was never in cultivation; how it may have been introduced is unknown, but the introduction would seem to have been recent.

2301. TYPHONIUM KOXBURGHII Schott. *T. Moitleyanum* F. E. I. vi. 510. *Arum trilobatum* F. I. iii. 505.

C. Bengal, introduced.

A tuberous herb; native of Malaya.

Accidentally introduced into the Koyal Botanic Gardens a century ago, where it occurs along with the three preceding species but more locally and rarely than they. Unlike the others, this seems not yet to have spread beyond the limits of these gardens.

2302. TYPHONIUM CUSPIDATUM Bl.; F. B. I. vi. 511. *flagelliforme* F. I. iii, 502.

C. Bengal; E. Bengal, in open, grassy places *

A tuberous herb.

More widely spread but at the same time less plentiful of the four preceding species.

1001. *Sauromatum* Schott.

Tuberous herbs; flowers preceding the leaves; pedately pedately pedately, lone-petioled. Flowers monoecious: stamens peduncled, its tube cylindrical, short, the margins of the limb very long, narrow, open, reflexed; *spadix* sessile with a slender, barren appendage as long as the spathe; female inflorescences short, widely distant, dense; few large, clavate neutrals close above the females. Sessile, subcompressed, 4-lobed; cells contiguous, obovate-oblong, opening by terminal pores; comical prominent. 9 Ovary oblong, 1-celled, rounded at the base. Ovary 1-2, erect, basal; style very short, or 0. Fruit

midal, 1-seeded, substipitate berries. Seed globose or sorsoid, convex, with an obconic strophiole; albumen copious; spathe, axial.

2303. o

Albumen

BAUROMATUM GUTTATUM Schott; F. B. I. VI. 50'

S. 902. Arum sessiliflorum F. I. iii. 507.

Chota Nagpur; Tirhufc.

*tc

A herb, with large, globose tuber.

ullata.

1002. AmorphopbsA'us Bl.

Tuberous herbs'- leava* (not appearing on tubers that are in flower) solitary, 3-partite; segments pinnatisect. Flowers monoecious; spathe with an open or convolute, funnel-shaped or campanulate limb; spadix exerted or included; appendage large, short or long; inflorescence cylindric, dense-flowered; males and females contiguous; neuters 0. <? Stamens 2-4; anthers sessile; [cells oblong; pores apical, i Ovaries globose, 1-4-celled; ovules in each cell solitary, subbasal, anatropous; style short or long; stigma entire or 2-4-lobed. Fruit of clustered, subglobose, or jbovoid berries. Seeds without albumen; embryo macropodous.

Leaf not bulbiferous; segments green-edged; petiole warted; spathe within more or less purple, campanulate; appendage dark purple, large, sinuously lobed; style much longer than the ovary:—

Appendage irregularly amorphous.....cfmpanulatus.

Appendage subregularly pyramidal.....campanulatus var. Blumei.

Leaf bulbiferous; segments purple-edged; petiole smooth; spathe within se-pink, wide-turgid; appendage rose-pink, smooth or slightly warted, rowly conoid; style none.....bvJbij'er.

(04. AMOKI'HOIALLUS CAM PAN VL AT US Bl.; F. B. I. vi. 518

E. D. A. 996. Arum campanulatum F. I. iii. 509.

In all the provinces, both wild and cultivated.

A herb with large, globose, usually much-warted tubers

The 01 of native cultivators.

t/2. Var. BLUMEI Prain. A. Rex F. B. I. vi. 514 partly.

In many of the provinces, cultivated only.

A herb with large, depressed, globose, hardly warte tubers. The Bombay 6l of native cultivators.

The description of A. Bex in the F. B. I. is of this plant, which is probably hardly entitled to specific rank. The Andaman plant referred to in the F. B. I. v&A. Rex is the true A. Rex, it has a

•een spathe pale yellow within and a pale brown appendage ; its
tiele is not warted.

MORPHOPHALLUS BULBIFER Bl.; F. B. I. vi. 515; E. D.
4.. 995. *Arum bulbiferum* F. I. iii. 510.

ChotaNagpur; N. Bengal, Duars; C. Bengal; E. Bengal. V
* herb, with depressed, globose tuber. *Beng.* Amla-
bela. —

1003. *Piantum* Schott.

Tuberous herbs; *leaves* (not appearing" on* tubers that are inow it
flower) solitary, 3-partite; segments pinnatisect. *Floivers* monoe-uctionio
cious; *spiathe* with an open, funnel-shaped limb ; *s2>adix* included ;
appendage 0 or very small; *inflorescence* cylindric, rather lax- T>
flowered; males and females distant, with large, obovoid, pearl-like
or turbinate neuters interposed, and, when a short appendage
exists, with small, slender neuters scattered over it. <f *Stamens*
2-4 ; anthers sessile; cells oblong; pores apical confluent. ?
Ovaries globose, 1-3-celled; ovules in each cell solitary, sub-a een-j
basilar, anatropous; style short; stigma 2-3-lobed. *Fruit* oftecies
clustered, red, ovoid berries. *Seeds* without albumen ; embryo
macropodous. lens.

2306. PLESMONIUM MARGARITIFERUM Schott; F. B. I. vi. 518.'

Arum margaritifera P. I. iii. 512.

ChotaNagpur; C. Bengal; E. Bengal.

A herb; tubers very white, usually warted.

1004. *Alocasia* Schott.

Herbs, usually tall and coarse ; rootstock tuberous or forming*^{in¹}
short, stout, suberect or erect caudex; flowers and ^{AH} *leaves*
coetaneous; *leaves* with stout petioles, sheathing below; lan-T
ovate-cordate, often distinctly peltate, *Fhunra moncecidi* • L
spathe on a stout, axillary peduncle, its tube thick, more or
fleshy, accrescent, persistent, the mouth constricted; limb <
deciduous; *sjmdix* shorter than the spathe, stout or **Bleu**
male and female inflorescences with usually interposed 1 i
neuters; appendage cylindric or subulate, j *Stamens* 3-8,;n₃ fi
nate in an obpyramidal column, with angular, flattened &vtT •
anthers linear-oblong; dohiseence apical, porous. ? Oss'
ovoid or oblong, 1-locular or partially 3-4-locular above; DUO?
few, ortbotropous, erect, basilar; **style** long, short, or 0; ' ^{ay}
ir

- cushion-like, 3-6-lobed. *Fruit* of clustered, obovoid or ellipsoid, few-seeded berries, included in the persistent tube of the spathe. *Seeds* subglobose; funicle short; testa thick, smooth; albumen copious; embryo axial.

Leaves not or very slightly peltate :—

Leaves ovate-cordate ; lower nerves approximate, subpalmate

cucullatxt.

Leaves sagittate-cordate; nerves pinnate.....

maica.

Leaves distinctly peltate, the basal lobes connate; nerves pinnate :-

Basal lobes of leaves united for less than half their length :-

k Leaves broadly ovate; basal lobes rounded, connate for only one-tenth their length.....

\ Leaves ovate-lanceolate; basal lobes acute or obtuse but not rounded, connate for one-third to one-fourth their length.....

forntcau .

o < capijal lobes of leaves connate for three-fourths their length; leaves \ ^ the ngate-rhomboid, caudate-acuminate, contracted opposite the basal

•\ibodves.....

1 >^{oro};)7. ALOCASIA CUCULLATA Schott; P. B. I. vi. 525 ; E. D. A. 807.

sllbg^l *Arum cucullatum* F. I. iii. 501.

inau; E. Bengal, cultivated ; Tippera.

albu; A stout herb; stock suberect, 1-2 feet, with many soboli.

23

809.

108. ALOCASIA INDICA Schott; P. B. I. vi. 520; E. P. A.

Arum indicwm F. I. iii. 498.

In all the provinces, cultivated.

A stout herb; stock suberect, large, 3-8 feet long, 3-8 in. thick, with few soboli. *Hind.* Man kandu ;

Beng. Man kachhu.

•309. ALOCASIA KAOBOPBHIZA Schott; P. B. I. vi. 526. *A. odora* E. D. A. 813. *Arum odortim* F. I. iii. 499.

In all the provinces, cultivated.

A very stout herb; stock suberect, very large, 6-16 feet long, 6-16 in. thick.

2310. ALOCASIA FORNICATA Schott; F. B. I. vi. 526; E. D. A. 808.

Arum fornicatum F. I. iii- 501.

In all the provinces.

A stout herb ; stock suberect, 1-3 feet.^

i'2yll. ALOCASIA ACUMINATA Schott; F. B. I. vi. 527.

Chittagong.

A stout herb ; stock horizontal.

4*

1005. Colocasia Linn.

Herbs, usually tall and coarse, sometimes small and handsome, with tuberous rhizomes or a short, stout caudex; leaves and flowers appearing simultaneously; *leaves* with stout petioles, sheathing below; lamina peltate, ovate-cordate. *Flowers* monoecious; *spathe* on a stout axillary peduncle; tube thick, accrescent, persistent, with constricted mouth; limb erect, deciduous; *spadix* shorter than the spathe, stout or slender; male and female inflorescence with usually interposed, flat neuters; appendage cylindrical or subulate. *Stamens* 3-8, connate in an obpyramidal column, with angular, flattened apex; anthers linear-oblong; dehiscence apical, porous. *Ovary* ovoid, 1-celled; ovules many; on; usually 3 parietal placentas, orthotropous; stigma sessile discoid. *Fruit* of small obconic or oblong berries. *Seeds* obisulcate; albumen copious; embryo axial.

Leaves with a bronze margin; spathe dark yellow.....*Antiquorum* Cen-j
Leaves not bronze-margined; spathe pale yellow.....*Antiquorum* h t hi

2312. COLOCASIA NYMPHEIFOLIA Kunth. *C. Antiquorum* P.L. 18. vi. 523 partly. *Arum nymphaeifolium* F. I. iii. 495.

In all the provinces, wild.

A stout herb. *Beng.* Sar-kachhu.

2313. COLOCASIA ANTIQUORUM Schott; F. B. I. vi. 523 part, E. D. C. 1731. *Arum Colocasia* F. I. iii. 494.

In all the provinces, both wild and cultivated.

A stout-herb. *Beng.* Kachhu.

1006. Remusatia Schott.

Herbs with tuberous rhizomes, emitting long, radical, shoots, clothed with small bulbils; flowers preceding the *leaf* with rather short petiole and entire, peltate lamina. *Flowers* monoecious; *spathe* coriaceous, short-stalked; tube convoluted, ovoid, accrescent over the fruit; limb broad or narrow, erect, spreading and reflexed, deciduous; *spadix* very short, sessile; male and female inflorescence with interposed neuters; appendage cylindrical or subulate. *Stamens* with neuters forming a clavate mass of densely packed, angular, flat-topped florets, the individual *stamens* with a fleshy connective bearing 2-3 small anther-cells, opening by ten longitudinal slits. *Ovary* ovoid, 1-celled; ovules many; on; usually 3 parietal placentas, orthotropous; stigma sessile discoid. *Fruit* of small obconic or oblong berries. *Seeds* obisulcate; albumen copious; embryo axial.

iglaonenta.]

ovoid, 1-celled ; placentas parietal, each with ovules ; stigma sessile, discoid. Fruit of small, Seeds small; albumen copious; embryo axial.

many orthotropous clustered berries.

2314. REMUSATIA VIVIPARA Schott; F. 13. viviparum F. I. iii. 496.

I. vi. 521. Arum

Chota Nagpur, Parasnath.

A tuberous herb, with numerous bulbiferous shoots.

1007. Steudnera C. Koch.

Herbs with a short caudex, often clothed with fibrous remains of old sheath; leaves long-petioled, involute at

Flowers

capitate the spathe; appendage 0. body with a flat, crenulate crown; anther-cells globose; dehiscence porous, apical. Ovaries often mixed with clavate staminodia, stigma 4-5-lobed; placentas parietal; ovules clustered berries.

buuinous; embryo axial.

2315. STEUDNERA VIROSA Prain. S. colocasioides F. B.I. vi.520. Colocasia virosa F. B. I. vi. 524; E. D. C. 1738. Calla virosa F. I. iii. 517.

Chit A st

S b , with a distinct stoc,. Ben., Bish Uachhu.

1008. Aglaonema Schott.

Herbs with an erect or prostrate stock ; leaves or or oblong; involucre sheathing at base ; lamina ovate, oblong, or deltoid, not late. Flowers monoecious; spathe subtubular to embiform, stipitate, equalling or shorter than the spathe. male and female inflorescence usually sessile, with rarely 2-4, distinct anther short; cells remote, with apical pores. J atropous in each rarely 2-celled ; ovules solitary, subbasilar, of few 1; stigma small or large, discoid or cupular stipitate berries. Seeds solitary; albumen 0.

erves of leaf numerous, close, parallel, all very slender; stem

identfp. "1A1

Clarkei.

•Nerves unequal, primary much stronger than the intermediate or secondary; stock elongate, nodose [p. 1113];.....*Hookerianum*.

2316. *AGLAONEMA CLARKEI* Hook. f.; F. B. I. vi. 529.

Chittagong.

A scandent herb.

2317. *AGLAONEMA HOOKERIANUM* Schott; F. B. I. vi. 529.

Chittagong,

A stout herb.

1009. *Scindapsus* Schott.

Robust, climbing shrubs; tissues with acicular needles; stems, rooting at the nodes; *leaves* ovate, oblong, or oblong-lanceolate; < petiole sheathing, geniculate, sheath often accrescent. *Flowers* > hermaphrodite, all fertile; *spathe cymbiform*, thick, soon deciduous; *spadix* shorter than the spathe, sessile, cylindrical, dense-flowered. *Perianth* 0. *Stamens* 4; filaments widish, flattened, thickened at the tips; anthers terminal; cells oblong, parallel or divaricate*¹¹ dehiscing by lateral slits. *Ovary* prismatic or obpyramidal, 1-locu-^{es} lar, top flattened; ovule solitary, anatropous, basilar; stigma¹¹ sessile, linear-oblong, depressed. *Fruit* of clustered, fleshy, obpyramidal berries, but with apex coriaceous and ultimately separating. *Seed* more or less reniform, with an arillate base; testa hard; albumen 0; embryo horseshoe-shaped.

2318. *SCINDAPSUS OFFICINALIS* Schott; F. B. I. vi. 541; E. S. 970. *Pothos officinalis* F. I. i. 431.

In all the provinces.

A large, epiphytic climber. *Hind*, and *Bong*. Gajpr *SantaL* Dare jhapak.

1010. *Rhaphidophora* Schott.

Robust, climbing shrubs; tissues with acicular needles; stem sending down long aerial roots; *leaves* large, distichous, oit-j oblique, perforate or pinnately lobed, rarely entire; petiole sheathing, geniculate. *Flowers* hermaphrodite or polygamous by ab- tion, with a few female florets; *spathe cymbiform*, thick, sc¹¹ deciduous; *spadix* included, thick, cylindrical, dense-flower 7J *Perianth* 0. *Stamens* 4 or 5; filaments linear, flattened, narrow it the tips; anthers small; cells oblong, divergent, dehiscing extrorse slits. *Ovary* obpyramidal or prismatic, 1- or imperfec

2-locular, top flattened; ovules many, anatropous, parietal or on the edges of the partial septa; stigma rounded or oblong, terminating a short, conical style. *Fruit* a cluster of cohering berries, but with apices coriaceous and often ultimately separating conjointly. *Seed* narrow; testa thin; albumen copious; embryo axial.

2319. KHAPHIDOPHORA HOOKERI Schott; F. B. I. vi. 546.

Chittagong.

A lofty, epiphytic climber.

1011. Pothos Linn.

Shrubs with climbing and rooting branches; *leaves* distichous, obliquely linear to ovate, blade sometimes obsolete; petiole winged or leaflike, sheathing at the base. *Flowers* hermaphrodite, all fertile; peduncles axillary or infra-axillary, leafy or 3-lobed or naked; *spathe* small, ovate or concave; *epadia* * 3r than spathe, stipitate. *Perianth* of 6 segments, with 'd tips. *Stamens* 6; filaments short or long, linear or 3d; anthers terminal; cells ellipsoid; dehiscence by extrorse 's. *Ovary* ovoid, oblong, or depressed, 3-locular; ovules 3, anatropous in each cell, adnate to inner angles; stigma j, hemispheric. *Fruit* of ellipsoid or obovoid, 1-3-seeded JS. *Seeds* ellipsoid, often compressed; testa rather thick; *embryo* 0.

*20. POTHOS SCANDENS Linn.; F. I. i. 430; F. B. I. vi. 551.

N. Bengal; Chittagong.

An extensive, epiphytic climber.

1012. Lasia Lour.

Herbs, spinous, aquatic or marsh herbs; rootstock branched; leaves long, prickly; *leaf-bl&de* hastate, entire or pedately lobed [cut; petiole and nerves beneath prickly. *Flowers* hermaphrodite, all fertile; *spathe* very long, narrow, fleshy, twisted; base glabrous, deciduous; *spadix* short, cylindrical, dense-flowered, turning centrifugally. *Perianth* segments 4-6, obovate; tips late, incurved. *Stamens* 4-6; filaments short, flat; anthers with parallel cells, dehiscing by extrorse slits. *Ovary* ovoid, 3-lobed; ovule solitary, pendulous from apex of cell; style 1, stigma depressed. *Fruit* a cluster of 6-sided, obpyramidal *1 with warted or muricate tips. *Seeds* compressed, rugose; *embryo* 0.

2321. **LASIA** HETEROPHYLLA Schott; F. B. I. vi. 550. *L. spinosa* E. D. L. 84. *Pothos heterovpfoylla* F. I. i. 437. *P. Lasia* F. I. i. 438.

In most of the provinces.

A stout, intensely prickly marsh plant. *Beng.* Kantakachhu ; *SantaL* Kanta saru.

Order CXLYI. LEMNACE/E.

Small or minute, gregarious, aquatic herbs, scale-like or **globular** rootless or with capillary roots, propagated by buds or bulbils, rarely by seed; fronds smooth above, spongy below. *Flower*^ monoecious, 1-3, naked or enclosed in a membranous spathe. *Perianth* absent, **j Stamens** 1 or 2; anthers 1- or 2-celled, tlu cells superposed; dehiscence by transverse slits. ? *Ovary* s^o-^{ra} 1-ldcular, narrowed into a funnel-shaped style; stigma sii^{ous}; ovules 1-7, basal, erect or horizontal. *Fruit* a minute, ^{Brc} shaped utricle, indehiscent or opening by circumscissile dehisc^ai. *Seeds* erect or horizontal, 1-7 ; testa coriaceous; albumen u^oa^es or absent; embryo cylindric, axial.

Fronds flat, with one or more roots, bearing the flowers in m ^{igma} clefts; anthers 2-celled; filaments slender.....1^{esnv}». Fronds minute, **granular**, rootless, proliferous, bearing the flo^ae^r^ the upper side ; anthers 1-celled, sessile.....Atfasc :

1013. *Lerana* Linn.

Herblets, with roots rising from the sides or base of the fronds. *Flowers* in marginal clefts of the frond, at first enclosed in a s **Lnijj** spathe. <? *Florets* in pairs, one of each pair opening befor *wt* other. *Stamen* solitary; filaments filiform or enlarged in 1le middle, recurved; anthers 2-locular, globose; cells dehiscingn i transverse slits; pollen muricate. \$ *Floret* solitary, elosfit;it male. *Ovary* 1-7-ovuled ; ovules anatropous, seini-anatropoiowu orthotropous. *Fruit* a 1-7-seeded utricle. *Seeds* erect or ;>Ule lontal; embryo conic or ovoid. afctio

•Rootlet solitary :—[p. 1117]

Fronds asymmetric, obovate or obovate-oblong ; seed erect Jb<<sil t| sci<lact j>awet7ei\CK4.—

Fronds symmetric, young hastate, persisting, the others set orowle^k to the young, oblanceolate, tip serrate ; seed horizontal.....n<T n'n

:fecovff

LEMNACEÆ.

•Rootlets several:—[p. UW] broadly obovate or orbicular,
 Rootlets many; fronds herbaceous, broadly obovate or orbicular, *polyrrhiza*.
 7-nerved; fronds "rotate" oblong, 3-6-nerved
 Rootlets few, 2-5; fronds membranous, ovate *olgorrhiza* Mza.

2322. LEMNA PAUCICOSTATA Hegelm. j F. B. L vi. 55⁶.

In most of the provinces.

A minute, annual, floating herb. ^ ^ ^ crtC_{fl}to

2323. LEMNA TRISTYLICA Linn.; F. B. I.

F. I. ill- 566.

In the central and eastern provinces.

A minute, annual, floating herb.

L. orbiculata

2324. LEMNA POLYRRHIZA Linn.; F. B. L vi. 557.

In the central and eastern provinces.

A minute, annual, floating herb. fl^{ng}b^{..^^^}

2325. LEMNA OLIGORRHIZA K ;
 Central, and perhaps elsewhere.

A minute, annual, floating herb.

1014. Wolffia Hoik.

Very minute herblets, flattish globe, or conically produced
 rootless. **<***** groove on the upper surface
 the plant; spathe 0. & Floret solitary. Stamen solitary;
 filament short or long; anther globose, 1-celled; pollen smooth.
 Floret solitary, close to the male. Ovary globose or ovoid;
 solitary, orthotropous. Fruit a spherical utricle. Seed
 globose, erect; testa thick; albumen scanty.

fronds subglobose *microscopica*.
 fronds flat above, conical beneath ..

— . K B I.vi.557. *Lemna ghbow*

326. WOLFFIA ABBHIZA Wnm., F. *

F. L Hi. 565.
 In most of the provinces.

A minute, floating, annual herb. ^ ^ . 558.
 *327. WOLFFIA MICROSCOPICA Kurz , r. B. . ^ . 558.

C. Bengal.

A minute, floating, annual herb.

Order CXLYII. ALISMACEJE.

Aquatic or marsh herbs; usually erect, sometimes floating. *Leaves* radical or clustered at nodes of floating stems, entire, pectioled, often pellucid-dotted or -lineolate. *Flowers* pedicell»-d. hermaphrodite, monoecious, or polygamous, rarely dioecious, in umbelled or paniculate whorls, white or pink, rarely blue or yellow; bracts 3 or more, membranous; bractcoles small. *Perianth* 2-seriate; the outer whorl of 3 herbaceous, the inner whorl petaloid, rarely obsolete. *Stamens* 6 or more, rarely 3, hypo-, EYtions or perigynous; anthers erect, basin" xed, 2-celled; dehis-* cence by lateral or dorsal longitudinal slits. *Carpels* 3-6, or] **more**, 1-celled, sessile or stipitate on a flat or raised receptacle style long or short, rarely 0, subterminal or ventral; **stigma** \ simple ; ovules 1 or more **in** each carpel; placentas on the in **in**er angle, rarely ovule solitary and basilar. *Fruit* of small achenes or follicles, the ripe carpels free or connate at the base only, usually tipped by the style and stigma, very rarely each carpe's circumseissile at the base. *Seeds* small or minute; albumen 0 ;¹ embryo straight or conduplicate.

Fruit inlehiscent, of 3 or more achenes; **ovules** and seeds solitary :—

Stamens few, 6-9; receptacle flat:—

Flowers hermaphrodite..... Alism

Flowers polygamous..... Limnophyto

Stamens usually many, rarely as few as 6; receptacle globose

oblong; **flowers 1-sexual or polygamous**..... Sagitta an,,

Fruit dehiscent, of 6-7 follicles ; stamens 8-12 ; **flowers** hermaphroc¹,

ovules and seeds numerous..... **Butomo** ,

1015. *Alisma* Linn.

Herbs, scapigerous, stemless, palustrine, perennial; *leaves* **l**L ceolate, cordate or sagittate. *Flowers* hermaphrodite, in umbell;j(G) or panicled whorls, white or pink; scapes short or long; receptai- flat. *Sepals* 3, herbaceous, persistent. *Petals* 3, membrane-1 J deciduous. *Stamens* 2-3-seriate, 6 or 9 ; filaments filiform. Cj_a A *pels* few or many; receptacle small; stigma small, terming I ovule solitary, anatropous, basilar. *Fruit* of few or many, **oottu** pressed or turgid, coriaceous or hard achenes. *Seeds* ere [basilar ; testa membranous; embryo horseshoe-shaped.

leaves linear, ovate-lanceolate or subcordate, 5-7-nerved; achenes membranous, compressed..... *Pluntayo*.

leaves 11-17-nerved; achenes hard, turgid :—

Leaves coriaceous, orbicular-cordate or reniformi, with rounded lobes and rounded or emarginate apex..... *renifarme*.

Leaves membranous, broadly ovate-cordate, with acute lobes and a narrow sinus..... *oligococcum*.

2028. ALISMA PLANTAGO Linn.; F. B. I. vi. 559; E. D. A. 757.

Tirhut; N. Bengal.

A scapigerous herb of marshes.

2329. ALISMA HENIFORME Don; F. B. I. vi. 560.

N. Bengal; C. Bengal; E. Bengal.

A scapigerous herb of pools and marshes.

2330. ALISMA OLIGOCOCCUM F. Muell.; F. B. I. vi. 560.

C. Bengal, rare.

A scapigerous herb of pools and marshes.

1016. Limnophyton Miq,

Herbs, scapigerous, stemless, palustrine, perennial; juice milky; leaves sagittate, erect. Flowers polygamous, male and hermaphroditic, in paniced whorls, white; scapes stout; receptacle flat. Sepals 3, herbaceous, persistent. Petals 3, membranous, deciduous. Stamens 2-seriate, 6, largest in the male flowers; anthers subfiliform, compressed. Carpels 15-20, obsolete in the female flowers; receptacle small; stigma small, on a ventral style; ovary solitary, anatropous, basilar. Fruit of several compressed, turgid, hard achenes. Seeds erect, basilar; testa membranous; embryo horseshoe-shaped.

Limnophyton obtusifolium Miq.; F. B. I. vi. 560. *Sagittaria obtusifolia* F. I. iii. 646.

C. Bengal; W. Bengal; Orissa.

A scapigerous herb of pools and marshes.

1017. Sagittaria Linn.

Herbs, usually perennial, aquatic, stemless; leaves long-petioled, orbiculate or sagittate. Flowers 1-sexual or polygamous, in terminal or spicate whorls; scape erect, stout or slender; receptacle globose or oblong. Sepals 3, herbaceous, persistent. Petals membranous, deciduous, white. Stamens in male flowers about 6-10, in female flowers only staminodes in the female flowers, or 6-10 in the

male flowers, with 9-12 in the hermaphrodite ; filaments filiform compressed. *Carpels* very many, crowded on the large, globose or oblong receptacle, flattened laterally; style ventral or apical, stigma papillose; ovary solitary, basilar. *Fruit* a globose or oblong head of flattened, crested or winged achenes. *Seed* erect, basilar ; testa thin ; embryo horseshoe-shaped.

Leaves rising above the surface of the water, hastate or sagittate or stamens about 24 in j, reduced to staminodia in the ? florets v,H.

Leaves floating, broadly ovate, deep cordate, obtuse; stamens 6-10 in <\$10. 9-12 in £ florets.....*guayanensis*

2332. **SAGITTARIA SAGITTIFOLIA** Linn.; F. I. iii. 645; F. B. or vi. 561; E. D. S. 510. cle

ChotaNagpur; Behar; Tirhut; N.Bengal.

A scapigerous herb of pools and marshes. *Bong.* Muyen muya, chhoto-kut.

2333. **SAGITTARIA GUAYANENSIS** H. B. K.; F. B. I. vi. 561. 8. coaly *difolia* F. I. iii. 647. Tpe

In all the provinces. 0

A scapigerous herb of pools and marshes.

1018. *Butomopsis* Kunth. :—

Annual, erect, scapigerous, palustrine herbs ; juice milky ; *led* radical, elliptic-acute. *Flowers* hermaphrodite, umbelled or scape, longer than the leaves ; whorls sometimes **superpod** bracteate. *Sej pah* 3, herbaceous, persistent. *Petals* 3, branous, deciduous, white, larger than the sepals. *Stan* usually 9, hypogynous, 6 outer in pairs opposite sepals, one of a pair obsolete; 3 inner single opposite petals, one or more replaced by a pair; filaments filiform; anthers *Carpels* 6-9, whorled on a flat receptacle, sessile, shortly below, **1-ocular** ; style short; stigma somewhat external of style; ovules many, small, on reticulate, parietal ascending, anatropous. *Fruit* of 6-7 erect, meinbraruus 1. *Seeds* minute, parietal, very numerous, smooth; embryo duplicate, horBeshoe-shaped.

2334. **BUTOMOPSIS LANCEOLATA** Kunth.; F. B. I, vi. 562. *Buto* TM *lanceolatus* F, I. ii. 315.

In all the provinces.

An annual herb of marshes and rice-fields ; juice ix

Order CXLYIII. NAIADACEÆ.

Herbs, palustrine, stemless, scapigerous, with a tuberous or creeping rootstock; or aquatic and submerged or floating, with longated, branched stem. *Leaves* erect or submerged or floating, **loathing at** the base. *Flotven* hermaphrodite or 1-sexual, green, inconspicuous, in spikes, racemes, or terminal or axillary peduncled padices; bracts small or 0. *Perianth* absent or of 3-4 inferior, ?alvate segments, or tubular and very delicate. *Stamens* 1-6, yp^osy^{nou}s> free in the hermaphrodite flowers, solitary or connate i male flowers; anthers basifixed, erect, 2-locular.or reduced to "aie anther-cell. *Carpels* 1-6, each 1- or more-ovuled; style long % v short; stigmas usually simple, sometimes 2-3, capillary; ovule •rect or pendulous. *Frtidt* of 1 or more 1- or several-seeded Utricles, achenes, follicles, or small drupes. *Seeds* erect, pendulous, or laterally peltate; testa coriaceous or somewhat fleshy; albumen 0; embryo fleshy, straight.

lowers hermaphrodite; style short or 0; stigma discoid or decurrent on the ovary :—

JP<rjanth of sepals present; carpels sessile :—

^2o4.ft|3 j ^ white or pink, membranous ; stamens (> or more

Aponogeton.

>als 4, green, herbaceous; anthers 4, sessile. Potamogeton.

34nth wanting; carpels stipitate; anthers 2, sessile Ruppia.

1 -sexual; stamen solitary:—

long, slender; stigma oblique, peltate; achenes 2-9, sessile or ped ; male perianth wanting, female perianth cupular, hyaline

Zanichellia.

i wanting; stigmas 2-4, slender; achene solitary, sessile; male

nth double, an outer inflated or 4-fid tube and an inner hyaline ;

le perianth wanting, or hyaline and adherent to carpel....-Naias.

1019. Aponogeton Thunb.

1
[is, scapigerous, with tuberous rootstocks, aquatic ; *leaves* floating or submerged. *Flowers* bi-sexual, on long scapes, solitary or geminate, often unilateral spikes, the spikes . mng enclosed in a conical, soon deciduous sheath. *Perianth* equal or unequal, pink or white segments, or obsolete.

6 or more ; filaments subulate, unequal, persistent; didymous. *Carpels* 3-6, each 2- or more-ovuled ; style

stigma discoid or decurrent, persistent; ovules basilar, anatropous. *Fruit* of 8 or more coriaceous follicles. *Seeds* erect; **embryo** straight.

Leaves floating, oblong, 3-5-nerved, opaque; sepals 2, pink or white shorter than the three follicles:—

Cross-nervules of leaves distinct; follicles smooth, 4-8-seeded

VUmostdrhtjui

Cross-nervules of leaves obsolete; follicles echinate, 2-seeded

eehhmtun

Leaves submerged, linear-oblong to lanceolate, 3-7-nerved, **translucent** cross-nervules distinct; sepals 1-3, white, longer than the 3-4 smooth 1-2-seeded follicles.....*erisptaf*

2335. APONOGETON MONOSTACHYON Linn, f.; F. I. ii. 210; F. B. vi. 564; E. D. A. 1242.

In all the provinces.

' AD aquatic herb. *Hind, Jhechu.*

2336. APONOGETON ECHINATUM Eoxb.; F. I. ii. 210; F. B. vi. 564.

C. Bengal.

An aquatic herb.

2337. APONOGETON CRISPUM Thunb.; F. B. I. vi. 564. *latum* F. I. ii. 211.

Tirhut; N. Bengal; C. Bengal; E. Bengal.

An aquatic herb.

1020. Potamogeton Linn.

[Herbs, aquatic, submerged, with creeping rootstock; submerged or floating, opposite or alternate, entire or TM with intrafoliaceous stipules. *Flowers* small, hermaphroditic, spicate on a scape, rising from a membranous **spathe**; bracts *Perianth* of 4 concave, green, valvate segments. *Stamens* anthers sessile on the perianth-segments, didymous, opening by extrorse slits. *Carpels* 4, sessile, 1-celled and stigma sessile or decurrent on a style, persistent; ovules anatropous, adnate to inner angle of carpel. *Fruit* of coriaceous or spongy drupelets. *Seed* subreniform; (fo*) straight.

•Upper leaves floating:—[p. 1123]

•Floating leaves large, coriaceous; submerged leaves lanceolate* transbrinous [p. 1123]

fFloating leaves small, herbaceous; submerged leaves linear [p. 1122] javanicus.

•Leaves all submerged :—[p. 1122]
Leaves lanceolate, membranous:—

Leaves semiamplexicaul at base, crisped and serrulate, i many-nerved crispus.

Leaves truncate or cuneate at base, not crispate, mucronatus.

Leaves narrowly linear or filiform :—

Stipules adnate to leaf-sheaths n«illus.

Stipules free.....

TD i T? T i 4*52* F B. I. vi. 565.

2338. POTAMOGETON INDICUS Roxb., r. i. * *OZi» •

In all the provinces.
A very common aquatic herb.

2339. POTAMOGETON JAVANICUS Hassk.; F. B. I. vi. 1)60.

Tirhut; N. Bengal.
A somewhat rare aquatic herb.

2340. POTAMOGETON CKISPUS Linn.; F. a L vi. 566; B, J>. p. 1194. P. tuberosus F. I. i. 453.

In all the provinces.
A common aquatic herb.

2341. POTAMOGETON MUCRONATUS PresL ; F. B, 1. vi. *>cu.

N. Bengal; E.Bengal.
A very lare aquatic herb.

;42. POTAMOGETON PECTINATUS Linn.; F. B. I. vi, ð •

Tirhut; N. Bengal; E. Bdngal. pusillus sub-sp. flabellata
A common aquatic herb.

343. POTAMOGETON PUSILLUS Liu
F. B. I. vi. 567.

Behar.
An aquatic herb, exceedingly rare in our area.

1021. Ruppia Linn.

[erbs of brackish swamps, with B1 enter, submerged, branched
QIS ; leaves long, filiform, with sti; pale-like sheaths. Flowers
rate, hermaphrodite, 2-6 together withm a leaf-sheath, on an
i y , T ^ , T2£- or ^ VT OI 4 T twisted peruncb.
Ivuled; stigma sessUe; ovule pendulous 1-nut of 4 si apitate,
5 obtuse or beaked achenes. Seed unemate; embryo straight.

2344. RUPPIA ROSTKLLATA Koch; F. B. I. vi. 568.

C. Bengal; E. Bengal; Sundribuns.

A submerged aquatic, plentiful in brackish water.

1022. Zanichellia Linn.

Herbs, aquatic, usually in brackish water, with slender root¹ stock and stem; *leaves* linear, with stipular sheaths. *Flower*[^] minute, monoecious, both sexes in one membranous sheath. *Perianth* 0. *Stamen* solitary; filament slender; anther linear-2-3-celled. ? *Perianth* cupular, hyaline. *Carpels* 2-9, sessile [-style long, slender; stigma oblique, peltate, crenate; ovufr^r solitary, pendulous, orthotropous. *Fruit* of sessile or stipitate¹ reniform, crested achenes, usually 4 in number. *Seed* pendulous I testa thin; embryo subcylindric, with the cotyledonary end folded twice on itself. es

2345. ZANICHELLIA PALUSTRIS Linn, sub-sp. PEDICELLATA Hook, f.p> F. B. I. vi. 568.

ChotaNagpur; Behar. 0;

A submerged aquatic, not very common in our area.

1023. Najas Linn.

Herbs; aquatic, submerged; stems branched, filiform, smooth ^ nⁿ nruncate; *leaves* opposite, alternate, or whorled, linear, entire fto| toothed. *Flowers* 1-sexual, monoecious or dioecious, minut^e axillary, j *Perianth* double, outer tubular or inflated, entire a 4-fid, inner hyaline. *Stamen* solitary, adnate to inner perian^« tube, apiculate or cuspidate, 1-4-1 ocular. ? *Perianth* 0, or hvalid and adnate to carpel. *Carpel* solitary, sessile, 1-ovuled; stign 2-4, slender; ovule basilar, erect, anatropous. *Fruit* an obi- achene. *Seed* erect; testa very thin ; embryo straight. Is l

Dioecious; leaf-teeth large, few, back of leaf and internodes with sirr¹ teeth; anther 4-locular.....mariiF®¹] bell
Monoecious; leaf-teeth rather numerous, back of leaf usually with^{tU1oi} teeth:— r Cl

'Male and female flowers in a spathe ; leaf-teeth long ; anther 4-locul^{11*1^} r r % T O * t " |indio cor

*Male flowers only in a sheath;—[p. 1125] (re

f Anther 1-locular:—[p. 1125]

Flowers solitary ; areolse on testa broader than long.....mini

Flowers aggregated; areols on testa as long as broad ...Kur zian

jajas.]

f Anther 4-locular :—[p. 1124]

Beak of sheath lacerate..... *lacerata.*

Beak of sheath entire..... *foveoUda.*

•Male and female flowers alike unprovi..... *graminea.*

4-locular [p. 1124]

2346. NAJAS MAKINA Linn. K *major* F. B. L vi. 569.

E. Bengal.

A slender herb.

2347. NAJAS INDICA Cham. N. *minor* F. B. 1. vi. 569 in part.

Behar; C. Bengal.

A slender herb. « *dichototna* F. I.

2348. NAJAS MINOR All., *. »•

iii. 749.

C.Bengal; E.Bengal.

A slender herb.

2349. NAJAS KUBZIANA Rendle.

N. Bengal.

A slender herb.

2350. NAJAS LACERATA Bendle.

C. Bengal.

A slender herb.

93M NAJAS FOVEOLATA A. Br.

In most of the provinces, common.

A herb.

vi. 569.

2352. N

In all the provinces, common.

A slender herb.

order CXLIX. ERIOCAULEÆ.

Lu a l or perennial,

L w w « narrow,

ftary globose or i/tubular basal sheath;

an involucre of short, more or less hoary

rets often cked on a flat, convex, he itary in the axil of a c

scapigerous, palustrine, with sheathing bases; white, 1-sexual, densely

spheric head at the ap heads andro

carious or with short

spheric, or conical rece uniform bracteole, which

^ aquatio

veins parallel.

rarely 1-sexual,

us bracts; the

the hairs, and closely

le, each

- a , or

exceeds its flower, and is dorsally hoary near the apex. <? *Flower* stipitate. *Sepals* 3, free or connate, hyaline, deciduous, rarely or 0. *Petals* 3, connate in a stipitate, funnel-shaped, minutely 3-lobed corolla, one lobe sometimes longer than the others. *Stamens* 6 or fewer, inserted at the base of the corolla; filament short, often unequal; anthers didynious, 2-celled, usually black. *Pistillode* 0. ¥ *Flowers* sessile or stipitate. *Sepals* 3, rarely 2 or 1 or 0, unequal, usually concave, deciduous. *Petals* 3, unequal broad or narrow, persistent, with often a black spot on the limb forming a corolla sessile on the calyx or stipitate. *Ovary* superior sessile or stipitate, globose, 3-lobed and 3-celled; cells each with 1 pendulous ovule; style rather short; stigmas 3, erect, filiform. *Fruit* a small, membranous, 3-celled, loculicidal capsule. *Seed* very minute, oblong or ellipsoid, smooth, striated, or ribbed; albumen floury; embryo minute.

1024. *Eriocaulon* Linn.

Characters those of the order.

Aquatic; stem submerged, elongated, branched, densely leafy, upper branches floating; leaves capillary..... *Cwpillus-Naiad* Marsh, rice-field, or terrestrial herbs; stem very short or none:—

Involucral and floral bracts both glabrous:—

Receptacle glabrous or nearly so; leaves subulate:—

Involucral bracts sub-2-seriate, cuneate, spreading, shining, floral scarious, obovoid, tip truncately rounded; sepals in flower of both sexes 2..... *truncatu*

Involucral bracts oblong, obtuse, passing gradually into the oblong-lanceolate, subacute floral, all scarious; sepals in male flower 3, in female 2-1 or wanting..... *Sieboldian*

Receptacle more or less villous; leaves ensiform; bracts all scarious, hyaline, involucral oblong-obtuse, passing into the cuneate-obovate, densely imbricate floral; sepals in male flower 2, in female 3

oryzob>n

Involucral bracts alone glabrous, floral bearded or pubescent; receptacle villous:—

• Perennial; rootstock elongated, slender or stout; leaves ensiform broadly subulate:— [p. 1127]

Female flowers distinctly pedicelled:— [p. 1127]

\ Involucral bracts erect or spreading, never reflexed, hemispheric, grey; leaves pale grey-green, opaque [p. 1127]

htzulifoliu

CYPERACEAE

Eriocaulon

at length reflexed under the globose grey or snow-white heads; leaves reddish, one ^{translucent} ^q [^] ^{ma} ⁿ ^{Suter} *.

[p. 1126]; r-i-a-i bracts reflexed; heads Female flowers almost sessile; mvo ^{u 2 6]} ^{tr} ^{Uobum}.

Lrk-grey, globose; leaves grey-green * W ^ ^ ^{invo} ^{lucral} annual, tufted, dwarf; ^ . * ^ * £ £ ^ 6 * * bracts erect or stellately spreading, pale, sum b ^{-xeranthib} ^{mUA}.

[P. 1126] " " I . 572.

2353. ERIOCAULON CAPILLDB-NAIADIS Hook. I i F- B. I . «- N.Bengal; C. Bengal ; E. Bengal. A submerged aquatic herb.

2354. ERIOCAULON TBUNCATUM Ham.; F. B. I. vi. 578. *LeucocephalaU spathacea* F, L iii. 6W. In all the provinces.

A herb of rice-fields and marsh; ground. Zucc.; F. B. I. vi. 577.

2355. ERIOCAULON SIEBOLDIANUM Sieb. & In most of the provinces. A herb of rice-fields and marshy ground. I. vi. 579.

2356. ERIOCAULON ORVZKTORUM Mart.; .F. B. Chota Nagpur. A weed of rice-fields. ^ 582(

2357. ERIOCAULON LUZULIFOLIUM Mart. -, * . * • In all the provinces. A herb of rice-Belds and wet pl^es. F. B. I. vi. 582.

2358. EEXOCAULON ,onW««rouLA«. Lmn.,, *LencacyUU graminifoha* F. I. BL 61-

2359. EBIOOAUON TRILOBOM Ham., F. B. L In all the provinces. A herb of rice-fields and wei.places F. B. I. vi. ^

12360. EEIOCAULOHXEEANTHKM^MaU., Chota Nagpur; N. Bengal. An annual, terrestrial, tufted herb.

Order CL. CYPEBACE«

Perenn ial, rarely annual herbs; roots fibrous; stem cylindric or cornered, rarely 0, mostly powdered at , upper fewer, sheathing below; the

sheaths tubular and more or less closed, or those of the lower leaves split to the base ; ligule 0 or a faint prolongation of the mouth of the sheath opposite the blade. *Flowers* minute, hermaphrodite or 1-sexual, in the axils of glumes of a **spikelet** (*Cyperaceae*) or of the glume-like bracts of a spike ; spikelets of *Cyperaceae* spikes of remaining tribes, composed of small, imbricating distichously or spirally imbricating scales (*glumes* or *bracts*), disposed in fascicles, panicles, or spikes, or solitary. *Perianth* 0 or 6 or more hypogynous bristles or scales, rarely (*Carex*) a utricle enclosing the ovary. *Stamens* 1-3; filaments flattened; anther basifixed, linear. *Ovary* 1-celled; style short or long; stigma 2-3 ; ovule 1, basal, erect, anatropous. *Fruit* a compressed or trigonous nut. *Seed* erect, free ; embryo minute within the base

the floury albumen,

ovary and fruit enclosed in a bottle-shaped utricle with an entire notched or shortly slit mouth.....*Carex*

Ovary and fruit not enclosed in an utricle:—

Spikelets with a terminal ? flower and with two basal opposite glumes:—

Spikes corymbose; style 2-fid.....**Hypolytrum**

Spikes in an oblong panicle ; style 3-branched.....**Scirpodendron**

Spikelets with the terminal flower not ? :—

Spikelets 1-sexual or with a basal \$ flower and 1 or more empty glumes ; fruit stipitate, bony ; scales or bristles 0:—

Glumes entire, with one median vein.....**Scleria**

Glumes 3-fid, with 5-7 strong veins.....**Diplacrum**

Spikelets with the lower glumes always empty, intermediate glumes and uppermost <? or imperfect or empty :—

Intermediate £ glumes few, not more numerous than the 2-m lowest empty; uppermost empty and thinner than the intermediate glumes:—

Style 2-fid; hypogynous bristles usually 6.....**Rhynchospora**

Style 3-fid ; hypogynous bristles 0.....**Cladium**

Intermediate £ glumes usually many, always more numerous than the 1-2 lowest empty ; uppermost j or imperfect or but similar to the intermediate glumes (CYPEREJE) :—

*Flowering glumes distichous ; scales or bristles 0 :—[p. 1129] o

fStyle 2-fid :—[p. 1129]

Rachilla of spikelet deciduous.....**Kyllingia**

Rachilla of spikelet persistent:—

CYVERAGEM.

'it rex.]

.....Pycreus.
 Fruit compressed laterally.....JuncelluH.
 Fruit compressed dorsally.....V'nhpntire and
 fStyle **8-fid**, very rarely {Cyperv* § ^ ^ ^ **b e a t i r e**
 then casually 2-lobed ; fruit trigonous :- [p. H-8J **Cyperus.**
 Rachilla of spikelet persistent
 Baehilla of spikelet deciduous :— it broadish
 Fruit-bearing glumes not **winged**; **ru** **Mariscus.**
 Fruit-bearing glumes winged on the keel; fruit narrow ^ ^ ^ ^ ^

Flowering glumes spirally **arranged** :-{p. U28]

Base of style constricted or - * ^ ^ << ^ * !
 Stem leafless ; hypogynous bristles usually present
Eleocharis.

Stem leafy at base ; bristles 0 :—

Style base persistent, or if deciduous not leaving a

^ r s e ^ ^ the rachi,,Fimbristylis.

Glumes persistent on the racMlaEchinolytrum.

stj,e-base **deciduous**, leaving a tumour on the fruit **Bulbostylis.**

Base of style passing gradually into the fruit :—

Hypogynous scales 2, hyaline, antero-posterior, undiv 5
Lipocarpia.

Hypogynous scales 1-7, or 0, when 2 (Sc(-ri?<<< rarely) then
setaceous and :—

Hypogynou s 6, divided to the base into linear
.....**Eriophorum.**

Leaves hairy; hypogynous scales 6 << 3 0 1 0 **Fuirena.**

Leaves glabrous; hypogynous scales 7-1 or 0 ^ **rpus.**

1025. Carex Linn.

vimiill, glabrous, rarely pubescent, grassy sedges ; stems
 ,, ^ at the base. f pikelets solitary or few, one terminal,
others lower down, rarely all clustered in terminal or axillary
 androgynous, the lower
 base or top, very rarely

ious, uppermost often wholly male. Scales many, imbricate
 und the rachilla, persistent or deciduous. Flowers solitary

in the scales. <? *Stamens* 2-3; anthers linear, obtuse. ? *Ovary* compressed or 3-quetrous, enclosed in an urceolate, 2-toothed* utricle; style slender; stigmas 2-3, protruding from the utricle; *Fruit* a minute, coriaceous, compressed or 3-gonous nut, included in the utricle.

Spikes short (*5 in. or less), narrow, very numerous, compoundly paniculately arranged:—

Glumes distinctly aristate ; beak of utricle half as long as its body :—

Inflorescence brown..... *triamica*

Inflorescence pale straw-coloured..... *stramentitia*

Glumes minutely or not mucronate :—

Beak of utricle half as long as its body or longer

cruciata var. *nagporensis*

Beak of utricle one-third as long as its body or shorter :—

Glumes ovate-acute..... *plebeja*

Glumes ovate-obtuse..... *Uicina* var. *microgyna*

Spikes longer (1 in, long or more), few, distant, racemosely arranged:—

Spikes 3 or fewer, very remote, slender..... *speciosa*

Spikes 4-8, distant, cylindric, rather stout..... *Vallich'tana*

2361. CAREX INDICA Linn.; F. B. I. vi. 714.

N. Bengal, Duars.

A herb ; stems 2-2*5 feet; leaves '5 in. wide.

2362. CAREX STRAMENTTIA Booth; F. B. I. vi. 717.

Chota Nagpur, Parasnath.

A herb ; stems 2-3 feet; leaves '5-*7 in. wide.

2363. CAREX CRUCIATA Wahl. var. NAGPORENSIS Clarke; F. B. I. vi. 716.

Chota Nagpur, Parasnath.

A herb ; stems 2-3 feet; leaves narrow, or up to '5 in. wide.

2364. CAREX PLEBEJA Clarke; F. B. I. vi. 718.

Chota Nagpur.

A herb, 1-2 feet high; leaves narrow.

2365. CAREX FILICINA Nees var. ? MICROGYNA Clarke ; F. B. I. vi. 718.

Chittagong.

A herb, 1-1*5 feet high ; leaves very narrow.

2366. CAREX SPECIOSA Kunth ; F. B. I. vi, 729.

Behar; Chota Nagpur.

A tough but slender herb, 1-2 feet high.

567. CAR EX WALLICHIANA Prese. ; F. B. I. v i. 747.

N, Bengal.

A herb, 6 in. to 2*5 feet high.

1026. Hypolytrum L. C. Rich;.

Stout, perennial herbs, with woody roots t ock and very stout
 ct-fibres ; stem erect, trigonous, leafy; *eaves* long, narrow,
 lear or ensiform, coriaceous, widest about IM middle, 3-veined.
fikeleta small, ovoid or subglobose, in n*oad, subumbellate
 nicles, with stout, spreading, bracteol. e branches, or the
 ilicle contracted into a compact, lobed viad; bracts leaf-like ;
 iteoles coriaceous. (*Humes* 2, opposit basal, each with a j¹
 wer, spread big in fruit, persistent; rare empty glumes inter-
 ead between basal males and termij B. female; bristles 0.
hi metis solitary; **filaments** elongate. *Ov ry* terminal, flattened,
(rbinate, beaked; style continuous with the ovary, persistent;
 igulas 2, filiform. *Fruit* a rounded or obtusely angled nut, with
 lick, hard endocarp, beaked or not.

»e spikelet of *Hypolytrum* usually resembles «- single flower, com -
 of 1 bract, 2 bracteoles, 2 stamens, and » pistil.

HTPOLYTEUM LATIFOLIUM L. C. Rich.; F, B. I. vi. 678.

if *Tunga diandra* F. I. L 184,

N. Bengal, Duars ; **Chittagonf** •

A stout herb, 1-3 feet high. ^{efi}moist undergrowth.

77.

1027. Sobpodendr | Kurz.

out herbs, with woody **rhizome**], s ("i« ending in an **oblong**
 ;le; radical *leaves* very long, wit. ferrate edges, narrowed to
 ends. *Flower** in ellipsoid, clus[^]-ed spikes of many spike-
SpikchU of **8-11** glumes beyo *cj* ^{the bTMct}eole, the lowest
 il lle)pposite, navicular, 1-androus; « ^{IC}uppermost three falsely
 stoi ed, narrow, thin, empty; intermediate 3-6 1-androus or
 , Ov S. *Style* long, linear, continuous l[^]low with the ovary, above
 - or ighed. *Fruit* a large, bony, du*ky, obtuse nut, coarsely
 the udinally 6-ribbed.

shoro. SCIROPODENDRON COSTATUM Ku^{zz} > ^ *x L VI. 684.

Sundribuiis.

A coar se herb of muddy, li[^]oral forests.

is sedge; stems usually 1-3 feet high

Perennial, rarely ⁿg&*
 leaves narrow or ^U^ANS Vam" J F_#• L vi_ 60<?_ VI"
 male and female, the provinces,
 panicle, mixed wibl ge, usually 2-4 feet high,
 bracts often foliac^ACCENSis Lamk; F. B. I. vi. 608;
 1-veined. <? or and incurvatus F. I. i. 196. C. Pangoi'
 lower distichous, ir
 many narrowly line E.Bengal; Sundribuns. *• ""
 rowly linear, euspiu 'oue, rush-like sedge; stems 1*5-3 fe ""
 broader, 1-flowered; ati pati.
 empty, the next abo' ^sus R. Br.; F. B. I. vi. 612; E. D.
 rarely obscure, often ^ I. ii, 198. fir
 style slender; stigu_e it(y

I usually white and poll* labruus sedge, 1*5-3 feet high. h_ujU
 isexual spikdets numen * ^

Boots fibrous; spikeletr^^8 Linn; i F* B* L * 61L C,
 di:OO).

Eootstock horizontal, w<_n Bengal; Orissa.

L rush-like sedge ; Btems 3-6 feet h

Bisexual spikelets none or •» OBJO8 Boxb.; F.]5. I. vi. 612 ;

Slender plants with fibro&s F. I. i. 209 (not 187).

Lobes of the disk-marg^Bengal; Sundribuns; Chittagong.

brown.....y_f rush-like sedge ; stems 1*5-3 fee

Lobes of the disk-marg'thi; Santal. Sura.

Bobust plants with thick, v)sus R_o_ttb.; F. B. I. vi. 612 ; 5

Sheaths of middle stem-
 jattered:- *>> F< L ^h 187< B. I. VI. 613,

Stemslender; panie - ^ ^ j . ^ & stema M ^ m

lets; 2-4 feet high ...

Stems stout; panicle ; ;r8

spikelets; 6-9 feet hig

2370. SCLERIA PEBGRACIL!

leaves just below the brs; j^ sed e 5, stem ^ feet hi K^ o

A slender herb, 1-i').; F. I. i. 208; F. B. I. vhl ro

2371. SCLERIA LITHOSrEKM)

F. I. iii. 574.

Stend. , . 613.

gal; chittagotlgi

stems 1*5-3 feet high.

deciduous; spikelets

Linn.; P. B.] . viⁱJ Isachne.
deciduous:—

>i* JL MBL. ° all the provinces, ilate-aristate; spike-
'7H ^ ^ 'M fl b * / br 0 U s h e r b ; stein S ' m • simple axis or on the
..... Oplismenus.

(2390 H aristate:—
..... time III. with a deep-
..... Axonopus.
1*5-2-5 feetie; glume III. with a
inn. var. SEGREDpietary pale or quite
..... Panicum.
0:—[p. 1162]

V39C' il(1,11 us h; stems 1-3 fusually present; glume
pale, its nerves straight,
..... Digitaria.
..... *ie II. (= glume III. of
Ajtoutish olub-rush ; .tem, i ^ J a l nerves curved :-
the base Paspalum.
i ^ base Eriochloa.

Order CLI. GRAMINE^], and deciduous from

vt-t, [ercumbent, ov——, —k
W Qtems oerete or compressedkP TTT , T.r ,
f: ^ ^ ceous; III. and IV. char- Oryza
J'K u ^ @ L e a v e s distichous, simple, \ \
arely an interposed petiole ; / Leersia.
jrely, entire, with often a \ \ Hygrorrhiza.
apex of the sheath and faciniia :—

[fely also from the upper shei slender rachis, falling in
or paniced spikelets. ninate ...i :Tragus.
e distichous glumes, of³gly; glumes not echinate :—
fnpty, and the remainder, if i Perotis.
i -Ja, and are all or some of t¹ ZoyBia.

i e1 each flowering glume an erf* other pedicelled, or the tel,
i fl infolded towards the glum" a ""*?* f ^ * TTM"
er than the liowenng glumes,
i !lowers hermaphrodite O5; flowering glumes membra-
i & \ 6, minute lodlcl¹ea, som<ret oft e n awne d or reduced to

yii .) * . (-X¹ or 6j ver? rarely mai
4 11, " ^ S iy¹¹¹¹¹⁶¹ ^ versatile, fugacioi
in \ i ^ it " u ^ n i a | connective obsoleliform or flattened, inarticulate
? *2 ^ a ' t ontirc, 1-celled ovary; s^J Dimeria.

rbicularoblong, Usually paleate, male or neuter, the pal.
 IV. sessile, coriaceous or crustaceous, broadly ovoid-
 sally very convex, smooth or rugulose, sides incurved; 2-se:
 3-androus; styles distinct. Grain oblong, free within the harde
 glume palca.

Bristles smooth or with barbs erect or spreading ;-

Panicle spiciform, cylindrical:-

Barba of bristles 0 or minute

Barbs of bristles strong, spreading or erect; --

Glumes III- »nd IV. dissimilar :—

Glume IV. strongly rugose

Glume I 7. WHly rugose

Glumes III and V subsimilar, large

lessl-bed or with elongate branches

.....

Bristles with barbs defied

2508. SKTAEIA if AUS* Beauv.; F. B. I. vii. 78 ; E. D. 8. 11>.

pinieumitaleum Y. I. \. SO^

Cultivated.

An annual grassp-S feet high. Vernac. Kangu,
 kora; Sa>*al. Erba.r/rtya Tangun.

2509. SKTAHIA OLAUCA B<<<v.;-- B. I. vii. 78; E. P.

In all the provinces. *i*limdri; *Bvi* 1 I'mS¹
 An annual gnus. H.*ml. B<<<1>. >>>>>^{dn}

Kukra.
 Munro; F. B. I. vii. 79.

2509/2. In the western pro%
 A small annual gra>>>.

2509/3. Var. MACKOCAUI>A Hook
 W. Bengal; Buhar.

An annual grass. Schult.; F. R. I. vii. 79;

2510. SttTAKU INTKRHBDI
 E. D. 8. 1210.

In all the provinces.
 An annual grana.

511, SKTARIA VBR TICILLATA Beauv.; F. B. I. vii. K0; E. V-
 01.

lu all the provinces.
 Au annual grass,
 [kttuui; *Bentj.* Siluuja.

1049. Chamaraphls B. Br.

Mibious marsh or aquatic grasses; *leaven* narrowly linear-lan-
 Lo. *Spikelett* 1-2-flowered, nubsessile and subsecund on the

uhes of a simple panicle, which arc produced as awn-like
 les beyond the ultimate spikelet, obscurely articulate but per-
 il t on their short, obconic pedicels, narrowly lanceolate, terete,

^ii. *Glumes* 4; I. very small, suborbicular, hyaline, white, vein-
 oss; II, and III. membranous, green, narrowly lanceolate, II,
 Ruminant, 9-11 veined, longer than III., the tip subulate or

awned; HI. acuminate, 7-veined, paleate, male, the palea smaller
 ^n the glume, hyaline, the veins obscure; IV. much smaller than
 ^I-, stoutly stipitate, female, oblong or ovate-oblong, acute, flat,

thinly coriaceous, veinless, the palea as broad ivs the glume, vein-
 le8s, acute; *lodicules* cuneate; *stamens* 8; anthers very short;
 tea free; stigmas laterally exB&rted; hairs scattered. *Grain*

*¹, oblong, compressed, free in the coriaceous glume and
 saline palea.

fcnis stoirtiah; spikek'ts on branches of panicle few;—
 Leaves longish; bpikelt-td '2o in. or longer

Leaves very short; panicle contracted; spikelete under -25 in,
 *uis slcuder; spike lets on branches of panicle many, very small

tjmciliu
 25 12. CHAMBER APHIS SPIKKSCCKKS II, Br. var. BKUNONIAMA Hool
 t; F. B. I. vii. 62.

E. Bengal; Sundribuns.
 A floating, aquatic grass.
 *512/2. Va. r. DKPAUTKRATA Hook. f; F. U, I. vii. 62.

liehar,
 A floating, aquatic grass.
 2513. (UAMXEAI'HiH tiRActis Hack.; I¹. B. I. vii. 6*2

C. Bengal; E. Bengal; ('hittagung.
 A floating, aquatic gm»s.

1050. *Thyianolana* Neco.

A large, glabrous
 lets very
 pedicels and
 grus<; stems solid; *leave** broad, flat. *Spike-*
 lulinntc, numberless, l-riowcred, jointed on very short'
 Bubwcuud on Uu very numerous, crowded, long,

filiform
 a very ^ ^, subevert branches and branchlets, WI < * « ?
 minute, concave, obtuse, awnless, and nerveless, I shortest; III
 much longer, epaleate, empty, coriaceous, 1-nerved,
 hardening; IV. rather shorter, membranous, oblong, acute, clothed
 with white, erect hairs; palea short, truncate; stamens 2-5;
 anthers short; styles free. Grain very minute, free within the
 hardened glumes.

2514. *THYSANOLEA* Ag. **R T** Nees; F. B. I. vii. 61. *T. acari-*
fera E. D. T. 420. *ostis maxima* F. L. i. 317. *Melica*
latifolia F. L. i. 326.

Chota Nagpur; Behar; N. Bengal, Duars; Chittagong.
 A tall, handsome grass. Santal. Karsar.

1051. *Isachne* R. Br.

Perennial grasses; leaves ovate- or linear-lanceolate. Spikelets
 small or minute, loosely paniculate, not or obscurely articulate
 with the pedicel, subglobose or obovoid, 1-2-flowered. Glumes 4.
 the two lower often separately deciduous, thinly coriaceous or
 membranous, strongly veined; I. and II. subequal, convex, empty;
 III. and IV. both paleate, equal, and both convex or I. larger
 and flatter; III. ♂ or neuter; IV. jointed and often stipitate on
 the very short rachilla, hemispheric, ♀ or ♂; lodicules most
 minute; stamens 3, usually 4-6; styles 2, free; stigma is short.
 feathery, exerted at top of the spikelet. Grain free within
 the hardened glume and palea.

Panicle ovoid or pyramidal *S. australis*
 Panicle small, lax-flowered *miliacea*

2515. *ISACHNE AUSTRALIS* R. Br.; F. B. I. vii. 24.

Chota Nagpur; N. Bengal, Duars.
 A grass, with creeping stem below.

2516. *ISACHNE MILIACEA* Roth; F. B. I. vii. 25. *Panicum patens*
 F. L. i. 305.

N. Bengal,

A slender grass, prostrate throughout.

1052. *Oplismenus* Beauv.

Slender grasses; stems
 ascending, leafy; Z f/wes Creepii? below, branches
 ovate-lanceolate, thin, flat, margins

scaberulous; base narrow, auricled on one side; ligule a ridge of long hairs. *Spikelets* 1-flowered, sessile or subsessile, solitary or 2-nate, articulating at the base, secund on a terminal spike or on a raceme of spikes, subterete, awned. *Glumes* 4; I. and II. empty, 3-5-veined; III. usually awned, awns straight, I. shorter than III., 3-5-veined; IV. as long as or shorter than IV., 5-7-veined; V. as long as IV. or longer, 7-9-veined, paleate or not, empty; IV. sessile, lanceolate, acute or acuminate, thinly coriaceous, terete, smooth, white, finely, paleate, 2-sexual, margins broadly incurved, palea 2-keeled; *lodicules* minute; *anthers* 3, linear; *styles* free; stigmas exerted at the top of the glume. *Grain* oval-oblong, free within the hardened glume and palea.

Awns stout, smooth, obtuse.....*composite*.

Awns capillary, minutely scaberulous.....*Bunnanni*.

2517. OPLISMENUS COMPOSITUS Beauv.; F. B. I. vii. 66. *Panicum lanceolatum* F. i. 294.

In most of the provinces.

A tall, branching grass.

2518. OPLISMENUS BURMANNI Beauv.; F. B. I. vii. 68. *Panicum Burmanni* F. I. i. 295.

A small, diffuse grass. *Uriija* Kan-guria.

1053. Axonopus Beauv.

Perennial grasses; *leaves* subradical. *Spikelets* in whorled or aggregate, terminal spikes, solitary or 2-nate, awned, 2-flowered, 3-veined on their short pedicels, erect. *Glumes* 4; I. shorter than III., hyaline, acuminate or aristulate, veins 3, lateral arching to join the median below the tip; II. as long as IV., ovate or ovate-lanceolate, empty, acuminate or awned, 5-veined, the lateral veins villous, marginal; III. as long as IV., ovate-oblong, 5-veined, imbricate, palea very small, 2-partite, segments auricled; IV. sessile, oblong, narrowed into a slender, terminal awn, thinly coriaceous, dorsally flattened, quite smooth, margins glabrous or finely ciliate, narrowly incurved, the palea oblong, 2-keeled, the lobes 2-veined; *Zodicules* flabelliform; *stamens* 3; *anthers* linear; *styles* 3; stigmas linear, laterally exerted, shortly penicillate. *Grain* oblong, free within the hardened glume and palea.

Leaves ovate or ovate-lanceolate; spikes subverticillate.....*cimicinus*.

Leaves oblong, linear; spikes few, subdigitate.....*scmialatus*.

2519. AXONOPUS CIMICINUS Beauv.; F. B. I. vii. 64. *Patrick* cimicinum* F. I. i. 291.

In most of the provinces.
A tufted grass.

2520. AXONOPUS SEMIALATUS Hook. f.; F. B. I. vii. 64.

Chota Nagpur.
A densely tufted grass.

1054. Panicum Linn.

Annual or perennial grasses; *leaves* broad or narrow, **fla*** <f rarely plicate; *ligule* 0 or of hairs. *Spikelets* small, 1-2-flowered. terete or dorsally or laterally compressed, solitary or 2-nate, *om** secund, articulate on their pedicels and deciduous, rarely awned *d* *blumes* 4; I. and II. empty, I. smallest and fewest-veined; H-^a *d* III. usually subequal, 'oblong, ovate or lanceolate; III. usually neuter, paleate or not; IV. coriaceous or papery, sometimes *es* shortly stipitate, convex, 5-7-veined, paleate, 2-sexual, the *pa* *J* *eft* usually as long as the glumes, membranous; *lodicules* 2, cuneate *J* *stamens* 3; *styles* distinct; stigmas exerted near the top of &^e spikelet. *Grain* free, but tightly embraced by the hardened *g* *^0* and palea, oblong, ellipsoid or lanceolate.

- * Spikelets dorsally compressed or subterete :—[p. 1170]
- inflorescence racemose of simple, rarely branched spikes *bean* ^{tl} *11n*
- secund spikelets :—[p. 1175J
- {Rachis of spikes broad and flat:—[p. 1175]
- Spikelets 2-seriate :— *
- Spikelets villous..... *IsacW-*
- Spikelets glabrous:—
- Spikes shorter than the internodes..... *fla* ^{llxlm,}
- Spikes longer than the internodes :—
- Glume IV. granulate..... *punctate* ⁿ
- Glume IV. smooth..... *fluitans* [•]
- Spikelets 3-5-seriate; glume III. cuspidate or awned :—
- Stems stout, erect; leaves broad :—
- Raceme of spikes erect:—
- Glume III. awned..... *CrW** ^{m.} *at-* ^{tl} ***
- Glume III. only cuspidate ... *Crus-galli* var. *frumentae**
- Raceme of spikes drooping; glume III. awned
- Crus-galli* var. *W* ⁱⁱ *^*
- Stems slender, decumbent; leaves narrow; glume III-
- cuspidate..... *******

Rachis of spikes narrow and filiform, terete or angular :—[p. 1174]

Glume I. much shorter than glume III. :—

Spikelets approximate or imbricate, or if distant (*P. ramosum* sometimes) glume IV. distinctly rugulose:—

Glume I. veinless or 1-veined, about $\frac{1}{2}$ the length of glume III.
prostratinn.

Glume I. 5-veined, from J-J as long as glume III. :—

Stems 6-8 feet long or longer, usually in jhils and ponds ; nodes densely bearded; glume IV. obtuse. *muticum.*

Stems 2-3 feet long or shorter, never floating:—

Glume IV. shortly awned or apiculate:—

Glume IV. only apiculate. *ramosum.*

Glume IV. shortly, abruptly awned:—

Angles of rachis pubescent; spikelets over *15 in. in length. *javanicum.*

Angles of rachis scaberulous; spikelets under -15 in. in length. *setigerum.*

Glume IV. ellipsoid, with obtuse, rounded tip

distachyum.

Spikelets distant; glume IV. very minutely rugulose:—

Leaves long, narrow ; sheaths glabrous; glume IV. obtuse

reinotum.

Leaves short, cordate-lanceolate; sheaths with margins ciliate; glume IV. apiculate. *Kuriii.*

Glume I. more than half as long as glume III. *oryzvides.*

Inflorescence of spiciform or effuse panicles:—[p. 1174]

Glume II. only half as long as IV.; panicle broad, with long branches. *nodvsiim.*

Glume II. as long as glume IV. or longer:—

§Panicles narrow, spiciform, or if effuse, glumes II. and III. very strongly veined :—[p. 1176]

Glumes II. and III. 3-5-veined :—

Inflorescence a narrow, fastigate, rarely effuse panicle

auritium.

Inflorescence a spiciform panicle. *Nyurux.*

Glumes II. and III. 7-9-veined ; inflorescence spiciform :—

Glume I. very minute; spikelets lanceolate. *interruption.*

Glume I. half as long as III.; spikelets gibbous :—

Panicle 4 in. long or less:—

Spikes 2 in. long or under ; cylindric. *indicum.*

Spikes 2-4 in. long, slender. *indicum v&v.gracilc.*

Panicle 5-8 in. long. *niyoBiïroide*.*

§ Panicles broad, effuse:—[p. 1175]

Leaves flat:—

Glume I. nearly as long as III. ... *ocalifoliu »^f*-

Glume I. much shorter than III.:—

Annuals:—

Glume I. less than half as long as III.:

Spikelets *2 in. long..... *miliaccn ""*•

Spikelets *1--15 in. long :—

Nodes of stem glabrous :—

Leaves hairy: cultivated...

Leaves glabrous: wiM *i^uninnuu »••*

Nodes of stem bearded.. C<CMV""

Glume I. about three-fourths the length of III.:—

Glume III. 7-9-veined..... *tryphc, s''*•

Glume III. 3-5-veined.....

Perennials:—

Glume IV. rugulo

Glume IV. smooth :—

Glume I. not one-fourth of III., nerveless: —

Ligule a coriaceous ridge ... *... '<7" >\xc*

Ligule of fine, erect hairs..... *"»iY« >'»>yc*

Glume I. more than one-fourth the length 11

5-7-nerved:—

Glume HI. cpalcat.

Glume III. palea!<

Leaves plicate:—

Glume I. half as long as III. or longer, 5-nerved ... *plicat*

Glume I. less than half as long as III.:—

Glume I. orbicular, 3-nerved ; glume II. apicului

Glume I. miiniti•. inciiibrans; glume II. ova

obtuse. *rhachitri*

*SpikcleU laterally comprebMu , iiiioi-escef^{l''''} H mini acted panicle
[p. H74].....

2T/21. PANICUM ISACIINK Uoth ; F. H. 1. vn. 2*.

Dehar; Chota Nagpur.

A slender, much-branched K^{TAHV}.

2522 pANlriM FLAVIDI'M I V " ' .

P. bnzou'Ut F. I. i. _' .

In most of the proving

A leafy, branching -

llihu naugi.

iyf

2528. PANICUM PUHCTATUN Burrn.; P. B. I, vii. 29. *P. fluitan**
P. I. i. 293,

In all the provinces.

A perennial, glabrous grass of marshes and ditches.
Urng. Peti-nur.

2524. PANIGUM FLUITANS Ret/. *P. patpaloide** F. B. I. vii. 50.
Orissa, ChiUca Lab.

A perennial, glabrous grass of marshes and ditches.

2525. PANICUM CRUSQAXJJ Linn.; P. B. I. vii. 30; E. I). P. A 8.
/. *hitpidufam* P« I. i. 303.

In most of the provinces, but not common.

A annual grass of wet places and rich soil. Beng.
Bara-Shan.

- . Var, BTAonvun Trim, /, *ntagninum* P. Li. 2195.
P, Cru+GdlU E. 1>. P. 48 partly.

In all the provinces, very common.

2545. A. tall, stout grass of wet places. *Bettg, DuL*

- . Var. KiuMKNiACEUS: Trim.; P. il. I. vii. 81. *P. frumentaceum* F. I. i. 314; E. D. P. 53.

2546. In the northern and western provinces, cultivated.

A. tall, stout grass. Beng. Shama; Oriya Sama.

- PAICUM COLONM Linn.; P. r>. L vii. 82; E. 1>. P. 45.

2547. *P. cuspidatum* P. L I. 298.

In all the provinces.

A slender, annual grass. Hind. Samwal; Santal. Sami.

2547. PANICUM PHOSTIUTUM Laiuk. P. B. I. vii. 33; E. H. P. 72.

In all the provinces.

A rather slender, annual grass; stems creeping and rooting below.

2548. PANICUM MUTICUM Forsk.; F. B. I. vii. 34.

C. Bengal.

An introduced grass, cultivated in marshes and wet places. Beng. Nar-dul.

2529. PANICUM RAMOKI M Linn.; F. B. I. vii. 3(i. /'. *umbrosum*
F. I. i. 297. *P. Helopus* E. D. P. 57 partly.

Tirhut; Behar; Chota Nigpnr.

A decumbent, branching grass. MotagondLL

2530. PANICUM JAVVNHIM Poir.; F. EL. L vii. 86. *P. kiriatum*

P. Li BOa P. // EOMI B. D. P. 17 partly.

Behar; W. Bengal.

An annual, decumbent grass. Hind. Tal-ganti.

2531. PANICUM WTIORUM Retz; B. T. i. 299; F. B. I. vii. 36.
P. Hehqua E. IX P. 57 partly.
 C. Bengal.
 A slender, prostrate, straggling grass. **Beng.** liarajal-ganti.
2532. PANICUM DISTICHUM I-inn.; F. B. L. vii. 37.
 In most of the provinces.
 A branched straggling and creeping grass. **Santal*** Nari.
2533. PANICUM RKMOTUM Retz; F. B. I. vii, 38.
 'trim*.
 A branched, decumbent, flaccid grass.
2534. PANICUM KURZII Hook. f.; F. B. I. vii. 38.
 C. Bengal; E. Bengal; Chota Nagpur.
 An annual, decumbent, flaccid grass.
2535. PANICUM RYZONDES Sw. *P. latifolium* I. B. I. vii, 38.
 E. Bengal.
 A rather stout, creeping grass.
2536. PANICUM NODOSUM Kunth; F. B. I. vii. 43.
 E. Bengal.
 A slender, leafy grass.
2537. PANICUM AURITUM Presl.; F. B. I. vii. 40.
 N. Bengal; E. Bengal.
 A tall, stout, perennial grass.
2538. PANICUM MYURUS II. B. K.; F. B. I. vii. 89. *P. ferrugineum* F. I. i. 307.
 In most of the provinces.
 A leafy grass, with stems spongy below; in marshes and lowland. // *ind.* Dhamsiria.
2539. PANICUM INTERRUPTUM Willd.; F. B. I. vii. 10.
 Orissa; Chota Nagpur; N. Bengal; E. Bengal.
 A glabrous, perennial grass of wet places and ponds. **Beng.** Nardula.
2540. PANICUM INDICUM Linn.; F. B. I. vii. 41.
 In all the provinces.
 An annual, tufted grass.
- 2541/2. PANICUM OKHILKII Hook. f.; F. B. I. vii. 42.
 Tirhut; N. Bengal.
 A slender, flaccid, annual grass.

254. *Panicum myosuroides* R. Br.; P. B. L. vii. 42. *P. ewr-
vatum* P. I. i. 286.

In most of the provinces.

An erect or shortly creeping, slender grass.

254-2. *Panicum ovalifolium* Poir.; F. B. I. vii. 44. *P. brevifolium* T. I. i. H06.

Thittagong.

A slender, decumbent, leafy grass.

254-3. *Panicum miliacbum* Linn.; P. I. i. 310; F. B. I. vii. 45;
E. I. P. 68.

Tirhut; Jit-har, cultivated.

An annual, tufted grass. *Perennial*.

254-4. *Panicum miliare* Lamour.; P. L. i. BW; F. B. I. vii. 46;
E. D. P. 67.

(hota **Nagpur**, cultivated.

A tufted annual grass. *Beng. Gonda. Santal. Gandli.*

254-5. *Panicum psilopodium* Trin.; F. B. I. vii. 46.

In all the western provinces, but rare.

A slender, tufted grass.

254-6. *Panicum cæsius* Nees; F. B. I. vii. 48.

Behar, Rajmahal; E. Bengal.

A stout, erect, annual grass.

254-7. *Panicum trypheron* Schult.; P. B. L. vii. 17. *P. tenellum*
I. I. i. 806.

In most of the provinces.

An annual tufted grass.

254-8. *Panicum humile* Nees; F. B. I. vii. 48.

In every province.

A dwarf, slender, tufted annual grass.

✓254-9. *Panicum maximum* Jacq.; F. B. I. vii. 49. *P. mentorum*
E. I. P. 59.

Occasionally cultivated.

A tall, stout, erect, leafy grass.

W0, *Panicum hypens* Linn.; F. B. I. M. 19. *P. liginosum*
F. I. i. 308.

In all the provinces.

A perennial grass of sandy or marshy places, *Beng.*

Baranda; Uriya Pani (local).

✓255-1. *Panicum proliferrum* Lamour.; F. B. L. vii. 100. *P. paludotum* I. I. i. 307.

In all the provinces.

A matted grass, floating on ponds and ditches. V* r

Borati, kalas-nar, dalakri ghas. # --

2552. PANICUM MONTANUM Roxb.; F. I. i. 313 ; F. B. I. vii. &*
Chota Nagpur ; Behar; Chittagong.

A rigid, broad-leafed perennial grass. # f 4.

¹2553. PANICUM SARMENTOSUM Roxb.; F. I. i. 308; F. B. I. ^'
N. Bengal, Duars ; Chittagong.

A long, branched, scandent perennial grass. s n h.

2554. PANICUM PLICATUM Lamk; F. B. I. vii. 55. P. nef»°
F. I. i. 811.

Chota Nagpur, on Parasnath.

A tall, erect, perennial grass. • t u b t

2555. PANICUM FLAVESCENS SW. ; F. B. I. vii. 56. P. cost*
F. I. i. 312.

C. Bengal, common. - n s.

A slender, rather flaccid perennial grass. Beng. Ba
pati ghas.

2556. PANICUM RHACHITRICHUM Hochst.; F. B. I. vii. 56.
Chota Nagpur.

A slender, rather flaccid, tufted annual grass. •

2657. PANICUM TRIGONUM Retz; F. I. i. 305 ; F. B. I. vii. p.
C. Bengal.

A perennial, decumbent, wiry grass.

1055. digitaria Lamk.

Perennial or annual gr^ses; leaves linear or lanceolate. ft>£
lets 1-flowered, in digitate or racemose spikes, jointed on ally
pedicel but not thickened at the base, awnless. Glumes norm
4, the lowest sometimes absent or present in the same ^sPf^{ci e} ^ u B |
«i minute, nerveless scale or obsolete; II. and III. mem^p ra ^.
epaleate, as long as IV., or II. sometimes shorter than III., ^ 1.
flowering, paleate, coriaceous, smooth, shining, the P i-ma J
aceous, with inflexed margins; stamens 3; styles 2, free, s g com-
plumose, exerted near apex of spikelet. Grain oblong, -lume
pressed, free, but tightly enclosed between the hardened g
and the palea.

*Spikelets -1 in. long or longer:—[p- I¹⁸¹]

tBachis slender, narrowly winged or wingless :-[p. n»iJ

Spikelets with bearded glumes..... *sanguimli** var. *ciliaris*.

Spikelets with glumes glabrous or nearly so:—

Erect stout or slender grasses:—

Rachis wingless, trigonous..... *sanguinalis* var. *pruriens*.

Rachis with wings about as wide as midrib

*'nanguinali** var. *extensa*.

Prostrate or creeping, much-branched, small grasses ; rachis with wings hardly as wide as midrib..... *santjuinalist* var. *dchilis*.

1 Rachis broad, green, with wings 2-3 times as wide as midrib [p. 1180]

sauyuinalis var. *Tottleri*.

'Spikelets -05--07 in. long only :—[p. 1180]

Pedicel of upper spikelet not longer than spikelet:—

Spikelets subsilky, with slender hairs..... *longiflora*.

Spikelets subtomentose, with clavellate hairs..... *Royleana*.

Pedicel of upper spikelet twice as long as the spikelet *pedicellaris*.

2558. DIGITARIA SANGUINALIS Scop. var. CILIARIS. *Panicum ciliare* F. I. i. 290. *Paspalum sanguinale* var. *ciliaris* F. B. I. vii. 15. *Panicum sangv/inale* var. *ciliaris* E. D. P. 79.

In all the provinces.

A rather tall, slender grass. *Beng. Makur-jali*.

2558/2. Var. PRURIENS. *Paspalum sanguinale* var. *pruriens* F. B. I. vii. 15.

C. Bengal.

A slender, erect grass.

2558/3. Var. EXTENSA. *Panicum cegyptiacum* F. I. i. 289. *Paspalum sanguinale* var. *extensa* F. B. I. vii. 15. *Panicum sanguinale* E. D. P. 77.

In all the provinces.

2558/4. Var. DEBILIS. *Paspalum sanguinale* var. *debilis* F. B. I. vii. 16.

C. Bengal.

2559. A dwarf, tufted grass.

^y/5. Var. ROTTLERI. *Paspalum sanguinale* var. *Rottleri* F. B. I. vii. 16.

In all the provinces.

2559 ^{oo} ^ dwarf | tufted g^{ra}-ss.

• DIGITARIA TENUIFLORA Beauv. *Milium filiforme* F. I. i- 314. *Paspalum longifloruni* F. B. I. vii. 17.

In all the provinces.

- A small, tufted grass. *Hind.* Kanka-juriya. [^]
 2560. BIGITARIA ROYLEANA Prain. *Paspalum Boyleanum*^{7-^} I.
 vii. 18.

In all the provinces.

- A slender, tufted grass. ^{< üü}
 2561. DIGITARIA PEDICILLARIS Train. *Paspalum jpedi&*[>]
 F. B. I. vii. 19. *Milium sanguinale* F. I. i- 315.

In the western and northern provinces.

A slender, tufted grass. *Beng.* Chiri-chira.

1056. Paspalum Linn.

Annual or perennial grasses; *leaves* lanceolate or ovate-la^{*10}eo-
 late. *Spikelets* 1-flowered, awnless, in digitate, racemose^{or}
 paniced spikes, jointed on the pedicel but not thickened ft^{*^}the
 base. *Glumes* 3, or occasionally 2, corresponding to g^{1^111^}
 II.-IV. or glumes III. and IV. of *Digitaria* and *Panicwn* (g^{1^}
 I. [of *Panicum*, &c] absent) ; II. membranous, epaleate, as ^{ig}
 as IV. (flowering glume) or shorter, sometimes obsolete; ^{III.}
 membranous, as long as flowering glume, epaleate ; IV. t⁰wering
 glume) paleate, coriaceous, smooth, shining, the palea coria^{ceous,}
 with inflexed margins; *stamens* 3; *styles* 2, free; stigmas
 plumose, exserted from near the top of the spikelet. ^{Grain}
 oblong, compressed, free, but tightly enclosed between
 hardened glume and the palea. ^{the}

Rachis as wide as the spikelets :—

Spikelets glabrous or nearly soscrobiculatum.

Spikelets ciliate with long hairs.....conjugatum.

Rachis narrower than the distichous spikeletsdistichum.

2562. PASPALUM SCROBICULATUM Linn.; F. I. i. 278; F. ^{B. I.}
 vii. 10; E. D. P. 332. P. *Kora* F. I. i. 278. P-^{long}
folium F. I. i. 280.

In all the provinces. ^{Undo*}

An annual grass ; sometimes poisonous. *Hind"* ^{ira}
 kodaka; *Beng.* Khodoá dhan; *Santah* Janhe; W >
 Kodus.

2563. PASPALUM CONJUGATUM Berg.; F. B. I. vii. 11.

C. Bengal; E. Bengal.

An annual grass.

2364. PAPPALUM WSTICHUM Linn.; F. B. I. \u. 12. P. ^on^t-
^orwm F. I. i. 279.

Sundribuns.

A perennial grass, with creeping and rooting stem.

1057. Eriochloa H. B. & K.

Annual or perennial grasses; *leaves* flat, lanceolate or ovate-lanceolate. *Spikelets* 1-flowered, aristulate, secund on the spiciform branches of a raceme or panicle, the base thickened and articulate on the thickened apex of the short pedicel. *Glumes* 3 (glume I. [of *Panicum*, &c] absent); II. and III. subequal, membranous, epaleate; IV. (flowering glume) paleate, rather shorter, apiculate, hardening in fruit; *lodicules* truncate; *stamens* 3; *anthers* linear; *styles* % free; *stigmas* plumose, subapically exserted. *Grain* oblong, free between the hardened glume and toe palea.

2565. ERIOCHLOA POLYSTACHYA H. B. & K.; F. B. I. vii. 201;
E. D. 287. *Militim ramosiim* F. I. i. 316.

la most of the provinces.

A large grass; stems ascending from a creeping base.

1058. Oryza Linn.

Tall, annual or perennial grasses; *leaves* long, narrow, flat. *Spikelets* 1-flowered, loosely arranged on the branches of an elongate or rarely spiciform panicle, disarticulating below the *urnes*, laterally strongly compressed, awned or not, thickened at the base. *Glumes* 1-3; I. and II. very minute, subulate or obsolete; III. dimidiate-oblong, coriaceous or chartaceous, hard, 5-veined, the lateral vein forming a thickened margin to the glume, awnless or with a short or long, straight, terminal, scabrid awn, articulate on the glume; *palea* linear, as long as the *glume*, 3-veined, coriaceous, with membranous margins; *lodicules* 2, entire or 2-lobed; *stamens* 6; *anthers* linear; *styles* short, free; *stigmas* laterally exserted from glume. *Grain* narrowly oblong, compressed, closely covered by or adnate to glume and palea.

Margins of leaves not spinulose; glume III. not winged:—[p. 1184]

Spikelets over 25 in. long; ligule long:—[p. 1184]

Styles normal, solitary:—[p. 1184]

Spikelets over 3 in. long, awned or not *mtiva*.

Spikelets about 6 in. long, always long awned ... *sativa* \ *ax.fatua*.

{Ovaries 2 or more, usually 3-5, sometimes 6 or 7 [p. 1188] ...wri*«a

var. *plena*.

Spikelets under 25 in. long; ligule short: - [p. 1183]

Glumes tessellately punctulate, setulose..... *latifolia*.

Glumes granulate, glabrous..... *granulata*.

•Margins of leaves spinulose-serrate; glume III. dorsally winged, quite smooth; ligule very short [p. 1183]..... *coarctata*.

2566. *ORYZA SATIVA* Linn.; F. I. ii. 200; F. B. I. vii. 92; E. V. O. 258.

In all the provinces, cultivated.

An annual crop. *Veniac.* Dhan, chawal; *Santal* U*ⁱ-
" Rice."

2566/2. Var. *FATUA*.

Orissa; Sundribuns; W. Bengal; N. Bengal.

or«CM ^{an annual} *Sativa* of watery places. " Wild Rice."
4oot>/d. Var. *PLENA*.

Chittagong.

An annual crop. » Double Rice."

There are many cultivated forms, some with long awns, others with short awns (*sativa* var. *submutica*) or none (*sativa* var. *immutata*). The most remarkable is the form known as " Double Rice" (var. *plena*), with 2-7 ovaries.

2567. *ORYZA LATIFOLIA* Desv.; F. B. I. vii. 93.

Behar.

A tall, tufted grass; stems sometimes 6 feet high.

2568. *ORYZA GRANULATA* Nees & Arn.; F. B. I. vii. 93; E. V. O. 255.

Behar; Chota Nagpur.

A slender, tufted grass; stems 2-3 feet high. *Santal*.
Horo.

2569. *ORYZA COARCTATA* Roxb.; F. I. ii. 206; F. B. I. vii. 93.

Sundribuns, very common.

An erect grass; stems 4-6 feet, from a creeping ^{root} stock. *Beng.* Dhani, harakato.

1059. *Leersia* Sw.

Tall, perennial, slender marsh grasses; *leaves* narrow, ^{flat}, *Spikelets* 1-flowered, in slender, contracted panicles, articulated below the glume, strongly laterally compressed. *Glume* ⁵⁰lateral

dimidiate, oblong, thinly chartaceous, keeled, awnless, the keel pectinately ciliate, 3-veined or 5-veined, the lateral veins forming the thickened margins of the glume ; palea linear, as long as the glume, rigid; margins membranous, 3-veined, dorsally ciliate; *lodicules* 2; *stamens* 6; *styles* 2, short, free; stigmas plumose, laterally exerted from the glume. *Grain* narrowly oblong, free within the glume and palea.

2570. LEERSIA HEXANDRA SW. ; F. B. I. vii. 94; E. D. L. 247.
L. ciliata F. I. ii. 207.

In all the provinces.

A weak, floating grass ; stems 12-30 feet long.

1060. Hygrorrhiza Nees.

A floating, glabrous grass; stems stoutish, diffusely branched, tufting in dense masses at the nodes ; branches short, erect, leafy; *leaves* oblong, obtuse. *Spikelets* few, erect, 1-flowered, jointed on the pedicels but tardily dehiscent, lanceolate, long-awned, on the few wide-spreading branches of a short-peduncled panicle. *Glume* solitary, thinly chartaceous, narrowed to an erect, scaberulous awn, strongly 5-veined, the veins scabrid, ciliate, lateral marginal; palea much narrower, 3-veined, acuminate, with ciliate keel; *lodicules* minute, suborbicular; *stamens* 6 ; anthers long, very slender; *styles* 2, free; stigmas feathery, laterally protruded. *Grain* oblong, narrowed at the base, obtuse, free within the glume and Palea.

2571. HYGRORHIZA ARISTATA Nees ; F. B. I. vii. 95; E. D. H. 513.
Leersia aristata F. I. ii. 207.

In most of the provinces.

A glabrous, floating grass. *Vernac.* Jangli dal.

1061. Tragus Haller.

A small, perennial, rigid, densely tufted, depressed grass ; stem short, leafy; *leaves* small, subdistichously imbricate, flat, ciliate. *Spikelets* 1 spikes, binate on very short pedicels that are alternate with the rachis, 1-flowered. *Glumes* 3; I. very minute, II. cymbiform, oblong-lanceolate, thickly coriaceous, strongly 5-ribbed ; margins membranous, inflexed, closely armed with long, stout spines with hooked tips; III. 2-sexual, oblong-lanceolate, acuminate, dorsally sess, thin, scaberulous, sides incurved; palea nearly as

[Tragus.

long as the glume; *lodiades* minute, subquadrate; * ^ ^ o f
 anthers short, broad; *styles* 2, free, very long, exserte. . . ^
 glume; stigmas long, penicillate. *Grain* linear-oblong,
 within the glume and the palea.

97. Lappago

2572. TRAGUS RACEMOSUS Scop.; F. B. I. vu.

& i/torfl F. I. i. 281.

W. Bengal.

A low, rigid, perennial grass.

1062. Perotis Ait.

A small, densely tufted, rigid grass, with wiry roots; * ^
 or ascending; *leaves* very short, ovate or ovate-lanceo
 gently acuminate, ciliate. *SpiceUts* minute, terete, - raceflle.
 articulate on the very short pedicels of a spiciform ^ ^
Glumes 3; I. and II. empty, equal, linear-oblong, mem. ^,
 with a strong midrib produced into a very long capita J ^ ^
 III. minute, hyaline, ovate-lanceolate, 1-veined; palea
 oblong, hyaline, veinless; *lodicles* % quadrate; *mens* g *
 anthers short; *styles* very short, connate at the base, ^ ^
 exserted; stigmas very short, plumose. *Grain* tere e,
 subacute, as long as and free within the glumes. - . ^ ^

2573. PEROTIS LATIFOLIA Ait.; F. I. i. 233; F. B. I. vi.

In all the provinces. # . . = W.

A slender grass, with leafy stem and crinite spi

1063. Zoysia Willd.

A small, rigid, glabrous grass, with a long, wiry rootsto ^ >>
 emitting short, erect, leafy branches, ending in golitary,
 peduncled, spiciform racemes; *leaves* distichous, S. ^ | CO *
 cave, pungent. *SpiceMets* ovoid, laterally compressio
 articulate on very short, stout pedicels, adPre ^ se (^ to
 inarticulate rachis, with concave facets opposite the gpiket
 Guinea 2; I. empty, rigidly coriaceous, margins dose y
 tip membranous, veins 0; II. much smaller than an d com
 enclosed in I., ovate-lanceolate, hyaline, 1-veinea, ^ ^
 oblong, hyaline; *lodicles* 0; *stamens* 3; anthers long; ^
 very long, connate below; stigmas plumose, exserx eu at top o f
 spikelet. *Grain* oblong, free within the glume and palea

2574. ZOYSIA PUNGENS Willd.; F. B. I. vn. 99.

Sundribuns, on the sea-face.

A small, much-branched, rigid, glabrous grass.

1064. Dimeria B. Br.

Erect, slender, annual or perennial grasses; leaves narrow. Spikelets 1-flowered, sessile, articulate on very short pedicels, laterally much compressed, solitary, secund, bifarious, in solitary, 2-ranked or digitate, slender spikes, with inarticulate, terete, angular or flattened rachis; callus of spikelets short or long, bearded. Glume* 4; I. and II. usually divaricate in flower, empty; I. coriaceous, linear, sides complicate, dorsally rounded; II. as long as I. or longer, papery, oblong, margins hyaline, sides complicate, dorsally keeled, keel sometimes winged; III. much shorter, linear or oblanceolate, empty, hyaline, ciliate, palea 0; IV. hyaline, complicate, oblong, 2-fid, awned in the sinus; awn capillary, with a short column; palea minute or 0; lodicules 0, or very small; stamens 2; anthers long or short; styles short, distinct; stigmas short, laterally exerted. Grain linear, compressed.

Rachis flexuous ; spikelets less than *1 in. long.....ornithopoda. & rachis nearly straight; spikelets exceeding *1 in. long.....connivem,

2575. DIMERIA ORNITHOPODA Trin.; F. B. I. vii. 104. Andropogon filiformis F. I. i. 256.

Orissa; Chota Nagpur.

A much-branched, leafy, annual grass.

2576. DIMERIA CONNIVENS Hack.; F. B. I. vii. 104.

Chota Nagpur.

A slender, annual grass.

1065. Imperata Cyrill.

Erect, perennial grasses; stem leafy; internodes solid; leaves narrow. Spikelets 1-flowered, in spiciform, subcylindric, silvery-silky panicles, with very short, filiform, inarticulate branches and flowers, all alike and 2-sexual, narrow, terete, hidden among very long hairs, rising from small callus and from outer glumes, 2-nate sessile and a pedicelled, articulate at the base, fugacious. Glumes 4; I. subequal, membranous, dorsally rounded, or II. rarely keeled, 3-5-veined at the base; I. ovate-lanceolate, tip pale, O acute; H. acuminate; III. and IV. very short, erose; beak hyaline; lodicules 0; stamens 1-2; styles connate stigmas very long, narrow, exerted at the top of the ovary. Grain oblong, small, free.

2577. IMPERATA ARUNDINACEA Cyrill.; F. B. I. vii. 106; E. D.

I. 51. Sacchcurum cylindricum F. I. i. 234.

In all the provinces.

An erect, perennial grass. Hind. Dabh; Beng. Ulu.

1066. Saccharum Linn.

Tall, perennial grasses; leaves narrow, flat. Spiltelets mi>ute, awnless, 1-flowered, all similar, 2-sexual, articulate at the base, disposed in large, silky, much and densely branched panicles, *** spreading, at length erect, articulate, capillary, usually frftg^ branches and spikes; sessile spikelets deciduous with the in**' node and pedicel; callus bearded with very long hairs. Glu>*eS 4" I. and II. subequal, membranous or subcoriaceous, I. oblong o* lanceolate, dorsally flat or convex, margins incurved or indexed, 1-2-veined at each flexure, keels not winged or scaberulous, U-concave, dorsally rounded or obscurely keeled; HI. hy^alin* oblong; IV. various or obsolete, awnless, with palea minute or 0. lockcules cuneate or irregular; stamens 3; styles and stig^3 short, laterally exerted. Grain oblong or subglobose.

Stem solid; rachis of spike fragile; spikelets of each pair one sessile one pedicelled:—

Stem silky below the panicle:—

Hairs white, those of callus fine, many times longer than spikelets

gpontane''''

Hairs purple, those of callus rigid, hardly, if at all, longer than spikelets.

Narenga.

Stem glabrous below the panicle':—.....

Glume I. dorsally villous:—

Panicle laxly spreading ur undinaceum.

Panicle closer subfastigiate amndinaceum var. cUiaris.

Glume I. glabrous Jki''<>^dini,

Stem stular; rachis of spike tenacious; spies'' or a p^ both V^ pedicelled

fuscum.

2578. SACCHARUM SPONTANEUM Linn.; F. I. i. 235; F. B. I.

vn. 118. 8. canaliculatum F. I. i. 246.

In all the provinces.

It is 5-20 feet high, with a

2579. SACCHARUM NARBNGA Ham.; F. B. I. vii. 120.

It is tall; stems 6-8 feet high. N Bengal.

2380. SACCHARUM ARUNDINACEUM Retz ; F. B. I. vii. 119 ; E. D. S. 4. *S. exaltation* F. I. i. 245. *S. procerum* F. I. i. 243. N. Bengal, Duars; E. Bengal. A tall, erect, perennial grass ; stems 15-20 feet high. *Beng. Teng.*
- 2580/2. Var. CILIARIS. 8. *Munja* F. I. i. 246. *S. Sara* F. I. i. 244. *S. ciliare* E. D. S. 6. W. Bengal; Behar ; Tirhut. A tall, erect, perennial grass ; stems 10-12 feet high. *Vernac. Sara, sarkanda. The Munj Grass.*
2581. SACCHARUM OFFICINARUM Linn.; F. I. i. 237; F. B. T. vii. 118; E. D. S. 30. *S. sinense* F. I. i. 237. In most of the provinces, cultivated. A tall, erect perennial grass, with solid, juicy stem. *Vernac. Akh, ganna. Sugar-cane.*
2582. SACCHARUM FUSCUM Roxb.; F. I. i. 236; F. B. I. vii. 120 ; E. D. S. 25. E. Bengal. A stout, erect perennial; stems 5-8 feet high. *Beng. Khuri; Hind. Khilut.*

1067. Erianthus Michx.

Tall, perennial grasses; *leaves* flat, narrow. *Spikelets* 1-flowered, ^{all} similar, 2-sexual, awned, articulate at the base, a sessile and a pedicelled, arranged in large, silky, much and closely branched panicles ^{with} which articulate, usually fragile, filiform branches and spikes ; sessile ^s spikelets deciduous with the internode and pedicel; callus bearded ^{with} very long hairs. *Glumes* 4; I. and II. subequal, membranous ^{or} subcoriaceous, I. oblong or lanceolate, dorsally flat or convex, ^{margin} incurved or inflexed, 1-2-veined at each flexure, keels not ^{winged} or scaberulous, II. concave, dorsally rounded or obscurely ^{keeled}; *Hi-* hyaline, oblong; IV. shortest, awned; *palea* minute ^{or} obsolete; *lodicules* cuneate or irregular ; *stamens* 3; *styles* ^{and} *stigmas* short, laterally exerted. *Grain* oblong or subglobose.

^{Lower} branches of the panicle much shorter than rachis....*longisetosus*.

^{Lower} branches of the panicle almost as long as the rachis ...*fastigiatus*.

^{2nd}OO. ERIANTHUS LONGISETOSUS Anderss.; F. B. I. vii. 124.

Chittagong.

A stout, erect grass; stems 6-8 feet high.

2584. *ERIANTHUS FASTIGIATUS* Nees; F. B. I. vii. 125.
Chota Nagpur; N. Bengal, Duars; Chittagong.
An erect grass ; stems 2-8 feet high.

1068. Pollinia Trin.

Annual or perennial grasses; *leaves* usually narrow. 2-nate, a sessile and pedicelled, rarely both pedicelled, or the sessile 2-flowered, arranged on more or less hirsute spikes, with articulate, more or less fragile rachis, the and pedicels usually slender; callus short, bearded; spikes or 2-nate, shortly racemed or fascicled. *Glumes* 4; I. dorsally flat rarely convex, margins incurved or inflexed, 2-keeled above; II. as long as I., ovate-lanceolate, acuminate, veined; III. hyaline, paleate or not; IV. hyaline, 2-cleft in the sinus, awn slender, column brown; palea very cwtes obliquely truncate ; *stamens* 3, rarely 2, linear; stigmas long, very narrow. *Grain* oblong.

Leaf-base not conspicuously constricted above the sheath :—

Stems erect; glume I. as long as glume II. :—

Glume II. of sessile spikelets awned.....

Glume II. of sessile spikelets not awned.....

Stems decumbent below; glume I. shorter than glume II.

Leaf-base conspicuously constricted and subpetioled above the sheath.....

2585. *POLLINIA ARTICULATA* Trin.; F. B. I. vii. 109.
Chota Nagpur; Behar; W. Bengal; N. Bengal; E. Bengal, Mymensingh.
An erect, tufted grass, 1-2 feet high.
2586. *POLLINIA ARGKNTA* Trin.; F. B. I. vii. 111. *Andropogon trlstachyus* F. I. i. 256.
Chota Nagpur; Behar ; W. Bengal; C. Bengal.
An erect, tufted grass, 2-3 feet high.
2587. *POLLINIA CUMINGII* Nees; F. B. I. vii. 114.
N. Bengal, Duars; Chota Nagpur.
A slender, tufted grass.
2588. *POLLINIA CILIATA* Trin.; F. B. I. vii. 116.
Chota Nagpur, Parasnath.
A much-branched, straggling grass.

1071. Rottboellia Linn, f.

Annual or perennial grasses, usually tall; stems leafy; narrow, flat. *Spikes* solitary, racemose or subpaniculate; articulate; internodes terete or compressed, each bearing a pair of dissimilar, awnless spikelets, a lower 1-2-flowered, usually 2-sexual, sunk in a cavity of the internode, and an upper pedicelled, neuter, with the pedicel free or adnate to the side of the internode. *Glumes* 4; I. coriaceous, ovate or oblong, flat or convex, closing the mouth of the cavity, margins narrowly incurved; H- thin, 1-3-veined; III. hyaline, paleate or not, neuter; IV. paleate, 2-sexual; *lodicules* quadrate or cuneate; *stamens* anthers linear; *styles* rather distant at the base and stigma short. *Pedicelled* upper spikelet smaller than sessile; *glume* I. herbaceous in IL-IV. much as in sessile spikelets. *Grain* oblong, compressed.

Spikes panicked, lower whorled, peduncled.....

Spikes solitary or fascicled :—

Spikes compressed; rachis not fragile :-

Glume II. of pedicelled spikelet acuminate or shortly awned, nerved.....

Glume II. of pedicelled spikelet long-awned, 1-3-nerved.....

Spikes more or less cylindrical; rachis fragile :—

Glume I. of sessile spikelet broadly winged.....

Glume I. of sessile spikelet hardly winged.....

2591. ROTTBOELLIA ZEA Clarke; F. B. I. vii. 152.

N. Bengal, Duars.

A tall, stout grass, 6-8 feet high.

2592. ROTTBOELLIA COMPRESSA Linn. f.; F. I. i. 354; F. B. I. vii. 153.

In most of the provinces.

A branching, leafy grass - Beng. Pansbern.

2593. ROTTBOELLIA PROTENSA Hack.; F. B. I. vii. 153.

N. Bengal; E. Bengal; C. Bengal.

A leafy grass, decumbent below.

2594. ROTTBOELLIA CLARKEI Hack.; F. B. I. vii. 156.

Chota Nagpur.

2595. A small annual grass.

ROTTBOELLIA EXALTATA Linn. f.; F. I. i. 354; F. B. I. vii. 153.

In most of the provinces.

A short, erect grass, 6-10 feet high, with thick, spongy stems below. *Beng.* Bara-swati.

1072. Vossia Wall. & Griff.

A. gigantic floating grass; stems thick, spongy; *leaves* linear, hispidulous. *Spikes* terminal, solitary or 2-nate, rarely 3-6-nate, stout; rachis narrow, compressed, flexuous, jointed; *spikelets* 2-flowered, imbricate 2-nate, longer than the subexcavate joints, ^{On}e sessile, with a very broad callus, the other smaller, pedicelled. *Glumes* 4; I. very broad, ovate, flattened, coriaceous, smooth, narrowed into a long, rigid green tail; II. papery, ovate-lanceolate, acute, 3-nerved, keeled above; III. hyaline, 2-nerved, paleate, toale; IV. hyaline, oblong, 3-nerved, tip ciliate, palea 2-nerved; *wdicules* large, toothed; *stamens* 3; anthers long; *styles* distinct; ^swgmas short. *Grain* narrow, free.

2596. VOSSIA CUSPIDATA Griff. *V. procera* F. B. I. vii. 151.

Ischcemum cuspidatum F. I. i. 324.

E. Bengal, Jheels.

A gigantic floating grass.

1073. Mnesithea Kunth.

A slender, erect, perennial grass; *leaves* narrow. *Spikes* solitary, slender; rachis articulate, fragile; internodes terete, ribbed, ^{all} except a few upper with 2 equal and similar spikelets, sunk in ^{sub}opposite oblong cavities, separated by a hyaline, often evanescent septum, and with sometimes a minute glume of a third ^spikelet on the upper margin of the internode; *sessile spikelets* 1-flowered, nearly as long as internodes. *Glumes* 4; I. closing the ^mouth of ^e ^{cayjjjy} obliquely oblong, obtuse, thinly coriaceous, ^{sl}ooth, margins narrowly incurved; II. and III. as long as I., ^{obl}ongi obtuse, hyaline, III. paleate or not, empty; IV. rather stnailer, oblong, obtuse, 2-sexual, palea shorter than the glume; ^{lod}titles 0; *stamens* 3; anthers linear; *ovary* minute; *styles* and stigmas very small, not exerted. *Upper spikelet* seen only ⁱⁿ the upper, 1-flowered internodes; pedicel confluent with the ^{wall}s of the internode, its margins with 2 ribs; *glume* I. very ^{minute}, ^{or}kicular or broadly ovate, flat, green; II. very narrow ^{or} II.

Grain narrowly oblong, compressed.

2077. MNKSITHEA LiEvis Kunth. *liottboellia perforata* F. I. i. 356; F. B. I. vii. 158.

pinus ^11, .

In all the provinces.

A slender, erect grass, 2-4 feet high. *Beng* >

Kurki.

1074. *Apluda* Linn.

A tall, slender, perennial grass; stems leafy ascending or subscandent, branched; *haves* narrow, less petioled; upper sheaths spathiform. *Spikes* of leafy panicle, each in a spathiform bract; base of spike often utricular, bearing in front a sessile, 2-sexual spikelet, prolonged above the base into 2 flat, linear, truncate, parallel arms, one terminated by a solitary, minute glume, the other empty. *Glumes* of both spikelets 4; I. and III. and IV. delicately membranous; glume I. of lower spikelet largest, anticous, linear-oblong, coriaceous, rigid; II. tumid, beaked, dorsally gibbous, 7-veined; III. 3-veined, 3-androus or neuter; IV. short, quadrate, awned in the sinus, female or bisexual; palea of upper spikelet 2-veined, of IV. minute, ovate. *Upper spikelet* compressed; glume I. oblong, acute, many-veined, margins narrowly incurved; II. chartaceous, ovate-acuminate, 3-veined; III. and IV. oblong, 1-veined, III. female or imperfectly 2-sexual; pales of III. and lower spikelets; *lodicules* 2, cuneate; *stamens* 3; anthers short, free; stigmas short, penicillate. *Grain* oblong, compressed.

Glume IV. rarely awned, II. dorsally gibbous; keel above the gibbosity depressed. *Glume IV. awned, II. dorsally less gibbous.* *Glume IV. awned, II. dorsally less gibbous.* *Glume IV. awned, II. dorsally less gibbous.*

2598. *APLUDA VARIA* Hack, subsp. *MUTICA* Hack.;

vii. 150. *A. genicidata* F. I. i. 325.

N. Bengal; C. Bengal; E. Bengal; Sundribuiis.

A leafy, perennial grass.

2598/2. Subsp. *ARISTATA* Hack.; F. B. I. vii. 150. &

F. I. i. 324; E. D. A. 1232.

In all the western provinces.

A leafy, perennial grass. *Vernac.* Goroma.

1075. *Ischaemum* Linn.

Annual or perennial grasses; *leaves* narrow, digitate or fascicled, articulate; internodes of rachis and pedicels solitary.

of upper spikelets trigonous, hollowed ventrally ; *spikelets* 2-nate, one sessile, one pedicelled, each often 2-flowered, a male and a female or 2-sexual, deciduous with the internode, the pedicelled spikelet usually dissimilar from the sessile, sometimes conform, *female spikelet: glumes* 4; I. and II. subequal, coriaceous or papery, awnless or II. awned, I. ovoid-oblong or oblong-lanceolate, convex, with smooth sides, more or less nodose below the middle and more or less marginally winged and veined above it, the sides broadly or narrowly incurved, II. lanceolate, acuminate, concave ; *glume* nearly as long as L, usually membranous, acute or acuminate, With a narrow, lanceolate, acuminate, 2-veined palea, usually centrally opaque and rigid marginally, with broad, inflexed, hyaline wings, 3-veined, rarely empty; IV. hyaline, deeply 2-cleft, 3-veined, awned, the awn geniculate, smooth or nearly so, With a brown, twisted column, dorsally inserted at the sinus; Palea narrow, hyaline; *lodicules* cuneate or quadrate; *stamens* anthers linear; *styles* long; stigmas short. *Pedicelled spikelet* with pedicel half as long as sessile spikelet or shorter ; *glume* often dimidiate-ovate, flattened and wide-winged; glume IV. usually oblong, obtuse or minutely 2-lobed, very rarely awned. *Grain* free.

* Spikes 2-3, rarely more; veins of glume I. obscure :—[p. 1196]
 Margins of glume I. narrowly inflexed or incurved from base to apex ;—

Leaves rounded at the base :—

Pedicel of the upper spikelet less than one-third the length of the lower spikelet; base of stem not woolly :—

Glume I. of sessile spikelet with nodulose margins

aristatum subsp. *imberbe*.

Glume I. of sessile spikelet closely, transversely ridged

nigonum.

Pedicel of the upper spikelet more than one-third the length of the lower spikelet; base of stem woolly.....*angustifolium*.

Leaves broad, hastate or deep cordate at the base :—

Glume I. of sessile spikelet glabrous.....*aemisagittatum*.

Glume I. of sessile spikelet villous.....*conjuyatum*.

Margins of glume I. of sessile spikelet broadly incurved below the middle :—

Keel of glume II. winged above the middle.....*ciliare*.

Keel of glume II. not winged :—

- Stem stout, suberect..... *Isch. hamum.*
 Stem slender, creeping below..... *"...hirtum.*
tipore
jarum.
- *Spike solitary; veins of glume I. strongly raised [p. 1195 J.....
2599. ISCH-EMUM ARISTATUM Linn, subsp. IMBBRBB *in tick;*
 F. B. I. vii. 127.
 C. Bengal.
 A rather stout, perennial grass.
2600. ISCH-EMUM RUGOSUM Salisb.; F. I. i. 320; F. B. I. vii. 127;
 E. D. 1.503.
 In all the provinces.
 A coarse, tufted, annual grass. *Beng. Moraro; Santal.*
 Marudi.
2601. ISCH-EMUM ANGUSTIFOLIUM Hack.; F. B. I. vii. 127; - \$ p.
 I. 494.
 Chota Nagpur; Behar; Tirhut.
 A tufted, perennial grass, 2-3 feet high- *Vernac.*
 Bhabar, sabai; *Santal.* Bachkoni.
2602. ISCH-EMUM SEMISAGITTATUM Roxb, J F. I. * 320; F. B. I. vii. 130.
 C. Bengal.
 A slender, flaccid, leafy, annual grass.
2603. ISCH-EMUM CONJUGATUM Roxb.; F. I. i. 321; * ^ \
 vii. 131.
 C. Bengal.
2604. ISCH-EMUM CILIARIB Retz; F. B. I. vii. 133; E. I. 497.
 J. *geniculatum* F. I. i. 322.
 Chota Nagpur; Orissa.
 A tufted, leafy grass.
2605. ISCH-EMUM HIRTUM Hack.; F. B. I. vii. 135.
 Chota Nagpur.
 A stout, suberect grass.
2606. ISCH-EMUM TIMORENSE Kunth; F. B. I. vii. 136. I. *tene illum*
 F. I. i. 323.
 E. Bengal.
2607. ISCH-EMUM LAXUM R. Br.; F. B. I. vii. 136; E. D. 499.
 W. Bengal; Behar; Chota Nagpur.
 A tufted perennial, with short, stout, creeping roots*⁰ *cji,*

1076. Pogonatherum Beauv.

Slender, perennial grasses; stem leafy upwards, branches rigid; leaves narrow, suberect. Spikes solitary, on long, flexuous peduncles, plumose from the slender awns; rachis at length fragile; internodes short; spikelets very small, subterete, 2-nate, 1-2-flowered, a sessile 2-sexual, and pedicelled male or neuter or rarely 2-sexual; callus bearded with long, fine hairs. Glumes 3 or 4> all membranous and hyaline, obscurely veined or veinless; I. oblong, truncate, dorsally rounded; II. longer, ovate, keeled, 2-fid and awned in the sinus, awn much longer than spikelet, slightly twisted; III. nearly as long as II., not awned, usually absent from pedicelled spikelet; IV. about half as long as II., bifid and awned in the sinus like glume II.; palea broadly oblong, not keeled; lodicules obsolete; stamens 1 or 2; anthers long; ovary narrow; styles short, free; stigmas very long, exerted at the top of the spikelet, shortly hairy. Grain narrow, gibbously obovate, compressed, acute.

Stems rarely under a foot, usually longer; glume II. ciliate; stamens Usually 2; leaves pale green.....*saccharoideum*.
Stems never a foot long; glume II. glabrous or nearly so; stamens Usually solitary; leaves bright green.....*crinitum*.

2608. POGONATHERUM SACCHAROIDBUM Beauv.; F. B. I. vii. 141.

Orissa; Chota Nagpur; W. Bengal; N. Bengal; Chittagong.

A densely tufted grass, with spreading stems, 12-18 in. long.

2609. POGONATHERUM CRINITUM Trin.; F. B. I. vii. 141. *Andropogon monandrus* F. I. i. 260.

Chittagong.

A densely tufted grass, with erect stems, 6-9 in. high.

1077. Apocopsis Nees.

Annual or perennial grasses; stems slender; leaves narrow, flat. Spikes solitary or 2-3-nate, compressed; rachis firm, not readily disarticulating; internodes very short, slender and villous; spikelets 2-8 secund, closely imbricate in 2 series, solitary, sessile, 1-2-flowered. Glume I lowest 2-4 in the spike imperfect, neuter; callus bearing the long capillary, ciliate pedicel of an upper spikelet. Glumes 4; I. very large, cuneately

obovate or obcordate, papery below, membranous above, less villous, with pale brown or yellow hairs, 7-9-veined below, apex, margins incurved at the base only; II. as long as narrower, membranous, oblong-ovate, truncate, 3-veined, broadly incurved; II. oblong, similar to its hyaline palea, tips broadly truncate and ciliolate, male or neuter; IV. linear, 2-toothed, 1-veined, hyaline, shortly awned, the awn twisted; palea half as long as glume, quadrately oblong, truncate, tip ciliolate; *lodicules* 0; *stamens* 2 or 3; linear; *ovary* narrow; styles 2, very short; stigmas long, exerted at apex of spikelet. *Grain* very small, narrowly Perennial; glume IV. oblong, 2-fid; awn short or 0..... Annual; glume IV. linear, entire or 2-toothed; awn long.....

2610. APOCOPIS ROYLEANUS Nees; F. B. I. vii. 142.

N. Bengal, Duars.

A simple, slender grass, 1-2 feet high.

2611. APOCOPIS WIGHTII Nees; F. B. I. vii. 142.

Chota Nagpur.

A low, tufted grass.

1078. Arthraxon Beauv.

Annual or perennial slender grasses; stems decumbent and branching below; *leaves* short, broad, base cordate, shorter than the internodes. *Spikelets* 2-nate, digitate or rachis very slender, articulate, fragile; *spikelets* 1-flowered, sessile, solitary or with an imperfect pedicelled spikelet, compressed, deciduous with the internode; callus bearded. 4; I. lanceolate or linear-lanceolate, acute, thin or suberose, more or less muriculate or aculeate, margins hardly incurved, narrower, lanceolate, acuminate, chartaceous, keeled; III. paleate, empty; IV. hyaline, awned or mucronate, 2-sexual, dorsal; palea minute or 0; *lodicules* 2, cuneate or quadrate; *stamens* 3, 2, or 1; *styles* short; stigmas laterally exerted. linear or narrowly fusiform.

Stamens 3; *anthers* large, nearly as long as glume IV.; margins of glume I. armed with very strong, curved teeth..... *Stamens* 2 or 3; *anthers* much shorter than glume IV.; glume I. late or scaberulous on the nerves but not toothed:—

*Glume II. aristiform in the upper third:— [p. 1199]

- Joints of rachis glabrous *ciliaru*.
 Joints of rachis, at least the upper, ciliate. . . . *ciliaris* var. *colorata*.
 *Glume II. linear, acute [p. 1198]. *micropInjllus*.
2612. ARTHRAXON LANCEOLATUS Hochst.; F. B. I. vii. 143. *An-
 drojwgon lanceolatus* F. I. i. 257.
 Chota Nagpur, Parasnath.
 A tall, much-branched grass, suberect or subscandent.
2613. ARTHRAXON CILIARIS Beauv.; F. B. I. vii. 146.
 Chota Nagpur; Behar.
 A weak-stemmed, tufted grass.
- 2613/2. Var. COLORATA F. B. I. vii. 146.
 Chota Nagpur, Parasnath.
 A weak-stemmed, tufted grass.
2614. ARTHRAXON MICROPHYLLUS Hochst.; F. B. I. vii. 147.
 In most of the provinces.
 A dwarf, weak-stemmed, tufted grass.

1079. Lophopogon Hack.

Small, perennial, densely tufted grasses; *leaves* very narrow. *Spikes* very short, solitary, 2-nate or fascicled on the ends of capillary branches; rachis very fragile; joints short, slender, with °upular tips; *spikelets* small, similar or not, 1-2-flowered, 2-3-nate, °ne sessile; callus conical, villous. *Glumes* 4; I. and II. charta- °ous, I. oblong, broadly truncate, irregularly 3-4-toothed, 7-nerved, dorsally convex; II. longer than I., lanceolate, narrowed into a straight awn, 3-5-nerved, hispidly villous on the sides and with tufts °* hairs on the back below the middle; III. hyaline, oblong-lanceo- late» acute or aristulate, ciliolate, 1-nerved, with 1-2 stamens or neuter, palea linear, 2-nerved; IV. nearly as long as III., female Or hermaphrodite and 2-androus, linear-oblong, 2-fid, lobes setiform a fld margins hispidulous, the cleft with a tortuous awn longer than the glumes; palea 2-nerved, small, quadrate, lobulate; *lodicules* 0; stanie n8 1-2, with narrow anthers; *styles* connate below; stigmas ve i 7 long. *Grain* narrow.

2615. LOPHOPOGON KINGII Hook. f.; F. B. I. vii. 149.

Behar.

A small, densely tufted grass, with subcorymbosely branched stems.

1080. Andropogon Linn,

Annual or perennial grasses of very varied habit; *leaves* usually

[*Andropogon*.

narrow. *Spikes* solitary, 2-nate, digitate, fascicled or sometimes (§ *Cymbopogon*) reduced to 3 spikelets; rachis late, more or less fragile; *spikelets* in alternate pairs, hermaphrodite and a pedicelled male or neuter, one or more in the spike sometimes neuter and differing in form upper. *Sessile spikelets* 1-flowered; callus long or short 3 or 4; I. coriaceous or papery, 2-keeled, awnless; concave, keeled, rarely shortly awned; II. hyaline, awnless, absent; IV. hyaline, awned, often reduced to the dilated base of the awn, 2-sexual; palea small or 0; *lodicules* 2, cuneate, 3, 2, or 1, usually 3; *styles* short or long; stigmas laterally inserted. *Pedicelled spikelets* usually smaller than sessile, IV. awnless. *Grain* free.

•Internodes of the spike deeply cupped at the apex:—[p-¹²⁰¹J
 Sessile spikelets of the lowest pairs differing from those above in sex and form; spikes 2-nate, each pair with a spathaceous

(§ *Cymbopogon*):—

Joints of spikes and pedicels of upper spikelets copiously villous on the sides and back; hairs more or less concealing the sessile

Joints of spikes and pedicels of upper spikelets villous or nearly so; hairs not concealing the sessile spikelets:—

Leaf-base broad, cordate.....

Leaf-base narrow, not cordate:—

Glume I. dorsally flat or with shallow depressions or concave towards the base:—

Spathes less than 1 in. long.....

Spathes 1 in. long or longer.....

Glume I. dorsally deeply concave below the middle, with a boss at the base of the cavity.....

Sessile spikelets of all the pairs alike in sex and form throughout the spike; peduncles of spikes enclosed in spathe with no spathaceous bract under the spike:—

Spikes solitary on the peduncle:—

Pedicelled spikelets smaller than the sessile (§ *Schizachyri*).....

Leaves divaricate; spathes spreading.....

Leaves and spathes erect.....

Pedicelled spikelets longer than the sessile (§ *Diectoviis*).....

Spikes 2 or more on a common peduncle (§ *Arthrolepis*).....

Internodes of the spike truncate at the apex but not cupped —[p 1200]

†Sessile spikelets of all the panicles alike in sex and form —[p 1202]

Peduncles of solitary spikes enclosed in spathiform leaf sheaths
(*h Kwogymum*) *foveolatum*

Peduncles of spikes not enclosed in spathiform leaf sheaths —

Pedicels of upper spikelets and joints of rachis slender, strongly compressed with thickened margins and translucent center
(*§ Atphilolijhis*) —

Spikes small of 1-3, rarely 4 panicles of spikelets, often reduced to
2 spikelets, a sessile and 2 pedicelled panicles pyramidal with
capillary rachis and branches —

Herbaceous, erect stem, simple or subsimple, leaves linear,
narrowed at base, with sheaths closed

mictanthioides var *illowia*

Suffruticose, samentose stems much branched, leaves lanceolate
much narrowed at base, with lower sheaths open

aschismill

Spikes with numerous panicles of spikelets —

Spikes 3-7 digitately subfasciated, the lower longer than the
rachis of the inflorescence, glume 1 coriaceous, distinctly
subperforately pitted *pertubus*

Spikes usually very many, paniculate, rarely few racemose,
the lower spikes shorter than the rachis of the inflorescence,
glume 1 thin —

Glume 1 not pitted *intimilius**

Glume 1 shallowly pitted *uifeimidius?* var *punctatus*

Pedicels of upper spikelets and joints of rachis terete, subterete,
angular or laterally compressed, the center not diaphanous —

Spikes with several or many panicles of spikelets, tips of branches
of panicle not bearded —[p 1202]

Glume 1 not truncate, internodes of spikes terete or subterete —

Bunches of panicle bearing spikelets close down to the
rachis (*^ Prfudamphdoping*) *f(n>aad(nn>*

Below panicle naked below (*§ Soighum*) —

Rachis of spike teretaceous (So) *<jhum*

Rachis of spike firm agile —

Spikelets softly silky with pile rarely dark hairs

halepensis

Spikelets villous, with lufous or purplish hairs

set rutib

Glume 1 with truncate sides, internodes of spikes laterally
compressed (*^ Vetiia la*) *squaiiosus*

Spikes with 3 spikelets; tips of branches of panicle bearded (& *thrysopogon*):—[p. 1201]

Pedicels of upper spikelets at least half as long as the sessile spikelets:—

Pedicels of upper spikelets scaberulous; sessile spikelets 15 in. long. *aciculatus*.

Pedicels of upper spikelets villous with long hairs; sessile spikelets-25 in. long.-

Leaves glabrous on both surfaces. *lanceari**;

Ped. Leaves scaberulous beneath *Hannu*^{NU}
of upper spikelets I** than half as long as the sessile spikelets:—

Pedicels with vilious margins; callus short, hairy

“ “ “ *vionticola* var. *Trinii*.
Pedicels vilious only at their tips; callus long, vilious only

at its base. *poly*^{III*}
Sessile spikelets of the pairs of the spike differing from the upper in sex (usually neuter) and more << less in form:— [p. 120!]

Lo of spikelets markedly << the upper; upper sessile spikelets cylindric; spikes solitary *U heteropogon*

I pairs of spikelets “Or Vel unlike the upper; upper sessile XT/i 11
plet dorsally compressed (S *Vlckanthimu*):—

spikelets subdistichous; spikes usually solitary:—
Nodes of the stem bearded; sessile spikelets pale, pedicelled
spikelets dark. *Clarkei*.

Nodes of the stem beardless*; sessile and pedicelled spikelets concolorous. *Zcarico****.

Spikelets imbrical; spikes usually corymbose or subdigitately fascicled nodes of the stem bearded; sessile and pedicelled spikelets concolorous:—

Glume I. of sessile spikelets uniformly beset with tubercle-based hairs; *annulate*-

Wume I. of sessile spikelets with a row of tubercle-based hairs below the tip *papillosus*.

Uleme I. of sessile spikelets glabrous or loosely hairy *annulatus* var. *Bladhii*.
annulatus var.

2616. ANDROPOGON IWARANCUSA Jones; t. I. i. 275; F. B. I. vii. 203. *A. laniger* E. D. A. 1093 partly. Behar and Tirhut, cultivated.

- A tufted grass, with an annulate, creeping rootstock.
Vernac. Ibharankusha, kurankusha.
2617. ANDROPOGON SCHOENANTHUS Linn.; F. B. I. vii. 204; E. D. A. 1117. *A. Martini* F. I. i. 277.
 Chota Nagpur; Behar; W. Bengal; E. Bengal, Mymensingh.
 A tall, erect grass, 3-6 feet high. *Hind.* Biisa ghas; *Beng.* Agya-ghas.
2618. ANDROPOGON NARDUS Linn.; F. B. I. vii. 206. *A. Schoenanthus* F. I. i. 274. *A. citratus* E. D. A. 1079.
 Cultivated in most of the provinces.
 A tall, erect grass, 3-6 feet high. *Beng.* Gandhabena.
- 2618/2. Var. GRANDIS Hack.; F. B. I. vii. 206.
 Behar; Tirhut; N. Bengal.
 A tall, erect grass, 8-15 feet high.
2619. ANDROPOGON GIDARBA Ham.; F. B. I. vii. 208.
 Behar.
 An erect, slender grass, 4-6 feet high.
2620. ANDROPOGON BRBVIFOLIUS Sw.; F. B. I. vii. 165; E. D. A. 1078. *A. parviflora* F. I. i. 274.
 In most of the provinces.
 A glabrous, flaccid, geniculate, annual grass.
2621. ANDROPOGON EXILIS Hochst.; F. B. I. vii. 166.
 W. Bengal; Behar; Chota Nagpur.
 An erect, slender, annual grass.
2622. ANDROPOGON FASTIGIATUS Sw.; F. B. I. vii. 167.
 Behar; Chota Nagpur.
 An erect or decumbent, perennial grass.
2623. ANDROPOGON APRICUS Trin.; F. B. I. vii. 169.
 Chota Nagpur.
 A tall, strict, slender grass.
2624. ANDROPOGON FOVEOLATUS Del.; F. B. I. vii. 168. *A. strictus* F. I. i. 260.
 W. Bengal; Behar; Chota Nagpur.
 A densely tufted grass of dry places.
2625. ANDROPOGON MICRANTHUS Kunth. var. VILLOSULA Hack.;
 F. B. I. vii. 179.
 Chota Nagpur, Parasnath.
 An erect or suberect grass, with stems 2-3 feet high.
2626. ANDROPOGON ASHMITIS Steud.; F. B. I. vii. 179.

Chota Nagpur; Behar; N. Bengal.

2627. *ANDROPOGON PERTUSUS* Willd.; F. I. i-²⁵⁸; F. B. I. vii. 173; E. D. A. 1114.

In all the western provinces.

A small, tufted, annual or perennial grass.

Kada chandi ghás.

2628. *ANDROPOGON INTERMEDIUS* R. Br.; F. B. I. vii. 175.

In all the western provinces.

A stoutish perennial grass; stems 3-5 feet high.

- 2628/2. Var. *PUNCTATUS* F. B. I. vii. 176. *A. glaber* F. I. i. 264.
A. punctatus F. I. i. 264.

E. Bengal; N. Bengal; C. Bengal; Chota Nagpur; N. Bengal.

A stoutish perennial grass; stems 3-5 feet high.

Gandha-gurana.

2629. *ANDROPOGON FASCICULARIS* Roxb.; F. L. i. vii. 177.

Chota Nagpur; Behar; Orissa.

A slender, annual grass; stems 2-3 feet high.

2630. *ANDROPOGON SORGHUM* Brot.; F. I. i-²⁷³; F. B. I. vii. 183. *Sorghum saccharatum* E. D. S. 2400.
Sorghum saccharatum E. D. S. 2424.

Cultivated in the northern and western provinces.

A tall, annual grass. Vernac. Juar (the grain-)

Dco-dhan.

2631. *ANDROPOGON HALEPKN&IS* Brot.; F. B. I. vii. 182. *A. miliaceus* F. I. i. 271. *Sorghum* ^{larius} ^{ha} [^] ^{vul.}
pense E. D. S. 2394.

In the northern and central provinces.

A tall, stout or slender, perennial grass. Hind-^{Bar u;}

Ben g. Kála-múcha.

2632. *ANDROPOGON SERRATUS* Thunb.; F. B. I. vii. 185.

Behar; Chota Nagpur.

A tall, erect, perennial grass.

2633. *ANDROPOGON SQUARROSUS* Linn. f.; F. B. I. vii. 186. *A. muricatus* F. I. i. 265; E. D. A. 1097.

In most of the provinces.

A densely tufted grass; stems 2-5 feet high. Vernac.

Bena, khas-khas; Santal. Sirom.

- ^634. ANDROPOGON ACICULATUS Retz ; F. I. i. 262; F. 13. I.
vii. 188; E. D. A. 1073.
In all the provinces.
A creeping grass; stems branched below, erect above.
Beng. Chora-kanta.
2635. ANDROPOGON LANCEARIUS Hook, f.; F. B. I. vii. 190.
Behar; Chota Nagpur.
A tall grass, with leafy stems, 2-4 feet high.
2636. ANDROPOGON HAMILTONI Hook. f.; F. B. I. vii. 190.
Behar.
A tall grass, with leafy stems, 2-4 feet high.
2637. ANDROPOGON MONTICOLA Schult. var. TRINII Hook. f.;
F. B. I. vii. 193.
Behar; Chota Nagpur.
A tufted grass, with suberect stems, 1-3 feet high.
2638. ANDROPOGON POLYPHYLLUS Hack.; F. B. I. vii. 194.
Chota Nagpur.
A stiff, erect grass, with stems 2-3 feet high.
2639. ANDROPOGON CONTORTUS Linn.; F. I. i. 253; F. B. I.
vii. 199; E. D. A. 1090.
Orissa; Chota Nagpur; Behar; \Y. Bengal: in C.
Bengal rare, and probably introduced only.
A densely tufted, erect or decumbent grass; stems
1-5 feet long.
2640. ANDROPOGON CLARKEI Hack.; F. B. I. vii. 197.
Chota Nagpur, Parasnath.
A slender, annual grass; stems 1-1*5 feet high.
2641. ANDROPOGON CARICOSU^ Linn.; F. B. I. vii. 196. *A. ser-*
ratus F. I. i. 253.
In most of the provinces.
An erect or decumbent, large or small grass. *Beng.*
Detara, detta.
2642. ANDROPOGON ANNULATUS Forsk.; F. B. I. vii. 196. .1.
scandens F. I. i. 258.
In all the provinces.
A geniculately ascending, large or small grass. *Beng.*
Loari.
- 2642/2. Var. PAPILLOSUS Hook. f.; F. B. I. vii. 197.
Chota Nagpur, Parasnath.
A geniculately ascending, rather large grass.

[*Andropogon*.*A. Bladhii* F. I.

2642/3. Var. BLADHII Hack.; F. B. I. vii. 197.

i. 259; E. D. A. 1076.

In most of the provinces.

A geniculately ascending, small or large grass.

1081. *Pseudanthistiria* Hook. f.

Annual grasses; *leaves* long, narrow. *Spikes* crowded in paniced fascicles, each with a spathiform bract; *spikelets* in each spike usually one sessile with one pedicelled male, and a second sessile, bisexual pedicelled male. *Sessile* 2-sexual *spikelets* with *glume* I. chartaceous, 7-veined, margins incurved middle; II. lanceolate, 3-veined, membranous; III. rate; IV. the narrow hyaline base of a long capillary* *awn*; *lodicules* cuneate. *Pedicelled* male *spikelets* pedicels; *glume* I. thin, about 9-veined, margins narrow; II. 3-veined; III. very small, oblong; *stamens* 3; *anthers* short; *stigmas* short, exserted. *Grain* small.

2643. PSEUDANTHISTIRIA HETEROCLITA Hook, f.; F.

Anthistiria heteroclita F. I. i. 249.

C. Bengal.

A slender, geniculate grass.

1082. *Anthistiria* Linn.

Tall, annual or perennial grasses; *leaves* long, narrow, many, short, crowded in spathaceous, paniculate fascicles; a spathiform bract; rachis of spike articulate above the *spikelets*; *spikelets* 7-9, dimorphic, 4 whorled or nearly or neuter, awnless, forming an involucre round the joint with either one sessile, 2-sexual, and 2 pedicelled spikelets superposed 2-sexual spikelets, the lower with 1, the upper pedicelled spikelets. *Spikelets* of the involucre long; *glumes* 3; I. oblong-lanceolate, acuminate, sometimes thickened at the base, margins narrowly keels narrowly winged; II. membranous, 3-nerved; III. 1-nerved; *anthers*, if present, large. *Sessile* 2-sexual *spikelets* much smaller, narrowly oblong, subterete, obtuse, rigidly bearded; *glume* I. coriaceous, margins strongly incurved; II. as long as I., linear, hyaline, 3-nerved, dorsally chartaceous; III. very small, hyaline.

without palea; IV. the narrow or flattened base of a long, geniculate awn; palea 0; *lois* cuneate; *anthers* small. *Pedicelled spikelets* like the involucrent but narrower, male or neuter, with glabrous pedicels, no callus, and with keels of glume I. not winged; *stamens* 3; *styles* 2, short, spreading from the base; stigmas long, slender, variously exerted. *Grain* narrow, 2-convex.

^{lu} Involucrent spikelets truly verticillate :—

Annual; spikes in globose or fan-shaped fascicles..... *ciliata*.

Perennials :—

Spikes in globose or fan-shaped fascicles..... *imberhis*.

Spikes in small, dense, distinctly peduncled heads forming a long, narrow panicle..... *strigosa*.

^{lv} Involucrent spikelets in closely superposed pairs :—

Spikelets hirsute, with golden yellow hairs; bisexual spikelets 1, rarely 2 in each spike; awn 1*5-4 in. long *gigantea* var. *arundinacea**

Spikelets hirsute, with rufous hairs; bisexual spikelets 2 or 3 in each spike; awn -5 in. long..... *gigantea* var. *caudata*.

2644. ANTHISTIRIA CILIATA Linn. f.; F. B. I. vii. 213. *A. scandens* F. I. i. 248.

In all the western provinces, common.

A stout grass, 4-6 feet high.

2645. ANTHISTIRIA IMBERBIS Retz; F. B. I. vii. 211. *A. ciliata* F. I. i. 247; E. D. A. 1188.

Chota Nagpur, rare.

A stout grass, 4-6 feet high.

2646. ANTHISTIRIA STRIGOSA Ham.; F. B. I. vii. 214.

Behar; N. Bengal; E. Bengal, Mymensingh.

A stout, erect grass; stems 3-4 feet high.

2647. ANTHISTIRIA GIGANTEA Cav. var. ARUNDINACEA Hack.; F. B. I. vii. 217. *A. arundinacea* F. I. i. 251; E. D. A. 1186.

N. Bengal; E. Bengal.

A tall grass, 10-16 feet high.

2647/2. Var. CAUDATA Hack.; F. B. I. vii. 217.

Chota Nagpur; N. Bengal, Duars.

A tall grass, 8-12 feet high.

1083. Iseilema Hack.

^{Small} ^{an} Annual or perennial grasses; *leaves* long, narrow. *Spikes* ^{an} short, crowded in fascicles of short spikes in the axils of

[*Iseilema*.

spathiform bracts; rachis of spike articulated on the top of its peduncle below the lowest spikelets; *spikelets* inferior, the lower 4 truly whorled, male or neuter, forming an involucre of its pedicels short, flattened, glabrous or bearded at the base; *spikelets* of the involucre pedicels short, flattened, glabrous or bearded at the base; 3; I. and II. oblong-lanceolate, I. 3-5-nerved, II. 3-nerved; I. and II. oblong-lanceolate, I. 3-5-nerved, II. 3-nerved; hyaline, 1-nerved; lodicules cuneate, retuse. *Sessile* 2-sexual, narrowed into a slender stipe; *glume* I. truncate at tip; II. hyaline; III. absent or very small; IV. an awn longer than spikelet. *Pexcellent spikelets* on long, slender pedicels; *stamens* 3; *styles* 2, short, spreading from the base; stigma slender, exerted at the apex of the spikelet. *Grain* compressed.

Keel and submarginal nerves of the spathes granulate or tubercled.

Keel and submarginal nerves of the spathes smooth.

2648. ISEILEMA WIGHTII Anderss.; F. B. I. vii. 218;

I. 488. *Anthistvria prostrata* F. I. i. 230.

ChotaNagpur; Behar; N.Bengal.

A decumbent, perennial grass.

2649. ISEILEMA LAXUM Hack.; F. B. I. vii. 218; E. D. 487.

Orissa; W.Bengal; Behar.

A decumbent, perennial grass.

1084. Zea Linn.

A tall, stout, annual, monoecious grass; *leaves* broad; *Spikelets* 1-sexual, males in terminal, racemed spikes, female solitary, axillary, stout, sheathed spikes, with a thick, inarticulate spongy rachis. *Spikelets* 2-flowered, 2-nate, a sessile pedicelled at each of the alternating teeth of the inarticulate rachis; *glumes* 4, acute; I. and II. subequal, membranous, enclosing the hyaline paleate III. and IV.; *lodicules* 2; *stamens* 3; anthers linear. *Spikelets* 1-flowered, densely crowded in many series on the thick, cylindrical rachis; *glumes* 4, membranous; I. and II. very broad, obtuse or emarginate; III. hyaline, paleate, empty; IV. hyaline, often 2-fid; *lodicules* 0; *ovary* obliquely-ovoid, plano-convex; style long, 2-fid, with papillose arms. *Grain* large, subglobose flattened, surrounded by the membranous glumes.

2650. ZEA MAYS Linn.; F. I. Hi. 568; F. B. I. vii. 102; E. D. 2,50.

Cultivated.

A tall, annual, monoecious grass. *Vernac.* Butta, makai; *Santal.* Jondra.

1085. Polytoea B. Br.

Tall, stout, erect, branching, perennial, monoecious grasses; stems spongy; nodes bearded; flowering branches fascicled; waves long, flat. *Spikes* solitary or paniced, male only, or the upper male, the lower female; rachis jointed; spikelets geminate, sessile and a pedicelled. <r *Spikelets* lanceolate, 2-flowered; *glumes* 4; I. many-nerved, 2-keeled; II. 5-7-nerved; III. and IV. hyaline, paleate, 3-androus; *anthers* very long; *locules* cuneate. * *Spikelets* imbricate, the pedicelled imperfect, its pedicel consent with the rachis; *glumes* of sessile spikelet 4; I. oblong, naceous, margins inflexed, embracing the rachis, at length crucaceous; II. thin, acuminate; III. hyaline, epaleate; IV. hyaline, paleate, fertile; staminodes 0; *lodicules* 0; *ovary* minute; styles 8; stigmas slender. *Grain* very small, orbicular, enclosed in a hardened outer glumes.

Infr. Inflorescences mostly compound; male spikelets terminal, superposed, p 7; female 3-7..... *bracteata*.
Inflorescences all of simple, bisexual spikes; spikelets glabrous... *barbata*.

2651. POLYTOEA BRACTEATA H. Br.; F. B. I. vii. 101. *Coix heterodita* F. I. iii. 572.

N. Bengal, Duars; E. Bengal, Mymensingh.

A tall, usually stout grass, 3-5 feet high.

2652. POLYTOEA BARBATA Stapf; F. B. I. vii. 102. *Coix barbata* F. I. iii. 569.

In most of the provinces.

A tall grass, 3-5 feet high. *Beng.* Gungar.

1086. Coix Linn.

Tall, leafy, monoecious grasses; stem branching, spongy within; leaves long, flat. *Stems* many, axillary and terminal; lower spikelets solitary, female, enclosed in an ultimately hardened, polished, nut-like bract, through the apex of which the pedicelled portion of the spike protrudes. <? *Spikelets* 2-3-nate at each

node of the rachis, one sessile and 1 or 2 pedicelled, *glumes* 4; I. and II. subequal, empty, rigid or her- keeled along the inflexcd margins; III. and IV. 3-androus or empty. ? *Spikelets* ovoid, acuminate; I. chartaceous; II.-IV. successively thinner, IV. paleate nodes minute; *lodicules* 0; *ovary* ovoid ; styles 2, *Grain* orbicular, ventrally furrowed, enclosed in the globose, ovoid or cylindrical involucre.

Stems erect: —

Male spikelets 3 or 2, with 1 imperfect; glume I. narrowly

Male spikelets many, 3-nate at internodes, often forming dric, drooping spikes; glume I. broadly winged.....

Stems floating; male spikelets many, in cylindrical, drooping spi

2653. Coix LACHRYMA-JOBI Linn.; F. I. iii. 568; F. B. I. E. D. 0.1686.

In most of the provinces.

A stout, perennial grass; stems 3-5 feet high. Sankru; Beng. Gurgar, kunch; Santal. Jar Danghoi.

2654. Coix GIGANTBA Roxb.; F. I. iii. 569; E. D. C. *Lachryma-Jobi* var. *gigantea* F. B. I. vii. 100.

Chota Nagpur; Behar; Orissa.

A stout, erect perennial; stems 15 feet high. Danga gurgar.

2655. Coix AQUATICA Roxb.; F. I. iii. 571; F. B. I. vii. C. Bengal; E. Bengal.

A large, floating grass; stems 50-100 feet long-

1087. *Aristida* Linn.

Annual or perennial, tufted grasses; leaves flat or *Spikelets* paniced, 1-flowered, not articulate on their laterally compressed ; rachilla not produced beyond the glume. *Glumes* 3 ; I. and II. very narrow, long, 1-veined, persistent, with or without a terminal'awn; III. very cylindrical, coriaceous, convolute, acuminate, 3-veined, tip very long capillary awns, occasionally the side awns feb obsolete; callus long, articulate at the base ; palea minute

tote round ovary and grain; *lodicules* ?, long, narrow, hyaline; *stamens* 3 ; anthers long, narrow ; *styles* free, short; stigmas penicillate, laterally exerted. *Grain* long, narrow, cylindrical, free in the convolute glume.

Awn of glume III. tripartite from the base :—

Glumes I. and II. not awned :—

Panicle very slender; spikelets, without the awn, only 1 in. long

Cumingiana.

Panicle contracted; spikelets, without the awn, 2.5-6 in. long

*A(hcen*cionh.*

Glumes I. and II. long-awned; panicle contracted; spikelets without the awn 5-6 in. long..... *setacea.*

Awn of glume III. with a twisted column, and simple or with 2 very short branches; glumes I. and II. short-awned; panicle effuse...*redacta.*

2656. ARISTIDA CUMINGIANA Trin. & Rupr.; F. B. I. vii. 224.

Chota Nagpur.

A dwarf, annual grass.

2657. ARISTIDA ADSCENSIONIS Linn.; F. B. I. vii. 224. *A. tiepressa* F. I. i. 351; E. D. A. 1383.

In all the western provinces.

A tufted, annual or perennial, wiry grass.

2658. ARISTIDA SETACEA Retz; F. I. i. 349; F. B. I. vii. 225; E. D. A. 1385.

Orissa ; Chota Nagpur; Behar.

A stout, erect, perennial grass, 3-4 feet high.

2659. ARISTIDA REDACTA Stapf; F. B. I. vii. 227.

Chota Nagpur; Behar; W. Bengal.

A tufted, annual grass.

1088. Polypogon Desf.

Annual or perennial, soft, erect grasses; *leaves* flat. *Spilcelets* minute, 1-flowered, articulate or the pedicels, laterally compressed, densely crowded on the short branches of a spiciform, silky panicle; rachilla not produced beyond flowering glume, naked. *Glumes* 3 ; I. and II, empty, linear-oblong, keeled, pubescent and ciliate, ending in long capillary awns; III. much shorter, articulate at the base, hyaline, truncate, awned; palea as long as the glume; *stamens* 1-3 ; anthers short; *styles* free; stigmas narrowly plumose. *Grain* obovoid, clavate, free within the glume.

Panicle spiciform, oblong or cylindrical ; awns more than the glumes

Panicle lobed ; awns less than twice as long as glumes.

[Polypogon.
-ice as long as
uspeliensis.

r. Higeaweri.
Moral* va

2660. POLYPOGON MONSPELIENSIS Desf.; F. B. crinitum- F. I. i. 313.

Chota Nagpur; Tirhut; N. Bengal.

An annual, tufted grass.

2661. POLYPOGON LITTORALIS Sm. var. HIGEGAWBR F. R I. vii. 946.

N. Bengal, rare; on sandbanks and in beds : grain probably carried down from the An annual, tuftad grass.

-frock- *i
v e U y r i \ c ^ l n
n j s i

1089. Agrostis Linn.

Perennial, rarely annual grasses ; leaves small, 1-flowered, in effuse or contracted panicles, whorled branches, not articulate on their pedicels; produced beyond the flowering glume. Glumes 3; equal or unequal, keeled, 1- rarely 3-nerved; III- 5-nerved, truncate, glabrous, awned or not* awn dors glabrous or with a few minute hairs; palea nearly as glume or shorter or 0, 2-nerved or nerveless ; lodicules 3. Grain free within the glume.

flat
& j n : v e \ e t s
h ca p j l l a r y ^
chill ^ H O T
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ng as it-
amens

2662. AGROSTIS BRACHIATA Munro ; F. B. I. vii. 256.

Behar.

A tall, slender grass.

1090. Sporobolus R. Br.

Perennial, less often annual, glabrous grasses, erect or or creeping; leaves narrow, flat or convolute. Syikelets small or minute, in effuse or contracted panicles, a their pedicels ; rachilla not produced beyond the palea. 3, usually membranous, 1-veined or veinless; I. and I. unequal, separately caducous; III. not articulate at ovate or oblong, obtuse or acute; callus very short, palea as long as the glume and of similar texture, broad often dorsally narrowly inflexed along the median line, vein-like, ventral ridge along which the palea splits ; very minute or 0; stamens 2-3; anthers short or long

rostra te
red,
I - flo
articulate
Glumes
I. empty,
the b
labrous ;
with ^
lo « i c t l e s
? ^

²> fl-ee; stigmas very short; hairs simple. Grain oblong, obovoid,
or Pyriformi, free within glume and palea, with a loose, hyaline
pericarp.

⁶Umes I. and II. both shorter than glume III.: -

Panicle very narrow, its branches short :—

Spikelets .05-06 in. long *diamlcr.*

Spikelets .1 in. long *indicu**.

Panicle broad, its branches very long *Wallichii.*

Glume I. shorter than both II. and III., II. nearly or quite as long as
III. :—

Panicle contracted *tremulu**.

Panicle open, effuse :—

Keels of glumes I. and II. ciliate *pulchellu**.

Keels of glumes I. and II. not ciliate *coromandelianu**.

2663. SPOROBOLUS DIANDER Beauv.; P. B. I. vii. 247; E. D.
S. 2668. *Agrostis cUandra* F. I. i. 317.

In all the provinces.

A slender grass; stems 1-3 feet high. *Beng. Bena-joni.*

⁶⁶⁴ SPOROBOLUS INDICUS H. Br.; F. B. I. vii. 247; E. D.
S. 2670.

Chota Nagpur; Behar.

A stoutish grass; stems 2-3 feet high.

2665. SPOROBOLUS WALLIOHII Munro; F. B. I. vii. 248.

Behar.

A stoutish grass ; stems 9-4 feet high.

²⁶⁶⁶ SPOROBOLUS TREMULUS Kunth ; F. B. I. vii. 250. *Agrostis*
tenacissima F. I. i. 316.

W. Bengal; C. Bengal; Sundribuns.

A small, stoloniferous grass; stems 2-6 in., erect or

²⁶⁶⁷ ^{prostrate,}
^{b7} SPOROBOLUS PULOHELLUS R. Br.; F. K. I. vii. 252.

Chota Nagpur; Behar.

²⁶⁶⁸ ^{slender,} annual grass.

^{**} SPOROBOLUS OOROMANDELIANUS Kunth; F. B. I. vii. 252.
Agrostis coroyndelianua F. I. i. 316.

Orissa.

A tufted, annual grass, with many stems, spreading
from the root.

[Garnotia.

1091. Garnotia Brogn.

Erect, perennial, rarely annual grasses; stems stout or slender; leaves flat or convolute. *Spikelets* paniculate, very small narrow; terete, 1-flowered, solitary or 2-nate, jointed on pedicels; rachilla not produced beyond the palea. *Glumes* I and II subequal, lanceolate, acute, acuminate or awned, strongly veined, empty; III. as long as II., lanceolate, acuminate or awned, coriaceous or membranous, quite smooth, faintly 1-veined, 2-sexual, tip acute or minutely 2-dentate, awn rarely present, sometimes geniculate, slender, scaberulous; palea as long as glume, linear lobes minutely auricled at the base; lodicules 25; stamens 3; anthers linear; styles free; stigmas with simple, laterally exserted. *Grain* linear or oblong, dorsally compressed, free within the glume and palea.

2669. GARNOTIA STRICTA Brogn.; F. B. I. vii. 243; E. V*

Chota Nagpur, Parasnath.

A tufted grass; stems 1-3 feet.

1092. Coelachne H. Br.

Slender, flaccid, leafy, glabrous marsh grasses; stems ascending or creeping below; leaves linear-lanceolate, involute. *Spikelets* small, in panicles or interrupted racemes, 2-flowered, not articulate on their pedicels; lower perfect, upper female; rachilla not articulate at the base, elongated and slender between the flowering glumes, but not produced beyond the upper. *Glumes* 4; I. and II. membranous, or broadly oblong, empty, persistent, faintly veined, II. and III. flowering, persistent on the rachilla, thinly veined, veins faint or 0; III. cymbiform, dorsally rounded, margin strongly incurved; palea of similar consistence, ovate, veins 0 or very obscure, the margins strongly incurved below; much smaller, flat or concave, keels of palea hispidly ciliate; lodicules 2, very minute; stamens 3; anthers long, narrow, free, short; stigmas densely penicillate. *Grain* fusiform or nearly terete, free within the glumes.

2670. COELACHNE PULCHELLA R. Br. Var. SPICATA Hook, f. v. 271.

vii. 271.

Chota Nagpur.

A short, stout, suberect grass of marshy spots.

1093. Arundinella Eaddi.

Annual or perennial, erect grasses; leaves narrow. Spikelets
 panicle, terete, jointed, pedicels or
 separately deciduous; rachilla not
 female; rachilla not
 glumes. (Glumes 4
 I. and II. empty, III. shorter
 than I.; III. shorter
 neuter, rarely 2-sexual; IV. much shorter than III. and thinner
 paleate female or 2-sexual, sessile, disarticulate at the naked or
 bearded base, awnless or 1-3-awned, if
 awns capillary, straight, the median geniculate straight or
 twisted column; palea of III. and IV. linear
 flaps
 8. minute; stamens 8. anthers linear-oblong; 2, free
 • shortly connate below • stigmas short, laterally exserted, <<<<
 very small, oblong, connate, loose in the
 and palea and closely embraced by these. .neubranous glume IV.

Awns to glume IV. three, the lateral short, capillarysetosa.
 Awn to glume IV. solitary or 0:—

Glume IV. with awn twice as long as the spikelet:—
 Spikelets very small, less than .1 in. long; awn-base slightly twisted

Spikelets more than .1 in. long. column of awn distinctly twisted
 brasiliensis.

Glume IV. with awn 0 or short and hardly exserted:—

Panicle elongated, contracted, strict; awn to glume IV. 0 or very
 short and not twistedWallichii.

Panicle large, corymbiform, upper branches longer than rachis;
 awn to glume IV. very shortly exserted, with base twisted
 Clarkii.

2671 ARUNDINELLA SETOSA Trin.; F. B. I. vii. 70.

Chota Nagpur; Behar; W. Bengal.
 A rather tall, perennial, tufted grass.

ARUNDINELLA TENELLA Nees; F. B. I. vii. 71.

Chota Nagpur; Behar.
 A soft, erect, leafy, annual grass.

2673. ARUNDINELLA BRASILIENSIS F. B. I. vii. 73. *Holcus*
nervosus i. 318.

Chota Nagpur, Sirguja; N. Bengal, Duars.

A stout, perennial grass.

2674. ARUNDINELLA WALLICHII Nees; F. B. I. ii-75 < P ^ \$ - ^
strictmn F. I. i. 303.

Chota Nagpur; N. Bengal.

A stout, erect, perennial grass, 1-3 feet high.

Ganga bena.

2675. ARUNDINELLA CLARKEI Hook. f.; F. B. I. vii. 75.

N. Bengal, Duars.

A tall, stout grass, 6-8 feet high.

1094. Eriachne It. Br.

Slender, erect, tufted, usually perennial grasses, with fibrous roots & leaves very narrow, margins convolute. Spikelets laterally compressed, 2-flowered; flowers both perfect, not late on the pedicels; rachilla 0. Glumes 4; I. and II. chartaceous, lanceolate, many-veined, persistent, bases dull. III. and IV. equal and similar, narrowly lanceolate, coriaceous, villous, ending above in an awn and below in a long, villous callus, articulate at base of glume II.; palea as long as glume I., coriaceous and villous, margins strongly incurved, ending in diverging awns; lodicules minute, oblong, truncate, firm; stamens 3; anthers minute, didymous; ovary narrow; short, their bases distant; stigmas penicillate with simple linear, narrowed to the acute base, plano-convex, with keel along the flattened face, firmly enclosed in the thick glume and palea.

2676. ERIACHNE PALLESCENS R. Br.; F. B. I. vii. 269.

Chittagong,

A rigid, densely tufted grass; stems 1-2 feet high.

1095. A vena Linn.

Annual or perennial grasses; leaves flat. Spikelets panicle or terete or laterally compressed, 2- or more-flowered, not articulate on their pedicels; rachilla articulate at the base. Glumes 4, for sally rounded; I. and II. empty, unequal, thin, persistent, awnless; flowering glumes bisexual or the uppermost male or neuter, 2-keeled; styles 2; Stamens 3; Ovary 1; late, column twisted; Pappus fusiform, furrowed, with ample hairs. Grasses

2677. AVENA SATIVA Linn.; F. B. I. vii. 275 ; E. D. A. 1639.
Cultivated sparingly.

A tall, annual grass. *Hind. Jai.* The Oat.

1096. Centotheca Desv.

Tall, leafy, perennial grasses; *leaves* broadly oblong or lanceolate, veins trabeculate. *Spikelets* 1-3-flowered, alternate and secund on the long, spiciform capillary branches of a lax, subsimple panicle, not articulate at the base, laterally compressed, all Perfect or one or more upper neuter; rachilla slender, articulate at the base and between the flowering glumes, not produced beyond the uppermost. *Glumes* I. and II. distant at their insertions, ovate-oblong, empty, persistent, 3-veined, II. largest; flowering glumes broadly ovate, obtuse, apiculate, dorsally rounded, 7-veined, naked, or the upper usually bearing above the middle, soft, erect, at length deflexed, tubercle-based spines; palea narrow, keels ciliate; *lodicules* 0; *stamens* 2-3 ; anthers linear; *styles* short, three; stigmas narrow; hairs short. *Grain* ovoid, acute, terete, [^]ee within the glumes.

2678. CENTOTHECA LAPPACEA Desv.; F. B. I. vii. 332. *Melica diandra* F. I. i. 327. *M. refracta* F. I. i. 327.

N. Bengal, Duars; E. Bengal, Mymensingh.

A stout, erect grass, 1-3 feet high.

1097. Elytrophorus Beauv.

An annual, erect, glabrous grass; *leaves* very narrow, flat. ^s*Spikelets* very minute, sessile, in globose clusters, crowded together in long, cylindrical, continuous or interrupted, catkin-like ^{io}spikes, or rarely on the short, spike-like branches of a very contracted raceme, many of the spikelets imperfect, or reduced to empty glumes, strongly laterally compressed, not articulate at the base, 4-6-flowered; rachilla very short, articulate at the base and between the flowering glumes, but not beyond the upper. *Glumes* * and II. subequal, lanceolate, aristately acuminate, empty, ^rvaline, 1-veined, glabrous or ciliate, keeled, flowering glumes rather longer, ovate, long-awned, strongly 3-veined, margins ^{bro}ad, truncately 3-lobed, lobes ciliate, keels distant, winged, ⁸¹*ooth; *lodicules* 2, obliquely oblong; *stamens* 1-3; anthers [^] t ⁸ *styles* free, long; stigmatic hairs very short. *Gram*

*tate, fusiform or narrowly oblong, free; pericarp loose at both ends.

2679. ELYTROPHORUS A Tu. Beauv.; F. B. I. vii. 306. Chota Nagpur; W. Bengal j E. Bengal, Mymensingh. An erect, annual grass.

1098. Arundo Linn.

T. stout, perennial *...! <<...< *... few-flowered; compound panicles, laterally compressed; the flower mo8Uy 3exua; rachis jointed at the base between the flower and the glumes; glabrous << ^ l y ^ << > <M... 6 more; ? and TE ^ ual, empty, narrow, acute or ^ ^ Z...ous, scarious, persis... a flowing glumes W* late, acuminate S... short awn, 8-nerved, dors f... all over below the middle: palea h ^ i M. 2-><<ved; >><< stigmas obovate; stamens 3; ovar plumose. Grain oblong. (/ glabrous: styles distinct;

2680. ARUNDO DONAX Linn.; F. B. I. vii. 302; E. D. A. 1538. A. bengal Behar; W.Bengal; C.Bengal. stout Perennial grass; stem 6-10 fad hlgil, Be"? Gaba-nal.

1099> P... agmitea Trin.

Tall, perennial decomposed pan... SI DOT iointed on the pedicels, later* <<>^ b. compressed; rachis... ted between ^ lowering glume, ^ above glume III., sil... Pennicillate, Vrfth ^ 10n^ haitS, produced beyond the flower g glumes. Glumes all glabrous; I. and II. unequal, oblong-lanceolate, 3-uerved, membranous, persis- tent; III. much longer. r. narrowly oblong-lanceolate, a,ute, 8-nerved, male or neuter, pers... owering glumes subulate-lanceolate. subaristate, hyaline; awn much shorter than glume; lodicules 2. obtuse; stamens 1-3; styles 2, terminal, distinct; stigmas plumose. Grain oblong, terete.

Pedicels glabrous ... Karka. Pedicels ... Karka var. cinctu.

2681. K... p. 61, ... KA T ri... P- B. I. vii. 304. ^ Roxburghii

In most of the provinces.

A tall, stout, perennial grass. *Hind.* Nál.

²⁶81/2. Var. CINCTA Hook. f.; F. B. I. vii. 305.

Sundribuns.

A tall, stout, perennial grass. *Beng.* Narkul, *Hind.* nál.

1100. *Triraphis* E. Br.

A tall, perennial, leafy grass; *leaves* long, flat. *Spihelets* small, *8-flowered, in an effuse, decompound panicle, lowest flowering glume sometimes glabrous, epaleate, neuter; rachilla shortly bearded below the flowering glumes, jointed at the base above the Neuter glume when present and between the flowering glumes. *flumes* all membranous; I* and II. unequal, empty, lanceolate, 1-nerved; flowering glumes elongate, subulate, more or less recurved, ending in a very slender tip, with 2 setaceous points and ^a scabrid, interposed awn, 3-nerved, lateral nerves submarginal, penicillate with long hairs; palea oblong, keels scaberulous; *lodicules* 2, obovate or cuneate; *stamens* 3; anthers long, linear; *ovary* shortly stipitate, oblong; styles terminal; stigmas feathery. *Grain* linear, terete, loose in the glume.

2682. TRIRAPHIS MADAGASCARIENSIS Hook. f.; *Net/ran din wndn-gascariensis* F. B. I. vii. 305.

N. Bengal, Duars; Chittagong.

A tall, perennial, leafy grass, 6-15 feet high.

1101. *Eragrostis* Beauv.

Annual or perennial, usually slender, glabrous grasses; stem erect or ascending; *leaves* narrow. *Spikelcts* many-flowered, in °pen or contracted panicles, rarely spicate, on a simple, terminal ^{ra}chis, not articulate at the base, strongly laterally compressed, °vate-oblong or linear; rachilla produced and articulate or not between the glumes, but never beyond the terminal one. *Glumes* many, closely, distichously imbricate, -thin, dorsally rounded or keeled, awn 0; I. and II. much shorter than the spikelet, empty, *• rarely 3-veined, separately deciduous; flowering glumes 3-veined, Wral veins not reaching the mid-vein; callus 0; palea deciduous ^with the glume or persistent on the rachilla, keels smooth, scabrid or ciliate; *lodicules* 2, very minute or 0; *stamens* 1-3; anthers ^{lon}g or short; *styles* distinct; stigmas penicillate, laterally ex-erted. *Grain* very minute, free in the glume and palea.

*Spikelets paniced :—[p. 1221]

Rachilla of spikelets more or less jointed and breaking up from above downwards :—

spiciform; rachis bearded at the nodes; margins of the glumes ciliate :—

powering glumes cuspidate; panicle ovoid, «°»;

powering glumes obtuse; panicle oblong, often lobed or flowered .. .

Panicle open; "ZV":

Grain ovoid; a/18 of the flower; glumes oiliate :—

Empty glumes unequal, I distinctly shorter than II. :—

Panicle open; branches capillary; nodes bearded

Panicle narrow «, * contracted, flaccid; rachis «labrons

Empty glume, o oe tenella var. r

Stem 1 2 X " T L hard I ^ if * * * * * dorer tha

scid

tenella var. breviculmis.

Grain obovo

Panicle-branch "1: Stamens 2; _

Pseudo-whorl ITT f Vfriccate: spikelets O-liowered or m*»- «short and dense; panicle n a n w

Pseudo-whorls open :—

interrupta var. Koenigii.

Pani

«owe = iV, ! n ear «Oblong; brnches 1-2 in-! spikelets 10-^

1'anicl effn'w *'i.....i..... interrupta var. iliarrli^l 6, branch es 2-5 in.; spikelets 6-10-flower^<

Panicle-branch! ^; . >>temj,ta var. dipUichnoM**.

68 dlva »C»te; spi]flet3 (. . ^ ^ Q14 wer

Rachilla of spikelets tou^h away

internipta var. tenn falling

†Spfrom its base H p i S ^ 1 * , 1 , , flowelin e ^ " mes usually

S^ S-8 Reduncled; ~tP- MM]

nerves oi flowerin^ C 11s6 * o oblon(?1 , 2 in_ wide or wi ^ ! later, T

TM t ; palea! deciduou wihTh StraiRht, almoSt K-

Spikelets less compi-essPr i ^ g, Umes «, W, ni

wide; lateral nerves W n n e M " lineai_ Wong. under -2 i>-

0" lateral nerves p R ^ f ^ 1 1 1 1 " * ! when spikelets compressed

I delete moreo^es, I " ^ » * • P«totont .-

br «che., or ahortf p ^ 7 ' c ' e ! i on the primary or secondary »ow racemes :-[p. 1221J

- Leaves glaucous ; grain oblong *gangeŪca*.
 Leaves not glaucous ; grain globose or nearly so :—
 Spikelets less than .25 in. long *xtenoyhylla*.
 Spikelets .25 in. long or longer *elongate*.
 I Spikelets not fascicled, long-peduncled, more or less divaricate
 when ripe :—[p. 1220]
 Leaf-margins glandular:—
 Glume II. 3-nerved; glume I. 1-3-nerved *major*.
 Glume II. as well as glume I. always 1-nerved *minor*.
 Leaf-margins eglandular; glumes I. and II. 1-nerved;—
 Spikelets versatile, 1 in. long or longer, narrow-linear;
 branches of panicle solitary *tremula*.
 Spikelets small, .25 in. long or less :—
 Perennial; mouth of leaf-sheath naked; branches of
 panicle solitary or 2-nate *tenuifolia*.
 Annual; mouth of leaf-sheath bearded; branches of
 panicle usually more or less whorled *pllom*.

f Spikelets sessile and jointed on the very short, densely crowded
 branchlets of a tall, narrow, raceme-like panicle, deciduous, acute,
 much compressed, imbricate and secund [p. 1220]. . . . *cynosuroide**.

*Spikelets distichously spreading, secund in a long, simple, terminal
 spike:—[p. 1220]

Leaves more or less puberulous above :—

Upper surface of leaves with tufts of hairs on the surface below the
 middle *nardoides*.

Upper surface of leaves uniformly puberulous *voromundeliana*.

Leaves glabrous above *hmchyphylla*.

2683. ERAGROSTIS CILIATA Nees ; F. B. I. vii. 313. *Poa ciliata*
 F. I. i. 334.

Chota Nagpur.

An erect or ascending, perennial grass ; stems 2-4 feet.

2684. ERAGROSTIS COARCTATA Stapf; F. B. I. vii. 313.

Chota Nagpur; Behar; N. Bengal; Chittagong.

A tufted, perennial grass ; stems 4-18 in. high. *TJriya*
 Ghira nanja, pita-chura, kuti; *Hind*. Jinkua.

2685. ERAGROSTIS TENELLA Roem. & Schult. var. PLUMOSA Stapf;
 F. B. I. vii. 315. *E. plumosa* E. D. E. 263. *Poa plumosa*
 P. I. i. 337.

In all the provinces.

A slender, graceful, annual grass.

2685/2. Var. RIPARIA Stapf; F. B. I. vii. 310,

[Eragrostis.

Orissa, sea-coast.

A slender, graceful, annual grass. ^

2685/3. Var. VISCOSA Stapf; F. B. I. vii. 315.

Poa viscosa

F. I. i. 336.

Chota Nagpur; Behar; N. Bengal. . ,

A slender, annual grass. Santal Ich koic .

2685/4. Var. BREVICULMIS Stapf; F. B. I. vii. 316.

C. Bengal; Orissa.

A dwarf, prostrate, annual grass. ^ ^ gt&p*

2686. ERAGROSTIS INTERRUPTA Beauv. var. KOB»I interrupta

F. B. I. vii. 316. E. nutans E. D. E. 259. I**

F. I. i. 335.

In all the provinces.

A tall, perennial grass.

2686/2. Var. DIARRHENA Stapf; F. B. I. vii. 316.

Poa dia \$^

F. I. i. 336.

C. Bengal.

A tall, perennial grass.

2686/3. Var. DIPLACHNOIDES Stapf; F. B. I. vii. 316.

Behar; Chota Nagpur; Orissa.

A tall, stout, branching, perennial grass.

2686/4. Var. TENUISSIMA Stapf; F. B. I. vii. 316.

E. tenella

E. D. B. 265. Poa tenella F. I. i. 337.

In most of the provinces.

A slender, graceful, perennial grass.

2687. ERAGROSTIS AMABILIS Wight & Arn.; F. B. !

- vii. \$H-

Poa unioloides F. I. i. 339.

In most of the provinces.

A rather slender annual; stems -5-1'5 feet. & e' F. ^ \'

2688. ERAGROSTIS GANGETICA Steud. E. elegantulo

vii. 318. Poa gangetica F. I. i. 340.

In all the provinces.

A tall, suberect, perennial grass ; stems 1-3 feet. t. H. j. E.

2689. ERAGROSTIS STENOPHYLLA Hochst.; F. B. I. vii.

Brownei E. D. B. 248. Poa elegans F. I. i- 3B8.

In all the provinces.

A slender, graceful, annual or subperennial grass.

2690. ERAGROSTIS ELONGATA Jacq.; F. B. I. vii. 319.

Chota Nagpur; Chittagong.

A stiff, tufted, perennial grass.

2691. ERAGROSTIS MAJOR Host; F. B. I. vii. 320. *E. megastachya* E. D. E. 257. *Poa flexuosa* F. I. i. 339.
In all the western provinces.
A stoutish, much-branched, annual grass.
2692. ERAGROSTIS MINOR Host; F. B. I. vii. 321.
In most of the provinces.
A densely tufted, annual grass.
2693. ERAGROSTIS TREMULA Hochst.; F. B. I. vii. 320. *E. rha-chitricha* E. D. E. 267. *Poa multiflora* F. I. i. 338.
In all the western provinces.
A densely tufted, annual grass.
2694. ERAGROSTIS TENUIFOLIA Hochst.; F. B. I. vii. 322.
Chota Nagpur.
An erect, slender, branched perennial.
2695. ERAGROSTIS PILOSA Beauv.; F. B. I. vii. 323 ; E. D. E. 261.
Poa punctata F. I. i. 338.
In most of the provinces.
A tufted, annual grass.
2696. ERAGROSTIS CYNOSUROIDES Beauv.; F. B. I. vii. 324 ; E. D. E. 252. *Poa cynosuroides* F. I. i. 333.
In most of the provinces.
A tall, stout, stoloniferous, perennial grass. *Beng.*
Kusha; Hind. Dáb.
2697. ERAGROSTIS NARDOIDES Trin.; F. B. I. vii. 326. *E. hifaria*
E. D. E. 246.
Chota Nagpur, Parasnath.
A tufted, perennial grass, with filiform stems.
2698. ERAGROSTIS COROMANDELIANA Trin.; F. B. I. vii. 326.
Behar; Chota Nagpur.
A tufted, stoutish, perennial grass.
2699. ERAGROSTIS BRACHYPHYLLA Stapf; F. B. I. vii. 327.
Behar.
A densely tufted, perennial grass, with slender stems.

1102. Myriostachya Hook, i.

^ tall, stout, perennial, glabrous marsh grass ; rootstock thick, spongy; roots vermiform, with branched, capillary fibres ; leaves mainly radical, very long, flat. Spike very many, laterally much compressed, 4-20-flowered, distichously racemed on the short, crowded, filiform branches of a narrow, erect, long, thyrsi-

form panicle with a stout rachis, shortly pedicelled, not art^{ate} ^ i * on the pedicels, but pedicels articulate on the branches; r^{but} ^ very stout, shortly produced between the flowering glumes beyond the uppermost neuter glume. *Glumes* all coriace^{0U} A per-
sistent, I. and II. empty, subequal, 1-veined, lanceolate, ^ 1 ^
ing into rigid awns; flowering glumes quite glabrous, ovate-^{nc} ^
late, 3-veined, narrowed into short, very stout, scabrid flWii^{»»} ^,
smooth; callus very short; palea chartaceous, as long *¹ ^
glume, acuminate, 2-toothed, keels ciliate; lod^{nut}cles very n[»] ^
stamens 3; anthers linear-oblong; *ovary* globose; styles s^{hor}
distant at the base; stigmas long-penicillato, laterally <*^{ertel}.

Grain obliquely ovoid, subterete.

2700. MYRIOSTACHYA WIGHTIANA Hook. f.; F. ^{xiii} 27.

Sundribuns.

A tall, stout, perennial grass. *Bcwj*. Nalai.

1103. Bromus Linn.

Annual or perennial grasses; *leaves* narrow, usually fl** ^
'<< many-flowered, paniced, laterally compressed; "PP ^ pg
flowers usually imperfect; rachilla jointed below the flo**
glumes, not produced beyond the uppermost glume. &^{fl m}
jnany. I. luld rL unequalj empt ^ ^ ^ - ^ ^ w.ne rved f P<<^{rel}
tent; flowering flumes acuminate or shortly cleft; I. very *
pawnd, median awn erect or recurved, sometimes twisted **
the base; palea 2-fid or 2-toothed, keels scabrid or ciliate; *
cles 2, oblong or lanceolate, entire or cleft; *stamens* * \ ^ \ ^
oblong or cuneiform, crown more or less enlarged and hm£
villous; styles short, usually inserted ventrally below the tip n^{ary}
the ovary; stigmas plumose. *Grain* linear-oblong, usually *
cavo-convex and adherent to the palea.

^701. BROMUS HIMALAICUS Stapf; F. B. I. vii. 358.

K. Bengal, Mymensingh.

A perennial grass, with short rootstock; stems 2-^{2v} ^
high.

1104. Diplachne Beauv.

Tall, tufted grasses; *leaves* flato r convolute, narrow; stems
erect or ascending. *Spikelets* many-flowered, sessile, 1-seriate on
the slender, spiciform branches of a contracted, subsimple, erect
panicle, not articulate at the base, strongly laterally compressed;

hilla articulate between the flowering glumes, not produced beyond the uppermost neuter. Glumes many; I. and II. unequal, obtuse, membranous, 1-nerved, persistent; flowering glumes rather longer, oblong, 1-3-nerved, tip 2-4-toothed, mucronate or awned; palea linear; lodicules 2, wide-cuneate; stamens 3; anther short; styles short, distinct, with distant bases and short, plumose, laterally exerted stigmas. Grain oblong, stipitate, concavo-convex, free in the glumes.

2702. DIPLACHNE FUSCA Beauv.; F. B. I. vii. 829. *Poa procera* P. I. i. 332.

^undribuns; C. Bengal.

A tall, tufted, perennial grass, stems 5 feet high.

1105. *Leptochloa* Beauv.

Tall, slender, annual grasses; leaves flat or involute. Spikelets many, minute, compressed, 1-many-flowered, sessile or shortly pedicelled, alternate and unilateral on the very slender, spike-like rachis of a lax panicle, not jointed at the base; rachilla pro-nate between the flowering glumes, but not beyond the upper, articulate at the base. Glumes 3-8, membranous; I. and II. unequal, oblong or lanceolate, 1-nerved; flowering glumes 1-6, all perfect, or the upper neuter, ovate, subacute or obtuse, 3-nerved, unless the veins often ciliate, the lateral veins submarginal; palea nearly as long as glume, 2-keeled; lodicules 2, cuneate; stamens 3; anthers short; styles free; stigmas short, plumose, laterally exerted. Grain subglobose, oblong, obovoid or trigonous, closely invested by, and sometimes adnate to, the glume and palea.

Spikelets 2-3-flowered *filiformis*.
Spikelets 4-6-flowered *chinensis*.

2708. *UWOCHLOA FILIFORMIS* Boeni. & Schult.; F. B. I. * ii. 294.

MrafiUformis F. I. i. 326.

in all the provinces.

A slender, ascending, annual grass.

2704. *LKPTOCHLOA CHINKNSIS* Nees; F. B. I. vii. 299; I. »

L. 300. *Poa chineiuus* F. I. i- 332.

A slender, erect or suberect, annual grass.

1106. *Gracilea* Koen.

Small, tufted grasses; leaves short. *** » « • 2 flowered, col-
leaves 4 in turbinato fascicles, which are sessile, — and articu-

late on a slender spike ; spikelets not articulate at base, callus absent; rachilla usually produced beyond the upper part of the glume, filiform, scaberulous. *Glumes* 4; I. and II. elongated, rigid, ciliate at base, and ending in rigid, scabrid awns; spikelets I. collateral at base and laterally attached to base of stem without II., with rather wide, hyaline margins ; III. flattened; chartaceous, ovate-oblong, cymbiform, shortly awned, palea as long as glume, 2-cuspidate, keels scaberulous, minute, cuneiform, truncate; IV. like III. but empty, bicuspidate, male; sometimes an imperfect flower of 3 glumes at end of rachilla; *stamens* 3; anthers of 3 small; *styles* free; stigmas slender, with short, simple hairs, laterally exerted. *Grain* linear-oblong, free within the glumes.

2705. GRACILEA ROYLEANA Hook. f.; F. B. I. vii. 284.

Behar.

A densely tufted, slender, annual grass.

1107. *Microchloa* 11. Br.

Slender, perennial grasses ; *leaves* filiform, convolute. very narrow, 1-flowered, minute, 2-seriate, unilateral on terminal, filiform, curved spike, not jointed at the base, rachilla jointed at the base, not produced beyond the glume III. *Glumes* 3; I. and II. empty, membranous, 1-nerved, keels persistent; III. very small, oblong, hyaline, awnless ; palea as long as glumes, keels ciliate; *lodicules* 2, truncate; *stamens* 3; anthers linear; *styles* distinct. *Grain* oblong, fusiform, glabrous, free within the hyaline glume and palea.

2706. MICROCHLOA SETACEA R. Br.; F. B. I. vii. 283. *Kottboellia setacea* F. I. i. 257.

C. Bengal; W. Bengal; Chota Nagpur.

A tufted, slender, perennial grass.

1108. *Cynodon* Pers.

Perennial, glabrous, creeping grasses; *leaves* narrow, flat, *Spikelets* minute, 1-flowered, sessile, unilateral, 2-seriate, imbricate in slender, strict, digitate spikes, not articulate at the base, laterally compressed. *Glumes* 3, awnless; I. and II. ovate, stoutly 1-veined, persistent or separately deciduous; III. articulate at the base by a minute, glabrous callus, broader, branched, 3-nerved ; palea as long as glume, 2-nerved ; lodicules 2,

^^ot; *stamens* 3; anthers short, thick; *styles* distinct, short, ^ bases contiguous; stigmas short, plumose, laterally exerted. ^{ratn} oblong, free within the glumes.

²⁷<>7. CYNODON DACTYLON Pers.; F. B. I. vii. 288; E. D. C. 2558.

***Panicum dactylon* F. I. i. 289.**

In all the provinces.

A slender, perennial, creeping grass. *Vernac.* Dúbh.

1109. Chloris Sw.

Annual or perennial grasses; *leaves* flat or convolute. *Spikelets* 1-flowered, 2-seriate, unilateral, on solitary, geminate, fascicled, di-gitate or whorled, terminal, erect or radiating spikes, not jointed at the base; rachilla jointed at the base, sometimes produced beyond glume III. and bearing one or more empty glumes. *blumea* normally 3; I. and II. empty, membranous, 1-nerved, ^ insistent, acute, mucronate, or glume II. awned; III. flowering, broad or narrow, awned, concave, 3-nerved, acute obtuse or 2-nd, ^{ai}ticulate at base; callus short, bearded; palea rather shorter, 1-nerved, complicate; *lodicules* 2, minute, when the produced Achilla bears empty glumes these small, epaleate and imperfect; *stamens* 3; anthers small; *styles* free; stigmas laterally exerted. ^{rain} narrow, free.

pikelets 1-flowered, with no rudiment of a second; rachis of spike ^{ill}tened..... *pallida*.

Pikelets 1-flowered, the rachilla produced beyond the flowering glumes; ^{the} of spike terete or angular:—

Achilla bearing one or two awns beyond the flower:—

Annual; spikes 1-5-2 in. long, alternate on the apex of stem

delicti tula.

Perennial; spikes 4-5 in. long, whorled..... *incoiupleta*.

Rachilla bearing one to three reduced empty glumes beyond the flower:—

^pikelets 2-awned..... *virffata*.

Spikelets 3-4-awned:—

Rachis scaberulous; spikelets 3-awned..... *harhata*.

Rachis glabrous:—

Spikelets 3-awned..... *polyttachya*.

Spikelets 4-awned..... *mon. ar.*

²⁷⁰⁸. CHLORIS PALLIDA Hook. f.; F. B. I. vii. 2H9.

Behar; Chota Nagpur.

A slender, filiform, annual grass.

2709. CHLOKIS BKUCATULA Clarke; F. B. I. vii. 390.
Chota Nagpur.

710. tHwrn INCOMPLKTA Both; F. B. I. vii. 290. *Melica*
dvgitata F. I. j. 326.

N. Bengal; BeharjOrissa.
2711. C* tall, Perenni al grass; stems 2-3 feet high <* higher.

I" most of the provinces.
2712. c, A st Utlish, inching grass, decumbent bolo*. D.
S T BAHBATA S w - 'p - 1 - i.«8i; F. B. I. *« *» ; *

In most of the provinces.
2713. CHtlr? 1n11, 6re0t gmss, geniculate or creeping ^ * " ^
S 7 ? PonnSTATH VA R 0xb.; p. I. i. 330; F. B. I- ^ * "
W. JBengal, rare.

A slender
2714. C ^ ^ ^ J j ^ l .L 329 .P; B. I. vii. ^ i -
W. Behar, rare.
An erect or geniculately ascending grass.

1110. Tripogon Roth.

Slend
ual, i t' S " S e f T " Staff S ^ leafy beloW ; leaves
1-2 terminal , * * o many-owered; flowers all, except
terminal spike not join e ^ &nd unilate> - l on a very slender,
th « glume?, j o U l at H \ at the base, rachis - prod « ced between
* s tan% superpc t i, r b a S ^ e f mes e many Land II. unequal,
lodged in a furrow Teth? , empty, persisten*; L usually
II. entire or B A J , e H W h l S > and tooth ed or lobed on one side ;
ing glumes o a e f * rsal W ^ illuc, o T M te or apiculate tip; flower
4nd with tiroN WM f ^ C o m e X > 2 fid T M A ^ the Cleft, b
rarely awned A ^ s f , f 8 W d e d , the inner ^ membranous and
broad or, n a l H o " " " * * * * ! « » U « short, bearded; V a l e u
« « » eate: stamen T ^ e , truncate, keels ciate; WirW* *
short, distant at the ' h Z ' T U t ^ B « » w » bloiig; ^ * ^
narrow, f ree in t) e g I u ^ ; s l g > aas short, plumose, drain veO

Awn as long as or longer than its glume.....capitata...
Awn shorter than its glume.....jacquemontii.

2715 « TRIPOGON CAPILLATUS Jaub. & Spach ; F. B. I. vii. 285,
Chota Nagpur, Parasnath.

271ft ^ s k n der, densely tufted grass.

a6 - TRIPOGON JACQUEMONTII Stapf; F. B. I. vii. 287.
Chota Nagpur, Tributary States.
A slender, filiform, tufted grass.

1111. Eleusine Gaertn.

perenni grasses; leaves long or short. Spikelets
-flowered; flowers all perfect except the terminal, sessile,
and secund, forming digitate, capitate, or whorled
coif. laterally compressed, not jointed at the base; rachilla
between the flowering glumes. Glumes few or many,
in the flowering glumes, subequal or
equal, persistent; I. lanceolate; II. lanceolate, acute or acumi-
nately ovate, or didymous with a short, stout, recurved
a; flowering glumes like the empty, 3-nerved; palea compli-
jtc, strongly 2-keeled; hdicules % cuneate; stamens 3; anthers
short; styles short, free; stigmas slender, laterally exerted.
train small, free; pericarp hyaline, loose or vanishing; seed
lose.

Spikelets pointing forwards at an acute angle with the lachis of the
pike;—

Glumes I. and II. with entire tips :-

Stems 1-2 feet high ; grain oblong: wild inhcari

Stems 2-5 feet high; grain globose : cultivated Coraana.

Glumes I. and II. with notched tips..... vernallatn.

Wets erect at right angles to the rachis of the spike *W

2717. ELEUSINE INDICA Gaertn.; F. I. i. 345; F. B. I. vii. 293;
E. D. E. 186.

In all the provinces.

2 feet high.

An annual grass, with a soft, stout stem, l-

Hind. Molankuri.

E p E. 170.

2718. ELEUSINE CORACANA Gaertn.; F. I. i. « * «

In all the provinces, cultivated-

An annual crop. Beng. Mama; tal i. * g 46; F. I. ? . L

2719. ELEUSINE VERTICILLATA Roxb.;

\ ii. 295 ; E. B. E. 190.

Behar.

An annual grass, with an erect, stout, or slender stem,
1-3 feet high.

2720. ELEUSINE JEGYPTIACA Desf.; F. I. i. 344; * B. i. vii. #5;
E. D. E. 166.

In all the provinces.

An erect or prostrate annual grass.

Unya Kakhuriya; Santal. Suntu-bukrm.

1112. Dincbra Jacq.

An annual, leafy grass; leaves flat. Sheaths 2-seriate, secund and imbricating on Bhort, slender, Bp deflexed spikes, collected in narrow, pyramidal racemes jointed at the base; rachilla slender, jointed at the base beyond the flowering glumes and bearing an imperishable glume. Glumes 4-5; I. and II. empty, persistent, much longer than III. and IV., lanceolate, awned, 1-nerved, keeled; H- longer than I.; III. and IV. very small, broadly hyaline, 1-nerved; palea hyaline, shorter than the glume; oblong, obtuse, keels finely ciliolate; lodicules 2, minute; 3; anthers minute, didymous; styles free, short; stigma at apex of glume, shortly penicillate. Grain narrowly obscurely trigonous.

2721. DINEBKA ARABICA Jacq.; F. B. I. vii. 297; E. V-

Eleusine cahjeina F. I. i. 346.

Western Behar.

An oimuai, tufted, leafy grass; stems 1-3 feet

1113. Oropetium Trin.

A dwarf, densely tufted, erect, annual grass; leaves 8 form. Sheaths very minute, 1-flowered, half-immersed alternating, distichous cavities of the rachis of a simple curved, inarticulate spike, sessile, not articulate on the rachilla articulate at the base, bearded, not produced flowering glume. Glumes 3; I. very minute, hyaline, empty, persistent; II. linear-lanceolate, rigid, recurved in fruit, emarginate; III. flowering, concealed by glume II., the cavity in which III. is hidden, sessile, oval, hyaline, tip KcaberulouH; callus very short, bearded with silky hairs; as long as glume, keels contiguous, slender, smooth; very minute, obliquely cuneiform; stamens 3; anthers oblong

styles short, their
erect, or
with glume
2722 0
Cronafce apex*

PROPKTIUM THOSLBUM Trin.; F. B. I. Vn. 366. *Rottboellia*
Behar.

v ^ Warf, densely tufted, erect annual.

1114. *Triticum* Linn.

Annual or
sessile
articulate or
obtus
s oblong
leaves or
the central
ciliate; stamens
ten hairy,
8728. T>r!

T. 634 T. * ^ wit_w p. i. i. 359. *T. sativum* K. D.

Cultivated generally in the western parts; sparingly in
J.Bengal and E.Bengal.
A tall, annual grass. Vn-nac. Gehuin, giyun. gom.
Wheat.

1115. *Hordeum* iina.

perennial grasses; leaves flat. Spikelets
in the hollows at the nodes of a simple,
imperfect; rachilla jointed at the
flowering glume and produced above it, with some-
imperfect glume. Glumes 3; I. and II. narrow, empty.
tent, the outer of each cluster of spikelets often
resembling an involucre; III. dorsally rounded,
narrowed into an erect or recurved awn; palea 2-keeicci,
2, ciliate; stamens 3; styles very short. Grooved
in front, adherent to the H.

2724. *Hordeum vulgare* Linn.; V. J. f. 171; K. D. H. 373.
U. liejcatlichon F. I. i. 3⁵⁸.

Cultivated in the western parts.

An erect, annual grass. Vernac. Jao. jab. Barley-

1116. Bambusa Schreb.

Shrubs or trees, usually ^{lai}^e and c^spitose, rarely climbing;
 stem-sheaths broad, blade ^{Often} ^angular; leaves short-petioled,
 not tessellate by nervules ^{but} ^{someti} ellucid glands;
 sheaths variously auricled. ^{Spikelets} 1-many-flowered, generally
 disposed in a large, leafless Panicle, bearing ^ o || spiciform
 branches, or in leafy panicles or in paniced spikes. ^{lunes} ^{flanc} / eolate,
 1-4, empty or bulbiferous; ^{ng gl} ^Z es ova e
 uppermost impect; palea 2 keeled J fo * 2 or 3, membra-
 nous, ciliate raffi , ns 6, free; ovary oblong or
 oblong or line^M, y-6S Short or loi>g; ^igmas 2-3. Grain
 adherent. ^{oblon} S. Arrowed on one side; pericarp thin.

Shrubby; stems not spinous; blade of stem-sheaths linear.....

Arborescent :—
Stems not spinous :~
Leaves narrow, obscure; blade of stem-sheaths triangular or reni-
fo with cordate base Tulda.

Ligules distinct :—
Ligule of stem-sheaths ^ ; , toothed leaves broad y *angu-
lar, membranous; blade of stem-sheaths 2-morphio, Jo << short,
wide, ciliate with rounded ^{UPPER} ^ t , triangular ... ^ lrooa.

Ligule of stem-sheaths toothed short and
ciliate ; blade of stem-sheaths trianRUJa_r, with rounded base
rulgaria.

Stems spinosa

2725. BAMBD₃ NANA Roxb.; F. I. «• 199; P. B. I. «i. 390;
" E. D. B.*133.

Cultivated.
rf, shrubby bamboo, 6-10 feet high; native of
Beng. Chhota bans.

2726. B
E. D. B. 144.
C. Bengal; g. Bengal; Chittagong; Orissa.
rious bamboo, 20-70 feet high. Hind. Peka :
ulda, djowa, mitenga, matela bans."

*727. BAMBUSA BALCOOA Roxb.; F. I. U. 196; F. B. I. v. 13. 1. 391;

E. D. B. 129.

Tirhut; N. Bengal; C. Bengal; E. Bengal; A large bamboo; stems 60-70 feet high.

balkua.

2728. BAMBUSA VULGAKIS Schrad.; F. B. I. vii-

B. 149.

Cultivated.

A large bamboo; stems somewhat remote, high; native of Malaya. Basim bans.

2729. BAMBUSA AHUNDINACEA Willd.; F. V. V. W. E. D. vii. 395; E. D. B. 118. B. spinosa F. 1-

B. 139.

In most of the provinces.

A tall, thickset bamboo; stems find. Bans, kattang, magar bans, nal Bans, behar bans; Kol. Katanga; Snntai.

1117. Gigantochloa Kurz.

Trees or large, climbing shrubs; stems simple below; sheaths usually stiff, hairy above, auricled; leaves few, in heads on the long, spiciferous branches Panicle. Lower glumes 2-3, empty; flowering palea of all the flowering glumes 2-keeled; lodicules 1-3, sometimes obsolete; stamens connate in a short, thick, at length elongated, membranous; stigmas 1-3, hirsute. Grain usually near and furrowed; pericarp membranous.

2730. GIGANTOCHLOA MACROSTACHYA KUNZ, F. B. I. v. 13. 1.

G. 212.

Chittagong.

An evergreen bamboo; stems 60-70 feet high.

1118. Oxyten

Trees or large, climbing shrubs; root system or stoloniferous; stem-sheaths like large or small, shortly petioled. Drac or conical, 1-3-towered, with terminal capitate or whorled in few or many large panicle.

mucronate ; palea of lower flowers 2-keeled, lute, with keel obscure or obsolete ; *lodicules* filaments connate in an ultimately elongated, ovary ovoid; style slender; stigmas 1-3, Grain elongated, beaked, smooth.

Stem-sheaths 10-12 in long, by U-10 in. w Stem-sheaths 6 in. long and broad

2731. OXYTENANTHKRA AURICULATA Prah. F. B. I. vii. 396. *Gigantochloa auriculata*

Chittagong.

An evergreen bamboo ; stems 40-50 feet high.

2732. OXYTENANTHERA NIGRO-CILIATA MuiU'O ; E. D. O. 610.

Orissa; Chittagong.

An evergreen bamboo; stems 80-40 feet high.

1119. *Dendrocalamus* Nees.

Trees, unarmed; rootstocks densely branching; petioled, transverse nervules replaced by pellucid glands in globose clusters on the long branches of panicle, ovate, 2-6-flowered. Empty glumes 2-3 many-nerved; flowering glumes like the empty; flowers keeled, of upper dorsally rounded, eciliate, stamens 6; filaments free; ovary hairy above, often stigma usually simple. Grain small; pericarp crustaceous.

Stem-sheaths with a narrow ligule; spikelets crowded, hard, in spicate Loads:—

Spikelets coarsely hairy; anthers apiculate.

Spikelets softly silky; anthers obtuse.

Stem-sheaths with a broad, serrate, and often fimbriate ligule, few, in small heads, many of them sterile.

2703. DKNDROCALAMUS STRIOTUS Nees ; F. B. I. vii. 404 ; D. 292. *Bambusa stricta* F. I. ii. 193.

Behar; Chota Nagpur; Orissa.

A close-set bamboo ; stems 20-50 feet high, of ten

Hind. Bans kaban, bans khurd, kopar; Beng. arail;

Kol. Mathan, saring, burumat; Santal. Burumat.

2734. DENDROCALAMUS SERICBUS Munro; RB_Lvii_404 JE*D<
D. 291.

Chota Nagpur, Parasnath.

A close 6 stems 20-50 feet high
2735 « DEN DROCALAMUS LONGISPATUS Kurz; F. B. I. viL 407;
** D. 286.

Chittagong.

A large bamboo, leafy above only ; stems 60 feet.

1120. Melocalamus Benth.

Shrubby of ... Scandent from a stout rootstock; stem-
sheaths hard ... leaves large? petioled, transverse
... dense heads (very small) in large panicles;
... produced beyond the upper glume. Empty
... nianynerved; flowering glumes 2, bi-
... ciliate; ... ciliate; stamens 6; filaments short,
... ovary ... 5 pericarp tough;
... fleshy.

2736. MELOCALAMUS COMPACTIFLORUS Benth.; F. B. I. vii. 409.
TIPPERA; Chittagong.

A semi-scandent bamboo; stems 25-100 feet long,
spreading and arching over tall trees.

1121. Teinostachyum Munro.

Shrubs or small trees; stems thin, arching; stem-sheaths
usually thin; ... Spikelets in bracteate whorls,
arranged in ... panicles on leafy branches, long, narrow,
many-flowered; upper and lower flowers imperfect. Empty
... mucronate; flowering glumes similar, with longer
... convolute, its keels ciliate; lodicules 3, 3-9-nerved;
... filaments free, slender; anthers obtuse or obtusely
apiculate; ovary ovoid or depressed-globose; apex produced,
... 2-3, plumose. Grain ovoid, acuni-
... beaked; pericarp crustaceous.

- stem-sheaths auricled Gri/ithii.
- sheath3 not aurioled Dullooa.

2787. TEINOSTACHYCM GRIFFITH!! Munro; F. B. I. vi. 410.

Chittagong.

A rather small bamboo; stems 25-50 teen
subscandent.

2738. TKINOB TACHYTJM DDLLOOA Gamble; F. B. L % ii. tjj.

N.Bengal; Tippera; Chittagong.

A rather small, subscandent bamboo; sc
high. Vernac. Dulhua.

1122. Cephalostachyum Munro.

Shrubs with slender, straight stems; stem-sh"aths auricled;
feav* shortly petioled. 8\$ikeleU in terminal, globose heads in »
panicle of braoteate heads, 1-flowered, elongate; rachillfw ^, fy,
beyond the floving glumes. Empty ^um«t 2-8. ^^ ^ produced
many-merved, usually long-awned; flowering glumes IIIo ^ mem-
branous, convolute, awns shorter; palea thin, m«ay-nerve k, cells
2, late; i:

approxin '<>tUculc* 8, 8-5-nerved; ««a
stigmas 2-7 stipitate, ovoid, narrowed into a long, thiokel

2739. CE plumose. Grain oblong, beaked; perioan

E. SHAL 980 Acai iBORACiLa Munro; F. B. *
Chota Nagpur.

A large, deciduous bamboo; Blms 3>^"10 feet high.

1123. Dinochloa liuese.

Large evergreen climbers; stems zigzag, usually covered with
persistent sheaths; nodes with a broad, leathery ring left by the
sheath; stem-sheaths thick, loosely clasping, also wrinkled;
leaves large, rather soft, transverse nervules represented by
pellucid glands. Spikelets 1-flowered, very Dany, voi y! i
subglobose, sessile; heads on short branchlets, form; large,
comp. die hi rachilla inarticulate, noi produced. Empty
>und [Miiiele; rachilla inarticulate, noi produced. Empty
glumes 1-1) broad, very obtuse, upper gradually larger; /
glumes imilarj palea convolute, M>t I teeled, asloig as or longer
than the glume; lodicules 0; stamens 3, free, short; ovary ovoid,
glabrous; style short. Grain ovoid. acini, !,, te.

2740. DINOCHLOA M'CLELLAN El Km; F. B. I. vii. 415. N. D.
D. 448.

Chittagong.

A lu ge, climbing bamk>o; sterna 100 feet long.

1124. Melocanna Trin.

T: ces, unarmed; stems solitary. distant on the **brat** of the
 <(H)Utock; stem-sheath short, **brittle**, shortly **auri**
 very long; **leave** a **broad, petal**ed, sm "oth. *SjnkUts* 2-3, fascicled
 in bracts in the axils of 1-seriate spikes, arranged in a large, ^T
md panicle, **fee**, umbra with 1 **tori** ar' <* 1 or more steru
 flowers. *Em*, ty < *jlumes* indefiniU-, **acuminate**, uiucronato, stnate,
flower mg *ylumc** similar; **palea** like its glume, convolute, noi
 —led; *lodieul* es 2, narrow; •(amen • 6^7, free or irre^la
 connate; *ovary* glabrous; *style* elongate; *stigmas* 2-4, ...ortly
 hairy. **Fruit** very large, **pyrifonn**, long b. **with** a very **tnto**"
 Pericarp; *seed* with large embryo and no albumen.

27 ii. M **MELOCANNA BAMBUSOIDES** Trin.; 1 • B. I. vii. 417; b- U-
 M. 425. *Bambusa baccifera* I. ii. 197.

Chittagong.

An evergreen bam **boo**; stem * discrete, solitary on
 branches of the rootsto < k, 50 I 70 feet high. **Bet** 19. Muli,
 metunga, bi sh.

B.—ORyPTOQAMIA,

V I i I, l « I S.

Herb., rarely **shrub**, or **to** short or lon erect or
 creeping often scaly; **J** ronds simple or variously, o... L mu
 Wdorcut; in bud uall, circinate, very rarely erect. *Sporangia*
 1-celled, ... l, sur-
 rounded by a complete ... some-
 time • with the ring < on fin to ... of the capsule so as to
 the **ri**, lg obsolete or absent; U, ... tori of
 defined but varied form, with or without a covering indusium;
 • IK- the siK.ru: **Lctoai.** ... paniculate, rarely laxly
 at ... the •poran « " ^ " " T ^ ^ , ... many-celled, fleshy
 or corky receptacle of variable form, opening by ... on
 the upper s ... all of one
 kind.

opening inwardly towards midrib of frond :—[p. 1238]
 Sporangia on the under side of the leaf margin of the frond :—
 Adiantum.
 Sori on the under side of the frond :—
 Us of them

Supporting sori on their receptacles passing more or less to the margin :—
 Utricularia
 Sori terminal or subterminal at least at first, discrete :—
 Sori on a slender, upright stem :—
 indusium, connecting the sori :—
 continuous :—

Sori small and narrow, the receptacle connecting the sori :—
 Begonia
 Sori conspicuous, the receptacle connecting the apices of the veins :—
 Pteris.

Veins supporting sori 2-3, longitudinal, nearly parallel both to midrib and margin :—
 C. «ratopteri».

Sori remote from margin of frond :—[p. 1238]

Indusium linear or oblong :—
 Fronds simple or variously once or oftener pinnate :—
 Indusium membranous, parallel and close to and opening towards midrib :—
 Bladderwort.
 Indusium divergent from midrib, single and opening towards midrib, or double and opening both towards midrib and margin of leaf :—
 Asplenium.
 Fronds palmately flabellate :—
 Actinopterygion.

Indusium reniforme :—
 Pinnae mostly divided, not articulate :—
 Nephrodium.
 Pinnae always bifurcate at base with white, cretaceous dots above :—
 Hepatica.

Sori without an indusium :—[p. 1238]
 Sori on the back of the lobes confined to the veins :—[p. 1240]
 Polypodium.

Sori round or terete slightly oblong :—
 Sori linear :—

Veins not all sori-bearing :—[p. 1240]
 Sori generally distributed on the sori-bearing veins :—
 Gymnogramme.

Sori on the main-vein :—
 Sori on the transverse connecting vein :—
 Hymenophyllum

Sori circumscribed to a marginal or submarginal line parallel to midrib and margin of frond :—

[Alsophila.

- Fronds all **similar, grassy** Vittaria.
- Fronds dimorphic Drymoglossum.
- Veins freely anastomosing, all soriferous [p. 1289] itis.
- gSori not confined to the veins but spread over the whole under surface of the fertile frond [p. 1289] Acrostichum.

1126. Alsophila B. Br.

Tree ferns, with tall caudex ; *f ranch* **deconip** <> UD dly pinate ;
 is simple, forked or pinnate, not **anastomosing**. \ Sori g lobo9ti
 dorsal, on a vein or **at** the forking of a vein ; **gporang** ^ ^ rous,
 often compact, generally on an elevated receptacle, ^ us,
 obovate, with **a broad**, vertical or suboblique, elastic **rim**
 absent.

Segment I of fronds subfalcate, **linear-oblong**, entire uV l' hly crenate,
when fertile often contracted ; veins **forked** and **often B-** b ^ CHI

Segment Lento of fronds triangular or rounded, rarely o\ ate, serrate ; vein ^
 stipitate gl

2748. Ai.sui'iiiLA Q LAUCA -I. Sin. ; P. I. C. 12.
 Chittagong.

A lofty **tree-fern**.

271 J. & LBOFHXLA -SLABrk Hook. ; F. I. - * - 11-
 Chota **Nagpur** ; Chittagong.

A tall **tree-fern**.

1127. Trichomanes Smith.

Small, often inimitable herbs, growing **on moist** trunks and
 rocks ; caudex often long, filiform, creeping ; fronds delicately
 membranous, simple or **compound**, costate ; veins 811 simple or
 branched, never anastomosing. Sori marginal, always *e terminating
 a vein, **mon** or less sunk in the frond ; *indusium* tubular, like the
 mouth of the indusium, the mouth truncate or winged, < f^{1,11},
 receptacle bilobed, elongate, often considered inserted beyond
 the mouth of the indusium ; *sporangia* confined nearly to the base
 of the receptacle, orbicular, imbricate, subpeltate, compressed,
 surrounded by a complete transverse ring, and opening vertically.

Caudex a wide-creeping, slender, tomentose **koserhii** some pyxidifer n.
 Caudex **Ktafudwith** strong, wiry roots jaranica.

2745. TRICHOMANES PYXIDIFERA **urn linn.; P. L. C. 42. T. cam-**
mulatt F. I. 763 (Ed. C. B. C.).

Chittagong.

A creeping, villous filmy-fern.

2746* TRICHOMANES J. WAXHTM III. ; P. L. C. 44.

Chitta L'ong.

A (') :d, rather **wiry filmy-fern.**

1128. Davallia **Smith.**

Herbs i with usually **wide-cr**eping, scaly roots' lock; fronds very
variously **divided**, small or large, herbaceous or coriaceous; veins
always free. Sori marginal or **Submarginal**, globose or elongated
either laterally or vertically; **inducium** apical on **veins**, always
at the apex, the sides variously free or united.

Inducium attached by a wide base, with the sides free :- -

Rhizome more or less liyoprrifil, fibrillose..... **wultrifera.**

Rhizome epigeal, stout, scaly :-

Scales narrow, lanceolate; indusium evanescent **davaformis.**

Scales broad, obtuse **pvlchra.**

Inducium subcylindrical, attached by sides as well as base:—

Rhizome stout; fronds subcoriaceous, hairy on the rigid, prominent
veins **strigosa.**

Rhizome rather slender; fronds herbaceous; hairy throughout the
under side; veins neither rigid nor prominent **Spelunca.**

2747. DAVALLIA MULTIFLORA Roxb. P. L. 761 (Ed. C. B. C.).
Lencoxia immersa F. I. C. 51.

Chota Nagpur.

A creeping fern, with stout, usually buried rhizome.

2748. DAVALLIA DABJURBENS Sw.

Chittagong.

A creeping fern, with finely cut fronds.

2749. DAVALLIA PULCHRA Don. **Leucostegia pulchra** F. I. C. 52.

Chota Nagpur.

A creeping fern, with finely cut fronds.

2750. DAVALLIA STRIGOSA (L.) **Jw. Microlepia trigram** P. I. C. 67.

Chitta

A tall fern, with lanceolate, 2-pinnate fronds.

2751. DAVALLIA SPELUNCA (L.) **D. pilosa** F. I. 761 (Ed.
C. B. C.). **Microlepia Spelunca** F. I. C. 67.

[Lindsaya.

Chittagong.

A tall fern, with ovate or deltoid. 8-H»

1129. Lindsaya Dryand.

ngoav

Ferns, with more or less creeping rhizomes; fronds with unilateral, rarely equilateral pinnae; veins free; sori marginal or submarginal, placed along the outer margin, the inner valve membranous, the outer formed of modified margin of the frond.

Pinnae unilateral; veins free:—

Bhizome short; pinna fewer than 10 pairs, their upper lobes lobed or nearly entire. h ir upP** *^

Bhizome long, creeping; pinna 40 or more pairs, lobulate-crenate. "

Pinnae equilateral, lanceolate to linear-acuminatenuose; veins free; sori marginal or submarginal, placed along the outer margin, the inner valve membranous, the outer formed of modified margin of the frond.

2752. LINDSAYA CULTRATA Sw. in Prodr. Fl. Ind. : P. 1. C. 72. L. odorata F. I. 760 in Ed. C. B. C. ».

Chittagong.

A short-creeping fern; rhizome slender.

2753. LINDSAYA REPENS Thw.; F. I. C. 74. L. odorata F. I. 760 (Ed. C. B. C.).

N. Bengal, Duara.

A wide-creeping fern; rhizome slender.

2754. LINDSAYA ENSIFOLIA Sw. Schizoloma ensifolia F. I. C. 80. Chittagong.

A creeping fern, with stout rhizome.

1130. Adiantum Linn.

Ferns, with tufted roots or a creeping rootstock; fronds with pinnae unilateral; veins free. Sori marginal, linear, usually many and discrete, some confluent; the same in shape as the sori, reflexed margin; the frond, bearing the sori on surface, and opening towards the midrib or stalk.

Stipes naked, polished; pinna with rounded, more or less lobed upper edge, subdimidiate

Stipes tomentose; pinnae with deeply, often repeatedly cut into

k

2755. - *Adiantum hirsutum* Barm.; P. 1. C. 82; E. D. A. 506.
Pteris ritlunuaia P. r. 758 (Ed. C. B.C.).

In all the provinces.
A tufted, wiry. Bimply pinnate "Maiden-Hair" Fern.
vernac. Ké•li-jhant.

2756. *Adiantum caudatum* Linn.; F. I. 760 (Ed. C. B. C.);
P. t. C. 83; E. D. A. 601.

In all the provinces.
A tufted, wiry, limply pinnate "Maiden-Hair" Fern.

1131. *Cheilanthes Bwarte*.

Herbs, usually densely tufted; fronds subcoriaceous or racem-
bracteate; tuberculate, often powdered beneath and white or
yellowish; veins In me. Sori terminal or nearly so on the veins, first
small, subglobose, ultimate more or less confluent; indusium
formed of the reflexed and modified margin of the frond, roundish
and distinct or more or less confluent, but never wholly continuous.

Fronde Aubim-mbi anous, n. powdered beneath:—
Roots tufted; rachis not winged; pinnules lanceolate, acuminate or
acute, pinnatifid below, with acute teeth *varians*.
Racemose shortly creeping; rachis winged above; pinnules elliptic,
oblong or oblong-lanceolate, subpinnatifid or crenate, with broad, blunt
teeth *tenuifolia*.

Fronde BubooriaoeouB, white and powdery beneath; roots tufted
farinosa.

2757. *CHEILANTHES VARIANS* Will. : P. I. C. 91.
N. Bengal, Dnars; E. Bengal, Hymensingh; Tipperft;
Chittagong.

A small, graceful, tufted fern.

2758. *CHEILANTHES TENUIFOLIA* Swartz; F. I. C. 92; E. D. A.
C. 9*6.
Chota Nagpur; Behar; N. Bengal; E. Bengal; Chittagong.

A small, annual, graceful fern. Santal. Nanha, dodhari.

2759. *CHEILANTHES FARINOSA* Kaulf.; F. I. C. 92. *Pteris bicolor*
F. I. 758 (Ed. C. B.C.).

Chota Nagpur.
A small "Sunder-Fern."

1132. *Onychium Knulf*.

Tufted herb.; fronds ovate, alternately decussate, the ultimate

mate **pinnule*** linear, small, almost entirely continuous. *Sori* situated on a continuous linear receptacle; the apices of several veins : *indusium* parallel with the segments, linear, opposite, depressed over the almost or quite reaching the midrib.

I Stipes naked
 Stipes scaly at the base

2760. OKYOHIMUM AURATUM Kaulf. ; F. I. C. 9ft.

P.I. T.vi (Ed. c. B. C.).

E. Bengal; Tippera; Chittagong.

A handsome "Golden-Fern."

2761. ONYCHTUM JAPONICUM Kunzfi; P. L O. 96.

(Chittagong.)

A handsome "Golden-Fern."

1133. Pteris Linn.

Stipes, small or large, tufted or with a creeping rhizome; *frond** very variable in size, shape, and division, the margin of the *indusium* never reaching or even approximating to the midrib of the pinna; veins free or variously anastomosing. *Sori* marginal, 1 incur, continuous, situated on a woody receptacle in the axis of the involucre, connecting the numerous veins; *indusium* in shape like the *wool*, branched, at first completely covering it, ultimately spreading, opening towards the midrib.

*Veins mostly free :- [p. 1245]

All the veins quite free:— [p. 1245]

Lowest pinna linear, undivided, margins of pinna; entire.

Stipes tufted, roughish, woolly when young, harsh in old

Stipes single, from an elongated cat; leaf, smooth

Lowest pinna more or less divided, at least on some fronds:—

Lowest fertile pinna usually merely forked or 3-fid:— [p. 1245]

Margins of at least the sterile pinnae spinulose-serrate

Margins of the pinnae never spinulose:—

[Margins of sterile pinna undulate, crisped or crenate; veins

Upraised horizontally outwards from midrib (p. 1245)

2767/2. **Var. BLUMIANA** F. L. O. 112. *i*¹. *quadriaurita* F. I.¹⁵⁹
(E.C. I. C.).

Chittagong.

A very large, handsome fern.

2768. **J. PTVRIS BIAUBITA** Linn. *Catnpteria* *ritata* *j* < . U*

In most of the provinces.

A large, handsome fern.

2769. **PTKHIS (IKMIXATA)** Wall. *Camptena* *Klt* *iniana* *r* | C. 116.

Uota Nagpur; Orissa; Chittagong.

A large, handsome fern.

•2770. **PTBEIS UDKNS** Wall. *P. muUifida* F. I. 7¹⁰ [*r* M. B. C.).
Doryopteris ludena F. I. C. 120.

Orissa; Chittagong.

A fern; rhizome creeping fronds

1134. *Ceratopteris* Brogn.

A succulent, annual, tufted herb of wet places; fronds dimorphic, compound, the barren pinna broad, lobed, the fertile pinnae linear, veins anastomosing. Sori situated on two or three veins longitudinally down the fertile pinnule, nearly parallel to the midrib and edge; sori scattered on the fertile pinnae. Bubglosr. with a wing variously complete, partial or obsolete; indusium consisting of the reflexed margins of the frond, the two sides meeting again at the midrib.

*2771. **Cm:vi OPTERIS THALICTRIFOLIA** Brogn. *i* *¹ C. *23. *Pteris succulenta* F. I. 159 (Ed. C. B. C.).

In all the provinces.

A herbaceous, succulent weed of wet places.

1135. *Blechnum* Linn.

Rigid herbs, with usually a stout, suberect or erect caudex, rarely twining; fronds usually with numerous, linear, nearly contiguous pinnae on each side, rarely somewhat dimorphic, very rarely simple or 2-pin-nate; veins usually free. Sori linear, contiguous to the midrib; indusium membranous, distinct from the margin of the frond and opening towards the midrib.

2772. **BLECHNUM ORIENTALE** Linn.; P. J. C. 182. *B. moluccanum* F. I. 757 (Ed. C. B. C.).

Chota Nagpur; Chittagong.

A large fe., with a stout. *;:,!> .—>« »^d ^ " ^ iron ds.

1136. Asplenium Linn.

Herbs, tufted or with creeping r©ststock; fronds very variously
 simple, pinnate or **a-more-pinnatifid**, herbaceous or co.
 veins usually free, sometimes **Lirin'or** at their apices | a mar-
 vein or, less often **R anac -tomo**, ing towards . *c ""
 throughout the exte **at of the frond. Son attached to the , *t a**
 dorsal or subm **Kginal, linear or oblong, usually obUque.**
 reference to the mi **drib, generally atraight, o«** ^/ > ' ' ,
 indusium plane or **tumid, Bimilar b** a shape to the sorus, single and
 opening tow **ird tb. Lb, or donble and opening outwa** rd as well.
 *Veins passin **8 from midrib to margin with** out anastomosing:—[p. 1248]
 Vein **M connecU'd at their apices by an Lntramai** ginal line P^{ft} rallel with
 the edge o(**tho simple frond; indu sium simple, linear:—** ab)UI nilU-
 Midrib round. **d throughout or, the buck; whing** Nidus.
 way to margin of frond..... **Vrreachhi^ f.** om
 Mi **drib n** ounded and promin **it only below; sou** .Simonsianu^ .
 midrib nearly to margin of frond.....
 Veins U: ee:—

Indusium simple, oper **ling towards midrib** :—
 Indusium str. **•tight, linear or oblong:—**
 Fronds once **l'innate: ~**
 l'i: **i loddl** n the **upper si.i** e, the
 in- **parallel with main** -rachis, the lower side
 obliquely **tn.** ncate; sori in long, irregular lines, reaching
 nearly to **the margin.....** **turn***
 Pinnæ w **ith two-tb** rds of the lower side cut away; sori neither
 reac. **•biiiK midrib noi** margin..... **unilaterale.**
 Fronds with pinnæ cut nearly or quite to the rachis in the lower
 part, **with** stalked, ovate-rhomboid, deeply toothed lobes
 laciniatum var. depauperata.
 Indusium turn more or less ci **rved:—**
 Fronds 2-pinnatifid, 1.5-2 in. wide **drepanophyllum.**
 Fronds 3-4-pinnatifid, 6-12 in. wide:—
 Fronds finely 3-pinnate, 4-pinnatifid
 Filix-femina var. pectinata.
 Fronds **b ooarielj S-ptoi** nate, 3-pinnatifid **-|i#hi it.**
 Filix-femina var. paramai.....
 Indusium **igoui»¹** **towards midrib:—**
 (P **rondii** simple, .entire or neo> **lanceum.**
 only so ^{iv}, [1248]

- Fronds more or less pinnately divided :—[p*^{ia 47}]
- Fronds simply pinnate in the lower half to three-^{^((ulvicO^e}
- Pinnae entire or nearly so.....;
- Pinnae** divided **two-thirds** towards rachis into o^{^,,,v<'"}
toothed lobes
- Fronds copiously 2-pinnate:—
- Sori** linear, beginning near midrib **but fall*****
the margin ; indusium often only double on the
- Sori short, oblong, only near **midrib**, often ^{BOtJ}
and with double **Indusium** irregularly mixed...""

•**VeJhs freely** anastomosing :—{jp. 1247}

- Indusium single, opening towards midrib ; veins free in n^a the [^]margin
nearest midrib, copiously anastomosing in the half ^{ne8^}aygoni^{anum.}
- Indusium double, opening both towards midrib and ***&^{Xo}rpo*[']
veins anastomosing copiously throughout.....

- ^77d. ASPLENIUM NIDUS Linn. ; F. I. 755. *Thamnopis*...
F. I. C. 137.
Chittagong.
A tufted, cup-shaped " Bird's-Nest Fern." \$00\$'
2774. ASPLENIUM SIMONSTANUM Hook. *Thaninoptens*
siana F. I. C. 141.
Chittagong.
A tufted, cup-shaped "Bird's-Nest Fern."
2775. ASPLENIUM FALCATUM Laink ; F. I. C. 150. *A. M^{oH}* Oc-
moides F. I. 755 (Ed. C. B. C).
Sundribims; C.Bengal; E.Bengal; Chittagong-
A small, tufted fern.
2776. ASPLKNIUM UNILATEBALE Lamk ; F. I. C. 152.
Chittagong.
A small, tufted fern.
2777. ASPLENIUM LACINIATUM Don var. DEPAUPERATA 0**^{'e;}
Y- I. C. 154.
Chota Nagpur, Paraanath.
A small, tufted fern.
2778. ^{ABW,} Wi BREPANOPHYLLUM Bak. *Athi/viuni falcatum*
F. I. C. >•164.
Chota Nagpur, Parasnath.
A small, tufted fern.

2779. ASPLENIUM FILIX-F(EMINA Bernh. var. PECTINATA Wall.;
F. I. C. 169.
Chota Nagpur.
A graceful, tufted fern.
- *779/2. Var. PARASNATHENSIS Clarke ; F. I. C. 170.
Chota Nagpur, Parasnath.
A small, tufted fern.
2780. ASPLENIUM LANCEUM Thunb. *Diplazium lanceum* F. I. C.
174.
Chittagong.
A small, creeping fern, with simple fronds.
2781. ASPLENIUM BANTAMENSE Bak. *Diplazium hantamense*
F. I. C. 177.
Chittagong.
A small, creeping fern.
2782. ASPLENIUM JAPONICUM Thunb. *Diplazium japonicum*
F. I. C. 180.
Chittagong.
A suberect or creeping fern.
2783. ASPLENIUM POLYPODIOIDES Mett. *Diplazium polypodioides*
F. I. C. 184.
Chittagong.
A large fern, with an erect, stout caudex.
2784. ASPLENIUM MULTICAUDATUM Wall. *A. woodiardioides*
F. I. 756 (Ed. C. B. C). *Diplazium umbrosum* var. *multicaudata* F. I. C. 190.
Chittagong.
A large fern, with an erect, stout caudex.
2783. ASPLENIUM FINLAYSONIANUM Wall. *Hemidictyum Finlaysonianum* F. I. C. 195.
Chittagong.
A tufted fern.
2786. ASPLENIUM ESCULENTUM Presl; E. D. A. 1582. *Amsogonium esculentum* F. I. C. 192.
In most of the provinces.
A large fern, with an erect, stout caudex.

1137. Actinopteris Link.

A small, graceful, tufted herb ; *fronds* with long stipe, orbicular, flabellate-palmate. SoW linear-elongate, submarginal; *tridnsiuvi*

[Actinoptera]

to shape like the *Borua*, folded over it, placed one on each side of the narrow segments of the frond, opening towards the midrib.

2787. *ACTINOPTKIBIS DICHOTOMY* Bedd.; P. * C, 197; E. D.

A. 448.

W. Behar; Chiota Nagpur.

A small, densely tufted fern, resembling palm; in dry, rocky places

1138. *Nephrodium* Bich.

Herbs, tufted or creeping, small or large; fronds very variously subsimple or pinnate or decomposed, membranous or herbaceous or subcoriaceous in texture; veins free, simple or forked, or variously united or anastomosing. Sori subglobose, dorsiventral or terminal on the smaller veins; in *dunim* reniform-cordate, attached by the sinus, firm and herbaceous, less often membranous, occasionally obsolete or evanescent over some sori.

When the indurium is obsolete or evanescent over a frond the species is apt to be referred to *Polypodium*, from which genus it is then no longer distinguishable.

Veins all quite free:—

Fronde simple or, rarely, partially twice pinnate:—

Veins simple; fronds simply pinnate:—

Stipe without utricles below the frond:—

Pinnae caudate at the tip *calcaratum* var. *ciliata*.

Pinnae obtuse at the tip *calcaratum* var. *sericeum*.

Stipe with auricles below the frond *calcaratum* var. *fulcibola*.

Veins forked; fronds sometimes partially 2-pinnate *cochleatum*.

Fronde 3-pinnate *crenatum*.

Veins more or less confluent:—

*Veinlets of contiguous groups united, but with no general and copious anastomosis:—[p. 1251]

†Veins of the same group not uniting among themselves, confined to the veinlets of contiguous groups; fronds large, pinnate:—[p. 1251]

‡Rhizome wide-creeping:—[p. 1:161]

Lower pinnae hardly if at all reduced *pteroides*.

Lower pinnae conspicuously reduced:—

Rachis and lower surface of fronds densely pubescent; sori subterminal *unitum*.

Rachis and lower surface of fronds naked or nearly so; sori in rows midway between midrib and edge of lobe *aridum*.

1. JAVODIAC 1

»Uu<lc x crtct or suberect —[p 1250]

Minnie entire or slightl) lobed, so that most of the veinlets of contiguous groups unite —

Son clobe to the midrib

tiondshrmj herbaceous or subconaceous, puiu law "Hum
on both sides *ufpyhi*
ambouense.

Fronds thin papery, not punctate dotted *omuaerum*

Son medial oftneil) so *r*--*

T "me cut half way down to the rachis, so that onh the lower inlets of contiguous groups unite —

Lobes bluntly snbfalcate, fronds usually more or less pilose on both sides , son distant from the midrib *moll*

Lobes oblong, not subfalcate , fronds usualh only pubescent on the veins , son medial or nearly so —

Htem and rachis scaly , lobes of frond subacute, <»»
Hlightl) nearer the margin than the midnb *crmtpe**

Htem and rachis nuked oi slighth pilose, not scaly , lobe" of frond square cut and crenated at the apex , w>n slightly "tarcr tht midrib than the margin *tnmcatum.*

of the same group more or lesh uniting among them*!"

v ith union of vnlets of contiguous groups [P 1250] J

Sillies tufud copiou8l> bewt witli black linear subulate beak*. f IOHHH pinnate, * ith pinnatifid apex, about a foot long secondar> »n of veinlets not aUayspiresent in fertile fronds

Stipes 2 6 feet long, shortly hirsute, without scales, on a frout. *mrbrant(o''M*

Rubarborescentcaudex with scaly crown , fronds 2 3 pinnale. ^ *some*

Stipes 0 feet long **'A^My*

Stipes firming u copious ind general anastomose wit *My*
included tmltth in their aitolic, -on oopioui.. irren *partly*

1* »ith distinct areolie formed by strongwh *transverse, secon*
inlets uniting main \tius inclosinK i> *meshes smaller*

I veinleU, or bimpk or forked \eniH, or *^oih* ^ w l h e i ^ ^ e
Stipes and rachis narrowly <mK^wl nearly or ^, " ^ ^ ^ *lRwo\m*
(fronds pinnately lol>ed), scattered on a ireejunk M ^ ^ ^
enclosing both netted veinlets and simpk *or for k*

Sonsnill scivtUrd on the netted \unleU *nlets* *decurrens*

Sonlurgt ntarlyUrt>h terminal on free %ci *scaly near*

Slip., and luchiH not *mged (fronds ^ ~ *addid* *4 -*
tht bust, artolie copious with manv fw *pinnlk* *lobed*

• sup,, tufted, on a Mibciect ^ e 1 ^ » ' ^

»i pinnatihd f son usuall> large —[P

[*Nephrodium*.

Sori almost always at the apex of free netted veins..... veinlets, rarely on the *variolosum*.

Sori on the netted veins :—

Stipes and rachis yellow or brown.....

Stipes and rachis polished, black-purple

Stipes solitary, erect, on a wide-creeping rhizome; pinna entire ; sori small [p. 1251].....

Sfronds with main-veins tolerably distinct to the strongish, transverse veins forming primary areolae enclosing simple free veins ; stipes usually more or less twice-pinnate, sometimes rather large, both on free and netted veinlets [p- V2oΛ ..

2788. NEPHRODIUM CALCARATUM Hook. var. CILIATA *Beud. Las- trcea calcarata* var. *ciliata* F. I. C. 235.

Chittagong.

A tufted fern, with erect, stout caudex.

2788/2. Var. SERICEA Bedd. *Laatrwa calcarata* var.

F. I. C. 237.

Chittagong.

A tufted fern, with erect, stout caudex.

2788/3. Var. FALCILOBA Bedd. *Lastrea calcarata* *yoXm* *jd loba* F. I. C. 237. *Polypodium parasiticiun* F. I- *3* (Ed.

C B. C).

Chota Nagpur; E. Bengal; Chittagong.

A tufted fern.

2789. NEPHRODIUM COCHLEATUM Don. *Lastrea Fili* *Allias* *v* *Ar* *cochleata* F. I. C. 250.

Chota Nagpur; Chittagong.

A handsome, tufted fern.

2790. NEPHRODIUM CRENATUM]ed. *Lastrea crenata* F. *T Q* *258*.

Chota Nagpur, Parasnath.

A handsome, tufted fern.

2791. NEPHRODIUM PTEROIDES J. Sin. ; F. I. C. 269.

Orissa.

A wide-creeping fern.

2792. NEPHRODIUM UNITUM Sieb. ; F. I. C. 268. *PoUjpoM* *3* *unitum* F. I. 752 (Ed. C. B. C).

C. Bengal; E. Bengal; Chittagong.

A common fern of swampy ground. *Beng.* Pankakrul-

- 279³ - NEPHRODIUM ARIDUM Bak.; F. I. C. 272. *Polypodium senusagittatum* F. I. 753 (Ed. C. B. C).
Chota Nagpur; N. Bengal; E. Bengal; Sundribuns;
Chittagong.
- 2794⁴ - NEPHRODIUM UROPHYLLUM Bedd.; F. I. C. 274.
Chittagong.
- 279-⁵ - NEPHRODIUM AMBOINENSE Bak. *N. molle* var. *amboinensis*
F. I. C. 278.
Chittagong.
2796. NEPHRODIUM PENNIGERUM Hook.; F. I. C. 277.
Chittagong.
A tufted fern, with erect caudex.
2797. NEPHRODIUM MOLLE Desv.; F. I. C. 277.
In all the provinces.
A tufted fern.
2798. NEPHRODIUM CRINIPES Hook.; F. I. C. 279.
Chittagong.
A large, tufted fern.
2799. NEPHRODIUM TRUNCATUM Presl; F. I. C. 280.
Chota Nagpur; Chittagong.
A tufted fern; fronds 2 feet long.
2800. NEPHRODIUM MEMBRANIFOLIUM Presl. *Pleocnejnja membranifolia* F. I. C. 225. *Polypodium pilosum* F. I. 753 (Ed. C. B. C).
Chittagong.
A tufted fern ; fronds about a foot long.
2801. NEPHRODIUM LEUZEANUM Hook. *Pleocnemia Leuzeana*
F. I. C. 228.
Chittagong.
A large fern with shrubby caudex; fronds up to 6 feet long.
2802. NEPHRODIUM VASTUM Bak. *Asjndium vastum* F. I. C. 213.
Tippera; Chittagong.
A creeping fern, with large, scattered fronds 2-4 feet long.
2803. NEPHRODIUM DECURRENS Bak. *Asjjiclium decurrens* F. I. C. 219.

[Nephrodium.

Chittagong.

A creeping fern, with large fronds 3 feet long.

Aspidium variolosum

2804. NIPHODIUM VARIOLOSUM Bak.

P. • C. 21ft.

Chota Nagpur; E. Bengal; Tippera;

Chittagong.

A tufted fern; fronds 2-3 feet long.

Aspidium polymorphum

2805. NIPHODIUM POLYMOBPHUM Bak.

F. i. c 21a

Chittagong.

A tufted fern; fronds 1-4 feet long.

Simonsii F. I. C.

2806. NIPHODIUM SIMONSII Bak.

218.

Chittagong.

A tufted fern; fronds 1-1 feet long.

*id*****

2807. NIPHODIUM HETEROCARPUM Bak.

Aspidium heterocarpum

F. I. C. 219,

Chittagong.

A tall, gregarious, creeping fern, in wet places; fronds 2 feet high.

2808. NIPHODIUM CICUTARIUM Bak.

Aspidium cicutarium

F. I. C. 220. *Atplenium cicutarium* (Ed.

C. B. C.).

Chota Nagpur; Orissa.

A tufted fern.

1139. Nephrolepis Schott.

Herbe, wiry, tufted stipes from short or long, wiry root-stock, often emitting wiry fibres; fronds simply pinnate, with pinnae articulating at the base and often deciduous from fronds, each pinna with white, crustaceous dots on the upper surface; veins all free. Sori round, arising from the apex of the upper branch of a vein, generally submarginal; indusium reniform or roundish.

Sori about half-way between the midrib and the margin; pinnae crowded, usually imbricating, with a large, crenated, auricle on upper side, and with a rounded or cordate, lower basal angle.....*cordifolia*. Sori submarginal; pinnae close, with a narrow basal auricle on upper side, and a smaller rounded one below :—

- Rhizome suberect *exaltata*.
- Rhizome climbing, sometimes 50 feet long *volvulata*.

NEPHROLEPIS CORDIFOLIA Presl; F. I. C. 282. *Polypodium flagelliferum* F. I. 751 (Ed. C. B. C.).

C. Bengal; E. Bengal.

A tufted, wiry fern; fronds up to 2 feet long.

2810. NEPHROLEPIS EXALTATA Schotã; F. I. C. 282. *N. acuta* F. I. C. 284.

Chittagong.

A tufted, wiry fern; fronds up to 3 feet long.

2811. NEPHROLEPIS VOLUBILIS J. Sm.; P. I. C. 284.

Chittagong.

A long, climbing fern, extending over trees to 50 feet or more.

1140. *Polypodium* LUm.

Herbs, with stems continuous with the caudex or articulating at point of junction with the rhizome; fronds very various in size, form, and division, sometimes entire, often variously lobed or pinnate, uniform or diverse in form or texture or both; veins free or variously anastomosing. Sori on the back of the leaf, round or long, never more than twice the diameter, rarely oblong, or terminal on the veins; indusium absent.

Stems continuous with the caudex, and sori always medial on the veins:—

Veins free; fronds 3-pinnate, large:—

Caudex erect; stipe scaly, not pilose; fronds up to 15-20 feet long; sori medial *ornatum*.

Rhizome wide-creeping; stipe viscous-pubescent, fronds up to 1 foot long; sori towards but not on the apex of the veins *punctatum*.

Veins confluent:—

Veins pinnate, with the lower veinlets of contiguous veins joining; the remaining veins free; fronds pinnate; pinnae with distinctly lobed margins:—

Stipe spreading; frond usually decumbent, elongating and rooting at the tip, and copiously branched from the axils; pinnae bluntly lobed; veinlets free, 6-10 a side *proliferum*.

Stipe erect; frond not rooting or branched; pinnae acutely, laterally lobed; veinlets 15-20 a side *multilinerum*.

Veins copiously anastomosing; fronds distinctly dimorphic *chattagramicum*.

Stems articulated at point of junction with the rhizome; sori generally terminal on the veinlets; veins anastomosing:—

Areolae uniform, bound* d by parallel, tr>MP" o: curved, transverse veinlets connecting the primary veins, which n run distinctly from midrib to edge; areolae containing 2 or more' • °ri, I he contained fr<* veinlets all directed towards the edge; fronds simple, their under surface

matted with thin, adpressed, wool: y or cottony tomentum :— ^mut*0

StJ ies dis kanl; I fronds dimorpho; sori in 5-6 series ^ " " *

Sti^M's iij.'gregated; fronds uniform; sori in 8-10 series ...st', ^ " " *

Are. IIIH irr't'nuliir, linr und copious; the free veinlets spreading in various directions; •or! ; generally on the back of united veinlets; fronds not felted or cottony beneath h :—

Fronds simple :—

Main-veins obscure in the thick substance of the frond, not distinct to the edge of the frond ui simplex.

Main-veins distinct nearly or quite to the edge of the frond :—

Texture thin, membranous; main-veins distinct; sori large, mostly in 2 rather irregular rows near the main-veins membranaceum.

Texture firm, thickly herbaceous or subcoriaceous :—

Main-veins distinct; sori large :—

Main-veins passing quite to the edge; sori irregularly 1-3 rowed oca

Main-veins branching and becoming lost before they quite reach the edge; sori in one irregular row, often confluent hemionitideum.

Main-veins very fine; sori small, very copious and irregularly scattered, often only towards apex of frond irioides.

Fronds more or less lobed or divided :—

Fronds uniform, all fertile, or if some wholly or partly sterile, the sterile portion in consistence like the fertile :—

Fronds with distinct midrib or rachis, not divided into two halves; rachis winged :—

Fronds 3-fid or pinnatifid, with 2 lobes on each side, the larger U>>r the

Utcral pteropus

Fronds deeply pinnatifid, with 2-6 lobes on each side, rarely only 3-fid; the end lobe similar to the lateral dilatata

Fronds flabellately divided into two halves, each deeply lobed from the circumference in the direction of the base ... Wallichii.

Fronds diverse, with either the base of the ordinary frond or with a separate frond sterile, lyrate-pinnatifid, brownish in colour and rigid in texture like a sere oak-leaf :—

Sterile frond the basal portion of the fertile coronata.

Sterile frond distinct from the fertile quercifolium.

2812. POLYPODIUM ORNATUM Wall. *Phegopteris ornata* F. I. C. 294.
Chittagong.
A large, handsome fern; fronds up to 20 feet long.
2813. POLYPODIUM PUNCTATUM Thunb. *Phigopteris punctata* F. I. C. 295.
Chittagong.
A handsome fern; fronds up to 4 feet long.
2814. POLYPODIUM PROLIFERUM Roxb.; F. I. 752 (Ed. C. B. C.).
Goniopteris prolifera F. I. C. 296.
Chota Nagpur; N. Bengal; C. Bengal; E. Bengal.
A spreading fern, often rooting at the tips of the fronds.
Beng. Dapu.
2815. POLYPODIUM MULTILINEATUM Wall. *Nephrodium moulemeinense* F. I. C. 275.
Chota Nagpur; Chittagong.
An erect fern; fronds up to 4 feet long.
2816. POLYPODIUM CHATTAGRAMICUM Clarke. *Dictyopteris chattagramica* F. I. C. 299.
Chittagong.
A small, rather handsome fern.
2817. POLYPODIUM ADNASCENS Sw. *P. pertusum* F. I. 750 (Ed. C. B. C.). *Niphobolus adnascens* F. I. C. 325.
Chota Nagpur; N. Bengal; C. Bengal; E. Bengal; Chittagong; Sundribuns.
A small creeping, epiphytic fern, with simple fronds.
2818. POLYPODIUM STIGMOSUM Sw. *P. tomentosum* F. I. 750 (Ed. C. B. C.). *Niphobolus stigmorus* F. I. C. 35.
Chota Nagpur.
A small epiphytic fern, with entire, simple fronds.
2819. POLYPODIUM SIMPLEX Sw. *Pleopeltis simplex* F. I. C. 347.
Chota Nagpur.
A small fern, with thick, simple fronds.
2820. POLYPODIUM MKMBLANACEUM Don. *Pleopeltis membranacea* F. I. C. 355.
Chota Nagpur.
A small fern, with thin, simple fronds.
2821. POLYPODIUM OVATUM Wall. *Pleopeltis ovata* F. I. 750 (Ed. C. B. C.). *Pleopeltis ovata* F. I. C. 354.
Chittagong.
A small, wide-creeping fern, with entire fronds.

2822. POLYPODIUM HEMIONITIDBUM Wall. *Pleopeltis hemionitidea*

F. I. C. 358.

Chittagong.

A creeping fern, with entire fronds.

2823. POLYPODIUM IHIOIDES Lamk. *I-* <y/"/"'"'"'"C. B. C). *Pleopeltis ptmctata* F. 1. ('• '*;'"

Orissa; C. Bengal; E. Bengal; Sundribun--^.

A tufted, parasitic fern, with enti*

Chittea born.

2824. POLYPODIUM PTBBOPUS Bl. *Pleopeltis teropus*; I-

59.

Chittagong,

A smallish fern of marshy places.

2825. POLYPODIUM DILATATUM Wall *Pleopeltis dilatata* F. I. C. 867.

867.

Chittagong.

A considerable fern.

2826. POLYPODIUM WALLXCHII B. Br. *Diplazis Wallichii* F. I. C. 867.

867.

Chittagong.

A flabellately 2-partite, epiphytic fern.

2827. POLYPODIUM COKONANS Wall. *Drynaria* i

8HK.

Chittagong.

A huge fern, with rather rigid fronds.

2828. POLYPODIUM QUERCIFOLIUM Linn.; P. E. C. 843.

Drynaria

C. Bengal; Orissa; Sundribuna; Chittagong.

An epiphytic fern, with rigid fronds.

1141. *Gymnogramme* Deav.

Herbs, with creeping rhizomes; fronds entire, arising from the rhizome; veins copiously anastomosing, with free, included veinlets. Sori arising from the veins over the under surface of the frond, linear or linear-oblong, simple or forked; indusium absent.

2829. GYMNORHAMME HAMILTONIANA Hook. *Sellignea Hamiltoniana* F. I. C. 358.

Chittagong.

A fern, rather like *Polypodium ovatum* but with elongated sori.

1142. *Meniscium* Bohreb.

Herbs, with tufted stipes or creeping rhizome; fronds simple or pinnate; veins pinnate, the lowest veinlets of a group trop joining the contiguous groups. Sorus* oblong or linear

on the connivent, transverse veinlets; indusium absent.

0. MIAGH TEIPHYLLUK Sw. J. P. 1: 7.

ngal, lhairs; Chittaj

regarious, wide-creeping fern.

1143. *Yittaria* Sin.

Herbs, usually epiphytic, grassy; veins free. Sorus simple, narrow or elongated; indusium in continuous marginal

lightly intramarginal linear; indusium absent.

1. 'm\i:i i ngal; E. Bengal; Su

\ A, i. C, l

cmgui

indribuni: ('liitta^on

1144. *Dymoglossum* Presl

Small, epiphytic, creeping ferns, with dimorphic, articulate

sterile ovate or oblong, fertile linear; veins obscure, anastomosing; areolae with copious, free veinlets. Sorus linear, scarcely

immersed, central or submarginal, often exserted; indusium absent or nearly covering under surface of frond

2832. *DRYMOGLOSSUM PILOSELLOIDES* Presl; I. !. C. 111

0 *pihsrl loides* 1. I. 757 (Ed. C. B. C.).

Sundribuns; Chitagong.

A small, creeping epiphytic fern, with dimorphic fronds

1145. *Hemionitis* Linn.

Small, terrestrial ferns, with tufted stipes, not articulating with caudex; fronds simple, pinnate, 1 or bipinnate; veins copiously anastomosing. Sorus continuous along all the veins of the fertile fronds; (lowest veinlets in the areolae rare, when present) linear; indusium absent.

4000. *HEMIONITIS ARIFOLIA* Linn. C. 413. *H. cordifolia*

1. 1.756 (Ed. C. B. C.).

In most provinces.

A small fern, with cordato-bastate fronds. Beng.

Chiakuli

1146. *Acrostichum* Linn.

Herbs, with tufted stipes or a creeping variously simple or pinnate, usually anastomosing. Sort spread in a layer over the frond or its upper pinnic, occasionally over not confined to the veins only ; *mdutium* absent.

Veins free; barren fronds simply pinnate; fronds *dun**

Pin me rigid, coriaceous, pungent-serrate ; veins *tine, c ^veen eff^h*

Pinnse herbaceous, deep-crenate, with a seta in the sin pair of crenatures ; veins more open.....

Veins anastomosing copiously;—

Ma in-veins distinct nearly or quite to the margin ; tip °

often proliferous ; fronds dimorphic :—

Barren frond simple or with only 1-3 pairs of *pinntf*

Barren frond with many pairs of *pinntfB*.....

Main-veins falling short of the margin, or indistinct, oi ° •

Barren fronds entire ; fronds dimorphic, acute :—

Main-veins raised but falling considerably short of the frond.....

Main-veins none.....

Barren fronds pinnate ; sterile and fertile fronds subsim ^ufeOH-obtuse ; areolae without free veinlets.....

2834. ACROSTICHUM PALUSTRE Bedd. *A. scandens* Cl

Pteris scandens F. I. 758 (Ed. C. B. C).

palustre F. I. C. 421.

C.Bengal; E.Bengal; Sundribuns; Chittagong-

A large, scandent fern.

2835. ACROSTICHUM APPENDICULATUM Willd. *A. aetaco*[^]

F. I. 749 (Ed. C. B. C). *Pohjbotrya*

Hamiltoniana F, I. C. 424.

Chittagong.-

A tufted fern; fronds simply pinnate, sometime Hferous.

2836. ACROSTICHUM FLAGELLIFKUIUM Wall. «[•] // *nmopterte J*¹

lifera F. I. C. 433.

Chittagong.

A creeping fern, with woody, scaly rhizome.

2837. ACROSTICHUM COSTATUM Wall. *Gyrrmopteri*^{*}

F. I. C. 438.

Chittagong.

A short-creeping fern, with woody rhizome.

²⁸B8. ACROSTICHUM LANCEOLATUM Hook. *Gymnopteris variabilis* var. *lanceolata* F. I. C. 429.

Chittagong.

A wide-creeping fern, with woody rhizome.

4839. ACROSTICHUM AXILLARE Cav. *Gymnopteris variabilis* var. *axillaris* F. I. C. 430.

E. Bengal.

A wide-climbing fern, with entire fronds.

²&40. ACROSTICHUM AUREUM Linn.; F. I. C. 440. *A. emarginatum* F. I. 749 (Ed. C. B. C).

C.Bengal; E.Bengal; Sundribuns; Chittagong.

A common fern of tidal marshes.

Order CLIV. SCHIZIACEAE.

Herbs, often climbing ; *fronds* palmate or pinnate ; veins free ; Vernation circinate. *Sori* lateral, with 2-valved sporangia that are crowned by a complete opercular ring, and open down the sides.

tufted herbs with simple or forked fronds.....**Schizsea.**

Climbing herbs with scandent fronds.....**Lygodium.**

1147. Schizsea Sm.

Small, tufted herbs; *fronds* simple or forked; veins free. *Sporangia* sessile, in 2-4 rows, on one side of close, distichous ^sspikes^ that form separate fertile segments at tips of fronds.

2841. SCHIZJEA DIGITATA SW. ; F. I. C. 452.

Chittagong.

A small fern, with tufted stipes; fertile spikes 6-15.

1148. Lygodium Sw.

Climbing herbs, with wide-twining stems; *fronds* scandent; *PW* conjugate, palmately lobed, pinnatifid, or pinnate; veins **, forked. *Sporangia* solitary or casually paired in the axils of *He*, imbricated, clasping indusia, that form spikes either on ^{se}parate pinn* or in lax rows along the margins of leafy ones.

* *Wn* fronds when fully developed palmate or 2-partite in ^{to 2 palmate} lobes..... **circinatum.**

Barren fronds pinnate:— *i_{rtm/r}* <<< broad,

Fronds simply pinnate sterile pinna, about twice as long as broad,

margin subentire ; fertile deltoid, scarcely longer than broad, with square base and rounded sides. Fronds stipitate-pinnate, with pinnae lobed pinnate, margin serrulate or lobed*; fertile with sterile both several times longer than Pinnules with serrulate margins ; lamina of the fertile leaf less leafy. Pinnules smaller, with finely cut margins ; lamina much contracted as to be evanescent.

2842. LYGODIUM CIRCINATUM SW. ; F. I. C. 40 f). *furcatum* F. I. 748 (Ed. C. B. C).

Chittagong.

A graceful, climbing fern.

2843. LYGODIUM MICROPHYLLUM R. Br.; F. I. C. 455. *glossum filiforme* F. I. 748 (Ed. C. B. C). N. Bengal; Chittagong.

A graceful, climbing fern.

2844. LYGODIUM FLEXUOSUM Sw.; F. I. C. 471. *scandens* F. I. 748 (Ed. C. B. C).

Chotanagpur; Behar; Chittagong.

A graceful, climbing fern. [B*mg. Bhut-ra] •

Nanjom rehet'.

2845. LYGODIUM JAPONICUM Sw.; F. I. C. 457. *flexuosum* F. I. 748 (Ed. C. B. C).

C. Bengal, occasional.

A very slender and graceful, climbing fern.

Order CLY. MARATTIACEJE.

Usually large herbs; fronds pinnate or palmate, basal, fleshy, stipule-like auricles, texture thick; veins anastomosing; vernation circinate. Sori marginal or *sporangia* without any ring, opening by a slit down one side by a pore at the apex; usually joined together in syngangia, sometimes only contiguous but discrete.

Sporangia sessile, contiguous but discrete, arranged in bands on edge of the pinna ; fronds 2-pinnate ; veins free. Sporangia concrete, in raised, circular, dorsal masses with hollow fronds palmate ; veins anastomosing.

[*Ophioglossum*.

Sterile division of frond ovate or ovate-oblong, herbaceous, placed generally about the middle.
Sterile division of frond cordate, membranous, placed & what below the middle.

2848. OPHIOGLOSSUM VULGATUM Linn.; F. I. C 464.

Chota Nagpur.

A small, herbaceous "Adder's Tongue."

2849. OPHIOGLOSSUM RETICULATUM Linn.; F. I. 465.
difoUum F. I. 747 (Ed. C. B. C).

Behar; N. Bengal; C. Bengal.

A small, membranous "Adder's Tongue."

1152. *Helminthostachys* Kaulf.

Herbs, terrestrial; *fronds* stipitate; sterile segments digitate; fertile upraised and rising from base of fronds; veins forked, free. *Sporangia* in small, crested clusters, a long, loose spike.

2850. HELMINTHOSTACHYS ZEYLANICA Hook.; F. I. & 467. *Os.*
munda zeylanica F. I. 748 (Ed. G. B. C).

Behar; C. Bengal; E. Bengal; Sundribuns.

A stipate fern, with thick, fleshy, creeping stem.
.Beng Ekbir.

VIII.—RHIZOCARPEJE.

Herbs, sometimes annual, floating, fugacious; some perennial, with a filiform rhizome. *Sporangia* of two the same or in different membranous conceptacles, single with no outer covering, or several together coriaceous, outer conceptacle. *Macrosporangia* with a macrospore; *microsporangia* with numerous microspores.

Order CLYII. SALYINIACEJE.

Fugacious, floating, annual, aquatic herbs; stems branched, giving off sessile or short-petioled 2«WM on the up side' and copious root-fibres downwards. *Conceptacles* indehiscent, and contain sporangia of only one kind. *Macrosporangia* containing a

Azolla.]

SALVINIACE.E.

12b5

macrospore, from which a rudimentary prothallus is produced.
Microsporangia containing numerous microspores.

Leaves entire, with complicated anastomosing venation ; microsporangia
free. Within the conceptacle.....**Salvinia.**

6a Leaves small, deeply lobed, each lobe 1-nerved only; microsporangia
aggregated within the conceptacle in massulae with a membranous cuticle
Azolla.

1153. Salvinia Schreb.

Terrestrial, annual, aquatic herbs, with slender, floating stems
bearing short-petioled or sessile leaves on the upper side, and
short, conceptacle-bearing branches and much-branched, feathery
root-fibres on the lower side; leaves small, simple, with a distinct
midrib running from base to apex, and a close erecto-patent,
conclary nervation connected by a few looped veins. *Conceptacles*
globose, membranous, indehiscent, seated in clusters on
short branches of the floating stem, 1-2 of each cluster containing
one or more turbinate macrosporangia, each with a single macro-
spore, several of each cluster containing very many globose micro-
sporangia, much smaller than the macrosporangia, each with
many minute microspores. *Sporangia* of both kinds borne on a
much-branched, filamentous receptacle;

Floids horizontal, flat.....*natam.*
Floids suberect, with infolded edges.....*cucullata.*

2851. SALVINIA NATANS Hoffm. *S. verticillata* F. I. 745 (Ed. C B. C).

N. Bengal; Tirhut.

A small, floating, annual herb.

2852. SALVINIA CUCULLATA Roxb.; F. I. 745 (Ed. O. B. C.)-

In all the provinces.

A small, floating, annual herb.

1134. Azolla Lamk.

Terrestrial, annual, aquatic herbs; stems copiously branching;
leaves minute, densely imbricating, deeply-lobed, each
with a single midrib; root-fibres on the lower side copious,
simple or feathery, solitary or fascicled. *Conceptacles in the axils*
of the leaves of two kinds: one larger, membranous, globose, con-
taining numerous microspores, aggregated in *free* *in* *the* *axils*
a Membranous cuticle, and borne on a branched, filamentous recep

BENGAL PLANTS.

[Azolla.

tad.; the other smaller, ovoid, containing single macrospore, crowned by few or many float-corpse*? and calyp cap pushed off as the archegonium develops.

2853. AZOLLA PINKATA B. Br. *Balm* (Ed. C. B. C).

In all the provinces. A small, floating, annual herb.

Order CLYIII. MARSILEACE*.

Aquatic or subaquatic herbs, with rhizomes; leaves singly or in tufts from its nodes with floating or emergent blades. coriaceous and dehiscent, inner membranous containing both kinds of sporangia. Macrospore, from which a single macrospore, from which a few microspores. Microsporangia containing numerous

1155. Marsilca Linn.

Aquatic or subaquatic herbs, with a slender rhizome; leaves singly or in tufts from its nodes, each with and four sessile, equal, spreading, deltoid-cuneate floating or emergent leaflets, with flabellate, anaclinal Conceptacles oblong or globose, coriaceous, in axillary leaf-stalks, ultimately dehiscent along ventral sinus valves, and emitting a mucilaginous, placental intervals numerous oblong-cylindric sori with a coat, each sorus with many microsporangia, containing numerous microspores and a few macrosporangia with solitary

Pedicels adnate to the base of the petioles. Pedicels quite free from the petioles.

2854. MARSILEA QUADRIFOLIATA Linn. ; E. D- M- 306.

In most of the provinces. An aquatic herb, at the edges of ponds. shak; Santal. Chatom arak¹.

2855. MARSILKA MINUTA Linn. *M. quadrifolia* (C B. C).

In all the provinces. An aquatic herb, at the edges of ponds.

IX.—EQUISETINEJE.

^{c>} ^{Herbs} *J* leaves small in proportion to the stems, whorled, not
[^]cinate, the fertile peltate forming a spike at the apex of the
^j ^{em}- *Sporangia* all similar on the inner face of the peltate
^e ^a ^s. *Spores* many, free, each with 4 hygroscopic filaments,
^{club}bed at the end, developing as a rule dioecious lobed prothalli.
^{*} *Wieridia* at apex of lobes; *archegonia* on fleshy upper surface
^{Uej*} base of prothall^{lus}.

Order GLIX. EQUISETACEJE.

^{Herbs}; rootstock widely creeping, hypogauil, jointed and
^sheathed at the nodes, often branched and bearing tubercles;
⁸teni erect, cylindric, with a distinct central hollow, occluded at
the nodes, strongly ribbed, with air-spaces in the walls under the
Hbs ; cuticle loaded with silica ; the nodes articulate and sheathed,
sheath toothed, the teeth as many as the stem-ribs; steins usually
3U similar, sometimes dimorphic (barren and fertile) often with
Regularly whorled branches. *Leaves* 0. *Spikes* obtuse or apicu-
late. *Sporangia* all similar, oblong, dehiscing down inner face,
[^]-9 uniseriately disposed round the under side of the margin of
talked, peltate receptacles, conically arranged at apex of stem.
Spores very many, free, smooth, globose, each with 4 clubbed,
spirally curled, hygroscopic filaments; germinating on the ground
^as lobed, usually dioecious, prothallia.

1156. *Equisetum* Linn.

The only genus; characters those of the order.

^SPikes obtuse, shortly stalked; stomata with openings on level of epi-
^r ^W s ; branches copious, densely whorled ; stems erect::: ...^d^{um}.
^SPikes apiculate, sessile; stomata with openings hidden in the
["]Merniis; branches sparse; stems semi-scandent.....^d^u^l

2856. *EQUISETUM DIFFUSUM* Don.

N. Bengal, Duars.

A herb, 1-2 feet high.

2857. *EQUISETUM DEBILE* Roxb.; P. I. 745 (Ed. C. B. C.), E. V-^D

E. 241.

Chota Nagpur.

Psilotum.]

LYCOPODIACE

Sporangia in the axils of unaltered leaves all J» stem...Hamiltonii.
Sporangia in the axils of bracts unlike the stem-leaves ^d aggregated
«to distinct terminal spikes:— , forked from the base.
Stems more or less pendulous, dichotomously. whlegmana.

E ^ L r - ^ d - i t h e b ä s e - , t e r r e s t r i a l
t u n b c h e n e a

2858. LYCOPODIUM HAMILTONII Spreng.

S ^ S * t u f e d b e * . + ? ? £ & . C . B . C .) .

2859. LYCOPODIUM PHUSOMAEIA Linn., . . .

Sundribuns.
A p e n d u l o u s , d i c h o t o m o u s l y b r a n c h e d e p i p h y t e - 6 i n .
t o 2 f e e t l o n g -

2860 LYCOPODIUM CERNUUM Linn.; * I . 746 (Ed. C. B. C).

Chittagong.
A t e r r e s t r i a l . e r e c t h e r b ; s t e m s s o m e t i m e s 3 f e e t h i g h .

1158. *Psilotum* Sw.

H with wiry, short-creeping rootstocks; stems simple
W v , c o p i o u s l y , d i c h o t o m o u s l y b r a n c h i n g u p w a r d s ; l e a v e s
m i n u t e , l a x l y a r r a n g e d , 3 - f a r i o u s o r 2 - f a r i o u s . S p o r a n g i a r i g i d l y
c o r i a c e o u s , t u r b i n a t e , w i t h u n b i l i c a t e t i p s , 3 - c e l l e d ,
s p l i t t i n g v ^ j ^ all down the branches. S ^
t h e a x i l s o f t h e r u d i m e n t a r y l e a v e s
o b l o n g , s o m e w h a t c u r v e d , 1 - n b h e a .

2861. PSILOTUM TMOOTRUM Sw.

E. gal; Sundribuns.
A l , e r e c t o r s u b e r e c t h e r b , 6 i n . t o 2 f e e t h i g h .

Order CLXI. SELAGINELLACEÆ.

Herbs, with copiously branching stems, the ultimate << ** >>''
usually flabellately dichotomous. trailing, suberect, or scandent;
root-fibres confined to base or extending to upper nodes, more or
less quadrangular, with the faces angled or flat; the nodes at
times articulate; leaves small, 1-veined, rarely all alike, usually
tetrastichous and dimorphic, more or less oblique, the two rows of
the lower plane larger and spreading, those oi the upper ascending,
adpressed to stem and imbricating. Spikes usually tetrastichous,

[*Selaginella*.

often square, the bracts usually similar, but sometimes dimorphic like the leaves. *Sporangia* of two kinds, orbicular, laterally compressed, membranous, 1-celled, inserted in the angles of bracts to form dense spikes at the ends of leafy branches; microsporangia many, splitting across the wide diameter; *microspores* dust-like, very numerous; *macrospores* few and confined to base of spike, usually also 2-valved, bearing 4 or fewer macrospores; *macrospores* globose, chalky, female, 3 radiating ribs from the apex, developing a minute protuberance. re.

1159. *Selaginella* Spring.

Characters those of the order.

Ordinary leaves all similar, multifarious; bracts unirostrate.
 Ordinary leaves of two kinds, tetrastichous and spreading in two planes; those of the upper plane smaller and somewhat ascending.
 Bracts uniform; stems erect, persistent, simple below, decomposed and frond-like above.
 Bracts of two kinds like the leaves, but the smaller bracts in the same plane as the larger leaves; stems decumbent, fugacious, the protuberance simple or little compound.

2862. *SELAGINELLA RUPESTRIS* Spring.

Chota Nagpur.

A densely tufted herb.

2863. *SELAGINELLA PENTAGONA* Spring.

Behar; Chota Nagpur; Orissa.

An ascending or erect herb; stems 1-1.5 feet long-attenuated.

2864. *SELAGINELLA PRONIFLORA* Bak. *Lycopodiuni itnhrw*

F. I. 747 (Ed. C. B. C).

In most of the provinces.

A small, prostrate, fugacious herb; stems 1-4 m« in length.

Beny. Hatajhera.

V APPENDIX

1. Clematis Linn

W in axillai) panicles, achenes with long, feathery tails & epals
 gelding horn the base, filaments glabrous Howe 18 a(jr0bs,
 Purple ^hmfolia

2 CLEMAISSMIIAGHOLIA Wall , T ^ i I 3

Orissa.

A large, woody climber

50. Cleome Linn

Leaves compound, biternate

77 CLBOME ALPESIA Koen , F B I 1 169

m 129

Orissa

An annual herb, 6-15 in high

52. Capparis Linn

Howei&num^us.coivmbs simple fls. white, yellow, green, red, purple

83 CAPPARIS ROXBURGHII DC , T B I 1 176

T I n 569

Orissa

A large woody climber

93. Abutilon Gaertn

Leaves obovate and stems very hard, ca. 20

156 ABUTILON HIRTUM G D 327

F B

W al, C Bengal, Sundribans

An erect, woody herb, Beng Jhampi, Kanghani

Order XXII. STERCULIACEAE.

Flowers hermaphrodite ; petals present, deciduous ;
joined, inflated and membranous..... 106*. *Kleinhovia*.

106*. *Kleinhovia* Linn.

A tree, with simple palmi-nerved, ovate, ^{acyminate, entire} leaves. ^{bracteoles} Flowers in terminal, lax, cymose panicles, ^{pink,} small, ensiform. ^{deciduous} Sepals 5, deciduous. Petals ⁵ unequal, margins involute, upper with rather ^{long} claws. ^{connate} Stamens connate in a column, above swollen into a ^{lobe} panulate cup, with 3 extrorse, 2-celled ^{anther-cells} anther-cells divergent. ^{stigma} Ovary within the stigma, 1-celled, connate carpels opposite the sepals; ^{stigma} stigmas 5, free; ovules 2 in each cell. ^{inflated} Fruit an inflated, membranous, loculicidally 5-valved capsule. ^{5-celled} each cell, sometimes abortive in one or more of the ^{cells} cells; testa ^{obovate} tubercled; albumen scanty or obsolete; embryo with 2 cotyledons and radicle next the hilum.

205*. *KLEINHOVIA HOSPITA* Linn.; F. I. iii. 141; F. j.*. ^{from} C. Bengal, in gardens near Calcutta, introduced from the Moluccas; Sundribuns, wild.
A tree, 50 feet high. *Beng. Bola.*

108. *Pterospermum* Schreb.

Capsule obscurely 5-angled ; peduncles as long as petioles..... ^{5-angled}

208*. *PTEROSPERMUM HEYNEANUM* Wall.; F. B. I. * ⁶⁹ⁱ Orissa.
A medium tree.

117. *Grewia* Linn.

Inflorescence not paniculate; drupe fleshy, wrinkled; leaves ^{vein} nearly glabrous ; fruit pilose, hardly lobed..... ^{oneH}

233*. *GREWIA ORIENTALIS* Linn.; F. I. ii. 586; F. B. I. * ³⁸⁴ Orissa.
A suberect or scandent shrub.

133. *Zanthoxylum* Linn.

Leaflets wide-crenate, with glandular sinuses ^{Budrunpa.}
Leaflets entire ^{Rhetsa.}

270*. *ZANTHOXYLUM UHETSA* DC.; F. B. I. i. 495; E. V. ^{Z. 35.}
Fagara Hhetsa F. I. i, 417,

Orissa, common.
A considerable tree.

143. Paramignya Wight.

Spines short; ovary 5-celled.....*...citrifolia.*
Spines long; ovary 3-4-celled.....*longispina.*

²84*. PARAMIGNYA LONGISPINA Hook, f.; F. 13.1. i. 511.
Sundribuns.
A thorny undershrub. *Beng.* Ban nimbu.

154. Melia Linn.

Leaves twice or thrice pinnate; flowers greenish-white.....*Melia*
288*. MELIA DUBIA Cav.; P. B. I. L 545; E. 1). M. 412. *M. sujerba* F. I. ii. 396.
Orissa, common.
A large tree. *Uriya* Máhánini, bátara.

162. Carapa Aubl.

Roots without vertical rootsuckers.....*obovata.*
Roots with vertical rootsuckers.....*Uccemu* var. *Uccemu*
812*. CARAPA MOLUCCENSIS Lamk. var. GANGETICA.
Sundribuns, rare.
A tall tree. *Beng.* Pussur.

184. Zizyphus Juss.

Bynes axillary; all parts glabrous.....*glabra.*
346-. ZIZYPHUS GLABRA Roxb.; F. I. i. 614.
Chittagong.
A scandent shrub; nearest to *Z. xylopyra.*

Order XLIII. ANACARDIACE5:

Leaves simple; parts of flower not altered in fruit; carpels solitary;
stamens 3-5; leaves opposite; sepals valvate.....*Bouea*

203*. Bouea Meisn.

Trees; *Ua* opposite, petioled, coriaceous, quite entire;
stipules 0. *Flo* polygamous, in axillary and terminal
panicles; pedicels jointed; bracts deciduous *Calyx* ^ ^
segment valvate. deciduous. *Petal*, 3-5, lanceolate, small.
*Stamen** 3-5, inserted just inside the disk, all together.

BENGAL PLANTS.

Ovary sessile, 1-locular; style terminal, short; stigma unequally 3-lobed; ovule solitary, ascending from wall of chamber. *Fruit* a fleshy drupe with a thin, fibrous stone. *Seed* suberect; thin; albumen 0; embryo with fleshy cotyledons and inferior radicle.

396*. BOUBA BURMANICA Griff.; F. B. I. ii. 21. *Mangifera oppositifolia* F. I. i. 640.

E. Bengal, cultivated; Sundribuns, among vestiges of abandoned settlements.

A tree; native of Burma. *Beng.* Meriám, uriám.

235. Dolichos Linn.

Style filiform; pods recurved, few-seeded :-

Pods hirsute; flowers 1-3, fascicled: annual..... *Worui*,

Pods glabrous; flowers 2-8, racemose : perennial..... *J< **W**

505*. DOLICHOS FALCATUS Klein; F. I. iii. 811; F. B. I. ii-211i

Orissa.

A slender climber ; not tuberous.

255. Dalbergia Linn. f.

Pod thin and flattened except opposite the seed; stamens in 2 lateral phalanges of 5 filaments each; bracts and bracteoles inconspicuous,

de luo: PodS coriaceous opposite the seeds, gradually narrowed to a calyx 2. 3/8 long as broad, veined

cSosUV 5 Panicles impact; standard without

y..... *pan*culata*.

B86*. PALBERGIA PANICULATA Roxb.; p. I. iii. 227; F. I. ii. 236; E. D. D. 53.

Orissa, common.

A handsome tree. *Uña Bâbiiklia*.

D. lanceola: Linn. f. known in Orissa as *Angaria*.

274. Indigofera Linn.

Leaves compound; leaflets 17-21, membranous, opposite except the terminal; stems and pods almost glabrous; flowers large; pods straight, 8-12-seeded, pubescent. *Hot*..... *pulchella*.

643*. INDIGOFERA PULCHELLA Roxb.; F. I. iii. 382.

Orissa.

A slender, straggling shrub.

Lip jointed to the foot.....Ornitharii

Lip not jointed to the foot.....Terid

* Column with little or no foot; **lip** not jointed .

[p. 1001]

Spur with neither calli nor septum within :

Spur compressed laterally, deep, pubesce
the mouth ; side-lobes none.-.Rhynchost

Spur not compressed, long, narrow, cylm<
or wide, funnel-shaped, or short, sacc
rarely (one *Vanda*) reduced to a gibb
swelling, and then the leaves flat:

Side-lobes of lip usually large; spur wi
infundibuliform, glabrous at the mou

if side-lobes of lip small then the spur j
subobsolete; flowers large; caudicle of
Hniayeiy broft(J.....Ya n

*> j Side-lobes of lip small or none; m
naked or fimbriate; spur narrow, cylin
or short, wide saccate; flowers, si
caudicle very narrow.....Sacolabi

Spur within partially 0* completely occlude
calli:—

Spur occluded by a dorsal scale or by oal

^ u*, with pseuifdbuTfoies steins, -nowei^
^eduncled racemes; leaves chartaceous or **membrane**
plicate:—

Lip distinctly **3-lobed**, saccate or spurred at ba
inflorescence strict.....Euloph

Lip obscurely 3-lobed, wide ventricose at base, but n
spurred; inflorescence at first decurved.**Geodorur**

Epiphytic herbs:—

Stem pseudobulbous; leaf solitary.....Thecoste¹

Stem not pseudobulbous ; leaves several :—

Stems very short; leaves closely clustered, flat, fl
and pendulous ; lip spurred, with forked append'

its disk.....

Stems more or less elongated; leaves conn

flat or fleshy and terete:—

Lip not spurred ; leaves terete. Luis

Lip spurred, adnate to the column or to its foot.

-Column prolonged into a long foot5 spur v
no callus or septum within :—[p. 100^J

coriaceous or fleshy; inflorescence lateral or terminal, racemose or capitate; column short or long; pollinia 4 or 8, attached by fours to a common membrane; ... **Eria.**

Terrestrial herbs, pseudobulbous or not; leaves membranous or chartaceous; inflorescence axillary or scapose; column long above, not prolonged below as a foot:—

leaves linear h-n.v., ... a long, slender pseudostem; lip sessile column, saccate but not spurred; flowers and leaf* not contemporaneous. **Pachystoma.**

column long or lanceolate from a short, stout pseudostem; lip adnate to the base of the column; flowers contemporaneous with leaves:—

Sepals free; lip gibbous or spurred; column not prolonged into a foot. **Phajus.**

Sepals connate in a broad, fleshy cup; lip not spurred; column prolonged into a large foot. **Acanthephippium.**

§ Pollinia attached singly or in pairs or by fours through one or rarely, two caudicles to a stigmatic gland:—[p. 999]

○ Anther terminal:—[p. 1002]

Pollinia 8, attached by fours to a granular caudicle; terrestrial herbs; leaves chartaceous, plicate. **Calanthe.**

Pollinia 2:—
Terrestrial herbs; spur within partially occluded by calli, and divided by a vertical, antero-posterior septum

anther dorsal; ... **Sarcanthus.**

tapering to a minute gland; ... **Camarotis.**

foUmia powdery, granular; anther terminal; pollinia either gland or caudicle <J? ... **Yahilla.**

Small, terrestrial, coriaceous-leaves. **Yahilla.**

ophytide; ... **Didyraoplexis.**

a 5-toothed, ^-labiate tube; Ureen herbs, with ... **Poraneous and**

the flower from, ^ ... **Pogonia.**

ram the same tuber ... **Pogonia.**

Anther pectinaceous, wtici i, ^ ... **Pogonia.**

Pairs, attached occasionally to a solitary gland; terrestrial herbs:—

Sepals connate in a 5-lobed calyx. *Petals* 5-6, connate in a rotate or funnel-shaped corolla. *Stamens* 5-6, adnate to bases of corolla-lobes; filaments free or connate at base by a membrane or ridge; anthers included. *Ovules* connate in a subglobose ovary; style filiform, persistent; ovules numerous. Fruit a subglobose or globose capsule, opening by valves or bursting irregularly. *Seeds* many, trigonous or plano-convex.

1151. *LYRINACHIA TRIPLOCHLOA* Wall.; F. B. I. iii. 504.

Chota Nagpur, Sindhu. A small annual herb with alternate leaves and long peduncled flowers.

This species, hitherto only known from Burma, was collected in Singbham by Mr. H. H. B. in December, 1902.

1159. *Vincetoxicum* Linn.

Leaves obovate; flowers large. Leaves lanceolate-acuminate. Berry small.

1212. *VINCA PESILLA* Murr.; F. B. I. iii. 640. *V. parviflora* F. L. II, 1.

Behar; Chota Nagpur. An erect, pale green, annual herb.

Argyreia Lour.

Leaves hairy above, glabrous beneath; bracts all similar, orbicular, persistent, leaf-like.

1376. *ARGYREIA, CYCLOPSA* Sweet; F. 13. I. iv. 190. Lett sow in cymom F. L. II, 42.

Orissa, common. A climber, on hedges.

Ilysanthes Itif.

Corolla twice as long as calyx. Corolla 3-4 times as long as calyx.

1447. *IYSANTHES HISSOPIOIDES* Benlli.; V. 13. I. iv. 283.

pDho Chota Nagpur, Sirguda. A slender, erect herb.

681. *Ilichandrone* Seem.

Corolla not exceeding 2 lines long. Corolla 5-6 in. long.

Hong. Rheedei.

1272

1491². DOLICHANDROSE RHEEDII Scop. : F. B. I. iv. 379.

Sumln hams.

A tree, 50 feet high. B. G. Goringhah.

826. Apocynum

Leaves dark-green; male bracts glabrous, ciliate Roxburghii.

1869². A. POROSA ROXBURGHII Bail. : F. I*. I. 2. 247. A. dioica

E. I. A. 1-245. A. nus dioica F. I. iii. 580.

it. 1869.

A tree, 2b-80 feet high.

895. Dendrobium Swartz.

Leaves not equidistant; stems pseudobulbous, tufted; leaves herbaceous, linear; flowers small, on several erect, dense-flowered scapes pygmaeum.

2027². DENDRO[HUM FIGM]EUM Lindl. : F. B. I. v. 417.

mini

Chota N. »KPur.

A small tufted epiphyte.

ol

958. Dioscorea Linn.

Stems twining to the right; leaves simple, opposite, with cartilaginous margins, glabrous or slightly pubescent; capsule broader than long; seeds winged all round oppositifolia.

2208². DIOSCOREA OPPOSITIFOLIA Jacq. : F. I. iii. 992. F. B. I.

Vi. 29*2; E. I. D. 517.

Ori sa.

A large, unarmed climber.

1054. Panicum Linn.

Spikelets laterally compressed; inflorescence a contracted panicle; panicle-branches glabrous; spikelets aspidurges trigonum. usually with slender hairs; spikelets glabrous

Panicle-branch*

2500². PANICUM FILIPES Hook & Arn. : F. B. L. vii. 37.

N. Bengal, Duars; Ori sa.

A perennial, geniculate ascending, creeping grass.

This species, of which specimens do not appear to have been collected in our country, was first written, and his original figure, published by Wight, was first published in December, 1802, by Mr. J. H. Lacer; it proves to be exceedingly distinct from *I. arborea*, with which it is customary to associate it.

Order LI. HALORAGACEJE.

- Stamens 4; leaves dentate, whorled..... 318. *Myriophyllum*
- Stamen solitary; leaves entire, opposite..... 318*. *Callitriche*.

318*. *Callitriche*: Linn.

Annual, slender, glabrous herb, of wet places, branches sometimes submerged or floating; leaves opposite, linear- or obovate-spatulate, entire, upper often sessile. Flowers very small, axillary; 1-sexual, usually monoicous, sometimes J and ? in one individual simulating a hermaphrodite flower. Perianth 0 in either sex, membranous, linear-oblong, ligulate. Petals 4. Stamens solitary; anthers 2-lobed, 4-ridged, 4-celled throughout; ovules solitary, pendulous in each cell. Pericarp coriaceous, nut, at length breaking up into 4 1-seeded cocci. Seed pendulous, cylindrical, oblong; testa membranous, albumen fleshy; embryo axillary. Lindric.

318*. *CALLITRICHE STAGNALIS* Scop.; F. B. I. ii. 434.

Chota Nagpur, SINGHUR.

A small, annual water weed, very rare in our area.

321. *Bruguiera* Link.

- Peduncles 1-flowered; calyx lobes more than 8, in fruit as long as the tube..... *gymanorhiza*.
- Peduncles many-flowered; calyx lobes not more than 8, in fruit much shorter than the tube..... *parviflora*.

760. *BRUGUIERA PARVIFLORA* W. & A.; F. B. I. ii. 438. *Rhizophora parviflora* F. I. ii. C. 1.

Sundribans.

A shrub or small tree; not recorded from the Sundribans since Roxburgh obtained it thence.

353. *Trapa* Linn.

- Fruit with 2 angles spinose..... *bispinosa*.
- Fruit with all 4 angles spinose..... *natans*.

847°. THAPA NAI A. Linn.; F. B. I. u. I 590. *P. quadrispinosa*
F. I. i. 451.

Chittagong.

A floating aquatic.

355. *Homalium* Jacq.

Stamens in *isicles* of 3 opposite each petal
Stamens solitary opposite each petal.....

851°. *HOMALIUM NEPALENSIS* Benth.; F. B. I. ii- 596.

Chota Nagpur, Sii^bhini.

A tree.

419. *Randia* Linn.

Flowers in fascicled cymes, with triangular, coriaceous, connate bracteoles; corolla-tube shorter than the lobes; berry pibiform; shiubs armed with straight spine

980°. *RANDIA MALABARICA* Lamk; F. B. I. iii.111. *Posoquena*
fragrant F. I. i. 717.

Orissa.

An erect shrub; with very pale-green leaves.

423. *Webera* Schreb.

Corolla-tube short, with a campanulate limb, tube and lobes; ovules solitary in each cell of ovary.....
Corolla-tube and limb uniform, vide-cylindric, not longer than the lobes; ovules 2 in each cell.....

• 984 . *WBEBACOBTBOSA* Willd.; F. I. i. 696; F. P. I. 10, J;
E. I). W. 22.

Orissa.

A large shrub. *Uriyi* Jhanjauka.

Order LXXYI. PRIMULACEA.

Corolla-lobes contorted; capsule dehiscent irregularly or by valves;
leaves alternate or opposite or whorled..... *Lysimachia*

516*. *Lysimachia* Linn.

Annual or ptrennial erect, procumbent, or creeping herbs:
leaves entire alternate opposite or whorled. Flowers solitary,
axillary, or in braoteate racemes or spikjs, yellow, w^ite, or pink.

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