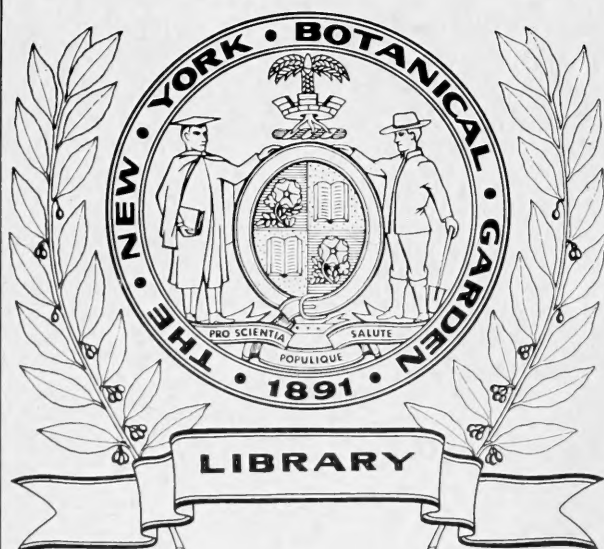




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PLANTS OF THE PUNJAB.

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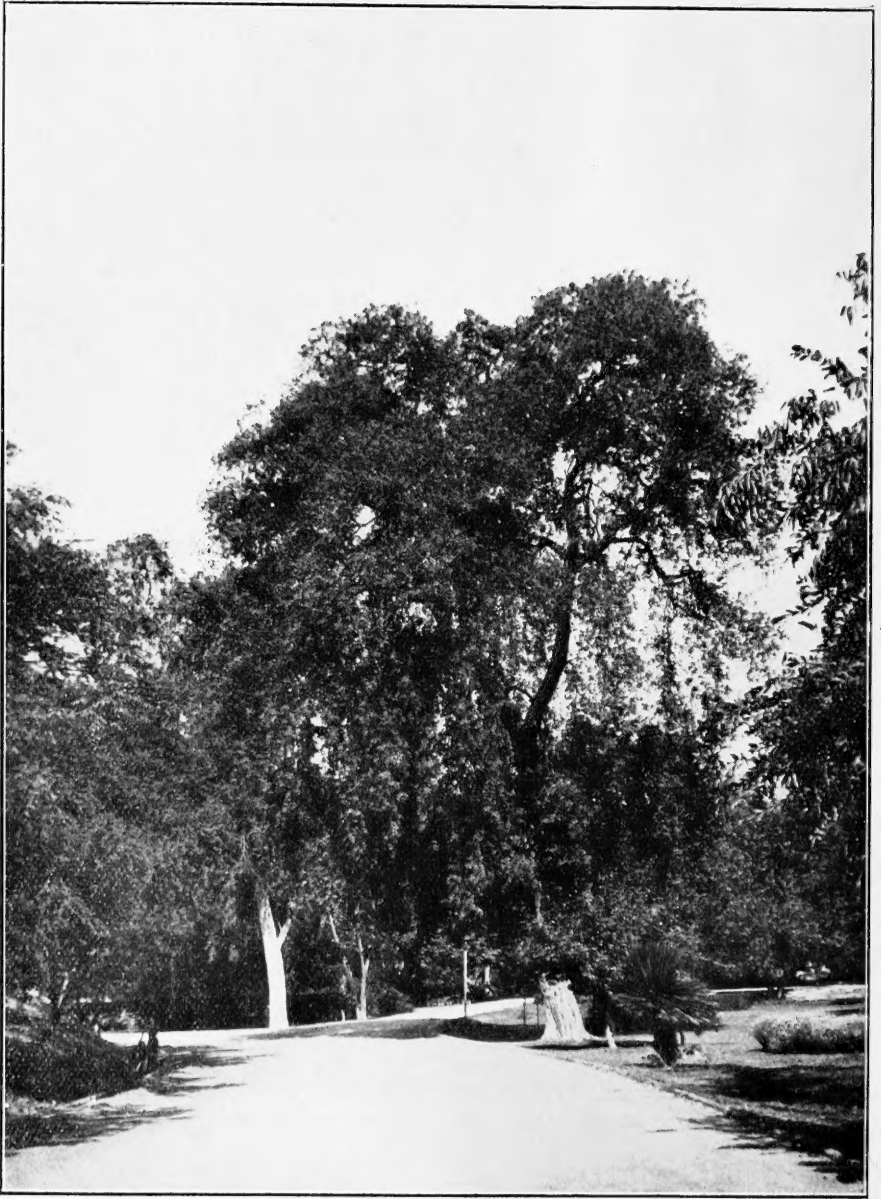
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*A shisham tree of the weeping variety, Dalbergia Sissoo.*

# PLANTS OF THE PUNJAB

A DESCRIPTIVE KEY TO THE  
FLORA OF THE PUNJAB,  
NORTH-WEST FRONTIER  
PROVINCE AND KASHMIR

BY

*hove*  
*amms*  
C. J. BAMBER, M.V.O.,

*Colonel, Indian Medical Service,  
Fellow of the Linnean Society.*

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## PREFACE.

THIS key is intended chiefly for the use of inquirers who have very little knowledge of botany.

The plan, that has been followed, is to classify all plants according to such characteristics as are obvious to all. Amateur botanists often complain of the difficulty they find in tracing out any plant in an ordinary Flora; it is with the hope of assisting such persons that this book has been compiled. It has been the intention of the author to use as few technical terms as possible.

The area, dealt with, is bounded on the north and north-east by the snow line of the Himalaya, on the east and south-east by the Jumna, on the south by Central India and Scinde, and the west and north-west by Afghanistan and Baluchistan. The North-West Frontier Province has been included, because it was considered as forming part of the Punjab, and until a short time ago the districts across the Indus were part of the Punjab.

Kashmir was included as it is impossible to form a satisfactory boundary in that direction, the greater number of the plants found in Kashmir grow in other parts of the Himalaya that are situated in the Punjab.

This little book is not intended to take the place of a complete Flora, but to be used as a guide in helping to identify with but little difficulty any plant in the area. Each plant is supplied with a short description consisting of the principal characters differentiating it from other plants.

This book forms an abbreviated Flora of the area, as in it is included probably every plant, excepting Grasses and Ferns, that has been found in the area. A large proportion of the plants have been examined by the author while they were still fresh.

He is much indebted to such works as the Flora of British India, the Flora of the Upper Gangetic Plain, the Flora Simlensis, the Forest Flora of the School Circle, United Provinces, and the Dictionary of Economic Productions for the descriptions and uses of plants with which he is unacquainted.

This is a suitable opportunity for thanking friends for the assistance which they have given to one, who has but a superficial knowledge of the science of botany. Mr. I. K. Kaul kindly took the photographs which have been used to illustrate the text. My thanks are due to the Bombay Natural History Society for allowing me to publish that portion of this book which I supplied to its Journal.

SIMLA :

July 1, 1915.

C. J. BAMBER,

Colonel, *Indian Medical Service.*



## INTRODUCTION.

THE method of classification that has been adopted in this work is the division of all flowering plants except grasses into erect plants, consisting of trees, shrubs and herbs; climbing plants; prostrate plants, that lie on the ground; water plants, which grow in water and are descended from land plants as they possess flowers which require wind or insects for their fertilization; leafless plants, which include many parasites.

Where it has proved necessary, the above classes have been sub-divided again into those plants with opposite and those with alternate leaves, these again have been separated into those with stipules (stipulate) and those without stipules (exstipulate) and these still further sub-divided into those with simple, those with lobed, and those with compound leaves.

Even these divisions are not sufficient to differentiate every single plant, it has therefore proved a necessity to supply a short description. The descriptions are arranged according to the sequence of the natural orders in Bentham and Hooker's *Genera Plantarum*.

Under the botanical name of each plant are the English and Urdu names, if any are known, then follows a reference to the page and volume of the *Flora of British India* where the full description of the plant will be found, to this has been added the habitat of the plant and its uses.

In cases where plants comply sometimes with the characteristics of one class and at other times with those of another the plant has been described in one class and merely a cross reference given in the other. Such cases occur among plants, which may be at some elevations trees, and at others merely shrubs.

Plants, which are commonly found to have established themselves as escapes or to be cultivated, but are not indigenous in the area, have been entered here.

It is essential to have good sight or to use a magnifying glass in examining plants; this is especially necessary in noting the presence or absence of stipules, as they are often very minute. Young shoots should always be selected in examining the leaves for stipules, as in many plants the stipules wither and fall off, while the leaves are still young. In identifying herbs the whole plant should be examined, as the character of the portion underground is of importance in the process of identification.





## GLOSSARY.

*Achene*.—The closed fruit-like seed of the *Compositæ*.

*Alternate*.—When a leaf has no leaf at the same level on the opposite side of the stem or branch it is called *Alternate*.

*Anther*.—See *Stamen*.

*Berry*.—A fruit fleshy or pulpy throughout surrounded by a skin with the seeds immersed in the pulp.

*Bipinnate*.—When the secondary as well as the primary divisions of a leaf are pinnate.

*Bract*.—A scale more or less leaflike situated below the calyx of a flower or collection of flowers.

*Bracteole*.—The bract, which is nearest to the flowers.

*Calyx*.—The outer envelope of the flower, where there are two dissimilar envelopes.

*Capsule*.—A dry seed vessel (fruit) consisting of one or more parts (carpels).

*Carpel*.—One of the component parts of a fruit or seed vessel.

*Climbers*.—Plants which throw their weight upon external supports and grow fast, as they do not require to form the fibres for an erect stem.

*Compound*.—Applied to a leaf when it is divided into one or more leaflets jointed on to one stalk.

*Cone*.—The compound fruit of *Pinus* and other plants of the *coniferæ* (cone bearers).

*Corolla*.—The inner envelope of the flower, where there are two dissimilar envelopes, usually the most showy part : it may consist of separate petals or united portions (corolla).

*Dentate*.—Toothed as the margin of a leaf, notched with small triangular processes.

*Digitate*.—A compound leaf is *digitate* when it has several leaflets radiating from the extremity of the leaf stalk.

*Drupe*.—A fleshy fruit having a stone enclosing the seed or kernel.

*Epiphyte*.—A plant growing upon another without drawing nourishment from it.

*Erect*.—Applied to plants which have stems that support their weight without external support.

*Exstipulate*.—Having no stipules, see *Stipules*.

*Follicle*.—A several-seeded carpel splitting open along one side only.

*Fruit*.—The seed vessel of any plant, edible or inedible.

*Head*.—A collection of small flowers sessile on one base, looking like one flower as in the *andelion* or *daisy*.

*Herb.*—A plant which possesses very little woody stem above ground and usually dies down in the autumn or after flowering, and is annual or perennial.

*Keel.*—The two more or less combined petals, forming together an angle as in the Pea.

*Lanceolate.*—Of leaves nearly ovate, but tapering to both ends, and broadest below the middle.

*Leaflets.*—The articulated (jointed) primary divisions of a pinnate compound leaf and the secondary divisions of a bipinnate leaf.

*Ligulate.*—Strap-shaped.

*Linear.*—Narrow with almost parallel edges.

*Lobe.*—The division of a leaf, of a leaflet or of a petal.

*Nut.*—A large one-seeded unopening dry fruit.

*Nutlet.*—A small one-seeded dry unopening fruit, or one of the divisions of the fruit of the Boraginaceæ or Labiatae.

*Opposite.*—When a leaf has one or more leaves at the same level and usually on the opposite side of the branch.

*Ovate.*—Egg-shaped.

*Palmate.*—Lobed in the shape of a hand.

*Pappus.*—The calyx of the Compositæ, formed of hairs, bristles or scales.

*Parasite.*—A plant that grows upon another and derives its nourishment from it.

*Perianth.*—The floral envelopes—corolla and calyx, but often used to denote the floral envelope, when the flower possesses only one.

*Peltate.*—Applied to a leaf when its stalk (petiole) is within the margin.

*Petals.*—The parts of the corolla.

*Pinnate.*—Compound leaves with leaflets arranged like the pinnules of a feather along both sides and at the end of a common stalk are styled pinnate.

*Pinule or Pinna.*—One of the primary divisions of a bipinnate leaf.

*Raceme.*—A collection of flowers, nearly equally stalked and arranged singly along a common stalk.

*Rhizome.*—A creeping, generally underground, stem giving off erect stems at intervals.

*Sepals.*—The parts of a calyx.

*Sessile.*—Stalkless.

*Shrub.*—A woody perennial plant of not more than 30 feet in height and much branched down to the level of the ground; this includes undershrubs.

*Simple.*—Applied to leaves which are undivided.

*Spadix.*—A spike of flowers enclosed in a leafy bract (spathe).

*Spathe.*—A leafy bract enclosing a spike of flowers.

*Spathulate.*—Applied to a leaf that is oblong and tapers down into a stalk.

*Spike.*—A collection of sessile flowers on a common simple or branched stalk.

*Spine.*—A sharp woody outgrowth.

*Spurred.*—Having a hollow tubular projection.

*Stamens.*—The male organs consisting of a thread (filament) with a head (anther) containing pollen found within the petals in the flower centre.

*Stigma.*—See Style.

*Stipules.*—Bract-like growths at the base of some leaf stalks, sometimes leafy or spinous. Stipulate having stipules.

*Stipels.*—Secondary stipules, at the base of the leaflets of compound leaves.

*Style.*—One or more thread-like processes in the centre of the flower with a single or divided head (stigma).

*Tendril.*—A twining organ by means of which some plants climb.

*Tree.*—A perennial plant with a woody stem which branches out above and generally grows to more than 30 feet in height.

*Tube.*—The united part of the calyx or corolla.

*Tuber.*—An underground fleshy stem.

*Unarmed.*—Destitute of spines or prickles.

*Winged.*—Supplied with a leafy or membranous expansion.



# Plants of the Punjab.

## ERECT PLANTS.

### TREES.

#### TREES WITH OPPOSITE STIPULATE SIMPLE LEAVES.

##### PETALS UNUNITED.

**Euonymus tingens**, see Trees, Opposite, Exstipulate, Simple.

##### PETALS UNITED.

**Stephegyne or Mitragyna parvifolia**, medium size, trunk buttressed ; leaves 2-6 in. diam., leathery, variable in shape, ovate or round, tip short- or long-pointed, stipules pale, membranous, large, soon falling off ; flowers white, or light yellow, very small, in round heads 1 in. diam., corolla trumpet-shaped, lobes 5, stamens 5, on the throat of the corolla ; capsule  $\frac{1}{8}$  in., 100-150 in each head, seeds many, winged, minute.  
*Kaëm.*  
RUBIACEÆ.  
F. B. I. iii. 25.  
The Plains to 4,000 ft.  
Rohtak.

**Wendlandia exserta**, small, young shoots grey woolly ; leaves 5-9 in. long, grey woolly on under surface, stipules recurved ; flowers small, white, fragrant, in dense terminal branching racemes, calyx lobes 4-5, persistent, corolla funnel-shaped, lobes 4-5, stamens 4-5 ; fruit dry, woolly, round, seeds minute, many.  
RUBIACEÆ.  
F. B. I. iii. 37.  
Himalaya up to 4,000 ft.  
Sutlej Valley (Collett).

**Randia dumetorum**, see Shrubs, Opposite, Stipulate, Simple.

**Morinda tinctoria**, small, branches 4-angled, woolly ; leaves 4-8 in. long, pointed at both ends, woolly on both surfaces, stipules sheathing with divided points ; flowers in round heads, white, corolla about 1 in. long, lobes 4-7, stamens 4-7 ; fruit, 1 in. diam., composed of many drupes joined together.  
*Al, ach.*  
RUBIACEÆ.  
F. B. I. iii. 156.  
The Plains, east of the Sutlej river.

**Ficus hispida**, see Shrubs, Opposite, Stipulate, Simple.

##### COMPOUND LEAVES.

**Staphylea Emodi**, small, bark spotted and streaked ; leaves long stalked, pinnate, two lateral leaflets sessile, terminal one stalked ; flowers white, in long hanging racemes, sepals and petals alike, white, 5, erect, stamens 5 ; capsule dry, papery, 2-3 in. long, 3-lobed and 3 pointed at the top.  
*Naqdaun, marchob.*  
SAPINDACEÆ.  
F. B. I. i. 698.  
Himalaya, 6-9,000 ft.  
Narkunda (Collett).

## TREES WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## COMPOUND LEAVES.

- Dolichandrone stipulata**, large, branchlets and flowering parts covered with easily separating yellow or brown wool; leaves 1-1½ ft. long, leaflets 3-5 pairs; flowers 2-3 in. long, yellow brown, woolly, calyx cleft on one side to the base, corolla tubular, stamens 4, in two pairs facing each other; capsule 18-24 in. by 1 in., very woolly.  
 BIGNONIACEÆ.  
 F. B. I. iv. 379.  
 The Plains.  
 Gujranwala, planted.

## PETALS UNUNITED.

- Euonymus tingsens**, small; leaves thick, leathery, 1-3 in. long; flowers ½ in. diam., yellowish white with purple veins, calyx lobes 5, fringed, petals 5, stamens 5; fruit is a capsule, 4- or 5-lobed, opening to show a red interior in which the seeds are embedded; the capsule is angled. The inner bark yields a yellow dye. The English representative of this genus is *Euonymus Europæus*, Spindle Tree, usually a shrub.  
 CELASTRACEÆ.  
 F. B. I. i. 610.  
 Himalaya, 6-10,000 ft.  
 Simla (Collett).

- Acer oblongum**, Maple, large; leaves smooth, oblong, 3-6 by 1-2 in. long, pointed, upper surface dark green, lower white; flowers in terminal or leaf-bearing lateral clusters, sepals and petals 5,  $\frac{1}{10}$  in. long, stamens 8, smooth; fruit winged, back of wing straight.  
 SAPINDACEÆ.  
 F. B. I. i. 693.  
 Himalaya, 2-6,000 ft.  
 Simla, the Glen (Collett).

- Acer lævigatum**, large; leaves smooth, oblong, 2½-5 by 1-2 in., lower surface green; flowers in loose terminal branching racemes, sepals and petals 5, stamens 5-8, smooth; fruit winged, wings reddish, back curved.  
 SAPINDACEÆ.  
 F. B. I. i. 693.  
 Himalaya, 5-9,000 ft.

- Psidium guyava**, small, bark smooth, pinkish, peeling off in flakes; leaves 3-4 in. long, ovate, principal nerves prominent; flowers large, white, petals ununited, calyx 4-5-lobed, stamens many; fruit 2-3½ in. diam., rough skinned, succulent, edible, in the centre a mass of pulp in which many small seeds are embedded, strongly scented, a great favourite raw or cooked.  
 MYRTACEÆ.  
 F. B. I. ii. 468.  
 The Plains to 2,000 ft.  
 Baluchistan.

- Eugenia Jambolana**, large; leaves smooth, shining leathery, 3-6 in. long, covered with minute shining dots; flowers pale green,  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, crowded in small round clusters, calyx tube funnel-shaped, petals united into a hood, stamens in several series; fruit succulent, edible, dark purple when ripe, stone one. It is used in Indian medicine.  
 MYRTACEÆ.  
 F. B. I. ii. 499.  
 The Plains to 5,000 ft.  
 Baluchistan.

## TREES WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Lagerstroemia parviflora,***Bakli, dhaura.*

LYTHRACEÆ.

F. B. I. ii. 575.

The Plains to 1,000 ft.

small, bark ash coloured or light brown, smooth, peeling off in flakes; leaves 2-3½ in. long, smooth; flowers ¼ in. across, white, fragrant, sepals 6, petals 6, narrow with a wavy margin, long-stalked, wrinkled, stamens very many and long; capsule attached to woody calyx ¾-1 in. long, seeds many, winged at the top, ½ in. long.

**Lagerstroemia Flos-Reginæ,***Jarul.*

LYTHRACEÆ.

F. B. I. ii. 577.

The Plains.

large; leaves 4-8 in. long, spines sometimes on the trunks and branches of old trees; flowers 2-3 in. across, mauve, petals long-stalked, wavy; capsule 1½ in. long, seeds winged.

**Cornus macrophylla,***Haleo, kasir.*

CORNACEÆ.

F. B. I. ii. 744.

Himalaya, 4-8,000 ft.

Simla (Collett).

large, bark brown, rough; leaves, sometimes a few alternate, 6-4 in. long, long-pointed; flowers small, in bunches, often 4-5 in. diam., calyx covered with white hairs, petals 3-4, ¼ in. long, strap-shaped, stamens 4; fruit round, ⅙ in. diam., crowned with the remains of the cup-shaped calyx.

**Cornus oblonga,***Kagshi, bakar.*

CORNACEÆ.

F. B. I. ii. 744.

Himalaya, 4-7,000 ft.

Simla (Collett).

small, bark reddish brown, rough; leaves, sometimes a few alternate, 2-6 by ¾-1½ in., narrowly oblong; flowers as above; fruit ovoid, ¼ in. diam., crowned as above.

**Cornus capitata,****The Strawberry Tree,***Tharwar, thesi.*

CORNACEÆ.

F. B. I. ii. 745.

Himalaya, 4-7,000 ft.

Simla (Collett).

small, bark greyish brown, young branches and leaves rough with short close clinging two-pointed hairs; leaves opposite, 2-3½ by 1¼ 1½ in., oblong or ovate; flowers in heads rounded ½ in. diam. with four yellowish white bracts 1 by ¼ in., petal-like, calyx teeth 4, reflexed, petals 4, stamens 4; fruit a depressed round strawberry-like head of many minute drupes, one seeded, edible.

## PETALS UNITED.

**Olea cuspidata,****The Olive,***Kahu.*

OLEACEÆ.

F. B. I. ii. 611.

Himalaya, 2-6,000 ft.

Baluchistan

(Boissier).

Rawalpindi.

Salt Range.

small, bark thin, peeling in narrow strips when old; leaves 2-4 in. long, leathery, oblong, tip hard, acute, smooth, shining above, covered beneath by minute red scales; flowers small, white, in numerous short branching racemes in the axils of leaves, corolla rotate, deeply divided, tube short, lobes 4, stamens 2; drupe ¼-½ in. long, ovoid, black when ripe, stone hard, one seeded.

## TREES WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Olea glandulifera*,** medium size, bark rough, branches with lentil-shaped corky excrescences; leaves ovate, 4-5 by  $1\frac{1}{2}$  in., long-pointed, glands on the under surface; flowers cream coloured in terminal or lateral branching racemes 2-3 in. long, corolla deeply divided; drupe  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, ovoid, acute at the top, black when ripe, stone as the last.  
*Gulibi, phalsh.*  
OLEACEÆ.  
F. B. I. iii. 611.  
Himalaya, 2-6,000 ft.
- Ligustrum compactum*,** see Shrubs, Opposite, Exstipulate, Simple.
- Salvadora persica*,** see Shrubs, Opposite, Exstipulate, Simple.
- Salvadora oleoides*,** see Shrubs, Opposite, Exstipulate, Simple.
- Carissa carandas*,** see Shrubs, Opposite, Exstipulate, Simple.
- Holarrhena antidiysenterica*,** small, bark rough brown, peeling off in irregular flakes; leaves 6-12 by 2-5 in., smooth; flowers white or cream colour, scented, 1-1 $\frac{1}{2}$  in. across in large bunches 3-6 in. diam., calyx 5-lobed, petals united in a tube, stamens 5 at the base of the tube; fruit of two distinct follicles, 8-16 by  $\frac{1}{5}$ - $\frac{1}{2}$  in. in-curved covered with white dots, seeds many,  $\frac{1}{2}$  in. long, linear crowned with hairs, 1 $\frac{1}{2}$ -2 in. long, brownish yellow. The powdered bark cures chronic dysentery.  
*Kura.*  
APOCYNACEÆ.  
F. B. I. iii. 644.  
Himalaya to 3,500 ft.  
Valleys below Simla (Collett).
- Wrightia tomentosa*,** small, bark corky; leaves 3-6 by 1 $\frac{1}{2}$ -3 in., long-pointed, woolly often on both surfaces, always on the under surface; flowers pale yellow, 1 in. across in large bunches, petals united in a tube, round flat on top, scales within, stamens 5, at the top of the tube converging; fruit of two united follicles with two grooves, 8-12 by  $\frac{1}{2}$ - $\frac{3}{4}$  in., straight, seeds many,  $\frac{1}{2}$  in. long with white silky hairs at the lower end.  
*Dudhi.*  
APOCYNACEÆ.  
F. B. I. iii. 653.  
The Plains to 2,000 ft.  
The Ridge, Delhi.
- Tecoma undulata*,** small; leaves 3-5 by  $\frac{1}{2}$ -1 in., narrowly oblong, margin wavy, blunt tip; flowers 2-3 in. long, orange, in few flowered clusters, on lateral branches, calyx  $\frac{1}{3}$  in. long, lobes 5, blunt, corolla 1 $\frac{1}{2}$  to 2 in. long, tubular, lobes 5, round, stamens 4, in pairs, opposite to each other, within the corolla; capsule, linear, 8 by  $\frac{1}{3}$  in., slightly curved, seeds thinly discoid, with wing 1 by  $\frac{1}{3}$  in., wing very narrow round the top.  
*Rohira, lahura.*  
BIGNONIACEÆ.  
F. B. I. iv. 378.  
The Plains to 3,000 ft.  
Baluchistan (Stocks).



## TREES WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Tectona grandis,**  
**Teak,***Saigun.*

VERBENACEÆ.

F. B. I. iv. 570.

The Plains.

large, branchlets 4-angled, felted with star-shaped hairs; leaves 12 by 8 in., wedge-shaped at both ends, felted beneath, ovate, stalk 1 in. long; flowers whitish blue, small, numerous in terminal branching racemes 18 in. diam., calyx small, large in fruit, corolla  $\frac{1}{6}$  in. long, 5-lobed; drupe  $\frac{2}{3}$  in. diam., hairy, 4-celled, bony. A fine timber tree.

**Gmelina arborea,***Kumhar.*

VERBENACEÆ.

F. B. I. iv. 581.

The Plains to 2,000 ft.

large, bark grey, smooth, peeling in flakes, branchlets with white specks; leaves 4-8 by 3-6 in., broad, ovate, hollowed at the base, pointed, velvety beneath, stalk 3-6 in. long; flowers 1-1 $\frac{1}{2}$  in. long, tubular, 2-lipped, brownish yellow in terminal branching racemes, calyx  $\frac{1}{5}$  in., corolla lobes 5-4, stamens 4; drupe ovoid,  $\frac{3}{4}$ -1 in. long, skin leathery yellow, succulent, edible, stone 2-4-celled, seeds oblong. The bark and seeds are used medicinally.

## PETALS NONE.

**Cinnamomun Tamala,***Dalchini.*

LAURINACEÆ,

F. B. I. v. 128.

Himalaya, 3-5,000 ft.

leaves both opposite and alternate, sometimes on the same twig, 4-6 by 1 $\frac{1}{2}$ -2 $\frac{1}{2}$  in., smooth, shining above, pointed, pink when young; flowers white,  $\frac{1}{5}$ - $\frac{1}{4}$  in. long, in branching racemes, as long as the leaves, calyx lobes 6, unequal, silky, petals none, stamens 9 in 3 series; drupe  $\frac{1}{2}$  in. long, ovoid, succulent, black when ripe, supported by the thickened stalk and 6-toothed calyx. The bark is used instead of true cinnamon.

**Elæagnus hortensis,**

see Trees, Alternate, Exstipulate, Simple.

**Buxus sempervirens,**

see Shrubs, Opposite, Exstipulate, Simple.

**Cupressus torulosa,****Cypress,***Devidar.*

CONIFERÆ.

F. B. I. v. 645.

Himalaya,

5,500-8,000 ft.

large with pyramidal crown and drooping branchlets, branches spreading, outline of tree narrowly conical; leaves scale-like, triangular, overlapping, catkins terminal, cylindrical, with opposite target-shaped scales with 2-6 anther scales near the edge; fruit round, head of scales closed, open when ripe, seeds  $\frac{1}{6}$  in., with round wing.

## TREES WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Acer caesium**,  
SAPINDACEÆ.  
F. B. I. i. 695.  
Himalaya, 7-10,000 ft.

large; leaves 5-lobed, palmate,  $3\frac{1}{2}$ -7 by 4-8 in., stalks  $2\frac{1}{2}$ - $6\frac{1}{2}$  in. long; flowers in long bunches arranged along a stalk which is nearly as long as the leaves and appear after them, male and female on different trees, petals small, cream coloured.

**Acer villosum**,  
SAPINDACEÆ.  
F. B. I. i. 695.  
Himalaya, 7-9,000 ft.

large; leaves 5-lobed,  $3\frac{1}{2}$ -10 in. diam., stalks 2-5 in.; flowers in long bunches, branched and hairy, and appearing before leaves and shorter than the leaves, petals 5, short, white; fruit with wings slightly curved.

**Acer caudatum**,  
SAPINDACEÆ.  
F. B. I. i. 695.  
Himalaya, 7-11,000 ft.

large; leaves 5-lobed, lobes narrowed into long tail-like tips; flowers on short-stalked bunches and appearing with the leaves, sepals oblong, whitish, petals shorter than sepals, stamens 4-6; fruit smooth, wings pink, back moderately curved.

**Acer pictum**,  
*Tilpattar*.  
SAPINDACEÆ.  
F. B. I. i. 696.  
Himalaya, 4-6,000 ft.

small; leaves 5- to 7-lobed,  $2\frac{1}{2}$ - $5\frac{1}{2}$  by  $2\frac{1}{2}$ - $6\frac{1}{2}$  in., stalks 1- $4\frac{1}{2}$  in., lobes lanceolate; flowers in long-stalked bunches appearing with the leaves, sepals  $\frac{1}{10}$  in. long, oblong, petals equal to sepals in length, stamens 8, short; fruit differs from all the above by the wings diverging in nearly a straight line.

## PETALS NONE.

**Acer pentapomicum**,  
**The Maple**,  
SAPINDACEÆ.  
F. B. I. i. 693.  
Himalaya, 3-4,000 ft.

large, twigs grey or reddish; leaves 3-lobed,  $1\frac{1}{2}$ -4 by  $2\frac{1}{2}$ -6 in., pale on both sides, stalks  $1\frac{1}{2}$ -4 in., calyx 4-5 toothed, petals none, stamens 8; fruit smooth, wings with back nearly straight.

## TREES WITH OPPOSITE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Æsculus**  
**Hippocastanum**,  
**Horse Chestnut**,  
SAPINDACEÆ.  
F. B. I. i. 675.  
Himalaya, 4-10,000 ft.

large, bark stripping in long pieces, buds scaly; leaves digitately compound, stalks 4-6 in. long, leaflets 5-9, 8-12 by  $2\frac{1}{2}$ -4 in., the middle one largest oblong, long-pointed, toothed; flowers white, 1 in. long, irregular, in small velvety clusters arranged in erect terminal pyramidal branching racemes 12-15 in. long, calyx tubular, 5-lobed, petals 4, stalked, white, yellow and red streaks, 2 petals narrow, stamens 7; capsule prickly, brown ovoid, 1-2 in. diam. with 1-3 seeds, rounded, dark brown with a greyish scar on one side.

## TREES WITH OPPOSITE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Æsculus indica,**  
**Indian Horse Chestnut,**  
*Gun, torjaga, hane.*  
 SAPINDACEÆ.  
 F. B. I. i. 675.  
 Himalaya, 4-10,000 ft.  
 Simla, Narkanda  
 (Collett).

is very like the last species, but the leaflets are smaller and the capsule is smooth.

## PETALS UNITED.

**Fraxinus floribunda,**  
*Angu, hum, tunnu.*  
 OLEACEÆ.  
 F. B. I. iii. 605.  
 Himalaya, 5-9,000 ft.

large, bark grey, smooth on young stems, deeply furrowed on old; leaves odd pinnate, midrib 5-8 in. long, leaflets opposite, 5-9, 3-5 by 1-3 in. long, pointed, toothed; flowers small, white, in clusters on a large branching terminal raceme 6-8 in. long, calyx minute, 4-toothed, petals 4, stamens 2; a winged dry nut, one-seeded, 1-1½ in. long. Manna exudes from the bark by incision.

**Millingtonia**  
**hortensis,**  
**Indian Cork tree,**  
*Akas Nim.*  
 BIGNONIACEÆ.  
 F. B. I. iv. 377.  
 The Plains, planted.

large, towering, branches drooping, bark corky; leaves 2-3 ft. long, 2-3-pinnate, leaflets 2-3 in., ovate-lanceolate, long-pointed; flowers white, scented, on terminal branching racemes 10 by 6 in., calyx  $\frac{1}{2}$  in., teeth 5, corolla tube 2-3 by  $\frac{1}{16}$  in., mouth 1 in. diam., lobes 5, nearly equal, ovate, stamens 4, slightly protruding; capsule 12 by  $\frac{3}{4}$  in., pointed at both ends, seeds with wing 1 by  $\frac{1}{2}$  in. discoid. A fine avenue tree.

**Oroxylum indicum,**  
*Mulin, tatmorang.*  
 BIGNONIACEÆ.  
 F. B. I. iv. 378.  
 The Plains to 3,000 ft.  
 Valleys below Simla  
 (Collett).

medium size, bark soft, corky, branches few; leaves 2-3-pinnate, 4-6 ft. diam. pinnæ 3-4 pairs, pinnules 3-4-foliolate, leaflets 3-5 by 2-3½ in., broad ovate, long-pointed; flowers dark red, odour bad, large, fleshy in loose terminal racemes, main stalk 2-3 ft., calyx 1 in. long, leathery, hardly toothed, corolla bell-shaped, 2-3 in. long, lobes 5, stamens 5, 4 nearly equal, 5th shorter; capsule 15-30 by 2-4 in., flat, like a scabbard, seeds discoid with papery wing, 2-3 in. across. The bark is used as an astringent.

## PETALS NONE.

**Fraxinus excelsior,**  
**Common ash,**  
*Sum, kum.*  
 OLEACEÆ.  
 F. B. I. iii. 606.  
 Himalaya, 4-9,000 ft.

large; leaves odd pinnate, leaflets 3-11, 4 by 1½ in., sessile, long-pointed, toothed; flowers in short racemes, clustered at tips of branches, appearing before the leaves, no sepals or petals, stamens 2, short; a winged dry nut, 1-1½ in. long, one-seeded.

## TREES WITH OPPOSITE EXSTIPULATE COMPOUND LEAVES.

## PETALS NONE.

**Fraxinus xanthoxyloides**,  
*Hanuz, shangal.*  
 OLEACEÆ.  
 F. B. I. iii. 606.  
 Himalaya, 3-9,000 ft.  
 Baluchistan  
 (Boissier).

small; leaves odd pinnate, leaflets 7-11, 2 by  $\frac{3}{4}$  in., not long-pointed, teeth small; flowers in very short dense clusters, brown from woolly bracts, no calyx in some flowers, petals none; fruit as in the last species.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Bixa Orellana**,  
**Arnatto**,  
*Latkan.*  
 BIXNEÆ.  
 F. B. I. i. 190.  
 The Plains.

small, evergreen, young shoots rusty velvety; leaves 4-8 by  $2\frac{1}{2}$ -5 in., smooth, long-pointed, stalk 2-3 in., slender, stipules minute; flowers white or pink, 2 in. diam., in terminal branching racemes, sepals 5, petals and stamens many; fruit  $1\frac{1}{2}$  in., ovoid, softly prickly, seeds many in pulp. From this an orange dye is extracted.

**Shorea robusta**,  
*Sal.*  
 DIPTEROCARPEÆ.  
 F. B. I. i. 306.  
 Kangra Valley,  
 Himalaya to 3,000 ft.,  
 east of the Sutlej river.

large, young parts with greyish velvet, bark thick, dark grey, rough from irregular furrows; leaves 6-10 by 4-6 in., ovate-oblong, long-pointed, smooth, stalk 1 in. long, stipules curved,  $\frac{1}{3}$  in. long, soon falling off; flowers yellowish, shortly stalked in branching terminal or axillary loose racemes, 5-9 in. long, covered with greyish velvet, calyx and outside of petals with greyish velvet, petals  $5\frac{1}{2}$  in. long, orange within, tapering upwards, stamens 50; fruit ovoid,  $\frac{1}{2}$  in. long, with greyish velvet attached to the enlarged sepals, which form 5 unequal wings, seed one. Wood and resin are valuable.

**Kydia calycina**,

see Trees, Alternate, Stipulate, Lobed.

**Grewia oppositifolia**,  
*Behel.*  
 TILIACEÆ.  
 F. B. I. i. 384.  
 Himalaya to 7,000 ft.  
 Baluchistan (Lace).

medium size, bark ash coloured, herbaceous parts more or less with stellate hairs; leaves 3 in. long in two rows along branches, ovate, long-pointed, minutely toothed, rough above, velvety beneath, stalks  $\frac{1}{3}$  in., stipules more than  $\frac{1}{3}$  in., linear, soon falling off; flowers in short clusters, opposite to leaves, white to yellow, sepals 5, linear,  $\frac{3}{4}$  in. long, 3-ribbed on the back, petals 5, half the length of the sepals, stamens many; drupe smooth or thinly hairy, fleshy, dark green, 1 to 4-lobed, nuts one-celled, one-seeded, size of peas.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Grewia vestita, or  
asiatica,***Phalsa, Daman.*

TILIACEÆ.

F. B. I. i. 387.

Salt Range, the Plains  
to 4,000 ft.

Baluchistan (Boissier).

small, herbaceous parts covered with yellowish velvet; leaves 3-6 in. long, round or broadly ovate, round to long pointed at the apex, somewhat lobed, woolly on both surfaces, less so when mature, stalks  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, stipules curved, often with a broad base; flowers  $\frac{3}{4}$  in. diam., in clusters of 3, axillary, buds woolly, ribbed, sepals 5, brown woolly outside, yellow smooth inside, petals 5, half the length of sepals, oblong, yellow, stamens many; drupe round,  $\frac{2}{5}$  in. diam., partially 2-lobed with 1 to 2 one-celled nuts. The fruit is eaten. This plant is kept lopped in gardens level with the ground, only long annual fruit bearing shoots are allowed to grow.

**Ilex dipyrrena,  
Himalayan Holly,***Kanderu.*

ILICINEÆ.

F. B. I. i. 599.

Himalaya, 5-8,000 ft.  
Simla (Collett).

medium size, branches thick, young shoots slightly hairy; leaves 3-4 in. long, dark green, shining, leathery, spinous-toothed, without spines when old, stipules minute; flowers  $\frac{1}{5}$  in. diam., whitish green in short round axillary clusters, sepals 4, petals 4, stamens 4; drupe  $\frac{1}{2}$  in. diam., round, scarlet, stones usually 2, deeply grooved.

**Ilex odorata,**

ILICINEÆ.

F. B. I. i. 599.

Himalaya, 3-6,000 ft.  
Valleys below Simla  
(Collett).

small, branches thinner than those of the last species; leaves 5-7 or even 9 in. long, not spinous but minutely toothed, stipules minute; flowers  $\frac{1}{8}$  in. diam., white in dense short axillary clusters, sepals 4, petals 4, stamens 4, much longer than the petals; drupe  $\frac{1}{4}$  in. diam., round, black, stones 4, 3-angled.

**Zizyphus Jujuba,***Ber.*

RHAMNEÆ.

F. B. I. i. 632.

The Plains to 6,000 ft.  
Simla (Collett).

Baluchistan (Stocks).

small, thorny, bark dark grey, inside reddish, young parts with densely greyish brown velvet; leaves 1-4 in. long, ovate, nearly round, dark green and smooth above, grey velvety beneath, stipules of one straight spine or two spines, one of them short and curved back; flowers greenish-yellow in short axillary nearly sessile clusters, petals 5, bent down, stalked, concave, stamens 5; drupe  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, ovoid or round, orange to red when ripe, stone 2-celled, bony, edible, widely cultivated.

**Zizyphus vulgaris,**

see Shrubs, Alternate, Stipulate, Simple.

**Berchemia floribunda,**

see Climbing Plants, Alternate, Stipulate, Simple.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Rhamnus dahuricus,**  
or *virgatus*,  
**Indian Buckthorn,**  
*Chato, kanji.*

RHAMNACEÆ.

F. B. I. i. 639.

Peshawar, Himalaya,

4,500-9,000 ft.

small, much branched, shoots abort and the end becomes dry, hard and pointed, thus forming a spine, two lateral shoots grow from below the spine, thus a spine is found in the fork between two branches and leaves clustered on the lower part of the spines, bark dark grey, thin, shining, peeling in rolls; leaves alternate, nearly opposite,  $\frac{3}{4}$ -2 in. long, lanceolate, long-pointed, stipules soon falling off, linear, minute; flowers greenish, in axillary clusters, sepals 4, petals 4, minute, linear, stamens 4; fruit  $\frac{1}{4}$  in. long, ovoid, seated on the persistent calyx, seeds grooved. In China Green Indigo is made from the bark.

**Hovenia dulcis,**  
*Chamhrun, sicka.*

RHAMNACEÆ.

F. B. I. i. 640.

Himalaya, 3-6,500 ft.

medium size, trunk straight; leaves 4-6 by 2-3 in., ovate, long-pointed, in two rows, toothed, woolly beneath, stalk  $\frac{1}{2}$  in. long, stipules small, soon falling off; flowers white, in terminal and axillary clusters, sepals 5, petals 5, stalked, stamens 5, longer than the petals; fruit  $\frac{1}{4}$  in. diam., round, nearly 3-lobed, 3-celled and 3-seeded, the fruit stalk enlarges, becomes fleshy, tastes like a pear, edible.

**Bauhinia retusa,**  
*Kural, kandla.*

LEGUMINOSÆ.

F. B. I. ii. 279.

Himalaya to 4,000 ft.

Valleys below Simla

(Collett).

medium size, bark dark brown, generally scored by diagonal cuts, made to obtain the gum; leaves sometimes cleft at the end, 4-6 in. diam., broader than long, velvety beneath, stalk  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. long; flowers in terminal branching velvety racemes up to 12 in. long, flowers  $\frac{1}{2}$  in. long, pale yellow with purple streaks, petals oblong,  $\frac{1}{3}$  in., stalked, stamens 10, only 3 perfect; pod 4-6 by  $1\frac{1}{2}$  in., flat, reddish, seeds 6-8.

**Prunus Amygdalus,**  
**The Almond,**  
*Badam.*

ROSACEÆ.

F. B. I. ii. 313.

The Plains to 10,000 ft.

Baluchistan (Lace).

small, bark brownish grey, smooth; leaves 3 in. long, oblong-lanceolate, minutely toothed, thin, stalk  $\frac{1}{2}$  in. long, with two glands, stipules fringed; flowers pink, stalked,  $\frac{3}{4}$  in. diam., appear before the leaves, petals 5, stamens many, drupe  $1\frac{1}{2}$  in. long, velvety, opening in two pieces, stone large, flattened, covered with shallow wrinkles and minute holes, seed flattened, long, oval, seed edible.

**Prunus persica,**  
**The Peach,**  
*Aru.*

ROSACEÆ.

F. B. I. ii. 313.

The Plains to 10,000 ft.

Baluchistan

(Hughes-Buller).

small, bark brownish, rough, branches thick; leaves 3-5 by  $\frac{3}{4}$ - $1\frac{1}{4}$  in., oblong-lanceolate, small teeth, thicker than the last and darker green, stalk  $\frac{1}{2}$  in., stipules fringed; flowers 1 in. diam., sessile, dark pink, appear before or with the leaves, petals 5, stamens many; drupe  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long, round or flattened, very velvety, not opening in two pieces, fleshy, edible, sweet, green with a tinge of red when ripe, stone deeply and irregularly furrowed, thick.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Prunus Armeniaca,**  
**The Apricot,***Zurdalu.*

ROSACEÆ.

F. B. I. ii. 313.

Himalaya to 11,000 ft.

Baluchistan (Lace).

small, bark light brown; leaves 2-3½ in. diam., broad ovate, pointed, minutely toothed, long-stalked, stalk 1-1½ in. long, flexible, with two glands, stipules lanceolate; flowers appearing with or after the leaves, ¾ in. diam., white, shortly stalked, petals 5, stamens many; drupe yellow, or sometimes black in Kashmir, 1-1½ in. long, velvety or nearly smooth, fleshy, not opening in two pieces, edible, stone thick with a prominent thickened grooved margin.

**Prunus Avium,**  
**The Sweet Cherry or**  
**Gean,**

ROSACEÆ.

F. B. I. ii. 313.

Himalaya to 8,000 ft.

small, bark brownish grey, smooth, roots without sprouting shoots; leaves flaccid, drooping, acutely toothed, oblong ovate, broader at the apex, velvety beneath, stalk long with two glands; flowers appearing with the leaves, white, long-stalked in clusters, petals 5, spreading, stamens many; drupe ¼-½ in. diam., round, smooth, shining, sweet or bitter, stone smooth.

**Prunus Cerasus,**  
**The Wild Cherry,***Gilas, olchi.*

ROSACEÆ.

F. B. I. ii. 313.

Himalaya to 8,000 ft.

small, bark brownish grey, smooth, roots with many sprouting shoots; leaves 2-3 by 1-1¼ in., ovate, abruptly long-pointed, erect, firm, shining, minutely toothed, smooth beneath, stalk short, without glands; flowers appearing with the leaves, white, on long slender stalks in clusters of 2-5, petals 5, erect, stiff; drupe ¼-½ in. diam., round, smooth, shining, stone round, smooth.

**Prunus Puddum,**  
**Padam.**

ROSACEÆ.

F. B. I. ii. 314.

Himalaya, 3-6,000 ft.

Valleys below Simla  
(Collett).

medium size, bark smooth, brownish grey, peeling in strips; leaves 3-5 by 1-½ in., ovate, lanceolate, very long-pointed, sharply glandular toothed, smooth, shining, stalk ½ in. long with 2-4 glands at the base, stipules long, divided into 3-5 segments, fringed with glands; flowers appearing before the leaves, 1 in. diam., pink fading to white, solitary or in small clusters towards the ends of branchlets, petals 5, stalked, oblong, obtuse, stamens many; drupe ovoid, ½-¾ in. long, flesh scanty, yellow or reddish, acid, stone wrinkled and furrowed.

**Prunus communis,**  
**Bullace,***Alucha.*

ROSACEÆ.

F. B. I. ii. 315.

Himalaya, 5-7,000 ft.

Baluchistan

(Hughes-Buller).

small, branching from below, with or without thorns; leaves 3-4 in. long, ovate, lanceolate, short-pointed, finely toothed; flowers 1 in. diam., appearing with the leaves, white or pinkish on long stalks, solitary or in pairs, petals 5, stamens many; drupe 1¼ in., round or ovoid, drooping, smooth, with bloom, yellow or black, stone flattened, smooth.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Prunus Padus,**  
**Bird Cherry,***Jamoi.*

ROSACEÆ.

F. B. I. ii. 315.

Himalaya, 6-9,500 ft.

Simla (Collett).

medium size, bark rough, dark grey or brown, young parts somewhat velvety; leaves 4-6 by 1-2½ in., oblong-lanceolate, long-pointed, closely toothed, red before falling, midrib red, stalk 1-1½ in. long, stout, red, a pair of glands at apex, stipules linear, membranous, soon falling; flowers white, ⅙-¼ in. diam., in drooping many flowered axillary and terminal racemes which are 4-6 in. long, petals 5, concave, stamens many; drupe, size of a pea, round, acid, red turning to black, stone thick, rugged.

**Eriobotrya japonica,**  
**Loquat,***Lokat.*

ROSACEÆ.

F. B. I. ii. 372.

The Plains.

small, branches and branchlets thick; leaves 6-8 by 1½-3 in., leathery, stiff woolly beneath, stalk thick, woolly, stipules broad or lanceolate; flowers white, ½ in. diam., crowded in thick stiff woolly racemes, petals 5, broad, ovate; berry round or ovoid, 1½-2 in. long, yellow, fleshy, edible, seeds 2-5, angled, brown, smooth. This tree is much cultivated for its fruit.

**Pyrus Malus,**  
**Apple,***Seo.*

ROSACEÆ.

F. B. I. ii. 373.

The Plains to 9,000 ft.

Baluchistan

(Hughes-Buller).

leaves 2-3 in., ovate, smooth above, woolly beneath, leaf stalk woolly; flowers pink, 1½-2 in. diam., sepals persistent on the top of the fruit; fruit globose, fleshy, 2-5-celled, seeds contained in a core, fruit indented at both ends and with a very short stalk, widely cultivated.

**Pyrus baccata,**  
**Siberian Crab,***Liu, choda.*

ROSACEÆ.

F. B. I. ii. 373.

Himalaya, 6-10,000 ft.

small; leaves 2-3 in., smooth, ovate; flowers 1½-2 in. diam., in sessile clusters, or on long stalks clustered together, white; fruit small, ½-1 in. diam., globose, red, sepals not on the top, seeds in a core, only base indented flesh of fruit granular.

**Pyrus communis,**  
**Pear,***Nashpati.*

ROSACEÆ.

F. B. I. ii. 374.

Himalaya, 2-8,000 ft.

Baluchistan (Lace).

small, smooth, young parts woolly, young plant often spinous; leaves ovate, oblong, acute pointed, of young plants lobed; flowers white, 1½ in. diam.; fruit 1-2 in., narrow into the stalk, seeds in a core, flesh of fruit granular, sepals on top of the fruit. This tree is much cultivated for its fruit.



## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Pyrus Pashia**,  
*Mehal, tang.* ROSAOEÆ  
 F. B. I. ii. 374.  
 Himalaya,  
 2,500-8,000 ft.  
 Simla (Collett).  
 small, young parts woolly, deciduous, barren branchlets end in a spine, in young plants leaves lobed; leaves ovate; flowers 1 in. diam., white and pink, fruit globose, scurfy, yellow brown, astringent, eatable in decay, covered with raised white spots, not crowned by sepals.

like *P. Pashia*, but differentiated by smooth flower stalks and broad rounded sepals.

- Pyrus kumaoni**,  
*Doda, Chitana.*  
 ROSAOEÆ.  
 F. B. I. ii. 374.  
 Himalaya, 5-8,000 ft.

## PETALS UNITED.

- Randia dumetorum**, see Shrubs, Opposite, Stipulate, Simple.  
**Mimusops Elengi**, see Trees, Alternate, Exstipulate, Simple.  
**Euphorbia nivulia**, see Shrubs, Alternate, Stipulate, Simple.  
**Euphorbia antiquorum**, see Shrubs, Alternate, Stipulate, Simple.  
**Bridelia retusa**, see Trees, Alternate, Exstipulate, Simple.  
**Bridelia montana**, see Trees, Alternate, Exstipulate, Simple.

## PETALS NONE.

- Rhamnus purpureus**,  
*Bat sinjal, tandra.*  
 RHAMNEÆ.  
 F. B. I. i. 639.  
 Himalaya, 4-10,000 ft.  
 Simla (Collett).  
 small, looks like a cherry tree; young branches purplish with white spots, bark thin, smooth, no spines; leaves  $2\frac{1}{2}$ -5 in., ovate, lanceolate, thin, minutely toothed, stipules small, soon falling off; flowers greenish in small axillary clusters, calyx cup-shaped, teeth 5, petals none, stamens 5; drupe  $\frac{1}{4}$  in. long, ovoid, seated on the persistent calyx, stone one.

- Parrottia**, see Shrubs, Alternate, Stipulate, Simple.  
**Jacquemontiana**,

- Casearia graveolens**, see Shrubs, Alternate, Stipulate, Simple.

- Casearia tomentosa**, see Shrubs, Alternate, Stipulate, Simple.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Phyllanthus Emblica,***Amla.*

EUPHORBIACEÆ.

F. B. I. v. 289.

The Plains to 4,500 ft.  
Sutlej Valley (Collett).

small, bark flaking, foliage feathery, light green; leaves deciduous, linear, sessile,  $\frac{1}{3}$ - $\frac{1}{2}$  in., close set in two lines along the branchlets like the leaflets of a pinnate leaf, stipules ovate fimbriate; flowers without petals, yellow, set among the leaves on the branchlets, sepals 6, stamens 3 in a column; fruit  $\frac{1}{2}$  in. globose, succule, green or pale yellow, often reddish, acid, astringent, seeds 6, two in each of the three cells, fruit slightly 6-lobed. The fruit is made into pickle and is used as an astringent medicine.

**Phyllanthus distichus,***Chalmeri.*

EUPHORBIACEÆ.

F. B. I. v. 304.

The Plains.

small, bark roughly grey; leaves deciduous, stalked, ovate,  $\frac{2}{3}$  in., in two rows as above; flowers without petals,  $\frac{1}{6}$  in., sepals 4, stamens 4, not in a column; fruit globose, acid, 3-4-celled, one seed in each cell.

**Glochidion velutinum,***Ambu.*

EUPHORBIACEÆ.

F. B. I. v. 322.

Himalaya to 5,000 ft.  
Sutlej Valley (Collett).

small, young branches downy evergreen; leaves 2-5 in., rounded, stipules rigid; flowers green yellow, petals none, sepals 5-6, anthers 3; fruit  $\frac{1}{3}$  in. diameter, flattened, 4-6 celled, 8-12 lobed, red.

**Antidesma****Ghæsembilla,***Umtoa.*

EUPHORBIACEÆ.

F. B. I. v. 357.

Himalaya.

small branches, flowers and leaf stalks and under surface of leaves brown and woolly, leaves 2-3 in., base and top rounded; flowers without petals, small, sessile, clustered on spikes, calyx lobes 3-5, stamens 4-7; fruit roundish,  $\frac{1}{6}$  in., red to black, edible.

**Jatropha Curcas,**

see Shrubs, Alternate, Stipulate, Simple.

**Ulmus Wallichiana,****Elm,**

URTICACEÆ.

F. B. I. v. 480.

Himalaya, 4-10,000 ft.

large, bark rough, peeling in diamond-shaped flakes; leaves 4-8 in., deciduous, base obliquely narrowed, toothed; flowers appearing before the leaves, in dense lateral racemes, calyx 4-8-lobed, fruit dry flat, winged,  $\frac{1}{2}$ - $\frac{2}{3}$  in. (samara).

**Holoptelea integrifolia,***Papri.*

URTICACEÆ.

F. B. I. v. 481.

Himalaya to 2,000 ft.

small; leaves 3-6 in., deciduous, base unequally rounded, not toothed; flowers in short lateral clusters, apetalous, calyx lobes 5, stamens 8-5; fruit 1 in. long, wing tip bifid (samara).

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Celtis australis,***Kharak.*

URTICACEÆ.

F. B. I. v. 482.

The Plains to 8,000 ft.

large; leaves deciduous, obliquely ovate, toothed, long-pointed; flowers pale yellow, small, solitary or in clusters, sepals 4-5, stamens 4-5; fruit long-stalked, ovoid,  $\frac{1}{3}$  in. long, stone wrinkled. This sweet fruit is supposed to be the Lotus of the ancients.

**Trema politoria,***Khagshi.*

URTICACEÆ.

F. B. I. v. 484.

The Plains to 3,000 ft.

large, roughly hairy; leaves  $\frac{3}{4}$  in., hard and rough, often long-pointed, small toothed, base rounded, leaf stalk short, stipules longer than the leaf stalk; flowers small, in small axillary clusters, sepals 4-5, stamens 4-5; fruit small, globose, stone pitted.

**Plecospermum****spinosum,**

see Shrubs, Alternate, Stipulate, Simple.

**Morus alba,****Mulberry,***Tut.* *Wri*

F. B. I. v. 492.

The Plains to 11,000 ft.

Baluchistan (Lace).

small; leaves  $2\frac{1}{2}$ -4 in., stalk  $\frac{1}{2}$ -1 in. long (often lobed), ovate, pointed, toothed; flowers on spikes, sepals 4, stamens 4; fruiting spikes (berries) white or red, sweet, short, ovoid, consisting of fleshy calyces, each containing one seed. The wood is used in the manufacture of lawn tennis rackets.

**Morus indica,***Tutri.*

URTICACEÆ.

F. B. I. v. 492.

Himalaya to 7,000 ft.

small; leaves  $2\frac{1}{2}$ -6 in. with  $\frac{1}{2}$ -1 in. stalk, deciduous, ovate (often lobed), sharply toothed, long-pointed, rough; flowering and fruiting spike short, ovoid, dark purple, otherwise like the last species.

**Morus serrata,***Karttut, karun.*

URTICACEÆ.

F. B. I. v. 492.

Himalaya, 4-9,000 ft.

small; leaves deciduous, broad, ovate, pointed, toothed, leaf stalk woolly; fruiting spike short, cylindrical, purple, sweet.

**Morus lævigata,**

URTICACEÆ.

F. B. I. v. 492.

Himalaya to 4,000 ft.

leaves deciduous, ovate; fruiting spike long-stalked, 2-5 in. long, cylindrical, white, sweet.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

FIGUS, JUICE MILKY; FRUIT A HOLLOW FLESHY VESSEL, IN WHICH  
FLOWERS AND SEEDS ARE CONTAINED.

**Ficus bengalensis,****Banyan,***Bor, Bargat.*

URTICACEÆ.

F. B. I. v. 499.

The Plains to 4,000 ft.

Baluchistan

(Hughes-Buller).

large, rooting from branches, sometimes epiphytal when young, young shoots velvety; leaves leathery, ovate to orbicular, edges smooth, nerves prominent, stalk of leaf  $\frac{1}{2}$ -2 in., not jointed to blade, stipules  $\frac{3}{4}$ -1 in., leathery; fruit round, sessile, in pairs, red, velvety, size of a small cherry, with 3 broad leathery smooth leaf-like bracts at the base.

**Ficus elastica,**

URTICACEÆ.

F. B. I. v. 508.

The Plains.

large, often epiphytic when young; leaves 3-12 in., dark green, much longer than broad, glossy, leaf stalk 1-2 $\frac{1}{2}$  in., not jointed to the blade, stipule single, coloured, almost half as long as the leaf, fruit sessile in pairs, ovate, oblong, greenish, yellow, about  $\frac{1}{2}$  in. long.

**Ficus retusa,**

URTICACEÆ.

F. B. I. v. 511.

The Plains.

large, aerial roots few; leaves 2-4 in., leathery, broadly ovate, leaf stalk  $\frac{1}{4}$ - $\frac{1}{2}$  in., stipules narrow,  $\frac{1}{2}$  in. long; fruit small sessile in pairs,  $\frac{1}{2}$  in. diam., yellow or reddish bracts at base, broad, ovate.

*Leaf Stalk jointed to Blade.*

**Ficus infectoria,***War, jangli pipli.*

URTICACEÆ.

F. B. I. v. 515.

Salt Range, the Plains.

small, all parts smooth, sometimes sending down a few aerial roots; leaves shining, on long slender stalks abruptly pointed, stalk 1 $\frac{1}{2}$ -2 in., stipules  $\frac{1}{2}$  in. broad, ovate, fruit in sessile pairs, round, when ripe  $\frac{1}{4}$  in. diam., white tinged with red, dotted, basal bracts 3, minute.

**Ficus Rumphii,***Pulak, pilkhan.*

URTICACEÆ.

F. B. I. v. 512.

The Plains to 5,000 ft.

often epiphytal, all parts smooth; leaves minutely warty above, broadly ovate, leaf stalk 2 $\frac{1}{2}$ -3 $\frac{1}{2}$  in., stipules ovate,  $\frac{1}{2}$ -1 in.; fruit sessile in pairs, globose, smooth, when young whitish with dark spots, when ripe nearly black,  $\frac{1}{2}$  in. diam., basal bracts 3, round, smooth.

**Ficus religiosa,***Pipal.*

URTICACEÆ.

F. B. I. v. 513.

The Plains to 5,000 ft.

Valley below Simla

(Collett).

Baluchistan.

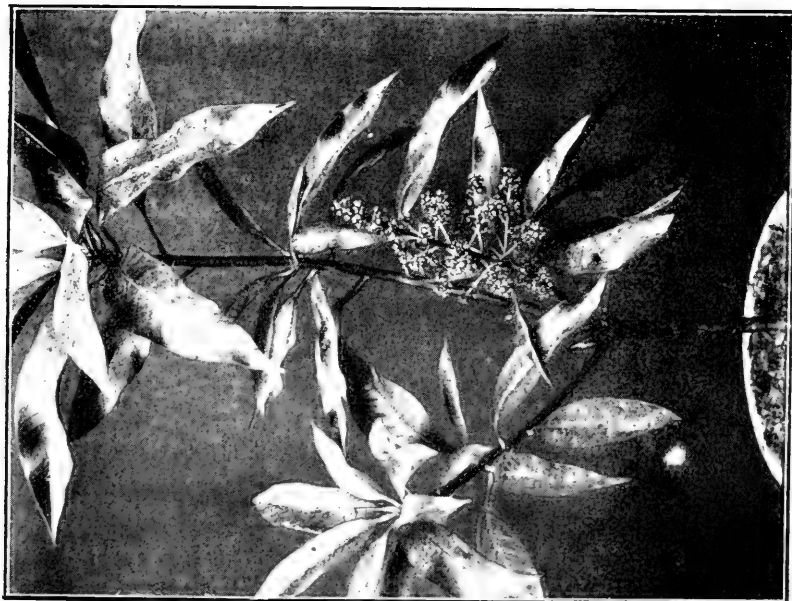
usually epiphytal, smooth; leaves leathery, shining above, base broad, point long, leaf stalk 3-4 in., slender; fruit sessile in pairs, smooth, depressed, spheroidal, dark purple when ripe,  $\frac{1}{2}$  in. diam., basal bracts 3, broad, spreading, leathery.

**Ficus clavata,**

see Shrubs, Alternate, Stipulate, Simple.



The alternate stipulate simple leaves of *Ficus elastica*.



The alternate exstipulate simple leaves of the mango tree, —*Mangifera indica*.

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## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Ficus Cunia***Kasa, ghui.*

URTICACEÆ.

F. B. I. v. 523.

Himalaya, 4,000 ft.

Valley below Simla

(Collett).

small, never epiphytal; leaves unequal sided at base, 6-10 in. long, oblong-lanceolate, leathery, stalk  $\frac{1}{5}$ - $\frac{2}{3}$  in., stipules  $\frac{3}{4}$ -1 in., linear; fruit in pairs or clusters on scaly, usually leafless, branches, round or pyriform, hairy, reddish brown when ripe.

**Ficus nemoralis,**

URTICACEÆ.

F. B. I. v. 534.

Himalaya, 1,500-7,000 ft.

Simla below Annandale.

Shah (Collett).

small, not epiphytal; leaves narrow, pointed, margin even, stalk  $\frac{1}{2}$ -1 in., stipules narrow, pointed, smooth, edges rolled up; fruit shortly stalked, roundish or club-shaped,  $\frac{1}{3}$  in. diam., smooth, reddish when ripe, basal bracts 3, broad, united.

**Ficus Roxburghii,***Urbal, timbal.*

URTICACEÆ.

F. B. I. v. 534.

Himalaya to 5,000 ft.

Sutlej Valley (Collett).

low, spreading; leaves broad, ovate or rounded, above smooth, beneath somewhat woolly, base heart-shaped, 5-15 by  $4\frac{1}{2}$ -12 in., stalk 1-4 in., stipules  $\frac{1}{2}$ -1 in., ovate, pointed; fruit top-shaped, 2 in. diam., smooth or velvety, when ripe russet, brown or purplish and spotted, basal bracts 3, rather large, triangular, fruit stalk  $\frac{3}{4}$ - $1\frac{1}{3}$  in., velvety, on leafless branchlets from the trunk in clusters: the fruit is eaten.

**Ficus glomerata,***Kathgular, dadhuri.*

URTICACEÆ.

F. B. I. v. 535.

The Plains to 3,000 ft.

large, bark smooth, reddish brown; leaves 4-7 in. long, ovate, margin even, smooth above, velvety beneath, base round, tapering to the point, stalk 1-2 in., stipules  $\frac{1}{2}$ -1 in., ovate, narrow, velvety, soon falling off; fruit  $1\frac{1}{4}$  in. diam., reddish, top depressed, top-shaped, stalked, in clusters on short leafless scaly branchlets on the trunk and large branches, basal bracts 3 or 4, ovate, small, overlapping.

**Villebrunea frutescens,**

see Shrubs, Alternate, Stipulate, Simple.

**Debregeasia hypoleuca,**

see Shrubs, Alternate, Stipulate, Simple.

*Flowers minute, close set on Hanging or Erect Spikes.*

**Betula utilis,***Bhujpattra.*

CUPULIFERÆ.

F. B. I. v. 599.

Himalaya, 7-10,000 ft.

The Chor, Hutu

(Collett).

bark brownish white, inner layer pink, thin with horizontal lentil-shaped excrescences, stripping off in thin broad sheets; leaves 2-3 in. long, thin, light green, when young, pointed; fruit a one-seeded, winged, lentil-like nut. The English representatives of this genus are *Betula alba* and *Betula nana*, the Common Birch and the Dwarf Birch. The bark is used to cover umbrellas.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

*Flowers minute, close set on Hanging or Erect Spikes.*

**Betula alnoides,**  
CUPULIFERÆ.  
F. B. I. v. 599.  
Himalaya, 5-10,000 ft.

bark thicker and excrescences shorter and stripping off in narrower bands than the last species; leaves 3-6 in. long, long-pointed; nut with broader wings than the last.

**Alnus nepalensis,**  
CUPULIFERÆ.  
F. B. I. V. 600.  
Himalaya, 3-9,000 ft.

bark compact, silvery grey; fruit a woody cone, with a winged nut. The English representative of this genus is *Alnus glutinosa*, Common Alder.

**Alnus nitida,**  
CUPULIFERÆ.  
F. B. I. v. 600.  
Himalaya, 5-9,000 ft.

bark dark brown, deeply furrowed; fruit a woody cone; nut with a thickened margin.

*Fruit, a Nut (Acorn) seated in a Cup of Hardened Bracts.*

**Quercus Semecarpifolia,**  
*Kharshu.*  
CUPULIFERÆ.  
F. B. I. v. 601.  
Himalaya, 6-12,000 ft.

leaves brown and woolly beneath; acorn globose, black when ripe, enclosed only a third in the cup of overlapping scales.

**Quercus dilatata,**  
*Moru.*  
CUPULIFERÆ.  
F. B. I. v. 602.  
Himalaya, 4,500-9,000 ft.

large; leaves quite smooth and green; acorn ovoid, pointed, solitary, smooth, brown when ripe, cup of over-lapping (imbricate) scales covering half the nut.

**Quercus Ilex,**

see Shrubs, Alternate, Stipulate, Simple:

**Quercus incana,**  
*Bana.*  
CUPULIFERÆ.  
F. B. I. v. 603.  
Salt Range, Himalaya,  
4-8,000 ft.  
Simla (Collett).

leaves when young pinkish and woolly all over, when mature dark green and smooth above, white or grey woolly beneath; acorn ovoid, generally solitary, white and woolly when young, brown and smooth when ripe, cup of overlapping scales at first almost covering the acorn, afterwards only half.

**Quercus glauca,**  
CUPULIFERÆ.  
F. B. I. v. 604.  
Himalaya, 3-6,000 ft.  
Simla (Collett).

large; leaves smooth and green; acorn single or in pairs, ovoid, half buried in a cup of scales, arranged in thin velvety rings of scales.



## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

*Nut, ribbed, contained in Leafy Scales.*

**Corylus Colurna,**

CUPULIFERÆ.

F. B. I. v. 625.

Himalaya, 6-10,000 ft.

Simla, rare, Narkanda  
(Collett).

small, bark dark grey, thin, sometimes peeling upwards; leaves doubly toothed, somewhat lobulated, nut  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, flattened, pointed, ovoid, hard, deep brown, 2-3 together in a ribbed leathery cup of long scales. This tree is akin to *Corylus Avellana*, Common Hazel or Nut of Britain.

**Carpinus viminea,**

CUPULIFERÆ.

F. B. I. v. 626.

Himalaya, east of

Chamba, 5-7,000 ft.

branches warty, slender drooping leaves, tips very long, tail-like; nut very small,  $\frac{1}{10}$  in. long, ribbed. This tree is akin to *Carpinus Betulus*, common Horn-beam of Britain.

**Carpinus faginea,**

CUPULIFERÆ.

F. B. I. v. 626.

Himalaya, 4-7,000 ft.

bark dark brown, smooth except for some wrinkles; leaves without long tips; nut  $\frac{1}{10}$  in. long, ribbed.

*Seeds several, each enveloped in a Tuft of White Silky Hairs.*

*Leaves shortly stalked.*

**Salix tetrasperma,***Bedleila, bed.*

SALICINÆÆ.

F. B. I. v. 626.

The Plains to 4,000 ft.

Sutlej Valley (Collett).

Baluchistan

(Hughes-Buller).

small, bark greyish brown or blackish, rough with deep vertical furrows; leaves 3-6 in. long, four times longer than broad, narrowed at both ends; flowers appear after the leaves on leafy stalks, flowering stalks (spikes) 2-5 in. long.

**Salix acmophylla,***Bisu, bada.*

SALICINÆÆ.

F. B. I. v. 628.

The Plains.

Baluchistan (Lace).

medium size, bark reddish brown; leaves 2-5 in. long, five times longer than broad, narrowed at both ends; flowers appear after the leaves on leafy stalks, flowering stalks (spikes) 1-2 in. long.

**Salix Wallichiana.**

see Shrubs, Alternate, Stipulate, Simple.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

*Seeds several, each enveloped in a Tuft of White Silky Hairs.*

*Leaves shortly stalked.*

**Salix alba,**  
**White willow,**  
*Bis, changma.*  
SALICINEÆ.  
F. B. I. v. 629.  
Himalaya, Simla,  
introduced (Collett).

branchlets green, yellow, red or purple; leaves 2-6 in. long, narrow, white with silky hairs beneath, minutely toothed; flowers appear after the leaves on leafy stalks, flowering stalks (spikes) 1-3 in. long.

**Salix babylonica,**  
**Weeping willow,**  
*Beda, majnun.*  
SALICINEÆ.  
F. B. I. v. 629.  
The Plains to 9,000 ft.  
Baluchistan (Lace).

like *S. Alba*, but with long drooping branches and the leaves not so white beneath as in *S. Alba*.

**Salix fragilis,**  
**Crack willow,**  
SALICINEÆ.  
F. B. I. v. 630.  
Lahoul.

medium size, branches smooth, polished, fragile at their insertion; leaves 3-6 in. long; flowering after leafing, flowering stalks (spikes) leafy (cultivated only in Lahoul and Western Tibet).

**Salix daphnoides,**  
*Beli, shun, thail.*  
SALICINEÆ.  
F. B. I. v. 631.  
Himalaya, 3-15,000 ft.  
Simla, Mahasu.

bark smooth, greenish grey; flowers appear before the leaves, flowering stalks (spikes) 1-4 in. long, silky.

**Salix oxycarpa,**

see Shrubs, Alternate, Stipulate, Simple.

*Leaves long stalked.*

**Populus nigra,**  
**var. pyramidalis,**  
**Lombardy Poplar,**  
*Frast, safeda.*  
SALICINEÆ.  
F. B. I. v. 638.  
The Plains to 10,000 ft.  
Kashmir, Lahore.  
Baluchistan (Lace).

large, sometimes planted, is easily recognised by its pyramidal shape, other characters like the following species of *Populus*, but leaf 2-4 in., stalk 1-2½ in. long, male flowering spikes short, stamens 15-30, female spikes 4-6 in. long.

## TREES WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

*Seeds several, each enveloped in a Tuft of White Silky Hairs.*

*Leaves long stalked.*

**Populus ciliata,**  
**The Himalayan Poplar,**  
*Pahari pipal.*  
 SALICINÆÆ.  
 F. B. I. v. 638.  
 Himalaya, 4-10,000 ft.  
 Simla (Collett).

large, bark grey, smooth on young plants, vertically wrinkled on old, buds viscidly resinous, branches angled; leaves 3-7 in. long, ovate, stalk 2-5 in.; flowering before leafing, flowering stalks (spikes) male short, female branched, 2-9 in. long, seeds numerous with long silky hairs.

**Populus balsamifera,**  
*Pakh, but.*  
 SALICINÆÆ.  
 F. B. I. v. 638.  
 The Plains to 13,000 ft.

large, strongly scented, leaf buds viscidly resinous, branches angled; leaves 2-5 in. long, ovate, stalk 2-5 in., male flowering spikes sessile, stamens 20-30, female 5-6 in. long. This tree is the same species as the Tacamahac or Balsam Poplars of North America.

**Populus euphratica,**  
*Safedar, palach, bagnu.*  
 SALICINÆÆ.  
 F. B. I. v. 638.  
 The Plains to 13,000 ft.  
 Indus Valley.  
 Baluchistan (Stocks).

large or small, leaf buds velvety, not viscid, branches not angled. This tree is found in abundance on the sand banks of the Indus.

**Populus alba,**  
**The White Poplar or**  
**Abele,**  
*Chita bagnu, jangli frast.*  
 SALICINÆÆ.  
 F. B. I. v. 639.  
 Himalaya, 4-10,000 ft.  
 Simla, planted.  
 (Collett).  
 Baluchistan (Lace).

large, leaf buds, shoots and under-surface of leaves covered with short dense cottony hairs; leaves 2-4 in., stalk 1-2 in.; flowering stalks (spikes) male hairy, 2-4, stamens 6-10, female spikes shorter.

## TREES WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Kydia calycina,**  
*Pula.*  
 MALVACEÆ.  
 F. B. I. i. 348.  
 The Plains to 2,000 ft.  
 Tret below Murree.  
 (Douie).  
 Lahore.

medium size, generally stellately downy; leaves sometimes simple, 4-5 by 3 in., rounded-heartshaped, midlobe longest, smooth or with few hairs above, stellate down beneath, leaf stalk 1-2 in.; flowers in many flowered branching bunches, white or pink, calyx 5-lobed, petals 5, exceeding the sepals in length, bracteoles 4-6, leafy, joined below, stamens joined into a tube of 5 segments, style 3-cleft; capsule nearly round, 3-valved, seeds kidney-shaped, grooved.

## TREES WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Pterospermum,  
acerifolium,***Kanakchampa.*

STERCULIACEÆ.

F. B. I. i. 368.

The Plains to 4,000 ft.,  
planted.

bark smooth, ashy, young branches and calyx covered with rusty wool; leaves 6-12 by 5-10 in., shallow lobes, smooth above, grey woolly beneath, stipules with many points, soon falling off, leaf stalk as long as the leaf; flowers white, fragrant, 5 in. long, calyx of segments linear, sharply cut, petals 5, linear, stamens joined into 20 threads, 15 with anthers, 5 without; capsule 2-6 in. long, woody, 5-angled, brown wool outside, seeds winged.

*Pod-bearing. Leaves in 2 Lobes.***Bauhinia racemosa,***Kachnal.*

LEGUMINOSÆ.

F. B. I. ii. 276.

The Plains.

small, crooked, rough, bark with deep cracks; leaves  $1\frac{1}{2}$ -2 in., broader than long, deeply split from the apex into two lobes, petals pale yellow,  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, stamens 10, hairy, pod 6-12 by  $\frac{1}{2}$ -1 in., curved, stalked, 1 in. long, seeds 12-20.

**Bauhinia purpurea,***Koiral.*

LEGUMINOSÆ.

F. B. I. ii. 284.

The Plains.

medium size, bark ashy or brownish, young branches velvety; leaves 3-6 in. long, a little longer than broad, split to the middle into two lobes, petals deep rose colour,  $1\frac{1}{2}$ -2 in. long, with a long stalk, stamens 3-4.

**Bauhinia variegata,***Kachnar.*

LEGUMINOSÆ.

F. B. I. ii. 284.

The Plains to 3,000 ft.

Baluchistan

(Hughes-Buller).

medium size, bark as in the last species; leaves rather broader than long, 4-6 in. long; flowers fragrant, petals 2 in. long, with a long stalk, four white and one red, the white often streaked with purple, stamens 3-5.

*Not Pod-bearing.***Pyrus Pashia,**

see Trees, Alternate, Stipulate, Simple.

**Pyrus lanata,***Marphal.*

ROSACEÆ.

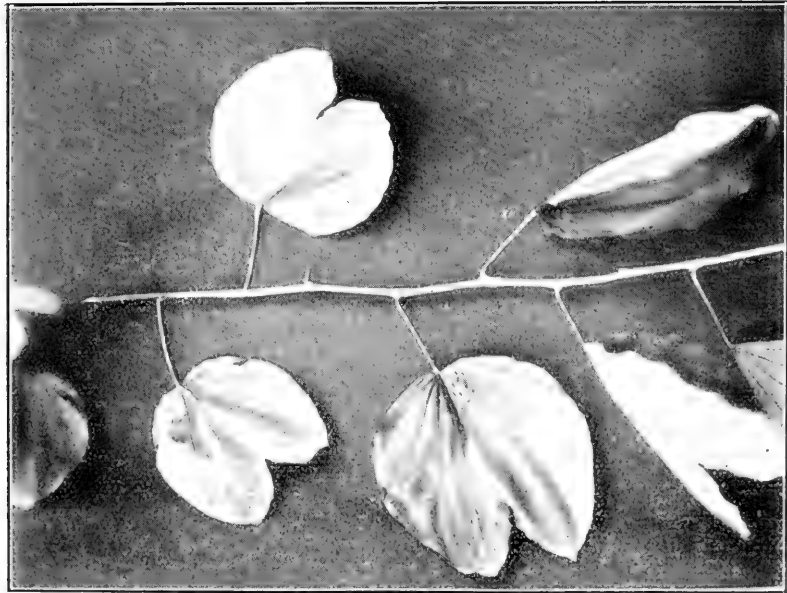
F. B. I. ii. 375.

Himalaya, 8-10,000 ft.

Simla, Jako, Narkanda

(Collett).

small; leaves lobulate, finely toothed, 5-0 by 2-4 in., white woolly beneath; flowers  $\frac{1}{2}$  in. diam., stalks short, woolly, sepals 5, petals 5, stamens many; fruit  $\frac{1}{2}$ - $1\frac{1}{2}$  in. diam., tinged with red, 2-3 seeded, pear-shaped or globose.



The lobed leaves of the *Kachnar* tree, — *Bauhinia variegata*.



The palmately lobed leaves of the castor oil plant,  
*Ricinus communis*.



## TREES WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

*Not Pod-bearing.***Crataegus Oxyacantha,**  
**Hawthorn,***Phindak.*

ROSACEÆ.

F. B. I. ii. 383.

Himalaya, west of the  
Chenab, 6-9,000 ft.

Murree.

Baluchistan (Lace).

small, branches with spines; leaves 1-2 in., wedge-shaped at the base, 3-5 lobed, lobes sharply toothed towards the tip, stipules leafy, soon falling off; flowers  $\frac{1}{2}$  in. diam., white, odorous, sepals 5, petals 5, stamens many; fruit scarlet, 2-3 stones.

**Crataegus Clarkei,**

ROSACEÆ.

F. B. I. ii. 383.

Kashmir, 8,000 ft.

small, softly woolly; leaves 2-4 in., oblong, base wedge-shaped, segments oblong, toothed at the broad tip, stipules very large, semi-circular and curved, toothed; flowers less than  $\frac{1}{2}$  in. diam., sepals 5, petals 5, stamens many; fruit green,  $\frac{1}{4}$  in. diam., 5-seeded with 5 ridges.

## PETALS NONE.

**Sterculia villosa,***Gulbadla, poshwa.*

STERCULIACEÆ.

F. B. I. i. 355.

The Plains.

large, bark grey, young parts tawny woolly, branches marked with large scars; leaves 12-18 in. long and broad, crowded at the end of branches, smooth above, woolly beneath, deeply palmately 5-7-lobed, lobes often cleft at the apex, leaf stalk about as long as the leaf, stipules large, soon falling off; flowers in yellow bunches, 8-12 in. long, appearing before the leaves, calyx of 5 lobes, yellow with pink or purple at the base, petals none; follicles 2-7, sessile,  $1\frac{1}{2}$ -3 in. long, tapering at both ends, bright red when ripe, seeds oval, smooth.

*Fruit, a Compound Berry.***Morus alba,**

see Trees, Alternate, Stipulate, Simple.

**Morus indica,**

see Trees, Alternate, Stipulate, Simple.

**Morus serrata,**

see Trees, Alternate, Stipulate, Simple.

*Flowers on long stalked Globose Heads.***Platanus orientalis,**  
*Chenar.*

PLATANACEÆ.

F. B. I. v. 594.

Himalaya, west of the  
Sutlej, 4-8,000 ft.

Kashmir.

Baluchistan (Lace).

large, bark flaky, whitish green and smooth beneath; leaves 6-9 in. diam., usually broader than long, palmately 3-5-lobed, lobes irregularly toothed, stipules on shoots, leafy and lobed; heads  $1-1\frac{1}{2}$  in. diam., 2-3 on one stalk, male without bracteoles, female with bracteoles, ripe carpels with pyramidal tips, seeds linear. This tree only flourishes very near water.

## TREES WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Bombax malabaricum,**  
**Silk cotton tree,***Semel.*

MALVACEÆ.

F. B. I. i. 349.

The Plains to 6,000 ft.

Simla (Collett).

large, trunk more or less buttressed; branches and young stem covered with conical prickles; leaves digitate, leaflets 5-7; flowers appearing before the leaves, 4-5 in. across, crimson or yellow, calyx leathery, silky felted within, petals 2-3 in. long, felted with star-shaped hairs, stamens many, joined below into a tube; capsule 5-7 in. long, oblong, downy, green, seeds smooth, covered with silky wool. A very handsome forest tree.

*Pod-bearing.**Pinnate with 3 Leaflets.***Ougeinia dalbergioides,***Sandan.*

LEGUMINOSÆ.

F. B. I. ii. 161.

The Plains to 4,000 ft.

Sutlej Valley (Collett).

medium size, branches round, grey; leaves 6-12 in. long, polished green above, end leaflet 3-6 in. long; flowers whitish or pale pink, calyx  $\frac{1}{10}$  in. long, corolla  $\frac{1}{4}$  in. long, pods flat, jointed, 2-4 by  $\frac{1}{4}$  in., seeds  $\frac{3}{5}$ ,  $\frac{1}{5}$  in. diam., smooth, brown, flat.

**Erythrina indica,**  
**Indian coral tree,***Pangra.*

LEGUMINOSÆ.

F. B. I. ii. 188.

The Plains to 4,000 ft.

Sutlej Valley (Collett).

medium size, bark grey, branches prickly, prickles usually black; leaves appear after the flowers, leaflets broad, ovate; flowers coral red,  $2\frac{1}{2}$  in. long, in bunches 6 in. long or more, calyx bell-shaped, 5-toothed, petals 2 in. long, standard large, wing and keel small, stamens 10, upper one often ununiting; pod  $\frac{1}{2}$  to 1 ft. long, cylindrical with contractions, seeds 6-8.

**Erythrina suberosa,***Dhauldhak.*

LEGUMINOSÆ.

F. B. I. ii. 190.

The Plains to 4,000 ft.

medium size, bark corky, deeply cracked, yellowish, prickles yellow; leaves appear after the flowers, leaflets broad, ovate; flowers coral red,  $1\frac{1}{2}$ -2 in. long, calyx top-shaped, 2-lipped; pod  $\frac{1}{2}$  ft. long, cylindrical, narrow, seeds 2-4.

**Butea frondosa,***Dhak.*

LEGUMINOSÆ.

F. B. I. ii. 194.

The Plains to 4,000 ft.

small crooked tree with stout trunk; leaflets 4-8 in. long; flowers 2-3 in. long, orange red in axillary or terminal racemes, calyx  $\frac{1}{2}$  in. long, brown velvety, petals orange red; pods 4-8 in. by  $1\frac{1}{2}$ -2 in., seed 1 in upper part of pod. This tree yields an astringent gum-like kino, also lac and lac dye.

*Pinnate with 3-5 Leaflets.***Dalbergia Sissoo,***Shisham, Tali.*

LEGUMINOSÆ.

F. B. I. ii. 231.

The Plains to 4,000 ft.

Baluchistan (Lace).

large, bark grey, furrowed vertically, flaking in narrow strips; leaves 4-5 in. long, leaflets alternate, ovate, long-pointed; flowers  $\frac{1}{5}$ - $\frac{2}{5}$  in. long, whitish yellow, in small branching racemes, stamens 9; pods 2-3 in. by  $\frac{1}{4}$ - $\frac{1}{2}$  in., seeds  $\frac{1}{4}$  in. long, kidney shaped, 1-3. This tree yields excellent timber.



## TREES WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

*Pod-bearing.**Pinnate with 5-many Leaflets.***Pongamia glabra,***Papar, karang.*

LEGUMINOSÆ.

F. B. I. ii. 240.

The Plains to 2,000 ft.

medium size, bark greyish green; leaves 8-10 in. long, leaflets 5-7, 2-4 in. long; flowers  $\frac{1}{2}$  in. long, whitish, tinged with violet or pink in axillary racemes; pod  $1\frac{1}{2}$ -2 in. long,  $\frac{1}{3}$ - $\frac{1}{4}$  in. thick, woody, with a curved point, seed 1, 1 in. diam. Oil from the seeds is used for lighting and as a cure for skin diseases.

*Leaves Bipinnate.***Cæsalpinia, or****Poinciana pulcherrima,***Krishnachura.*

LEGUMINOSÆ.

F. B. I. ii. 255.

The Plains.

small, prickles on branches few and scattered; pinnæ 12-18, leaflets on the pinnæ 20-24; flowers large, scarlet yellow, calyx 5, cleft to base, petals 5, nearly equal, stamens 10; pod nearly straight, 2-3 in. long, narrow and thin, seeds 6-8. A very showy tree.

**Parkinsonia aculeata,***Vilayati kikar.*

LEGUMINOSÆ.

F. B. I. ii. 260.

The Plains to 3,000 ft.

Baluchistan (Stocks).

small, sharp woody spines, the remains of the leaf stalks of bipinnate leaves with 2-6 pinnæ in the axils of two stipulate thorns; leaves bipinnate; pinnæ  $\frac{1}{2}$ -1 ft. long, stalks much flattened with or without minute leaflets; flowers yellow,  $\frac{1}{2}$  in. diam., in short racemes, calyx lobes nearly equal, petals equal; pods 3-4 in. long, like a necklace of beads. A native of Tropical America.

*Leaves Pinnate.***Cassia Fistula,****Indian Laburnum,***Amaltas.*

LEGUMINOSÆ.

F. B. I. ii. 261.

The Plains to 3,000 ft.

Baluchistan

(Hughes-Buller).

small; leaves 1 ft. long., leaflets 2-6 in. long, stipules minute, racemes as long as the leaves, pendulous; flowers 1 in. long, yellow, petals broad, nearly equal, stamens 20; pods 1-2 ft. long, cylindrical, 1 in. thick, seeds many, embedded in sweet blackish pulp; purgative. A very handsome tree.

**Tamarindus indica,****Tamarind,***Imbi.*

LEGUMINOSÆ.

F. B. I. ii. 273.

The Plains.

Baluchistan (Stocks).

large; leaves 3-6 in. long, leaflets  $\frac{1}{2}$  in. long, 20-30; flowers pale yellow streaked with red in racemes, calyx teeth 4, petals 3,  $\frac{1}{2}$  in. long, stamens 3; pods 3-8 by 1 in., leathery, flattened, edible, seeds  $\frac{1}{2}$  in. diam., embedded in brown pulp, brown, shining.

## TREES WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

*Pod-bearing.**Leaves Bipinnate.**Flowers Minute.***Prosopis spicigera,**  
*Jand.*

LEGUMINOSÆ.

F. B. I. ii. 288.

The Plains.

Baluchistan (Boissier).

medium size, with extremely long tap root, prickles  $\frac{1}{8}$ - $\frac{1}{4}$  in. long, scattered, broad, conical, nearly straight; pinnæ 4, 1-2 in. long with a gland between each pair, leaflets 8-12 pairs,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long; flowers yellow, in spikes, 2-3 in. long, calyx minute, 5-toothed, petals 5, stamens 10; pods 5-10 in. long, cylindrical, with contractions at intervals, edible, seeds in mealy pulp, oblong.

**Prosopis Stephaniana,**  
*Chogak.*

LEGUMINOSÆ.

F. B. I. ii. 288.

The Plains near

Peshawar.

small, prickles copious slender; leaflets smaller than the last; flowers rather larger; pods  $\frac{1}{2}$ -1 in. long,  $\frac{1}{2}$  in. thick, otherwise like the last species.

*Flowers Minute in Round Heads; Spines Long and Straight.*

**Acacia Farnesiana,**  
*Vilayati kikar.*

F. B. I. ii. 292.

The Plains to 3,000 ft.

Baluchistan (Stocks).

small, branches slender zigzag with grey dots; leaf stalk 1-1 $\frac{1}{2}$  in. long with 2 straight stipular thorns, pinnæ 4-8 pairs, 1-1 $\frac{1}{2}$  in. long, leaflets 10-20 pairs,  $\frac{1}{4}$  in. long; flowers bright yellow, fragrant, heads less than  $\frac{1}{2}$  in. diam.; pod 2-3 in. long,  $\frac{1}{2}$  in. thick, cylindrical, sutures straight, seeds in two series in pulp. A perfume is made from the flowers.

**Acacia arabica,**  
*Babul, kikar.*

F. B. I. ii. 293.

The Plains.

Baluchistan (Stocks).

small, branchlets finely grey, downy, spines stipular, straight,  $\frac{1}{4}$ -2 in. long; leaves 1-2 in. long, pinnæ 3-6 pairs,  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long, leaflets 10-20 pairs,  $\frac{1}{8}$ - $\frac{1}{4}$  in. long; flowers yellow, fragrant, heads  $\frac{1}{2}$  in. diam.; pods usually solitary, 3-6 in. long, straight, stalk  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, sutures deeply indented between each seed, grey; downy, 8-12 seeded. The wood is hard and used for wheels.

**Acacia eburnea,**  
*Pahari kikar.*

LEGUMINOSÆ.

F. B. I. ii. 293.

The Plains.

general habit of the last species, but differs by its leaves having fewer leaflets, 12-16, its flowers having an unpleasant smell and its straight sutured pod profusely veined, smooth, 6-10 seeded, generally 2-4 pods from one flower head. The wood is used for fuel.

## TREES WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

*Pod-bearing.**Leaves Bipinnate.**Flowers Minute in Round Heads ; Spines Long and Straight.***Acacia Jacquemontii,***Kinkar, babul.*

LEGUMINOSÆ.

F. B. I. ii. 293.

The Plains.

Baluchistan (Lace).

general habit of the last species, but the pod is thin, broad, flat, smooth with straight sutures, grey, 2-3 in. long, 5-6 seeded with a stalk  $\frac{1}{4}$ - $\frac{1}{2}$  in. long.

**Acacia leucophlœa,***Rinj, raeru.*

LEGUMINOSÆ.

F. B. I. ii. 294.

The Plains.

readily recognised from all the above by its branched racemes of flowers.

*Flowers Minute in Spikes ; Spines Short and Hooked.***Acacia Catechu,***Khair, Kutch.*

LEGUMINOSÆ.

F. B. I. ii. 295.

The Plains to 3,000 ft.

medium size, bark brown, hangs down in long strips, spines brown, in pairs, short curved, leaf stalk 3-4 in. long, often prickly, pinnæ 20-40 pairs, leaflets 30-50 pairs,  $\frac{1}{4}$  in. long, linear; flowers pale yellow; pod 2-3 in. long, straight, flat, dark brown, shining, 5-6 seeded. Catechu is obtained by boiling the wood.

**Acacia Senegal,***Khor, kumta.*

LEGUMINOSÆ.

F. B. I. ii. 295.

The Plains, Rohtak.

Baluchistan (Boissier).

small, flexuose grey branches, spines small, often in threes, hooked or straight, polished and black; pinnæ 3-5 pairs; leaflets 8-14 pairs; flowering spikes, white fragrant, 2-3 in. long, longer than the leaves, calyx bell-shaped, teeth angular, stamens yellow; pod 3 in. long,  $\frac{3}{4}$  in. broad, straight, thin, somewhat depressed between the 4-6 seeds.

**Acacia modesta,***Phulahi.*

LEGUMINOSÆ.

F. B. I. ii. 296.

The Plains to 4,000 ft.

Suni (Collett).

Baluchistan (Boissier).

medium size, branches grey smooth, spines stipular, in pairs, hooked, stout, dark brown, polished, pinnæ 2-3 pairs; leaflets 3-5 pairs; flowers white or pale yellow, fragrant in drooping spikes; pod 2-3 in. long, straight, flat, smooth, glossy, narrowed to a short stalk, 3-5 seeded.

## TREES WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

*Pod-bearing.**Flowers in Round Heads.***Albizzia Lebbeck,***Siris, Sirsa.*

LEGUMINOSÆ.

F. B. I. ii. 298.

The Plains to 5,000 ft.

Valleys below Simla  
(Collett).

Baluchistan (Stocks).

large, bark grey; leaves 3-12 in. long; pinnæ 4-8, leaflets  $1-1\frac{1}{2}$  in. long, 6-20 pairs on each pinnæ, obtuse; flower heads  $1\frac{1}{4}$  in. across, white, fragrant, on stalks 2-4 in. long, in clusters of 2-4, stamens long, rose colour, many, protruding like a shaving brush; pods 4-12 in. long by 1-2 in. broad, blunt at both ends, flat, smooth, straw coloured, seeds 4-12.

**Albizzia odoratissima,**  
*Kali Siris.*

LEGUMINOSÆ.

F. B. I. ii. 299.

The Plains to 3,000 ft.

medium size, bark dark grey; leaves 6-12 in. long; pinnæ 3-4 pairs, 5-8 in. long, leaflets 8-20 pairs on each pinnæ,  $\frac{3}{4}$ -1 in. long, obtuse; heads small, few flowered, arranged in a terminal branched raceme; flowers  $\frac{3}{4}$ -1 in. across, of which nearly all consisting of yellow stamens, yellowish-white, fragrant; pod 6-9 in., about 1 in. broad, thin, reddish brown, 8-12 seeded.

**Albizzia procera,***Safed Siris.*

LEGUMINOSÆ.

F. B. I. ii. 299.

Base of Himalaya.

large, bark yellowish or greenish-white, smooth, peeling off in thin flakes; leaves 10-15 in. long; pinnæ 3-5 pairs, 6-9 in. long, leaflets 6-12 pairs on each pinnæ; heads small,  $\frac{1}{2}$  in. diam., 15-20, flowered in clusters of 2-5 on terminal branched racemes, 12-24 in. long; flowers yellowish white,  $\frac{1}{4}$  in. long, stamens  $\frac{1}{5}$  in. long; pods 4-6 in. long by  $\frac{1}{2}$ - $\frac{3}{4}$  in., smooth, brown, 8-12 seeded.

**Albizzia Julibrissin,**  
**var. mollis,***Lal Siris, brind.*

LEGUMINOSÆ.

F. B. I. ii. 300.

Himalaya to 6,000 ft.

Suni (Collett).

medium size, bark dark grey, smooth, with long horizontal wrinkles; leaves 6-12 in. long; pinnæ 6-12 pairs, 3-5 in. long, leaflets 10-25 pairs,  $\frac{1}{6}$ - $\frac{1}{4}$  in. long, narrow, sensitive, heads round, not on branched racemes; flowers pink, 1-1 $\frac{1}{2}$  in. long, consisting chiefly of stamens; pod 3-5 in. long by  $\frac{1}{2}$ - $\frac{3}{4}$  in., linear, thin, 8-12 seeded.

**Albizzia stipulata,***Siran.*

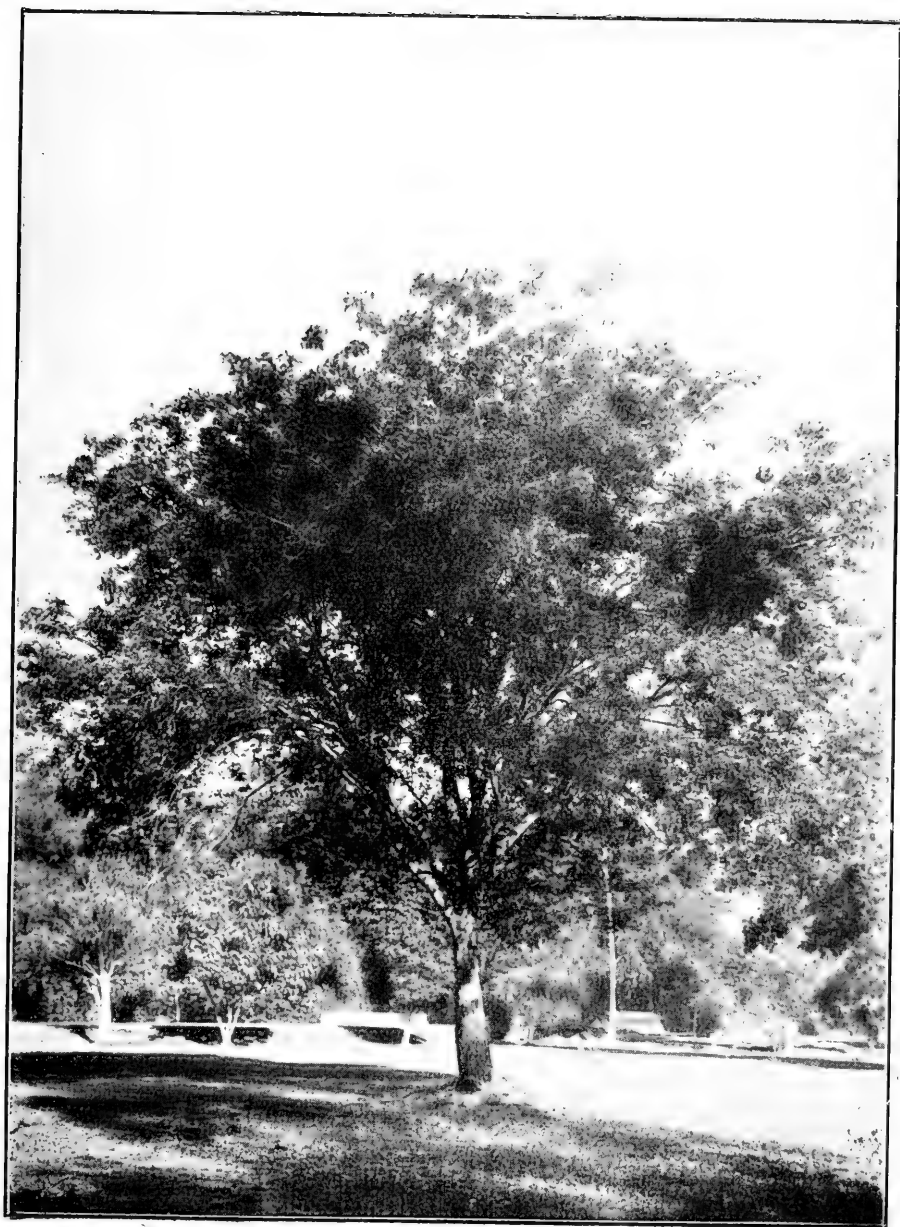
LEGUMINOSÆ.

F. B. I. ii. 300.

Himalaya to 4,000 ft.

Below Sipi (Collett).

medium size, bark grey, with short vertical wrinkles crossed by deeper horizontal cracks, stipules large, sharp-pointed; leaves 7-12 in. long; pinnæ 6-16 pairs, 4-6 in. long, leaflets 20-40 pairs,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, tapering from the broad base; heads in branched racemes; flowers odourless, yellowish white, stamens tinged with red; pod 5-6 in. long by  $\frac{3}{4}$ -1 in., pale brown, 8-10 seeded



A young *siris* tree, *Albizia Lebbek*.



## TREES WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

*Pod-bearing.**Flowers in Round Heads.***Pithecolobium dulce,***Vilayati imli.*

LEGUMINOSÆ.

F. B. I. ii. 302.

The Plains.

small; leaves and branches smooth, stipules spinous, minute, pointing upwards; pinnæ 2, leaflets 2, 1-2 in. long, obtuse; heads dense,  $\frac{3}{8}$ - $\frac{1}{2}$  in. broad, in long branched racemes of minute white flowers; pod twisted when ripe into a circle, 4-5 in. long, indented between the seeds, which are embedded in white pulp; sweet, edible.

*Not Pod-bearing.**Fruit Round or Pear-shaped.***Pyrus Aucuparia,  
Rowan, Mountain Ash,***Battal, rungrek.*

ROSACEÆ.

F. B. I. ii. 375.

Himalaya, 11-13,000 ft.

Hattu (Collett).

small, young parts with white cottony wool, sometimes persisting on stalks of leaves and flowers; leaves 4-6 in. long, pinnate, leaflets 15-25,  $\frac{1}{2}$ -2 in. long, sharply toothed, white beneath; flowers pink,  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., crowded in branching clusters nearly at the same level, petals 5, stamens many, styles 2-5, base woolly; fruit red, round,  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., crowned with the persistent calyx.

**Pyrus foliolosa,***Sulia, hulia.*

ROSACEÆ.

F. B. I. ii. 376.

Himalaya, 9-12,000 ft.

Hattu (Collett).

small, hairy, red brown down on leaf and flower stalks; leaves 4-6 in. long, pinnate, leaflets 20-30, 1-1 $\frac{1}{2}$  in. long, sharply toothed; flowers greenish-white,  $\frac{1}{4}$  in. diam., odour unpleasant, crowded in downy branching clusters with linear bracts, nearly at the same level, petals 5, stamens many, styles 2-5; fruit round or ovoid, red with blue bloom,  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Cocculus laurifolius,***Tilphara.*

MENISPERMACEÆ.

F. B. I. i. 101.

Himalaya to 5,000 ft.

Suni (Collett).

small, branches hanging down, angled, branchlets bearded at the base; leaves 3-6 in. long, dark green, tapering from both ends, shining; flowers in racemes with branching stalks, shorter than the leaves, minute, sepals 6 in 2 series of 3, petals 6, 2-lobed, stamens 6; drupe minute, black,  $\frac{1}{8}$  in. diam., generally 3, depressed laterally, stone horseshoe-shaped, keeled and with tubercles.

**Tamarix articulata,***Farash.*

TAMARISCINEÆ.

F. B. I. i. 249.

The Plains

Baluchistan (Boissier).

small, looks something like a fir, branches jointed; leaves minute, pressed against branch, apex triangular, scale-like, sheathing, often white with saline efflorescence; flowers in slender spikes collected in terminal branching racemes, pink,  $\frac{1}{8}$  in. diam., sepals and petals 5, stamens 5; capsule 3-5 valved, seeds small with a tuft of long hairs.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Citrus Aurantium,****Orange,***Naringi.*

RUTACEÆ.

F. B. I. i. 515.

The Plains to 2,000 ft.

Baluchistan

(Hughes-Buller).

small, young shoots greenish-white, usually spinous ; leaves really of one leaflet jointed to the leaf stalk, which is often winged, they appear to be simple leaves, but are really compound, the other leaflets having been suppressed, gland dotted, edges finely toothed, 2 in. long ; flowers pure white, sweet scented ; fruit round, flattened at both ends, orange colour, rind thin, loose, pulp sweet.

**Citrus decumana,****Shaddock, Pumelo,***Chakotra.*

RUTACEÆ.

F. B. I. i. 516.

The Plains.

Baluchistan

(Hughes-Buller).

small, young shoots downy, and usually spinous ; leaves 6-9 in. long, stalk broadly winged ; flowers large, white, strongly scented ; fruit very large, 5 in. diam., round or pear-shaped, rind very thick, pulp yellow, pink or crimson, sweet or acid.

**Meliosma dilleniaefolia,***Kanna, karkon.*

SABIACEÆ.

F. B. I. ii 4.

Himalaya, 4-8,000 feet.

Simla (Collett).

small, branches, leaf and flower stalks covered with rusty down ; leaves 6-12 by 3-5 in., margin sharply toothed, rough with minute dots above, abruptly pointed ; flowers stalked, minute, white, loosely scattered in branching racemes with bracts, sepals 5, concave, petals 5, 3 outer concave, orbicular, 2-lobed, stamens 5, two with anthers, three without ; fruit round,  $\frac{1}{3}$  in. diam., black, one stone.

**Meliosma pungens,***Kapper, bakesh.*

SABIACEÆ.

F. B. I. ii. 4.

Himalaya, 3-8,000 ft.

Narkanda (Collett).

small, branches, leaf and flower stalks covered with rusty down ; leaves 5-9 by 2-3 in., margin toothed with distant large teeth, long-pointed ; flowers larger than the last, white, small, sessile, closely packed on branching racemes, bracts soon falling, bracteoles 1 or 2 below the sepals ; fruit  $\frac{1}{3}$  in. diam., round.

**Mangifera indica,****Mango,***Am.*

ANACARDIACEÆ.

F. B. I. ii. 13.

The Plains to 3,000 ft.

Baluchistan (Stocks).

large, smooth except flower stalks ; leaves 6-16 in. long, shining, margin smooth, crowded at the end of branches, stalk 1-4 in. long, swollen at the base ; flowers yellow, fragrant, in branched downy racemes, calyx lobes 4-5, soon falling off, petals 5, with 3 ridges, stamens 4-5, one much the largest ; fruit large, yellow, fleshy, flattened lengthwise, stone fibrous, large. Widely cultivated ; many varieties.



## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Semecarpus  
Anacardium,**  
**Marking nut tree,**  
*Bhilawa.*  
ANACARDIACEÆ.  
F. B. I. ii. 31.  
The Plains to 3,500 ft.

medium size, bark exudes a dark acrid juice, young parts, leaf stalks, under surface of leaves and flower stalks covered with pale velvety down; leaves 9-30 by 5-12 in., flat, leathery, oblong, tip rounded, margin cartilaginous, stalk 1-2 in., clustered at the end of branches; flowers greenish-white,  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., in erect terminal branching racemes, calyx 5-lobed, petals 5, stamens 5-6, bracts lanceolate; fruit 1 in. long, ovoid, smooth, black in a fleshy orange-red cup, seed one. The acrid juice of the fruit is used for blistering and to simulate bruises, also to mark linen.

**Barringtonia  
acutangula,**  
*Samundar phal, jujar.*  
MYRTACEÆ.  
F. B. I. ii. 508.  
The Plains.

small; leaves 5 by 2 in., crowded at the ends of branches, short stalked, minutely toothed; flowers deep pink in long hanging racemes, racemes often 1 ft. long, calyx lobes 4, petals 4 or 5, small, stamens red, far protruding, many; fruit 1-1 $\frac{1}{2}$  by  $\frac{1}{2}$ - $\frac{3}{4}$  in., 4-angled, equally narrowed to each end, crowned by the calyx, seed 1, ovoid, 1 in. long.

**Careya arborea,**  
*Kumbi.*  
MYRTACEÆ.  
F. B. I. ii. 511.  
The Plains to 4,000 ft.

medium size, bark dark grey, peeling in narrow strips; leaves 6-12 by 3-6 in. broad, rounded at the apex, smooth, minutely toothed flowers 3-4 in. diam., scattered on spikes, calyx bell-shaped, lobes ovate, 4, petals 4, 1 $\frac{3}{4}$  in. long, white, soon falling off, stamens red, many, in several series; fruit round, 2-3 in. diam., crowned by a pit with the calyx teeth round it, seeds  $\frac{3}{8}$ - $\frac{1}{4}$  in., oblong with rounded ends.

**Marlea begoniæfolia,**

see Trees, Alternate, Exstipulate, Lobed.

**Cornus macrophylla,**

see Trees, Opposite, Exstipulate, Simple.

**Cornus oblonga,**

see Trees, Opposite, Exstipulate, Simple.

## PETALS UNITED.

**Saurauja napaulensis,**  
*Gogina.*  
TERNSTRÆMIACEÆ.  
F. B. I. i. 286.  
Himalaya, east of the  
Ravi, 2-4,500 ft.  
Dharmasala (Douie).

medium size, branches usually brown with whitish tubercular dots, young parts and stalks covered with scurfy felt; leaves 10-15 by 3-4 in., narrow, oblong, rounded at the base, long-pointed, sharply toothed, smooth above, rusty felted beneath, stalk 1-1 $\frac{1}{2}$  in.; flowers  $\frac{1}{2}$  in. diam., pink, in axillary stalked branching racemes, sepals 5,  $\frac{1}{6}$  in., petals 5, united at the base, recurved at the point, stamens many, styles 5; fruit green, mealy inside, edible, sweet, seeds many, minute, red-brown.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Pieris ovalifolia,***Ailan.*

ERICACEÆ.

F. B. I. iii. 460.

Himalaya, 3-8,000 ft.

Simla (Collett).

small, bark thick, deeply furrowed, peeling in narrow flakes; leaves 3-7 by 1-4 in., ovate, smooth; flowers  $\frac{1}{5}$ - $\frac{1}{3}$  in. long, white, bell-shaped, bracteolate in narrow bracteate racemes, 4-10 in. long, calyx teeth 5, triangular, corolla lobes 5, recurved, stamens 10, with 2 filiform tails; capsules  $\frac{1}{6}$  in., round, smooth, splitting into 5 valves, seeds minute, many, linear, oblong.

**Rhododendron arboreum,***Burans.*

ERICACEÆ.

F. B. I. iii. 465.

Himalaya, 5-10,000 ft.

Simla (Collett).

small, bark reddish brown, thick, furrowed, peeling in narrow flakes; leaves 5 by  $1\frac{1}{4}$  in., often clustered at the ends of branches, oblong, narrowed at both ends, pointed, whitish, felted beneath, sometimes brown; flowers 1- $1\frac{1}{2}$  by  $\frac{3}{4}$ -1 in., red, widely opened in dense clusters, calyx lobes  $\frac{1}{10}$  in. wide, ovate, corolla bell-shaped, lobes 5, stamens 10; fruit a capsule, 1 by  $\frac{1}{3}$  in., cylindrical, curved with longitudinal ridges.

**Mæsa indica,**

MYRSINACEÆ.

F. B. I. iii. 509.

The Plains to 6,000 ft.

Ambala District, Simla (McIntire).

small, branches long and straggling; leaves 5 by  $1\frac{3}{4}$  in., leathery, pointed, margin toothed; flowers white, small, in branched racemes, calyx lobes 5, blunt, corolla 5-lobed, twice the size of the calyx, stamens 5, short; fruit a round berry, about the size of a pepper corn, fleshy, juicy, pinkish white when ripe, crowned with the calyx, seeds many, hollowed out at the base.

**Reptonia buxifolia,**

see Shrubs, Alternate, Exstipulate, Simple.

**Mimusops Elengi,***Maulsari.*

SAPOTACEÆ.

F. B. I. iii. 548.

The Plains, planted.

Rohtak, in the Public gardens.

large, young shoots, flowers stalk and outside of calyx covered with rusty velvet; leaves  $3\frac{1}{2}$  by  $1\frac{3}{4}$  in., smooth, short-pointed, usually crowded at the end of branchlets, small processes, almost stipules, at base of very young leaf stalks; flowers white, fragrant, in clusters, calyx with 8 segments in two series, outer 4 brown, inner 4 white, corolla lobes 16-20, in two series, narrow-pointed, stamens 8, staminodes 8, all hairy; berry  $\frac{3}{4}$ -1 in., ovoid, 1-rarely 2-seeded, yellow; edible.

**Mimusops hexandra,***Kirni.*

SAPOTACEÆ.

F. B. I. iii. 549.

The Plains.

large; leaves 3-4 by  $1\frac{1}{2}$ -2 in., scattered, leathery, smooth, dark green, broad tip, apex notched or rounded; flowers whitish yellow,  $\frac{1}{4}$  in. across, in short stalked clusters along the branches as well as at the ends, calyx segments 6, corolla lobes 16-20, stamens 6-8, staminodes 6-8, smooth, often 2-pointed, berry  $\frac{1}{2}$  by  $\frac{1}{4}$  in., 1-rarely 2-seeded; edible.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Diospyros montana,***Bistendu.*

EBENACEÆ.

F. B. I. iii. 555.

The Plains east of the Ravi river.

Patiala.

medium size, often spinous on branches, bark pinkish or bluish-grey, thin and smooth on branches, on trunk almost black, deeply cracked; leaves 2-4 by 1-1½ in., light green, ovate, soft, velvety or smooth; flowers white, male in clusters, female solitary, larger than the male, calyx lobes 4, blunt, velvety on both sides, petals 4, stamens 16 in 8 pairs; fruit round, ½-1 in. diam., yellow, supported by the leathery enlarged calyx, has an unpleasant smell, bitter, seeds embedded in pulp.

**Diospyros Lotus,***Amlok.*

EBENACEÆ.

F. B. I. iii. 555.

West Punjab, Hazara,

3-6,000 ft.

resembling the last, but the leaves are larger, 6 by 2 in., the fruit is eaten, dark purple, round or ovoid, sweet.

**Symplocos cratægoides,***Ludh, lodar.*

STYRACEÆ.

F. B. I. iii. 573.

Himalaya, 2-8,000 ft.

Narkanda (Collett).

small, bark light grey, corky, with long vertical furrows; leaves 2-4 by 1-1½ in., ovate, long-pointed, minutely toothed with a black tip to each tooth, turning yellow when dried, bract 1, bracteoles 1-3; flowers ½ in. diam., white, sometimes yellow, fragrant, in terminal branching racemes. 1-5 in., calyx bell-shaped, lobes 4-5, corolla 5, cleft nearly to the base, stamens many in 5 bundles; fruit ¼ in. long, drupaceous, ovoid, crowned with the calyx, usually one-seeded. This plant yields a yellow dye.

**Plumeria acutifolia,****Frangipani tree,***Gulchin.*

APOCYNACEÆ.

F. B. I. iii. 641.

The Plains to 2,000 ft.

Cultivated.

small, branches thick and fleshy, juice milky, leaves at the end of branches; leaves 6-15 in., oblong, acute at both ends; flowers 2-3 in. diam., in terminal clusters of 2-3, white with yellow centre, fragrant, calyx 5-lobed, corolla tubular below, flat and spreading above; fruit a follicle 5 in. long, cylindrical, seeds oblong, winged. A native of America, the juice is purgative.

**Cordia Myxa,***Lasura.*

BORAGINACEÆ.

F. B. I. iv. 136.

The Plains to 5,000 ft.

Valleys below Simla

(Collett).

Baluchistan (Stocks).

small, bark grey or brown with shallow longitudinal wrinkles; leaves 3-6 by 2-4 in., broad, ovate, leathery, smooth above and below except when young, stalk 1-2 in. long; flowers small, white, in clusters of 2-8 in., calyx teeth 4-5, petals 5, united below, stamens 4-8, hairy; berry yellow or pinkish, glossy when ripe, edible, one stone rough, hard, in viscid-sweetish pulp: used for bird lime and as a cure for coughs.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Cordia oblqua**,  
*Chota lasura*.  
BORAGINACEÆ.  
F. B. I. iv. 137.  
The Plains.

small, shoots yellow, hairy; otherwise like the last species, but flowers a little larger.

**Cordia Rothli**,  
*Gondi*.  
BORAGINACEÆ.  
F. B. I. iv. 138.  
The Plains.  
Baluchistan  
(Hughes-Buller).

small; leaves 4 by  $1\frac{1}{4}$  in., nearly opposite, oblong, narrowed at the base, stalk  $\frac{3}{4}$  in.; flowers smaller than *C. Myxa* and in smaller clusters, petals 4; fruit usually one-seeded, edible.

**Cordia vestita**,  
*Kum paiman, kumbi*.  
BORAGINACEÆ.  
F. B. I. iv. 139.  
Himalaya, 1-4,000 ft.

small, shoots yellow, woolly, bark greenish-grey, smooth, peeling in large pieces; leaves 3-6 by  $2\frac{1}{2}$ -3 in., broad, long-pointed, leathery, velvety beneath till mature; flowers yellowish-white in dense clusters, corolla lobes  $\frac{1}{3}$  in.; fruit  $\frac{3}{4}$  in. long, oblong, sharp-pointed, edible.

**Ehretia acuminata**,  
*Puna*.  
BORAGINACEÆ.  
F. B. I. iv. 141.  
The Plains to 5,000 ft.

medium size, trunk deeply grooved, bark brown with longitudinal cracks; leaves 3-5 by  $1-2\frac{1}{2}$  in., oblong, pointed, small toothed, smooth, leathery; flowers white, fragrant, small, in large branching clusters at the end of branches, calyx 5-lobed, persistent, corolla 5-lobed, rotate, stamens 5; drupe  $\frac{1}{3}-\frac{1}{5}$  in. diam., short, obtuse; edible, red or black, not ribbed, with 2 stones, 1- or 2-seeded.

**Ehretia lævis**,  
*Chamror*.  
BORAGINACEÆ.  
F. B. I. iv. 141.  
The Plains to 3,000 ft.  
Sutlej Valley,  
Basantpur (Collett).  
Baluchistan (Boissier).

medium size, bark smooth, grey; leaves 5 by  $2\frac{1}{4}$  in., margin even, ovate, oblong; flowers  $\frac{1}{4}$  in. diam., white, in one-sided slender spikes not always at the end of branches, calyx 5-cleft, corolla 5-lobed, spreading, stamens 5; fruit a drupe,  $\frac{1}{5}$  in. diam., depressed, round, red, 4-ribbed with 1 to 4 one-seeded stones.

**Bridelia retusa**,  
*Pathor, mark*.  
EUPHORBIACEÆ.  
F. B. I. v. 268.  
Himalaya, 2-3,500 ft.

small, bark thin, grey or brownish-black, spinous when young; leaves 3-6 in. long, very leathery, oblong; flowers small, yellow, in clusters on long spikes, bracts small, hairy, calyx 4-5-lobed, petals 5, in male flowers stamens 5, united below, in female flowers styles 2 with 2 branches each; fruit  $\frac{1}{4}$  in. diam., round, purple black when ripe, resting on the flower, fruit edible, sweet, one stone.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Bridelia montana,***Gondni, kargnalia.*

EUPHORBIACEÆ.

F. B. I. v. 269.

Himalaya, east  
of the Jhelum river,  
2-3,000 ft.

small, bark dark grey, branchlets often dotted with warts; leaves 3-6 in. long, blunt or sharp-pointed, shining above, ovate; flowers small, greenish-yellow, in axillary clusters, male and female together, bracts many, crowded, velvety, calyx lobes 5, sharp-pointed, petals 5, round, shortly stalked, male flowers stamens 5, united below, female flowers styles 2 with 2 branches each; fruit size of a pea, ovoid or round, black when ripe, seated on the calyx, stones usually 2.

## PETALS NONE.

**Flacourtia Ramontchi,**var. *occidentalis,**Katai, kukai.*

BIXACEÆ.

F. B. I. i. 193.

Low hills to 3,000 ft.  
Suni (Collett).

small, more or less softly downy, spinous; leaves 1-2 in. long, broad and rounded; flowers small, yellow, in simple or branched racemes, sepals 4-5, small, petals none, stamens many; drupe  $\frac{1}{2}$  in. diam., red or black, edible, stones minute, 8-16. in 2 tiers.

**Xylosma longifolium,***Chirunda.*

BIXACEÆ.

F. B. I. i. 194.

Low hills to 5,000 ft.  
Sutlej Valley, Suni  
(Collett).

small, branches long, slender, thorny when young, wood scented; leaves 4-9 by  $1\frac{1}{2}$ -2 in., shining, leathery, toothed, long-pointed; flowers  $\frac{1}{2}$  in. diam., yellow, female flowers clustered, usually in short racemes, only  $\frac{1}{2}$  in. long, scattered along the branches, male flowers many, clustered in long racemes, stamens many, longer than the sepals, sepals 4-5, ovate, petals none; berry dry, smooth,  $\frac{1}{6}$  in. diam., red or black, 2-8-seeded.

**Terminalia Catappa,**

The Indian Almond,

*Janglibadam.*

COMBRETACEÆ.

F. B. I. ii. 444.

The Plains, planted.

large, trunk buttressed; leaves turn crimson before falling, branches in horizontal circles; leaves 6-8 in. long, stalk short, base of leaves very narrow; flowers in spikes, calyx teeth 5, smooth, stamens 10, protruding, no petals; fruit 1-1 $\frac{1}{2}$  in., fleshy, compressed, showing 2 ridges, not velvety, stone one, kernel edible.

**Terminalia belerica,***Bahera.*

COMBRETACEÆ.

F. B. I. ii. 445.

The Plains.

large, bark uneven, bluish or ashy grey with longitudinal furrows; leaves 3-6 in. long, crowded towards the ends of branches, stalk 1-3 in. long; flowers in spikes, very small, no petals, pale white or greenish-yellow with an unpleasant smell, calyx with 5 teeth, soon falling, stamens 10, far protruding; fruit 1 in. long, fleshy, velvety, when dry shows 5 ridges, seed bony, thick. Fruit called Myrobolan and used for tanning and as a purgative. The Terminalia are fine shady trees.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Terminalia Chebula,***Harh, hararh.*

COMBRETACEÆ.

F. B. I. ii. 446.

The Plains.

large, bark dark brown, young parts covered with rusty brown hairs; leaves nearly opposite, 3-6 in. long, ovate, short-pointed; flowers  $\frac{1}{10}$  in. diam., dull white, in clustered spikes, strong-scented, calyx teeth 5, hairy within, no petals, stamens 10, far protruding; fruit 1-2 in. long, fleshy, smooth, 5-ribbed when dry; nut rough with grooved surface, kernel edible. The fruit of this tree is called Myrobolan and used for tanning and as a purgative.

**Terminalia Arjuna,***Arjun.*

COMBRETACEÆ.

F. B. I. ii. 447.

The Plains.

large, trunk buttressed, bark smooth grey, young parts covered with rusty down; leaves nearly opposite, 5-8 in. long, oblong, short-pointed; flowers dull yellow in branching spikes, no petals, calyx teeth 5, smooth, broad; fruit 1-2 in. long with 5-7 hard, leathery, narrow wings.

**Terminalia tomentosa,***Asaina, sain.*

COMBRETACEÆ.

F. B. I. ii. 447.

The Plains.

large, bark deeply cracked, dark grey or black, peeling off in thick rectangular pieces, inner bark reddish-brown, young parts covered with rusty velvety down; leaves nearly opposite, 4-8 in. long, smooth above, woolly beneath; flowers  $\frac{1}{10}$  in. diam., dull yellow, calyx woolly, in spikes, bracts lanceolate, longer than buds, no petals; fruit  $1\frac{1}{2}$ - $2\frac{1}{8}$  in. long with broad wings, striated. The fruit is used as in the former species of Terminalia.

**Anogeissus latifolia,***Bakli, dhau.*

COMBRETACEÆ.

F. B. I. ii. 450.

The Plains to 3,000 ft.

small, bark greyish-green, smooth, young parts covered with rusty velvety down; leaves 2-4 in. long, broad, rounded at both ends, smooth when old; flowers in round heads, small, heads  $\frac{1}{2}$  in. diam., in racemes, calyx tube long, teeth 5, soon falling, stamens 10, in 2 series, no petals; fruit  $\frac{1}{8}$  in., 2 wings, flattened, crowned with the remains of the calyx as a beak.

**Cinnamomum Tamala,**

see Trees, Opposite, Exstipulate, Simple.

**Machilus odoratissima,***Kaula, mithpatta.*

LAURINEÆ.

F. B. I. v. 139,859,

Himalaya, 5,000 ft.

Sutlej Valley, Suni  
(Collett).

large; leaves 4-6 by  $1\frac{1}{2}$ -2 in., oblong with a tapering point, shining, dark green, dotted with small glands; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., pale yellow, fragrant, quite smooth, in branching racemes, sepals 6, reflexed in fruit, stamens 9 in 2 series; fruit an ovoid or oblong drupe,  $\frac{1}{2}$ - $\frac{3}{4}$  in., dark purple when ripe, sometimes with a bloom on the surface, seated on the persistent calyx.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Machilus Duthiei,**  
*Chan.*  
LAURINEÆ.  
F. B. I. v. 861.  
Himalaya, 4-9,000 ft.  
Simla, the Glen  
(Collett).  
very like the last species, but the leaves are not so dark, flowers covered with silky down, fruit round.
- Phæbe lanceolata,**  
*Badror.*  
LAURINEÆ.  
F. B. I. v. 141.  
Himalaya, 2-6,000 ft.  
Bhajji, Sutlej Valley  
(Collett).  
small, bark yellowish-white; leaves 5-8 by 1-2 in., crowded at the end of branches, narrow with tapering point, smooth; flowers  $\frac{1}{10}$ - $\frac{1}{8}$  in., pale yellow or white, in branching racemes not at the end of branches, sepals 6, hairy within, stamens 9 in 2 series, of 6 and 3 with 3 staminodes; fruit  $\frac{1}{2}$  in., narrowly oblong with round ends, black when ripe, half buried in the calyx segments, which become stiff and pressed against it.
- Litsæa sebifera,**  
*Maida-lakri, gwa.*  
LAURINEÆ.  
F. B. I. v. 157.  
The Plains.  
medium size, bark dark grey, soft, corky, young parts covered with grey wool; leaves 4-10 in. long, ovate or oblong, short- or long-pointed, slightly downy above, and grey woolly beneath; flowers, white, in few 4-6-flowered clusters on a common short stalk with 4 bracts, male and female on different trees, calyx 4-lobed, tubular, stamens 9 or more; fruit round,  $\frac{3}{10}$  in. diam., supported on the remains of the flower, black.
- Litsæa polyantha,**  
*Katmarra.*  
LAURINEÆ.  
F. B. I. v. 162.  
Salt Range.  
The Plains to 3,000 ft.  
small, bark dark grey, smooth; leaves 4-8 in. long, smooth above, rusty woolly beneath, broad; flowers as in last species but with 5 bracts; fruit ovoid, oblong,  $\frac{1}{4}$ - $\frac{1}{3}$  in.
- Litsæa lanuginosa,**  
LAURINEÆ.  
F. B. I. v. 178.  
Himalaya, 3,000 ft.  
Sutlej Valley  
(Collett).  
small, bark brown; leaves 6-12 in. long, crowded at the end of branches, thick, leathery, densely silky when young, narrow, long-pointed; flowers 1 in. diam., in fours, in sessile clusters, silky or woolly, stamens 6, glands of inner stamens long-stalked; fruit  $\frac{1}{2}$  in. long, pointed at both ends, seated on the thick end of the stalk.
- Litsæa umbrosa,**  
LAURINEÆ.  
F. B. I. v. 179.  
Himalaya, 3-9,000 ft.  
Mahasu, Narkanda  
(Collett).  
small, bark dark brown; leaves 3-6 in. long, oblong, long-pointed, thinly leathery; flowers yellowish-white with 5 bracts in small sessile clusters, calyx 4-lobed, stamens 6, with sessile glands not as long as in the last species; fruit  $\frac{4}{10}$  in. diam., round or oblong, on slender stalks  $\frac{1}{2}$  in. long.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Elæagnus hortensis,**

ELÆAGNACEÆ.

F. B. I. v. 201.

Western Himalaya,  
6-7,000 ft.

(Edgeworth).

Baluchistan (Boissier).

small, branches silvery with scales, often spinous, dark brown when older; leaves 1-3 in. long, oblong, ovate, blunt, silvery beneath, stalk  $\frac{1}{4}$  in.; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in. long, yellow, silvery, bell-shaped above, stalked, fragrant, solitary or in clusters of 3, calyx of 4 triangular, ovate teeth, soon falling off, stamens 4, on the mouth of the calyx, alternating with the lobes; fruit  $\frac{3}{4}$  in. long, oblong, red, dry or fleshy, stone thick, bony.

**Putranjiva Roxburghii,***Jiaputa, patajan.*

EUPHORBIACEÆ.

F. B. I. v. 336.

The Plains to 2,500 ft.  
Valleys of the outer  
hills (Collett).

medium size, bark dark grey, nearly smooth with horizontal lines of white dots, handsome tree; leaves 2-3 in. long, evergreen, dark green, shining, margin wavy, ovate; flowers, male nearly sessile in clusters (female stalked, in pairs or solitary), yellow, small, calyx 3-5-lobed, stamens 3, female flowers calyx 5-6 lobed, styles 3; fruit  $\frac{1}{2}$  in. long, ovoid, stone very hard, pointed, wrinkled, made into necklaces for *fakirs* or infants.

**Mallotus philippinensis,***Rora, raini, roli.*

EUPHORBIACEÆ.

F. B. I. v. 442.

Base of the Himalaya,  
Sutlej and Giri Valleys  
(Collett).

medium size, bark thin, dark grey, young branches rusty; leaves 3-5 in. long, velvety beneath with crimson glands, stalk 2-3 in. long; flowers in brown red spikes, minute, calyx 3-lobed, stamens 20-30 on a central receptacle, no petals; capsules  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., 3-lobed, covered with crimson powder; seeds round,  $\frac{1}{10}$  in. diam., smooth, black. The crimson powder is called *Kamela* and used as an orange dye and as a vermifuge.

**Sapium insigne,***Dudla, lendua.*

EUPHORBIACEÆ.

F. B. I. v. 471.

Himalaya, 5,000 ft.  
Valleys below Simla  
(Collett).

small, bark grey, corky, juice thick, milky, branches thick, soft, branchlets leafy at the tips; leaves 6-12 in. long, oblong, long-pointed, soft, smooth; flowers yellow green in long fleshy terminal spikes, male flowers in circular clusters, calyx 2-lipped, deeply cleft, stamens 2, short, top scarlet, female flowers nearly sessile, solitary, calyx 2-3-cleft, ovate, long-pointed, styles 3, short, recurved; capsule ovoid,  $\frac{1}{3}$  in. long, obscurely lobed on a fleshy spike.

**Myrica Nagi,***Kaiphal.*

F. B. I. v. 597.

Himalaya, east of the  
Ravi river, 3-6,000 ft.  
Simla, the Glen  
(Collett).

small, bark brownish-grey, rough, vertically wrinkled, branchlets velvety; leaves 3-7 in. by 1-2 in., leathery, with aromatic dots beneath; flowers in bracteate cylindrical catkin-like spikes, male flowers with 3-6 stamens in axils of broad bracts, female with 2 styles in glandular bracts; fruit  $\frac{3}{4}$  in. long, ovoid, succulent, edible, pulp of red spindle-shaped fibres, radiating from the wrinkled nut. The bark is used as a stimulant, carminative and astringent. This tree is akin to *Myrica Gale*, Sweet Gale of Britain.



## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS NONE.

CONE BEARING.

*Leaves narrow, linear.***Taxus baccata,  
Yew,***Barma, thunu.*

CONIFERÆ.

F. B. I. v. 648.

Himalaya, 6-11,000 ft.

Mahasu, Narkanda

(Collett).

medium size, bark reddish-grey, thin, smooth, flaking in longitudinal shreds; leaves in 2 rows, dark green, light or rusty beneath, leathery, 1-1½ by  $\frac{1}{10}$  in., narrowed into a short stalk; cones sessile, axillary, male and female on different trees, male  $\frac{1}{4}$  in., bracts empty, stamens in a cluster at the top, female minute, bud-like, two upper bracts enclose the seed with the disk; fruit an ovoid berry  $\frac{1}{2}$  in. long, consisting of a red fleshy cup nearly concealing the flattened olive-green wingless seed.

*Leaves needle-like.***Pinus excelsa,  
The Blue Pine,***Kail, biar, darchir.*

CONIFERÆ.

F. B. I. v. 651.

Himalaya, 6-12,000 ft.

Simla (Collett).

Baluchistan.

large, bark smooth, slatey leathery when young, grey corky, furrowed when older, wood excellent; leaves in clusters of 5, 6-8 in. long, 3 cornered, bluish-green, in sheaths pinkish-brown, soon falling off; male cones or catkins  $\frac{1}{3}$  in. long in crowded clusters, with many scales, each scale carries 2 anthers, female cones 2 or 3 together, 6-12 in. long, first erect, then pendulous, on stalks 2-3 in. long, seeds  $\frac{1}{3}$ - $\frac{1}{2}$  in., black, with a long, thin wing. Timber is very fairly good.

**Pinus longifolia,***Chir, chil.*

CONIFERÆ.

F. B. I. v. 651.

Himalaya,

1,500-6,000 ft.

Simla (Collett).

Kasauli.

large, bark, outer, corky and in thin crisp pieces, reddish-brown, inner bark brick red; leaves 9-12 in. long, in clusters of 3, light green, sheaths grey, persistent, fringed, male catkins  $\frac{1}{2}$  in. long, female cones ovoid with scales thickened at the apex, 4-8 by 3-5 in. at the lower end, seeds with a short wing. *Gandabaroza*, turpentine and tar are obtained from this tree. The wood is much used, but rots in the wet.

**Pinus Gerardiana,***Miri, galgoja.*

CONIFERÆ.

F. B. I. v. 652.

Dry inner Valleys of

Himalaya, 6-12,000 ft.

Kurram Valley,

7-11,000 ft.

Baluchistan.

medium size, bark smooth, often silvery, flaking in long pieces; leaves in clusters of 3, 3-5 in. long, stout, stiff, dark green, persistent for 3-4 years, sheaths soon falling off, male catkins  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, female cones ovoid, 6-9 by 4-5 in., bluish-green, young, erect scales with a recurved spine from the upper margin, seeds 1 in. long, cylindric, wing short, soon falling off, eaten when roasted, called *Chilgoza* or *Necoza*.

## TREES WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS NONE.

CONE BEARING.

*Leaves needle-like.*

**Cedrus Libani,**  
var. **Deodara,**  
*Kelo, diar.*  
CONIFERÆ.  
F. B. I. v. 653.  
Himalaya, 4-12,000 ft.

large, bark greyish-or reddish-brown, thick, furrowed vertically and cracked transversely, branches and branchlets horizontal, tips nodding; leaves 1-1½ in. long, in dense clusters, short, slender, bluish-green, sheaths very short, male catkin single, erect, 1 in. long, female cones erect, 4-5 in. long, ovoid, scales soon falling off, leaving a central spike, seeds ¼ in. long, triangular, wing triangular, ⅔ in. long. Timber excellent.

**Picea Morinda,**  
**Himalayan Spruce,**  
*Ran, tos.*  
CONIFERÆ.  
F. B. I. v. 653.  
Himalaya, 6-11,000 ft.

large, bark rough, greyish-white, peeling in round flakes about an inch. in-diam., branches horizontal, branchlets slender, hanging down like tassels; leaves 1-1½ in. long, scattered, short, 4-sided, needle-like, dark green, stiff; male catkins usually single, cylindric, sessile, 1 in. long; cones terminal, hanging down, blunt, 4-6 in. long, dark brown when ripe, scales with a thin edge, seeds ⅔ in. long with the abruptly ended wing. The wood is soft and used in making packing cases.

**Abies Webbiana,**  
var. **Pindrow,**  
**Himalayan Silver Fir,**  
*Tos, rai.*  
CONIFERÆ.  
F. B. I. v. 654.  
Himalaya, 7-12,000 ft.

large, bark dark brown or grey, fissured into long narrow scales, branches horizontal, flat, branchlets the same; leaves 2-3 in. long, narrow, linear, very dark green, foliage appears black at a distance; male catkins ¾ in., sessile, clustered, stamens with 2 pockets, cones always erect, 2-4 in. long, cylindrical, purple, scales closely overlapping, seeds oblong with a wing abruptly ended, ½-1 in. long. The wood is soft and used for shingles.

## TREES WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

**Marlea begoniæfolia,**  
*Budanar, sialu, padhu.*  
CORNACEÆ.  
F. B. I. ii. 743.  
Himalaya, 1-6,000 ft.  
Simla (Collett).

medium size, bark smooth, grey, young parts velvety; leaves 3-10 in. long, from round to broad-oblong, unequally sided, usually lobed like a maple; flowers ¾ in. long, white, in axillary bunches, calyx minutely 6-toothed, petals ⅔ in. long, 6-8, strap-shaped, stamens 6-8; drupe ovoid, dark purple, ½ in., crowned with the calyx, stone in pulp, 2-celled.

## TREES WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

**Cratæva religiosa,**  
*Barna.*  
CAPPARIDACEÆ.  
F. B. I. i. 172.  
The Plains.

medium size, bark grey, fairly smooth with long horizontal wrinkles; leaves of 3 leaflets, stalk 4-6 in. long, leaflets 3-6 by 1½-3 in., ovate; flowers 2-3 in. diam., pale greenish-yellow to purplish, in level many-flowered bunches, sepals 4, soon falling off, petals 4,

## TREES WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

long-stalked, stamens many on a short column surrounding a long thread with ovary above; fruit a many-seeded, ovoid, berry, 1-2 in. diam., rind rough with white dots, seeds  $\frac{1}{4}$  in. long, nearly smooth, kidney-shaped, black in pulp. The bark is an antipyretic and sedative, the fresh leaves are rubefacient and vesicant.

**Averrhoa Carambola,**  
*Khamrak.*

GERANIACEÆ.  
F. B. I. i. 439.  
The Plains.

small; leaves pinnate with a terminal leaflet, leaf stalk stout, velvety, leaflets 2-5 pairs, ovate,  $1\frac{1}{2}$ -3 in. long, smooth, long-pointed; flowers small, variegated, white and purple, sepals and petals 5 of each, stamens 10; fruit yellow, fleshy, 3 in. long, oblong, acutely 4-5 ridged, edible, seeds 2-5 in each cell, each seed surrounded by a fleshy appendage (aril). Cultivated.

**Averrhoa Bilimbi,**  
*Bilimbi.*

GERANIACEÆ.  
F. B. I. i. 439.  
The Plains.

small, same as the last, but leaflets 5-12 pairs, oblong, velvety beneath, fruit with rounded lobes and seeds without the fleshy appendage. Cultivated.

**Murraya exotica,**

see Shrubs, Alternate, Exstipulate, Compound.

**Murraya Koenigii,**  
*Gandalu, gandanim.*

RUTACEÆ.  
F. B. I. i. 503.  
The Plains to 5,000 ft.

small, strong scented tree with brown bark, usually velvety or woolly; leaves 6-12 in. long, leaflets 9-25, 1-1 $\frac{1}{2}$  in. long, alternate; flowers  $\frac{1}{2}$  in. long, white, in terminal flat-topped branching racemes, sepals 5, petals 5, dotted, stamens 10; fruit ovoid,  $\frac{1}{3}$  in. diam., black, wrinkled, seeds embedded in a gummy substance. The leaves are stomachic and used to flavour curries.

**Limonia acidissima,**

see Shrubs, Alternate, Exstipulate, Compound.

**Feronia Elephantum,**  
**Elephant or Wood**  
**apple,**

*Bilin, kat-bel.*  
RUTACEÆ.  
F. B. I. i. 516.  
The Plains to 1,500 ft.  
Gurgaon.  
Rohtak.

medium size, spinous, bark blackish-grey, wrinkled and with shallow longitudinal furrows; leaves smelling of aniseed, with an odd number of leaflets, leaflets 5-7, opposite toothed, gland dotted; flowers  $\frac{1}{2}$  in. diam., reddish-green in loose clusters, calyx 5-toothed, soon falling off, petals 4-5, stamens 10-12; fruit with woody rind, round, grey, rough, 2 $\frac{1}{2}$  in. diam., edible, seeds oblong, buried in pulp. This tree is often found shrubby on the sides of roads. The gum is used, the fruit eaten and is useful in dysentery.

## TREES WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Ægle Marmelos,**  
*Bel.*

RUTACEÆ.

F. B. I. i. 516.

The Plains to 4,000 ft.

Baluchistan

(Hughes-Buller).

medium size, spinous, bark grey, corky ; leaves  $3\frac{1}{2}$ - $6\frac{1}{2}$  in. long, leaflets 3-5, lateral sessile, terminal one stalked, 2-4 by  $1-1\frac{1}{2}$  in. ; flowers greenish-white, in bunches 1 in. diam., sweet scented, calyx 4-5-toothed, flat, velvety, petals 4-5, spreading, stamens many ; fruit 2-7 in. diam., round with grey woody rind, pulp orange-coloured, sweet, seeds many, in gummy pulp. The pulp of the fruit cures dysentery.

**Ailanthus excelsa,**  
*Arua, maharukha.*

SIMARUBACEÆ.

F. B. I. i. 518.

The Plains, Delhi Dist.

large ; leaves one foot or more long, with an unequal number of leaflets, leaflets numerous, on long stalks unequal at the base, hairy ; flowers small, yellowish, in long bunches, calyx small, 5-cleft, petals 5, spreading, edges inverted, stamens 10 in male flowers, stamens 2-3 in 2-sexed flowers, none in female flowers, styles 2-5, united ; fruit of 1-5 long membranous red-twisted wings, 2 by  $\frac{1}{2}$  in. long, each with one seed.

**Boswellia serrata,**  
*Salar, salhi.*

BURSERACEÆ.

F. B. I. i. 528.

Base of the Himalaya,  
east of the Sutlej  
river.

medium size, crown spreading flat, bark reddish-yellow or greenish-grey, peeling off in thin flakes, a clear gum exudes which burns with a pleasant odour ; leaves crowded at the ends of branches with unequal leaflets, leaflets 8-15 pairs besides the end one, 2-3 in. long, short toothed, tip usually rounded ; flowers small, white, in racemes, calyx small, 5-7-cleft, petals 5-7, stamens 10-12 ; drupe  $\frac{1}{2}$  in. long, 3-angled, splitting into 3 portions, 1 bony seed in each, surrounded by the woody disk.

**Melia Azadirachta,**  
or **Azadirachta indica,**  
*Nim.*

MELIACEÆ.

F. B. I. i. 544.

The Plains to 5,000 ft.  
Baluchistan (Stocks).

large, evergreen ; leaf spinnate, 8-10 in. long, crowded at the ends of branches, leaflets 9-15, smooth, lanceolate, toothed, 1-3 by  $\frac{1}{2}$ - $1\frac{1}{2}$  in. ; flowers  $\frac{1}{6}$ - $\frac{1}{5}$  in. long, white, sweet scented, in long-stalked branching racemes, shorter than the leaves, calyx 4-5-cleft, small, petals 5, stamens 10, united into a tube ; fruit oblong,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, smooth, greenish-yellow, one-seeded. The bark is a febrifuge, and the oil from the seeds is an insecticide. The leaves are used to keep moths from clothes.

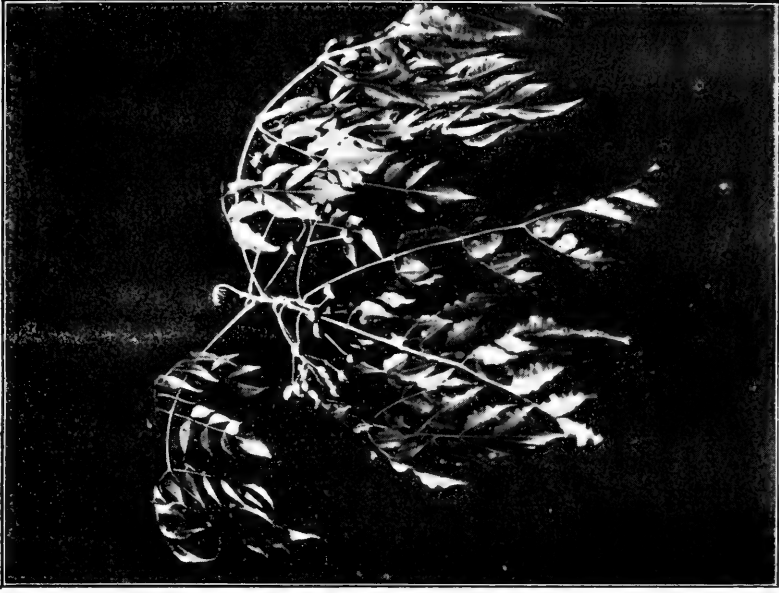
**Melia Azedarach,**  
**Persian Lilac,**  
*Bakain.*

MELIACEÆ.

F. B. I. 534.

The Plains to 5,000 ft.  
Baluchistan (Stocks).

medium size, bark smooth, dark grey ; leaves bipinnate or tripinnate, 9-18 in. long, pinnæ usually opposite, leaflets 3-7 on each pinnæ, ovate, long-pointed ; flowers  $\frac{1}{4}$ - $\frac{3}{4}$  in. long, lilac, sweet scented in branching racemes, calyx segments 5-6, short, petals 5-6, linear, stamens 10-12, united into a purple tube ; fruit  $\frac{1}{2}$  in. diam., yellow, round, wrinkled, 5-seeded. The seeds are used as beads. The plants properties are much the same as those of the last species.



The bipinnate leaves of the Persian Lilac, --Melial  
Azedarach.



The pinnate leaves of the soap-nut tree, Sapindus  
Mukorossi.



## TREES WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Walsura ternata,**

MELIACEÆ.

F. B. I. i. 563.

The Plains at  
Sheikhpura.

small; leaves 8 in. long, leaflets 3, 4-5 by 1 in., smooth, shining, white beneath; flowers  $\frac{1}{2}$  in. long, milk white in branching racemes, shorter than the leaves, calyx short, 5-fid, petals 5, oblong, spreading, stamens 10, united below; berry narrow, oblong, one-celled and one-seeded, seed enclosed in a fleshy appendage.

**Cedrela Toona,**

Tun.

MELIACEÆ.

F. B. I. i. 568.

The Plains to 3,000 ft.

large, bark smooth, dark grey, thin; leaves with an equal number of leaflets, 1-2 ft. long, leaflets 8-30, with smooth margins, 2-6 by  $\frac{3}{4}$ -2 $\frac{1}{2}$  in., long-pointed; flowers small, cream coloured, sweet scented, in branching drooping racemes nearly as long as the leaves, sepals 5, blunt, hairy, petals 5, fringed with marginal hairs, stamens 5, on fleshy hairy orange lobes; capsule  $\frac{3}{4}$ -1 in. long, oblong, dark brown, seeds with a membranous wing at each end. This tree yields good red wood much used for furniture.

**Cedrela serrata,**

Hill Toon,

*Darli, chutisirin.*

MELIACEÆ.

F. B. I. i. 568.

Himalaya, 3-8,000 ft.  
Matiana, Sainj  
(Collett).

medium size, bark with regular longitudinal cracks; leaves with usually an unequal number of leaflets, 2-3 ft. long, leaflets 24-48, 3-8 by 1-2 $\frac{1}{2}$  in., ovate, long-pointed, margin toothed; flowers in loose drooping branching racemes, longer than the leaves, pink, sepals 5 or 6, often smooth, petals 5 or 6, smooth, stamens 5, alternating with 5 staminodes; capsules 1 in. long, ovoid, pointed, dark grey, seeds winged only at the upper end.

**Sapindus Mukorossi,**

Soap-nut tree,

*Ritha, dodan.*

SAPINDACEÆ.

F. B. I. i. 683.

The Plains to 5,000 ft.

small, bark grey; leaves even pinnate, 12-20 in. long, crowded at the ends of branches, leaflets 10-20, 3 $\frac{1}{2}$ -6 by 1-2 in., smaller at the end of the leaf; flowers  $\frac{1}{10}$  in. long, white or purple in branching racemes, petals 4, as a rule fringed with hairs and with 2 woolly scales on each side of the stalk, stamens 8, far protruding; fruit  $\frac{3}{4}$ -1 in. long, fleshy, round, one-seeded, covering saponaceous, wrinkled when dry, yellow, seed black, loose in the fruit when dry. The fruit is commonly used instead of soap for washing clothes.

**Rhus semi-alata,***Tekri, titri, dudla,*  
*kakkari.*

ANACARDIACEÆ.

F. B. I. ii. 10.

Himalaya, 3-7,000 ft.  
Simla, the Glen,  
Mahasu (Collett).

small, young parts grey velvety; leaves odd pinnate, 12-18 in. long, upper part of leaf stalk winged, leaflets 9-13, lateral sessile, end one on a long winged stalk, ovate, 2-5 in., closely and sharply toothed, lower surface reddish-white, woolly; flowers  $\frac{1}{10}$  in. diam., pale yellow green, in large dense branched racemes, racemes as long as the leaves, calyx small, 4-6 cleft, petals 3-5, fringed with hairs, stamens 5; fruit a drupe  $\frac{1}{4}$  in. diam., woolly, red-brown, acid, edible.

## TREES WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Rhus punjabensis,***Titri, choklu, dor.*

ANACARDIACEÆ.

F. B. I. ii. 10.

Himalaya, 3-8,000 ft.

Simla, Jaku, the Glen

(Collett).

small, bark rough, dark grey, leaves aromatic, young parts velvety; leaves odd pinnate, 12-18 in. long, stalk not winged, leaflets 11-13, lateral sessile, end one stalked, ovate,  $2\frac{1}{2}$ -5 in., margin smooth or toothed towards the tip; flowers on broad branching racemes much shorter than the leaves, flowers less than  $\frac{1}{10}$  in. diam., yellow-green, calyx, petals and stamens as above; drupe red, woolly,  $\frac{1}{4}$  in. diam.

**Rhus Wallichii,***Arkhar, kambal, rikhul.*

ANACARDIACEÆ.

F. B. I. ii. 11.

Himalaya, 6-7,000 ft.

Simla, the Glen

(Collett).

small, something like the walnut (*Juglans regia*), bark smooth grey from which a black acrid varnish exudes, all parts rusty woolly; leaves odd pinnate, 12-18 in. long, leaflets 7-11, lateral sessile, end one long-stalked, 3-9 in., abruptly pointed; flowers  $\frac{1}{10}$  in., in short branching racemes, calyx as above, petals 4-6, yellow green with dark veins, stamens as the last; fruit ovoid,  $\frac{1}{3}$  in. long, brown, woolly at first, then smooth.

**Rhus succedanea,***Arkhol, hulashing, lakhar.*

ANACARDIACEÆ.

F. B. I. ii. 12.

Himalaya, 3-6,000 ft.

Valleys near Simla

(Collett).

small, smooth everywhere; leaves 6-18 in. long, crowded at the ends of branches, odd pinnate, leaflets 7-13, lateral shortly stalked, end one long-stalked, ovate, long-pointed, smooth, shining; flowers  $\frac{1}{12}$  in. diam., green-yellow, in drooping branching racemes shorter than the leaves, calyx 5-fid, much shorter than the petals, petals 5, stamens 5; drupe  $\frac{1}{4}$  in. diam., yellow, round, smooth.

**Odina Wodier,***Jhingan, kimlu, sulambra.*

ANACARDIACEÆ.

F. B. I. ii. 29.

The Plains to 5,000 ft.

Valleys below Simla

(Collett).

Baluchistan

(Hughes-Buller).

medium size, trunk thick, branches few, branchlets thick, soft, bark grey, smooth at first, in age peeling in round flakes, red inside; leaves 12-18 in. long, few at the end of branches, odd pinnate, leaflets 6-8, 3-6 in. long, oblong, ovate, long-pointed; flowers  $\frac{1}{10}$  in. diam., greenish-yellow, in dense branching racemes at the ends of the branches while leafless, male and female on different branches or trees, calyx 4-cleft, petals 4, in males stamens 8, in females styles 4, short, thick; drupe  $\frac{1}{4}$  in. long, oblong, kidney-shaped, red when ripe, stone hard. The bark is astringent, the wood is hard, and eaten by white ants.

**Moringa pterygosperma,****Horse radish tree,***Sainjna.*

MORINGEÆ.

F. B. I. ii. 45.

The Plains to 3,000 ft.

medium size, bark corky, wood soft, fruit is hot lik horse radish; leaves 12-24 in. long, usually 3-pinnate, stalk sheathing, pinnæ 8-12, leaflets 12-18,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, unevenly ovate or with broad tip, linear glands at the base; flowers 1 in. diam., white, scented, in axillary spreading branched racemes with linear bracts, sepals 5,



## TREES WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

linear-lanceolate, reflexed, petals 5, narrow at the base, broad at the tip, stamens 5 with anthers, 5 without; capsule 9-18 by  $\frac{1}{3}$  in., cylindrical, hanging down, 9-ribbed, beaked, seeds many in pits, 3-angled, winged at the angles. The young root is like horse radish. Oil from the seeds is an excellent lubricant, Ben Oil.

**Spondias Mangifera,**  
**The Hog-plum tree,**  
*Ambara, bahamb.*

ANACARDIACEÆ.

F. B. I. ii 42.

The Plains to 5,000 ft.

small, bark smooth, grey, aromatic; leaves 12-18 in. long, odd pinnate, leaflets 9-11, opposite, 3-9 by  $1\frac{1}{4}$ -4 in., smooth; flowers  $\frac{1}{4}$  in. diam., greenish-white, in terminal branching spreading racemes, calyx 5-cleft, petals 5, stamens 8-10; drupe  $1\frac{1}{2}$ -2 in. long, yellow, smooth, flesh acid, astringent, edible, stone fibrous, pitted within, seeds 1-3, usually one perfect. The ripe fruit is a useful antiscorbutic.

**Juglans regia,**  
**Walnut,**  
*Akhrot, charmaghz,*  
*starga.*

JUGLANDEÆ.

F. B. I. v. 595.

Himalaya, 3-10,000 ft.

Baluchistan (Boissier).

large, aromatic, shoots velvety, bark grey, fissured vertically; leaves 6-15 in. long, odd pinnate, woolly when young, leaflets 5-13, opposite, 3-8 by 2-4 in., lateral nearly sessile, end one shortly stalked; flowers very small, green, male and female on the same tree on spikes, males in pendulous catkins, calyx 5-lobed, stamens 15-20, females 1-3 clustered, calyx 4-toothed, petals 4, linear, lobed, styles 2, short recurved; fruit 2 in. long, ovoid, green with yellow dots, skin leathery, very aromatic, nut  $1-1\frac{1}{2}$  in. long, ribbed, shell thick, 2-valved, seed corrugated, 2-lobed. The wood is very good for making into furniture. From the seeds excellent oil for culinary and illuminating purposes is expressed. The bark is a vermifuge and used for staining.

**Phoenix sylvestris,**  
**Date Palm,**  
*Khajur.*

PALMÆ.

F. B. I. vi. 425.

The Plains to 3,000 ft.

large, trunk covered with the remains of old leaf stalks, unbranched; leaves, 4-8 ft. long, form a crown on the summit of old trees, pinnate, leaflets 9-18 in. long,  $\frac{1}{2}$ - $\frac{3}{4}$  in. broad, thick, folded at first, sessile; flowers, male on a compact spike in a broad spathe, female on a spike 2-2 $\frac{1}{2}$  ft., branching, male and female with 3 sepals and petals; fruit  $1-1\frac{1}{2}$  in. long, yellow reddish-brown when ripe, sweet, stones 1 in. long, deeply grooved on one side, widely cultivated, leaflets used for matting and cordage.

## TREES WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS NONE.

**Schleichera trijuga,****The Lac tree,**

*Gosum, kussumb, samma.*

SAPINDACEÆ.

F. B. I. i. 681.

The Plains, east of the Sutlej river.

bark grey, peeling in irregular pieces, red inside; leaves with an equal number of leaflets, 8-16 in. long, pink when young, dark green when old, leaflets 4-8, 2-9 by  $1\frac{1}{2}$ - $3\frac{1}{2}$  in.; the terminal pair much the longest, oblong or ovate; flowers yellowish-green in drooping racemes at the ends of branches, calyx 4-6 cleft, small, stamens 6-8, longer than calyx, hairy, petals none; fruit dry, pointed, smooth or spinous,  $\frac{3}{4}$ -1 in. long, seeds 1 or 2 in a pulpy appendage, edible, pleasant acid flavour. Lac is produced on this tree by the *Coccus lacca* insect.

**Pistacla integerrima,**

*Kakkar, sarawan, gurgu.*

ANACARDIACEÆ.

F. B. I. ii. 13.

The Plains, Peshawar, Salt Range, Himalaya, 1,500-8,000 ft. Simla (Collett).

bark rough, grey, large crooked galls, *kakrisingi*, form on the leaves in autumn and are sold as medicine; leaves 6-9 in. long, odd or even pinnate, leaflets 8-12, 3-6 by  $1-1\frac{3}{4}$  in., very long-pointed, smooth; flowers small, red, male and female on separate trees, no petals, in lateral branching racemes appearing with the young leaves which are also red, in male flowers calyx 5-cleft, very small, stamens 5-7, female flower calyx 4-cleft, lobes soon falling off, styles 3, recurved; drupe  $\frac{1}{4}$  in. diam., broader than long, wrinkled, grey when ripe, seed with a membranous coat. The heart wood is used for carving and furniture.

**Engelhardtia****Colebrookiana,**

*Timar rakh.*

JUGLANDEÆ.

F. B. I. v. 596.

Himalaya, east of Chenab, to 6,000 ft.

small, bark grey, shoots woolly; leaves 8-12 in. long, odd pinnate, leaflets 6-11, end one smallest, often wanting, lateral nearly opposite, shortly stalked, 3-5 in. long, woolly beneath; flowers in spikes, small, green, males in slender catkins, calyx 4-5-fid, stamens 4-5, nearly sessile, females in pendulous spikes, 3 large unequal bracts, calyx 4-toothed, hairy, petals none, style of 2-4 branches; fruit a small round nut,  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., hairy, seated on a 3-lobed bract.

## ERECT SHRUBS.

## SHRUBS WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Bergia odorata,**

ELATINÆ.

F. B. I. i. 251.

The Plains.

small, one foot or less high, widely spreading, glandular, hairy, bark papery peeling; leaves  $\frac{1}{12}$ - $\frac{1}{3}$  in., sessile, thick, ovate, margins minutely toothed, often reflexed; flowers  $\frac{1}{2}$  in. long on bare branches in bunches, sepals and petals 5, stamens 10, styles 5; capsule 5-celled, seeds many, minute, curved.

**Bergia æstivosa,**

ELATINÆ.

F. B. I. i. 251.

The Plains.

Multan.

small, much like the last, but not glandular, hairy, much branched, branches slender, widely diverging, flowers solitary or 2-4 together, pink, sepals lanceolate with membranous margins.

**Euonymus****Hamiltonianus,***Siki, singi, naga.*

CELASTRACEÆ.

F. B. I. i. 612.

Himalaya,

5-6,000 ft.

large, bark thick, corky, ashy grey; leaves 2-6 by  $\frac{3}{4}$ - $1\frac{1}{2}$  in., dull green, oblong, long-pointed, finely toothed, smooth, thin, leaf stalk  $\frac{1}{2}$  in. long, stipules fringed, soon falling off; flowers  $\frac{1}{2}$  in. diam., greenish-white, in short clusters, sepals 4-5, petals 4-5, margin rolled under, stamens 4-5, styles short; capsule  $\frac{1}{5}$ - $\frac{1}{3}$  in. long, top-shaped, deeply 3-4-lobed, yellow when ripe, seeds one to two in each cell, enclosed in a red fleshy skin.

**Sageretia****oppositifolia,**

see Climbing Plants, Opposite, Stipulate, Simple.

**Sageretia theezans,**

see Climbing Plants, Alternate, Stipulate, Simple.

**Sageretia****Brandrethiana,**

see Erect Shrubs, Alternate, Stipulate, Simple.

## PETALS UNITED.

**Hymenodictyon****excelsum,***Kukarhat.*

RUBIACEÆ.

F. B. I. iii. 35.

Himalaya, east of

the Ravi river, to

2,500 ft.

large, bark soft, brownish-grey, smooth on branches, corky and furrowed on old stems; leaves 4-10 by 3-5 in., ovate-oblong, with round ends or long-pointed, membranous, velvety on both surfaces, narrowed into a stalk, 1-3 in. long, stipules soon falling off, oblong, broad based, recurved; flowers  $\frac{1}{5}$  in. long, white, fragrant, in large spreading branching racemes with bracteate spicate branches, bracts large, leafy, persistent, calyx  $\frac{1}{2}$  in., soon falling off, lobes 5-6, corolla  $\frac{1}{5}$  in. long, funnel-shaped, lobes 5, short, sharp, stamens 5; capsule  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, on short recurved

## SHRUBS WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## PETALS UNITED.

stalks, oblong with rounded ends, 2-valved, many seeded, seeds flat, double convex, winged all round the margin,  $\frac{3}{4}$  by  $\frac{1}{10}$  in. with the wing. The inner bark is used by Hindus as a cure for ague. This shrub is closely allied to Cinchona.

**Randia tetrasperma,**  
*Kikra.*

RUBIACEÆ.

F. B. I. iii. 109.

Salt Range,

Himalaya,

4-6,000 ft.

Simla (Collett).

Baluchistan (Lace).

small, branches rough, grey, rigid, often spinous; leaves  $\frac{1}{2}$ -2 in long, at the tips of branchlets, tapering at both ends or broad at the apex, narrowed into a short stalk, smooth, stipules small, triangular, tapering to a point; flowers  $\frac{1}{4}$  in. diam., nearly solitary, sessile, greenish-white, fragrant, calyx hairy, lobes 5, large, narrow, corolla tube  $\frac{1}{3}$  in. long, hairy outside, lobes 5, stamens 5; berry  $\frac{1}{4}$  in. diam., round, 4-seeded, purple.

**Randia dumetorum,**  
*Mainphal.*

RUBIACEÆ.

F. B. I. iii. 110.

Himalaya to

3,000 ft.

large, bark grey, spines horizontal, often long and stout; leaves 1-2 in. long with the broad end towards the apex, narrowed into a short marginate stalk, stipules ovate, long-pointed; flowers hairy, yellowish-white, fragrant, solitary or 2-3 together at the end of short lateral branchlets, calyx bell-shaped, hairy, lobes ovate, corolla lobes 5, spreading, oval or oblong; berry soft, fleshy, 1-1 $\frac{1}{2}$  in. long, ovoid, yellow, smooth or velvety, skin leathery, thick, edible, seeds many, flattened, in gelatinous pulp. The pulp is an excellent substitute for ipecacuanha.

**Ixora coccinea,**  
**The Flame Tree,**  
*Rungan.*

RUBIACEÆ.

F. B. I. iii. 145.

The Plains.

medium size, branches stiff, rather stout; leaves 2-4 by 1-2 in., sessile, leathery, shortly oblong, stipules with stiff long points; flowers scarlet, in dense short-stalked bunches, calyx tube 4-toothed, persistent, corolla tube 1-1 $\frac{3}{4}$  in., lobes broad-pointed, 4, stamens 4, short, styles 2-branched; fruit sometimes fleshy,  $\frac{1}{4}$  in. diam., crowned by the calyx, seeds concave. The root is used in Indian medicine as a cure for dysentery.

**Hamiltonia**  
**suavolens,**  
*Padena, kanera.*

RUBIACEÆ.

F. B. I. iii. 197.

Salt Range,

Himalaya, 2-5,000 ft.

Valleys below

Simla (Collett).

Dhampur

(Bomford).

small, branches in threes, fetid when bruised; leaves 3-9 in. long by 2-3 $\frac{1}{2}$  in., rather rigid, stalked, leathery, smooth, often rough, stipules joined by their margins, short, short-pointed, persistent; flowers sessile or shortly stalked, sweet scented till crushed, crowded in large 3-branched racemes, blue or white, calyx lobes 5, persistent, corolla tube  $\frac{1}{4}$  in. long, woolly, lobes short, pointed, spreading, stamens 5; capsule oblong with round ends,  $\frac{1}{10}$  in. long, one-celled, 5-seeded, seeds sharply 3-cornered.

## SHRUBS WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Leptodermis lanceolata,**

RUBIACEÆ.

F. B. I. iii. 198.

Himalaya,

4-10,000 ft.

Simla (Collett).

Dharmpur

(Bomford).

small, bark thin, grey, leaves and young shoots fetid when crushed; leaves 1-3 in., shortly stalked, narrowed at both ends, finely pointed, both surfaces covered with minute white hairs, stipules short, broad, pointed, persistent; flowers  $\frac{1}{2}$  in. long, white or purplish, in small bracteate heads at the end of short branches forming a large branching raceme, each flower half enclosed in a tube of 2 pointed partially united thin bracts, calyx 5-lobed, small, fringed, persistent, corolla funnel-shaped, lobes 5, short, spreading, stamens 5, short, style long, 5-branched; capsule cylindric,  $\frac{1}{3}$  in., splitting into 5 valves, seeds 5 each in a loose covering.

**Leptodermis virgata,**

RUBIACEÆ.

F. B. I. iii. 198.

Himalaya,

4-7,000 ft.

slender, rigid, very bushy, white, velvety; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  by  $\frac{1}{10}$ - $\frac{1}{8}$  in., linear, acute, margins flat or recurved, white beneath, stipules triangular with stiff long sharp recurved points, white, calyx smooth, hairy, corolla  $\frac{1}{3}$  in. long, velvety, purplish, stamens 5, style as above; capsule  $\frac{1}{3}$  in., seeds with a few free fibres attached to the covering.

**Gaillonia calycoptera,**

RUBIACEÆ.

F. B. I. iii. 201.

The Plains, Attock.

small, branches slender, stiff, erect, dividing in twos, lower white; leaves  $\frac{1}{2}$ -1 in. long, linear, in distant pairs, margins rolled under, somewhat rough, stipules united with the leaf stalk into a sheath with teeth; flowers small, white, in spikes, calyx 2-5-toothed, dilated after flowering into a thin feathery wing, corolla funnel-shaped, lobes 4-5, stamens 4-5, style thread-like, arms 2, short; fruit  $\frac{1}{3}$  in. long, of 2 narrowly oblong lobes, crowned with the enlarged calyx, seeds oblong, grooved.

**Gaillonia hymenostephana,**

RUBIACEÆ.

F. B. I. iii. 202.

The Plains.

Waziristan, 3,500 ft.

Baluchistan

(Boissier).

very small, branches stiff, widely spreading, slender, very fetid when fresh; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., linear, oblong, margins rolled under, stipules rudimentary except of floral leaves, which are joined and 2-lobed; flowers solitary or in small clusters at the end of branchlets, like the last as to calyx, corolla and stamens; fruit of 2 hairy lobes crowned with a large orbicular horizontal 5-lobed wing.

## PETALS NONE.

**Ficus hispida,***Gobla, daduri.*

URTICACEÆ.

F. B. I. v. 522.

The Plains to

3,500 ft.

medium size, bark thin, grey, smooth, warty on old stems, often with transverse wrinkles, branches hollow; leaves 4-12 in. long, ovate, short-pointed, toothed, leathery, rough above, woolly beneath, leaf stalk  $\frac{1}{2}$ -4 in. long, stipules  $\frac{1}{2}$  in. long, velvety; fruit is a fig, top-shaped, 1 in. long, hairy, yellowish and faintly ribbed when ripe, usually

## SHRUBS WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

clustered on leafless branchlets from the old wood or on young plants, in pairs on leafy branches. The bark is used in Indian medicine as an emetic.

**Bœhmeria  
platyphylla,**  
F. B. I. v. 578.  
URTICACEÆ.  
Himalayas,  
5,000 ft.  
Valleys below Simla  
(Collett).

large, branches rough, dark brown, 4-sided; leaves usually opposite, 4-9 by 3-7 in., stalked, broadly ovate or orbicular, long-pointed, toothed, stalk  $1\frac{1}{2}$ -5 in., rough; flowers, male and female, whitish on long branching drooping spikes, male calyx 3-5-fid, stamens 4-5, female calyx tubular, 2-4-toothed, style far protruding; fruit narrowed or beaked at the 4-toothed tip.

## SHRUBS WITH OPPOSITE STIPULATE COMPOUND LEAVES.

**Sambucus Ebulus,**  
**Dwarf Elder,**  
*Ganhula gandla.*  
CAPRIFOLIACEÆ.  
F. B. I. iii. 2.  
Kashmir,  
6-10,000 ft.

small, leaves 9 in. long, unequally pinnate, leaflets 5-9, oblong, lanceolate, 3-6 in. long, slightly velvety, stipules often leafy; flowers white, pink or dark purple, with a strong odour, in large many-rayed level bracteate bunches, calyx 3-5-toothed, corolla  $\frac{1}{2}$  in. diam., 3-5-lobed, broad, stamens 5; drupe  $\frac{1}{8}$  in. diam., round, black when ripe, crowned with the calyx. The root and berries are purgative.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Berberis vulgaris,**  
**Barberry,**  
*Chochar.*  
BERBERIDACEÆ.  
F. B. I. i. 109.  
Himalaya,  
8-12,000 ft.  
Narkanda (Collett).  
Baluchistan  
(Boissier).

small, wood yellow, bark brown, soft; leaves 1-3 in. long, in tufts in the axils of 3-5-forked spines, stalked, margin spinous, toothed; flowers pale yellow in drooping racemes longer than the leaves, sepals 6, petal-like, in 2 series, petals 6, in 2 series, stamens 6, style short; berry oblong, ovoid, red when ripe. This plant is used as a diuretic.

**Berberis aristata,**  
*Kashmal.*  
BERBERIDACEÆ.  
F. B. I. i. 110.  
Himalaya,  
6-7,000 ft.  
Simla (Collett).

like the last species, young branches tinted red, leaves sessile, broad, lanceolate,  $1\frac{1}{2}$ -2 in. long, margin with few teeth, racemes long-stalked, branched, longer than the leaves. The root is used as a cure for ague in Indian medicine.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Berberis Lycium**, like the last but smaller, bark white, leaves sessile, *Choira*. narrowly lanceolate,  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., acute, margin smooth  
BERBERIDACEÆ. or with a few small teeth, racemes shortly stalked, not  
F. B. I. i. 110. branched, hardly longer than the leaves; berry ovoid,  
Himalaya, 3-9,000 ft. violet, covered with a bloom. *Rasout*, an extract from the  
Simla (Collett). root, is used as a febrifuge.  
Baluchistan (Lace).
- Cadaba farinosa**, small, straggling, much branched, wiry, and hoary ;  
CAPPARIDACEÆ. leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., rarely 1 in. long, ovate, obtuse ; flowers  
F. B. I. i. 137. 1 in. diam., greenish-white, in few-flowered level bunches,  
The Plains, Multan. petals 4, narrow, stalked, oblong, stamens 4-6 on a long  
Baluchistan stalk ; fruit  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, fleshy, cylindric.  
(Boissier).
- Gypsophila Stewartii**, small, green, tufted, spinous ; leaves  $\frac{1}{4}$  in., spreading,  
CARYOPHILLACEÆ. awl-like, flat above, convex beneath, points polished ;  
F. B. I. i. 216. flowers pink in short-stalked clusters, 8-15 flowered, calyx  
Waziri Hills, ovoid,  $\frac{1}{6}$  in., 5-ribbed, teeth 5, slender, long, petals 5,  
3-4,000 ft. narrow, stamens 8-10, styles 2-3 ; capsule 4-valved.  
Baluchistan (Lace).
- Hypericum cernuum**, medium size, branches cylindric, greenish, smooth,  
*Pintli*. bluish when young ; leaves 1-3 in., sessile, oblong, minutely  
HYPERICACEÆ. dotted, each pair at right angles to the next ; flowers in  
F. B. I. i. 253. 3-5-flowered terminal clusters, 2 in. diam., white turning  
Himalaya, to yellow, sepals 5,  $\frac{1}{4}$  in. long, ovate, petals 5, longer than  
5-7,000 ft. the stamens, stamens many, joined below into 3 or 5  
Simla (Collett). bundles, styles 5 ; capsule  $\frac{1}{2}$  in., conical.
- Hypericum** small, smooth, branches 4-sided towards the ends ;  
**lysimachioides**, leaves ovate,  $1\frac{1}{4}$  by  $\frac{1}{2}$  in., lower surface pale, black dotted ;  
HYPERICACEÆ. flowers 1- $1\frac{1}{2}$  in. diam., in terminal leafy forked 2-3-flowered  
F. B. I. i. 254. clusters, sepals  $\frac{1}{3}$  in., lanceolate narrow, petals longer than  
Himalaya, 5-8,000 ft. the stamens, stamens in 5 bundles, styles 5 ; capsule  $\frac{1}{4}$  in.  
Simla, Mashobra  
(Collett).
- Hypericum patulum**, small, smooth, dark brownish, branches numerous,  
HYPERICACEÆ. stiff, red, spreading, 2-edged ; leaves ovate,  $1\frac{1}{2}$  by  $\frac{3}{4}$  in.,  
F. B. I. i. 254. each pair at right angles to the next, pale and black dotted  
Himalaya, beneath ; flowers 1 in. diam., in terminal few-flowered  
3-7,000 ft. clusters, sepals ovate,  $\frac{1}{4}$  in., petals twice as long as the  
Simla (Collett). stamens, stamens in 5 bundles, styles 5 ; capsule  $\frac{1}{2}$  in.
- Euonymus tingens**, see Trees, Opposite, Exstipulate, Simple.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Coriaria nepalensis**, large with long arching branches, bark red, rough  
*Masuri*. branchlets, 4-angled; leaves 1-3 by  $\frac{3}{4}$ -2 in., nearly sessile,  
CORIARIACEÆ. ovate, shortly pointed, racemes 2-6 in. long, usually  
F. B. I. ii. 44. clustered; flowers small,  $\frac{1}{3}$  in. diam., greenish-yellow,  
Himalaya, sepals 5, persistent, petals 5, fleshy, persistent, keeled  
3-7,000 ft. within, stamens 10, styles 5, fruit of 5-10, flattened, one-  
Simla (Collett). seeded nuts, ridged, surrounded by the enlarged purple  
petals, separating the nuts by their keels, seeds flattened.
- Deutzia corymbosa**, medium size, stellately hairy, bark thin, light brown,  
SAXIFRAGACEÆ. peeling in thin rolls, inner white; leaves nearly sessile,  
F. B. I. ii. 406.  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. by  $\frac{3}{4}$ - $1\frac{1}{2}$  in., long-pointed, ovate, with minute  
Himalaya, teeth, stellately velvety above, green below; flowers  $\frac{1}{2}$  in.  
6-10,000 ft. diam., white, fragrant, in terminal branching many-flower-  
Mashobra, Shali, ed clusters, calyx teeth 5, ovate, obtuse, petals 5, smooth,  
Narkanda (Collett). stamens 10, winged, forming 3 points, styles 3-5; capsule  
 $\frac{1}{5}$  in. diam., round, opening by 3-5 valves, seeds many  
minute.
- Deutzia staminea**, medium size, stellately hairy, bark dark grey, peel-  
SAXIFRAGACEÆ. ing in long thin strips; leaves 1- $2\frac{1}{2}$  in. by  $\frac{1}{4}$ - $1\frac{1}{4}$  in., minute  
F. B. I. ii. 407. teeth, above stellately velvety, below grey with stellate  
Himalaya, 5-9,000 ft. wool; flowers white, fragrant,  $\frac{3}{4}$  in. diam., calyx teeth 5,  
Simla, Prospect Hill triangular, petals 5, velvety outside; stamens 10, winged,  
(Collett). forming 3 points; capsule smaller than the last.
- Philadlephus coronarius**, medium size, bark light grey; leaves  $1\frac{1}{2}$ -4 by  $\frac{3}{4}$ - $2\frac{1}{2}$   
Mock orange, or in., ovate-lanceolate, long-pointed, finely hairy, glossy  
Seringat, beneath, teeth minute, margin often hairy; flowers 1 in.  
*Dalwachi, buzru*. diam., white, orange scented, in short terminal racemes,  
SAXIFRAGACEÆ. sometimes solitary, calyx lobes 4, petals 4, rarely 5, stamens  
F. B. I. ii. 407. 20-40, not winged, styles 4; capsule  $\frac{1}{2}$  in long, valves 4.  
Himalaya, 5-9,000 ft.  
Matiana, Narkanda  
(Collett).
- Osbeckia stellata**, medium size, branches 4-angled, bristly; leaves  
MELASTOMACEÆ. 3-6 in. long, lanceolate, minutely bristly, tapering to a  
F. B. I. ii. 517. fine point, nerves prominent; flowers 2- $2\frac{1}{2}$  in. diam.,  
Himalaya, purple, in small terminal clusters, calyx white, matted with  
5,000 ft. starry bristles, lobes 4 or 5 large and 4 or 5 small, falling  
Lansdowne Falls, off after flowering, petals 4 or 5, twisted in bud, stamens  
Simla (Collett). 8-10, yellow, curved; capsule  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, ovoid, covered  
with bristles, opening by pores, seeds many, minute.



## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Melastoma Malabathricum, Indian Rhododendron,**  
**MELASTOMACEÆ.**  
 F. B. I. ii. 523.  
 The Plains to 6,000 ft.  
 large, stems with short dense hairs; leaves 3-4 in., broad-lanceolate, with hairs above and below; flowers 1-5, clustered, mauve-purple, calyx tube with simple hairs, lobes 5, long, soon falling off, petals 5, stamens 10, anthers alternately purple with a long curved process above; fruit  $\frac{1}{4}$  in. wide, short, ovoid, abruptly ended, becoming pulpy within, seeds many, minute, curved. A purple dye is made from the fruit.
- Woodfordia floribunda,**  
*Dhan, dhanla.*  
**LYTHRACEÆ.**  
 F. B. I. ii. 572.  
 The Plains to 5,000 ft.  
 Baluchistan (C. B. Clarke).  
 large, branches long, arching, bark reddish-brown, peeling in fibres, young branches and leaves with numerous black dots; leaves 2-4 in., sometimes in threes, sessile, lanceolate, tapering to a fine point, upper surface green, lower white, velvety with black dots; flowers in shortly stalked clusters on and around branches, bright red, calyx red, teeth 6, petals 6, red, scarcely longer than the calyx teeth, stamens red, long, protruding; capsule  $\frac{3}{8}$  in., enclosed in the calyx. The flowers are used as a dye and as an astringent, containing much tannin.
- Lawsonia alba, Henna, Camphire,**  
*Mehnde.*  
**LYTHRACEÆ.**  
 F. B. I. ii. 573.  
 The Plains to 5,000 ft.  
 Baluchistan (Boissier).  
 medium size, bark thin, greyish-brown, branchlets angular, sometimes spinous; leaves  $\frac{3}{4}$ -1 in. long, oblong, acute at both ends or the tip blunt, margin smooth, leathery; flowers  $\frac{1}{6}$  in., greenish-white, in large terminal branching racemes, sweet scented, sepals 4, petals 4, wrinkled, stamens 8, inserted in pairs between the petals; capsule  $\frac{1}{5}$  in. diam., round with persistent calyx, leathery, seeds many, smooth, angular, pyramidal. The leaves are used to dye the hands, feet and hair red.
- Lagerstroemia indica, China crape,**  
*Saoni, dhaura.*  
**LYTHRACEÆ.**  
 F. B. I. ii. 575.  
 The Plains.  
 medium size, bark light brown, very smooth, peeling in dark coloured scurfy pieces; leaves 2 in. long, upper alternate, smooth, oblong, sessile, short-pointed; flowers  $1\frac{1}{2}$ -2 in. diam., bright pink or white in branching racemes, calyx tube smooth, teeth 6 or 7-9, petals  $\frac{1}{2}$ - $\frac{3}{4}$  in. long. 6 or 7-9, stalked, much curled, stamens many, long; capsule  $\frac{1}{3}$  in. diam., nearly round, calyx long, triangular, erect on the capsule, seed  $\frac{1}{4}$  in. with wing.
- Punica Granatum, Pomegranate,**  
*Anar.*  
**LYTHRACEÆ.**  
 F. B. I. ii. 580.  
 The Plains to 5,000 ft.  
 Baluchistan (Lace).  
 large, bark dark grey, branchlets often spinous; leaves 1-2 $\frac{1}{2}$  in. long, sometimes hardly opposite or clustered, oblong, blunt, narrowed to a short stalk with a margin, smooth, shining; flowers vivid red, sessile, solitary or 3 together, calyx greenish-red, 1 by  $\frac{1}{2}$  in., tubular, fleshy, with 5-7 points, petals 5-7,  $\frac{1}{2}$ -1 in. long, thin, wrinkled, bright red, stamens many; fruit  $1\frac{1}{2}$ -3 $\frac{1}{2}$  in. diam., round, with a thick reddish-brown leathery rind, crowned by the

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

calyx, seeds  $\frac{1}{5}$  in. long, angled in ruby red flesh with sweetish astringent juice. The bark is used as a tan, a dye and a vermifuge.

**Cornus sanguinea,**  
**Cornel or Dogwood,**  
CORNACEÆ.  
F. B. I. ii. 744.  
Kashmir, 7,000 ft.  
Gulmarg.

medium size, branchlets, leaves beneath, and bunches of flowers with minute white hairs, young shoots are red; leaves  $1\frac{1}{2}$  to 3 in. long, margin smooth, ovate, turning red in the autumn; flowers small in branching bunches, sepals, petals and stamens in fours; drupe ovoid,  $\frac{1}{2}$  in. diam, minutely hairy, 2-celled, 2-seeded, seeds oblong, flattened.

## PETALS UNITED.

**Viburnum**  
**cotinifolium,**  
*Banguch.*  
CAPRIFOLIACEÆ.  
F. B. I. iii 3.  
Himalaya,  
6-10,000 ft.  
Simla (Collett).  
Baluchistan (Lace).

medium size, bark grey; leaves 3-3 $\frac{1}{2}$  in. long, nearly orbicular, stellately woolly beneath; flowers in dense clusters, 3-4 in. across, calyx 5-toothed, smooth, corolla tube  $\frac{1}{2}$  in. long, funnel-shaped, white tinged with pink, stamens 5, style short; drupe  $\frac{1}{2}$  in. long, oblong, compressed, ribbed, red, black when ripe, edible, seed dorsally 2-grooved. This tree is closely akin to *Viburnum Lantana*, the Wayfaring tree of Britain.

**Viburnum**  
**stellatum,**  
*Richi, ensi.*  
CAPRIFOLIACEÆ.  
F. B. I. iii. 4.  
Himalaya,  
6-11,000 ft.  
Simla, Mahasu  
(Collett).

large, branches long, bark almost black; leaves 3-4 by  $1\frac{1}{2}$ -2 in., ovate, long-pointed, distantly sharp-toothed, stellate hairs beneath; flowers small, very many in large level-topped terminal bunches, calyx 5-toothed, stellately hairy, corolla white, velvety, 5-lobed, stamens 5; drupe  $\frac{1}{4}$  by  $\frac{1}{5}$  in., compressed, broadly oblong, yellow, red, edible, seed 2-grooved on both surfaces.

**Viburnum**  
**coriaceum,**  
CAPRIFOLIACEÆ.  
F. B. I. iii. 5.  
Himalaya,  
4-8,000 ft.  
Simla (Collett).

large, bark grey; leaves 4-9 by  $1\frac{1}{2}$ -2 $\frac{1}{2}$  in., oblong, long-pointed, very leathery, smooth, stalk 10 in. long; flowers  $\frac{1}{4}$  in. long, many in terminal flat-topped bunches, calyx smooth, no teeth, corolla white, tubular, lobes erect, stamen tops red; drupe black, ovoid,  $\frac{1}{6}$  in.

**Viburnum nervosum,**  
*Amrola, thalein.*  
CAPRIFOLIACEÆ.  
F. B. I. iii. 8.  
Himalaya,  
10-13,000 ft.

large, branches stout, bark grey; leaves 2 $\frac{1}{2}$ -3 $\frac{1}{2}$  by  $1\frac{1}{4}$ -1 $\frac{1}{2}$  in., oblong, rounded at both ends, short-pointed, minutely toothed, nerves prominent; flowers in compact silky branching racemes, pinkish, calyx smooth, teeth small, corolla tube  $\frac{1}{4}$ - $\frac{1}{3}$  in.; drupe  $\frac{1}{2}$  by  $\frac{1}{4}$  in., oblong with rounded ends, edible.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Viburnum foetens**,  
*Guch.*  
CAPRIFOLIACEÆ.  
F. B. I. iii. 8.  
Kashmir,  
6-10,000 ft.  
Murree to Chamba.  
Narkanda (Collett).  
very much like the last, but leaves 4 in. long, toothed, emitting an unpleasant asafœtida-like smell on being crushed, flowers sweet-scented, corolla tube  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, pink, stamens 2 near the top of tube, 3 below, drupe  $\frac{1}{2}$  in. long, red, edible.
- Abelia triflora**,  
*Banbakhara.*  
CAPRIFOLIACEÆ.  
F. B. I. iii. 9.  
Himalaya,  
5-10,000 ft.  
Naldera (Collett).  
Baluchistan (Lace).  
medium size, bark grey, branches long, grooved, branchlets slender, often drooping; leaves 2-3 by  $\frac{3}{4}$ - $1\frac{1}{4}$  in., minutely fringed, long-pointed, stalks short, dilated at the base; flowers  $\frac{3}{4}$  in. long, scented, white or pinkish, in small bracteate 3-flowered clusters, crowded, terminal, middle flower sessile, calyx hairy, 5-ribbed, teeth 5, long, fringed, persistent, corolla funnel-shaped, lobes 5, short, round, stamens 4; fruit dry, oblong, crowned with the calyx, lobes 3-celled, one-seeded.
- Lonicera hispida**,  
CAPRIFOLIACEÆ.  
F. B. I. iii. 11.  
Himalaya,  
9-13,000 ft.  
Marali (Collett).  
medium size; leaves 1-4 in. long, hairy, nearly sessile, acute, ovate; flowers  $\frac{3}{4}$  in. long, each pair on a single stalk in the axil of a leaf, bracts hairy,  $\frac{1}{2}$  in. long, boat-shaped, half concealing the flowers, bracteoles none, calyx ovoid, teeth uneven, corolla  $\frac{1}{4}$ - $\frac{1}{2}$  by  $\frac{1}{2}$  in., green, lobes 5, pink, nearly regular, tubular, not 2-lipped, stamens 5; berries red, ovoid,  $\frac{1}{3}$  in., distinct or united, seeds few.
- Lonicera glauca**,  
*Shintik, shewa.*  
CAPRIFOLIACEÆ.  
F. B. I. iii. 11.  
Himalaya,  
12-16,000 ft.  
Kashmir.  
small, wiry, growing in fissures of rocks, densely branched, smooth except as to margins of leaves; leaves  $\frac{3}{8}$  by  $\frac{1}{4}$  in., obtuse; bracts bluish-green, hairy on margin, usually ununited,  $\frac{1}{4}$ - $\frac{1}{3}$  in., ovate, calyx nearly smooth, corolla-tube  $\frac{1}{4}$ - $\frac{1}{2}$  by  $\frac{1}{8}$  in., smooth, lobes yellow, regular, not 2-lipped, stamens 5; berries  $\frac{1}{4}$  by  $\frac{1}{8}$  in., sometimes united.
- Lonicera asperifolia**,  
CAPRIFOLIACEÆ.  
F. B. I. iii. 11.  
Kashmir, 12,000 ft.  
small, sparsely hairy; leaves  $1\frac{1}{4}$  by  $\frac{3}{4}$  in., ovate-oblong, margin crisped and hairy, shining and smooth above, bracts  $\frac{1}{2}$  in., ununited, ovate, corolla tube  $\frac{1}{2}$  by  $\frac{1}{8}$  in., slightly hairy, lobes  $\frac{1}{4}$  in.; berry  $\frac{1}{2}$  by  $\frac{1}{4}$  in., crowned by the funnel-shaped calyx.
- Lonicera purpurascens**,  
CAPRIFOLIACEÆ.  
F. B. I. iii. 12.  
Himalaya,  
9-12,000 ft.  
Hattu (Collett).  
small, bark peeling off in thin shreds, branches dark grey; leaves  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., shortly stalked, hairy, oblong, lower surface woolly; flowers  $\frac{1}{2}$  in. long, each pair on one stalk in the axil of a leaf, bracts linear,  $\frac{1}{4}$  in., spreading, bracteoles short, corolla purple, tubular, not 2-lipped, hairy; berries 2, joined into one,  $\frac{1}{4}$  in. diam., black, round,

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Lonicera angustifolia**,  
*Jinjru, philku.*  
CAPRIFOLIACEÆ.  
F. B. I. iii. 13.  
Himalaya,  
6-12,000 ft.  
Simla (Collett).  
small, bark smooth, grey, peeling in long papery flakes ; leaves 1-2½ by ¼-¾ in., shortly stalked, lanceolate, lower surface pale ; flowers ½-½ in. long, each pair on a single stalk in the axil of a leaf, bracts linear or leafy, ½ in., spreading, bracteoles united, enclosing the fruit, corolla tubular, not 2-lipped, white tinged with pink, velvety, scented ; berries two, joining to form one, ¼ in. diam., round, red, edible.
- Lonicera spinosa**,  
CAPRIFOLIACEÆ.  
F. B. I. iii. 13.  
Himalaya,  
11-16,000 ft.  
small, branchlets bluish-green, often leafless and spinous ; leaves ½ in. by ⅛-⅙ in., blunt, narrow, oblong ; margins recurved, stalk short ; flowers almost sessile, bracts ⅕ in., linear, bracteoles quadrate, united, corolla tube ⅓-½ by ⅓-⅕ in., smooth, not 2-lipped ; berries ⅓ by ⅓ in., not joined, crowned by the calyx.
- Lonicera parvifolia**,  
CAPRIFOLIACEÆ.  
F. B. I. iii. 13.  
Himalaya,  
8-12,000 ft.  
Simla, Jaku, Hattu,  
Chor (Collett).  
small, branches often prostrate ; leaves ⅓-½ in., shortly stalked, blunt, lower surface pale ; flowers ⅓-½ in. long, each pair on one stalk in the axil of a leaf, bracts narrow, long, bracteoles united, corolla not 2-lipped, tubular, white tinged with pink ; berries 2, joined into one, red, round, ¼ in. diam.
- Lonicera obovata**,  
CAPRIFOLIACEÆ.  
F. B. I. iii. 14.  
Himalaya,  
8-13,000 ft.  
small ; leaves ½ by ¼-⅓ in., obovate, blunt, nearly sessile ; flowers very small, tubular, funnel-shaped, not 2-lipped, slight spur, yellowish-white, often in fours, 2 on one stalk ; berries united, 2 calyx scars on top, roundish, ⅓ in. diam.
- Lonicera quinquelocularis**,  
**Himalayan Honeysuckle**,  
*Bakru, phut.*  
CAPRIFOLIACEÆ.  
F. B. I. iii. 14.  
Himalaya,  
4-12,000 ft.  
Simla (Collett) ;  
Baluchistan (Lace).  
large, bark grey with vertical furrows exfoliating in long strips, branchlets velvety ; leaves 1½-2 by ¾-1½ in., ovate, smooth above, woolly beneath ; flowers ½-¾ in. long, 2-lipped, white turning yellow, in pairs or clustered in threes or fours in the axil of a leaf, bracts linear, short, bracteoles united below into a cup ; berries distinct, ¼ in. long, ovoid, white.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Lonicera microphylla**, small, branchlets smooth; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  by  $\frac{1}{4}$ - $\frac{1}{3}$  in., almost sessile, blunt, velvety beneath; flowers whitish-yellow, 2-lipped, corolla tube  $\frac{1}{6}$  by  $\frac{1}{3}$  in., pouch-like, swelling at the base, bracts  $\frac{1}{8}$ - $\frac{1}{6}$  in., linear, bracteoles none; berries  $\frac{1}{6}$  in., oblong with rounded ends united at the lower portion.  
CAPRIFOLIACEÆ.  
F. B. I. iii. 15.  
Kashmir,  
11-14,000 ft.
- Lonicera orientalis**, large, bark peeling in long strips, branches horizontal, flattened; leaves 2-4 by  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., ovate, velvety and dotted beneath; flowers  $\frac{1}{2}$  in. long, pink, each pair on a single stalk in the axil of a leaf, 2-lipped, corolla tube  $\frac{1}{3}$  in., pouch-like, swelling at the base, bracts linear, bracteoles small, rounded or large or none; berries  $\frac{1}{4}$  in. diam., united in pairs, black, round.  
CAPRIFOLIACEÆ.  
F. B. I. iii. 15.  
Himalaya,  
7-11,000 ft.  
Narkanda (Collett).
- Lonicera heterophylla**, branches smooth, rigid, ascending; leaves  $2\frac{1}{2}$  in. by  $\frac{1}{2}$ -1 in., narrow, oblong, smooth; flowers like the last species; berries  $\frac{1}{5}$  by  $\frac{1}{5}$  in., not united.  
CAPRIFOLIACEÆ.  
F. B. I. iii. 15.  
Himalaya, 12,000 ft.  
Kashmir.
- Lonicera alpigena**, bark grey brown, peeling in flakes, branchlets velvety; leaves 3-4 by 1-2 in., oblong, long-pointed, smooth above, velvety beneath; flowers  $\frac{3}{4}$  in. long, each pair on a single stalk in the axil of a leaf, bracts linear, long, bracteoles very small, corolla 2-lipped, hairy, yellow turning to red, pouch-like below; berries  $\frac{1}{4}$  in. diam., ununited, red, round.  
CAPRIFOLIACEÆ.  
F. B. I. iii. 15.  
Himalaya,  
9-12,000 ft.  
Hattu (Collett).
- Leycesteria formosa**, small, herb-like, smooth, bark grey, stem and branches hollow; leaves 2-5 by 1-3 in., ovate, sometimes toothed, long-pointed, stalks united at the base; flowers 1 in. long, white tinged with purple, in spikes, arranged in circles, bracts leaf-like, tinged with purple, bracteoles like the bracts but smaller, corolla funnel-shaped, 5-lobed, stamens 5; berry  $\frac{1}{4}$  in. diam., hairy, dark purple, round, crowned by the calyx, seeds minute, many.  
CAPRIFOLIACEÆ.  
F. B. I. iii. 16.  
Himalaya,  
5-10,000 ft.  
Simla, Mahasu  
(Collett).
- Eupatorium Reevesii**, medium size, grey, velvety, stems much branched; leaves 3 by  $\frac{1}{2}$  in., shortly stalked, ovate, toothed, upper smaller and sometimes alternate; flowers pale purple, in heads arranged in large spreading branching racemes, bracts round the heads, heads  $\frac{1}{4}$  in. long; flowers all tubular, lobes 5, short, inner blunt, with a ring of fine rigid rough hairs (pappus) at the base; seeds (achenes)  $\frac{1}{8}$  in., angled, crowned by the fine hairs.  
COMPOSITÆ.  
F. B. I. iii. 243.  
Himalaya, 2-6,000 ft.  
Valleys below Simla  
(Collett).

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Eupatorium  
cannabinum,**  
**Hemp Agrimony,**  
COMPOSITÆ.  
F. B. I. iii. 243.  
Himalaya,  
3-11,000 ft.

medium size, velvety; leaves 4 by  $1\frac{1}{2}$  in., sessile, in pairs, sometimes in circles, lanceolate, toothed; flowers whitish in heads,  $\frac{1}{3}$  in. long, arranged in compact rounded clusters, inner bracts sharp, flowers all tubular, with pappus as in the last species.

**Nyctanthes  
Arbor-tristis,**  
*Harsingar.*  
OLEACEÆ.  
F. B. I. iii. 603.  
The Plains, Valleys  
below Simla  
(Collett).

large, rough, hairy, branches 4-angled; leaves 3-4 in., ovate, rough; flowers sessile, in clusters of 3 to 7 forming branching racemes, fragrant, bracts 2, ovate, calyx  $\frac{1}{5}$  in., corolla summit flat, circular, lobes 6, divided into two, margin jagged, white, tube  $\frac{1}{4}$  in. long, cylindric, bright orange, stamens 2, very short; capsule flat, circular,  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., splitting into two. The flowers are used as a dye. The plant is considered by the Hindus to be sacred.

**Syringa persica,**  
**Persian Lilac,**  
OLEACEÆ.  
F. B. I. iii. 604.  
West Kashmir,  
8,000 ft.

large, smooth; leaves 1 in., acute, lanceolate, smooth, sometimes pinnatifid or pinnate; flowers in terminal compound racemes, scented, corolla lilac or white, summit flat, circular, lobes 4, tube  $\frac{1}{4}$  in., stamens 2; capsule  $\frac{1}{3}$ - $\frac{1}{2}$  in. by  $\frac{1}{8}$  in., cylindrical, 4-ribbed, seeds winged.

**Syringa Emodi,**  
*Banphant, lolli.*  
OLEACEÆ.  
F. B. I. iii. 605.  
Himalaya,  
9-12,000 ft.  
Narkanda, Baghi  
(Collett).

large, young parts velvety; leaves  $2\frac{1}{2}$ -5 by 1-2 in., ovate, acute, smooth, pale beneath; flowers in terminal branching racemes densely flowered, small, white, scented, corolla summit circular, lobes 4, long-pointed, tips turned in, tube  $\frac{3}{10}$  in., cylindric, stamens 2; capsule cylindric,  $\frac{3}{4}$  in. long, seeds flat, winged.

**Ligustrum  
compactum,**  
OLEACEÆ.  
F. B. I. iii. 616.  
Himalaya, 5,000 ft.  
Valleys below  
Simla, Koti,  
Khogua (Collett).

large, smooth, bark grey, branches sometimes dotted with small corky excrescences; leaves 3-5 by 1-2 in., lanceolate, rounded at both ends, leathery, shining above; flowers small, white, nearly sessile in large terminal branching racemes, 4-6 in. long, corolla funnel-shaped, lobes 4, stamens 2; fruit  $\frac{1}{2}$  in. long, many, cylindric, often curved.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Salvadora persica,**  
**The Toothbrush**  
**Tree.***Khaindu, haurijal.*

SALVADORACEÆ.

F. B. I. iii. 619.

The Plains.

Baluchistan.

large, smooth; leaves  $1\frac{3}{4}$ - $2\frac{3}{4}$  in., ovate, blunt, fleshy; flowers minute, greenish-white in branching racemes, longer than the leaves, scattered, calyx  $\frac{1}{20}$  in., corolla  $\frac{1}{10}$  in., tube with sometimes 4 small teeth within at the base, lobes 4, reflexed, stamens 4; drupe  $\frac{1}{8}$  in. diam., round, on the persistent calyx and corolla, pink, translucent, edible, seed 1, minute. Royle considers this to be the Mustard tree of the Bible. The bark is acrid and used as a native medicine.

**Saivadora oleoides,**  
**Jal, peelu.**

SALVADORACEÆ.

F. B. I. iii. 620.

The Plains.

Baluchistan (Stocks).

large, smooth; leaves 2 by  $\frac{1}{3}$  in., narrow, grey green; flowers like the last, but the racemes consist of axillary clusters of short spikes, shorter than the leaves, stalks rough from the crowded scars of the flowers that have dropped; drupes clustered,  $\frac{1}{6}$  in., nearly sessile, yellow when ripe, sweet, much eaten, reddish brown when dried, and taste like currants.

**Carissa Carandas,**  
**Karawnda.**

APOCYNACEÆ.

F. B. I. iii. 631.

The Plains to

5,000 ft.

large, spinous, branches forking, rigid, thorns 2, simple or forked, at axils or nodes, 1-2 in. long, everywhere smooth except flower clusters; leaves  $1\frac{1}{2}$ -3 in. long, broadly ovate, leathery, shining above, tip rounded or blunt; flowers white, scented, crowded in terminal clusters, calyx teeth 5, corolla tube  $\frac{1}{2}$ - $\frac{3}{4}$  in., cylindric below, dilated above, lobes acute, about half as long as the tube, velvety; berry ovoid,  $\frac{1}{2}$  in. long, red then black, polished, edible, 4- or more-seeded. It is used as an antiscorbutic, also in curries, chutnies and jellies.

**Carissa spinarum,**

APOCYNACEÆ.

F. B. I. iii. 631.

The Plains to

6,000 ft.

like the last, but small, bark light grey, branches forked with smaller acute leaves and a smaller 2-seeded berry.

**Tabernæmontana**  
**coronaria,***Chandni.*

APOCYNACEÆ.

F. B. I. iii. 646.

The Plains.

large, smooth, bark silver grey, branches forking; leaves 4-6 by  $1-1\frac{1}{2}$  in., shining above, pale beneath, rather leathery, margins waved; flowers  $1-1\frac{1}{2}$  in. diam., pure white, fragrant, often double, calyx persistent, lobes 5, corolla tube  $\frac{3}{4}$ -1 in. long, slightly inflated in the middle, mouth glandular, lobes blunt, margins overlapping to the left, curled, stamens 5, short; follicles 1-3 in., cylindrical, somewhat fleshy, spreading, recurved, 3-ribbed, seeds 3-6, oblong, striated, with a red fleshy covering.

**Nerium odorum,**

see Shrubs, Alternate, Exstipulate, Simple.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Periploca aphylla,***Bata.*

ASCLEPIADACEÆ.

F. B. I. iv. 12.

The Plains.

The Salt Range.

The Park,

Rawalpindi.

Pindigheb.

Baluchistan

(Stocks).

small, juice milky, branches as thick as a goose quill or less, smooth or tips velvety, sometimes leafless; leaves  $\frac{1}{6}$ - $\frac{1}{4}$  in. linear, thick; flowers purple, in opposite clusters, branches of common stalk, short, thick, sepals 5, broad, corolla  $\frac{1}{2}$ - $\frac{2}{3}$  in. diam., fragrant, edible, taste like raisins, smooth externally, lobes ovate, densely bearded internally, above the middle coronal scales within corolla, stamens in a column with 5 tips; follicles  $\frac{3}{4}$  by  $\frac{1}{4}$  in., woody, cylindrical, rigid, seeds  $\frac{1}{4}$  in., oblong, with a tuft of hairs 1 in. long.

**Calotropis gigantea,***Mudar, ak.*

ASCLEPIADACEÆ.

F. B. I. iv. 17.

The Plains to

3,000 ft.

Baluchistan.

large, bark pale, juice milky, acrid, young parts white, woolly; leaves 4-8 by 1-3 in., sessile, ovate, smooth, whitish-green above, cottony beneath; flowers  $\frac{3}{4}$ -2 in. diam., pink with purple spots, in loose racemes or solitary. calyx lobes 5, corolla lobes 4, spreading, coronal scales 5 within corolla, truncate, hairy, stamens joined into a column with 5 tips; follicle recurved, 3-4 in. long, thick, wrinkled, covered with white wool, seeds  $\frac{1}{4}$  in., broadly ovate with a tuft of hairs. The milky juice forms a kind of Guttapercha. The root bark is an emetic and cure for dysentery.

**Calotropis procera,***Mudar, ak.*

ASCLEPIADACEÆ.

F. B. I. iv. 18.

The Plains to

3,500 ft.

Baluchistan

(Stocks).

like the last but smaller, leaves larger, more oblong, acute, flowers scented, corolla lobes erect, coronal, scales acute, smooth or only velvety, follicles 4-5 in., seeds ovoid.

**Cynanchum****Vincetoxicum,**

see Herbs, Opposite, Exstipulate, Simple, Entire.

**Cynanchum****glaucum,**

see Herbs, Opposite, Exstipulate, Simple, Entire.

**Cynanchum****Jaquemontianum,**

see Herbs, Opposite, Exstipulate, Simple, Entire.



## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Leptadenia spartium**, small, smooth, with long erect twiggy branches, sometimes leafless; leaves few, 3-4 by  $\frac{1}{4}$  in., narrowly linear, shortly stalked, leathery; flowers  $\frac{1}{8}$  in. diam., dirty yellow white, in solitary or double clusters of several flowers, corolla rotate like the spokes of a wheel, thick, velvety on both surfaces, calyx lobes obtuse, minute scales between the corolla lobes, staminal tube with a wavy ring round it; follicles 5 by  $\frac{1}{3}$  in., solitary by abortion, cylindrical, straight, with a long slender beak, seeds  $\frac{1}{2}$  in. long with a tuft of hairs, ovoid. The branches are used in Sind to make well ropes.  
*Kip.*  
ASCLEPIADACEÆ.  
F. B. I. iv. 64.  
The Plains.  
Baluchistan (Lace).
- Orthanthera viminea**, small, with erect twiggy branches, generally leafless; leaves 2 by  $\frac{1}{8}$  in., very few, on branches near the ground not on flowering branches; flowers  $\frac{1}{4}$ -1 in. long, in woolly stalked clusters, calyx lobes lanceolate, corolla  $\frac{1}{6}$  in. long, flat topped, not rotate, lobes erect, brownish-orange, minute scales between the lobes, staminal tube with a wavy ring round it; follicles 5 in. long, solitary, linear, seeds  $\frac{1}{5}$  in. long with a tuft of very fine silky hairs  $\frac{1}{2}$  in. long. Near Delhi the fibre is used to make ropes.  
*Kip, mahur.*  
ASCLEPIADACEÆ.  
F. B. I. iv. 64.  
The Plains to  
3,000 ft.
- Buddleia paniculata**, large, bark thin, pale grey, peeling off in long pieces; leaves 5 by 2 in., ovate or oblong, upper ones lanceolate, lower toothed, white, woolly beneath, united by a slight ridge across the branchlet; flowers  $\frac{1}{2}$  in. long, fragrant, in interrupted leafy branching racemes, usually terminal on branches, calyx lobes 4, persistent, blunt, corolla tube pink orange inside, lobes 4, blue (sometimes the flower is white or pink), stamens 4, very short; capsule  $\frac{1}{4}$  in. long, ovoid, woolly, seeds many.  
*Chiti boi, dholeu.*  
LOGANIACEÆ.  
F. B. I. iv. 81.  
Himalaya,  
4-7,000 ft.  
Simla, Fagu,  
Matiana (Collett).  
Baluchistan  
(Boissier).
- Buddleia asiatica**, medium size, bark thin, grey, ends of branches densely clothed with short white wool; leaves 3-6 by  $1-1\frac{1}{2}$  in., lanceolate, smooth and dark green above, dense short white wool beneath, united across the branchlets by a slight ridge; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, fragrant, sessile, crowded in long, slender, usually drooping spikes, often united into a terminal branching raceme, calyx lobes 4, long-pointed, corolla white, turning to purple, lobes 4, short, stamens 4, short; capsule  $\frac{1}{4}$  in. long, smooth.  
*Bana.*  
F. B. I. iv. 82.  
The Plains to  
5,000 ft.
- Tecoma undulata**, see Trees, Opposite, Exstipulate, Simple.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Petalidium  
barlerioides,**  
ACANTHACEÆ.  
F. B. I. iv. 416.  
Himalaya,  
1-3,000 ft.

small, finely velvety, stems several, cylindric, bark peeling in long papery strips; leaves 2-4 in. long, ovate, toothed, short-pointed; flowers pale blue or white, tinged with yellow, solitary or in small clusters, bracts none, bracteoles 1 in. long, ovate, net veined, enclosing the lower part of the flowers, sepals 5, linear, corolla  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. long, tube cylindric, hairy within, corolla not 2-lipped, 5 lobes, nearly equal, stamens 4; capsule  $\frac{1}{2}$  in., ovoid, flattened, usually 2-seeded, seeds shaggy.

**Dædalacanthus  
nervosus,**  
ACANTHACEÆ.  
F. B. I. iv. 418.  
Himalaya,  
1-3,000 ft.  
Sutlej Valley  
(Collett).

medium size, roughly pubescent; leaves 6 by 3 in., ovate, pointed; flowers deep blue, in short uninterrupted crowded spikes forming clusters, bracts  $\frac{1}{2}$  in. long, ovate, long-pointed, variegated green and white, concave, enclosing the lower part of the flower, corolla  $1\frac{1}{4}$  in. long, tube cylindric, dilated near the top, corolla not 2-lipped, spreading, 5-lobed, stamens 2; capsule  $\frac{1}{2}$  in., solid, cylindric, seeds 4, finely hairy.

**Æcmanthera  
tomentosa,**  
*Patrang, banmaru.*  
ACANTHACEÆ.  
F. B. I. iv. 428.  
Himalaya,  
3-5,000 ft.  
Valleys below Simla,  
Subathu (Collett).

small, stems hairy, grey or white; leaves 2-4 by 1-2 in., short-pointed, shortly toothed, hairy above, white woolly beneath; flowers come out at intervals of 4-5 years, pale blue or purple, sessile in small clusters along the spreading branches of a terminal raceme, bracts and bracteoles hairy, glandular, linear, equal to the calyx, corolla 1 in. long, tube cylindric, widened near the middle, lip  $\frac{1}{2}$  in. diam., lobes 5, rounded, stamens 4, style filiform, often divided; capsule  $\frac{1}{3}$  in. long, linear, splitting to the base, seeded to the bottom, seeds 6-8, hairy when wetted.

**Strobilanthes  
glutinosus,**  
ACANTHACEÆ.  
F. B. I. iv. 458.  
Himalaya,  
3-6,000 ft.  
Valleys below Simla  
(Collett).

medium size, sticky, hairy; leaves 3 by  $1\frac{1}{4}$  in., ovate, toothed, hairy on both sides; flowers pale blue on short spikes forming a round head or often the lowest flowers are separated, solitary in the axil of leaf-like bracts, upper bracts  $\frac{1}{4}$ - $\frac{1}{3}$  in., ovate, shorter than the calyx, bracteoles  $\frac{1}{3}$  in., oblong, calyx sticky, hairy, lobes linear, corolla 2 in. long, tube lower half cylindric, upper dilated, lips spreading, lobes 5, stamens 4, style linear, hardly bifid; capsule  $\frac{3}{4}$  in., oblong, sticky, velvety, seeds ovate, hairy.

**Strobilanthes  
Dalhousianus,**  
ACANTHACEÆ.  
F. B. I. iv. 460.  
Himalaya,  
6-8,000 ft.  
Simla, Mahasu  
(Collett).

medium size, hairy; leaves 3-6 by  $1\frac{1}{4}$ -2 in., rounded at both ends, hairy, toothed; flowers dark blue or purple in heads of three or very short spikes, bracts  $\frac{1}{4}$  in., orbicular, concave, smooth, whitish, bracteoles none, calyx slightly velvety, nearly smooth, corolla  $1\frac{1}{2}$ -2 in. long, tube yellowish, curved, gradually swollen from near the base, lip  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., purple, lobes 5, rounded, stamens 4; capsule  $\frac{2}{3}$  in. long, oblong, velvety, seeds 4, ovate, silky.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Strobilanthes alatus**, medium size, sticky, hairy ; leaves 5 by  $2\frac{3}{4}$  in., hairy, including ovate, sharply toothed, long-pointed, stalks long winged ;  
**S. angustifolius**, flowers dark blue, in interrupted spikes or in clusters,  
 ACANTHACEÆ. bracts soon falling off, narrow, hardly as long as the calyx,  
 F. B. I. iv. 464 and bracteoles  $\frac{1}{5}$  in., soon falling off, corolla  $1\frac{1}{4}$  in. long, tube  
 466. curved, gradually dilated from close to the base, lip  $\frac{3}{4}$  in.  
 Himalaya, diam., lobes 5, stamens 4 ; capsule  $\frac{3}{4}$  inch, narrow, glandular,  
 6-10,000 ft. hairy, seeds 4, ovate, hairy.  
 Mashobra (Collett).
- Lantana Camara**, rambling, rough, branches 4-angled with recurved  
 VERBENACEÆ. prickles ; leaves 3 in. long, ovate, rough above, woolly  
 F. B. I. iv. 562. beneath, stalk  $\frac{1}{4}$  in. long ; flowers scented in stalked ovoid  
 The Plains. heads, bracts longer than the calyx, corolla tube pink,  
 slender,  $\frac{1}{3}$  in. long, mouth  $\frac{1}{4}$  in. diam., lobes spreading,  
 4-5, orange or yellow, stamens 4, style 1, stigma oblique ;  
 drupe  $\frac{1}{8}$ - $\frac{1}{5}$  in., purple, 2 bony cells. An American plant.
- Lantana indica**, same as above, but no recurved prickles, flowers smaller,  
 VERBENACEÆ. not so strongly scented, corolla tube yellow, lobes  
 F. B. I. iv. 562. pink.  
 The Plains to  
 3,000 ft.  
 Valleys below  
 Simla (Collett).
- Callicarpa** medium size, stem very short, branches, leaf stalks  
**macrophylla**, and flower parts covered with dense tawny wool ; leaves  
*Bauna, sumali,* 4-7 in., ovate, long-pointed, minutely toothed, woolly  
*denthar.* with stellate hairs beneath, leaf stalk  $\frac{1}{4}$ - $\frac{1}{2}$  in. ; flowers  $\frac{1}{5}$  in.  
 VERBENACEÆ. long, pink, crowded in axillary short-stalked clusters,  
 F. B. I. iv. 568. round, 1-3 in. diam., calyx bell-shaped, 4-toothed, corolla  
 The Plains to short, spreading, lobes 4, nearly equal, stamens 4, protrud-  
 6,000 ft. ing, style long ; fruit very round, white, fleshy, nutlets 4,  
 Valleys below one-seeded.  
 Simla (Collett).
- Clerodendron** medium to large, bark light coloured, wood brittle ;  
**phlomoides**, leaves  $1\frac{3}{4}$  by  $1\frac{1}{4}$  in., ovate, blunt or short-pointed, stalk  
 VERBENACEÆ.  $\frac{2}{3}$  in., velvety ; flowers 1 in. long, white, on minor stalks,  
 F. B. I. iv. 590.  $\frac{1}{8}$ - $\frac{1}{2}$  in., in 12-flowered clusters, on axillary or terminal  
 Indri, main stalks, 1 in. long, bracts  $\frac{2}{3}$  in., lanceolate-ovate with  
 Karnal District. a broad tip, calyx  $\frac{1}{3}$ - $\frac{1}{2}$  in., lobed half way down, lobes trian-  
 Baluchistan gular, long-pointed, corolla tube  $\frac{3}{4}$  in., thread-like, lobes  
 (Hughes-Buller).  $\frac{1}{3}$  in., spreading, 5, stamens 4, long, protruding, style thread-  
 like, bifid at the tip ; drupe  $\frac{1}{3}$ - $\frac{1}{2}$  in., slightly succulent,  
 dividing into 4 pyrenes.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Holmskioldia sanguinea,**

VERBENACEÆ.

F. B. I. iv. 596.

Himalaya to 4,000 ft.

Valleys below Simla Subathu (Collett).

large, straggling; leaves 3-4 by 2-5 in., ovate, long-pointed, shortly toothed, stalk  $\frac{1}{2}$  in.; flowers in short clusters in the axil of leaves or at the ends of branches, calyx  $\frac{3}{4}$ -1 in. diam., conspicuous, brick red, persistent, widely open, corolla  $\frac{1}{3}$ - $\frac{3}{4}$  in., cylindric, curved, bright red, lobes 5, short, stamens 4, projecting, style bifid; drupe  $\frac{1}{5}$ - $\frac{1}{4}$  in., deeply 4-lobed, seeds 1-4, oblong.

**Caryopteris Wallichiana,**

VERBENACEÆ.

F. B. I. iv. 597.

Himalaya to 5,000 ft.

Valleys below Simla (Collett).

Baluchistan (Hughes-Buller).

medium size, spreading, bark peeling in long, papery flakes, young shoots grey velvety; leaves 4 by 1 in., lanceolate, long-pointed, minutely dotted with yellow glands; flowers pale mauve, in clusters forming a long pyramidal branching raceme at the ends of branches, corolla tube very short, lobes spreading, 5,  $\frac{3}{4}$  in. diam., 4 upper lobes equal, lowest larger, notched, stamens 4, in two pairs, far protruding, style bifid; capsule round, dark blue, 4-lobed, separating into 4 concave valves carrying each a single seed.

**Plectranthus ternifolius,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

**Pogostemon plectranthoides,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

**Colebrookia oppositifolia,***Pansra, shukardana.*

LABIATÆ.

F. B. I. iv. 642.

Salt Range.

The Plains 1-4,000 ft.

Valleys below Simla, Dharmapur, Suni (Collett).

medium size, woolly, bark grey; leaves 4-10 by  $1\frac{1}{2}$ -3 in., lanceolate, long-pointed, velvety, wrinkled above, grey and woolly beneath, leaf stalk  $\frac{1}{2}$ -1 in., stout, white-felted; flowers male and female often on different plants, minute, white, in clusters 2-4 in. long, on many branched spikes, corolla white, lobes rounded, stamens 4, within the corolla in females, protruding in males, style bifid and protruding in females, none in males; nutlet usually one, tip hairy, contained in the much enlarged calyx of which the segments are feathery, the tips often purple. The leaves are used as an application to wounds and bruises.

**Elsholtzia polystachya,***Rangchhari, pothi.*

LABIATÆ.

F. B. I. iv. 643.

Himalaya, 7-9,000 ft.

Simla (Collett).

medium size, velvety, bark grey, peeling in long strips, branches almost 4-angled; leaves 3-6 in. long, nearly sessile, lanceolate, toothed, long-pointed; flowers white or pale yellow, minute, in cylindric slender spikes, 4-6 in. long, bracts minute, calyx bell-shaped, 5-toothed, enlarged in fruit, corolla tube longer than the calyx, 4-lobed, upper lobe nearly erect, notched, the other spreading, stamens 4, in unequal pairs, protruding, style unequally bifid; nutlets 4, narrow, one-seeded.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Meriandra  
strobilifera,***Kafur-ka pat.*

LABIATÆ.

F. B. I. iv. 652.

Himalaya,

5-6,000 ft.

Valleys below Simla

(Collett).

small, woolly, smelling of sage, branches somewhat angled; leaves 3-4 by  $\frac{3}{4}$ - $1\frac{1}{4}$  in., thick, oblong or lanceolate, shortly toothed, two portions projecting backwards in points, velvety and closely wrinkled above, white woolly beneath, stalk very stout,  $\frac{1}{4}$  in. long; flowers white, small, in large circular clusters crowded in erect woolly 4-sided spikes with floral leaves (bracts), small, sessile, ovate, overlapping, calyx 2-lipped, corolla 4-lobed, spreading, stamens 2, short, stout, protruding, style bifid; nutlets brown, smooth. The leaves are used as a gargle in sore throats in Indian medicine.

**Loranthus  
cordifolius,**

LORANTHACEÆ.

F. B. I. v. 209.

Himalaya,

1-5,000 ft.

Giri Valley (Collett).

Dehli.

perennial, woody, stout, parasitic usually on oaks, white felted; leaves 2-3 in., broadly notched at the base, stalked, both sides felted or upper smooth; flowers  $\frac{3}{4}$ -1 in. long, shortly stalked, in axillary clusters, calyx short, not toothed, corolla brown felted without, pale pink or yellow within, slender, tubular, curved, lobes 4, short-pointed, stamens 4, style long, purple, stigma club-shaped, tip conical; berry  $\frac{1}{3}$  in., top-shaped.

**Loranthus elatus,**

LORANTHACEÆ.

F. B. I. v. 212.

Himalaya,

5-10,000 ft.

Theog (Collett).

like the last species, but smooth except the rusty velvety buds, leaves 3-6 in., not notched at the base, flowers 1- $1\frac{1}{2}$  in., red below, green above, calyx slightly 4-toothed, corolla lobes linear, reflexed.

**Loranthus vestitus,**

LORANTHACEÆ.

F. B. I. v. 212.

Himalaya,

5-7,000 ft.

Simla, the Glen.

Dehr (Collett).

like the last species, but leaves ovate-oblong or ovate-lanceolate, 2-3 in., smooth above, rusty felted below when old, flowers  $\frac{3}{4}$  in., brown felted without, smooth purple within.

**Loranthus  
longiflorus,***Panda, banda, amut.*

LORANTHACEÆ.

F. B. I. v. 214.

The Plains to

7,000 ft.

Basantpur, Sutlej

Valley (Collett).

Koti, Karnal.

like the last species, but smooth everywhere, leaves sometimes alternate, 5 by  $2\frac{1}{2}$  in., usually oblong-ovate, flowers  $1\frac{1}{2}$ -2 in. in racemes, not clusters, red below, yellow green above, lobes 5, berry crowned with the calyx. This and the preceding species of *Loranthus* are parasitic on and very destructive of *Acacia*, *Mangifera*, *Melia*, *Morus*, *Pyrus*, and *Quercus*.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## COROLLA TWO-LIPPED.

**Justicia Betonica,** see Herbs, Erect, Opposite, Exstipulate, Simple.

**Justicia pubigera,** see Herbs, Erect, Opposite, Exstipulate, Simple.

**Adhatoda Vasica,**  
*Bhekar, bansa,*  
*vasaka.*

ACANTHACEÆ.  
F. B. I. iv. 540.  
The Plains to  
2,500 ft.  
Valleys below Simla  
(Collett).

large, with a fetid smell, not eaten by goats; leaves 4-8 by  $1\frac{1}{2}$ -3 in., oblong, rounded at both ends, minutely velvety, stalk 1 in.; flowers white in short dense bracteate spikes of 2-4 in. in length, bracts  $\frac{3}{4}$  by  $\frac{1}{2}$  in., green, ovate, sessile, bracteoles  $\frac{3}{4}$  by  $\frac{1}{5}$  in., corolla 2-lipped,  $1\frac{1}{4}$  in. long, lower lip with pink streaks, tube short, barrel-shaped, stamens 2; capsule  $\frac{3}{4}$  in., velvety, 4-seeded, seeds  $\frac{1}{5}$  in. diam., warty. The leaves are used to cure bronchitis.

**Rhinacanthus communis,**  
*Palak-juhi.*

ACANTHACEÆ.  
F. B. I. iv. 541.  
The Plains,  
in gardens.

medium size; leaves 3-4 by  $\frac{3}{4}$ - $1\frac{1}{4}$  in., rounded at both ends, margins wavy, stalk  $\frac{1}{3}$  in.; flowers white in large spreading terminal clusters, bracts and bracteoles  $\frac{1}{1\frac{1}{2}}$  in., linear, corolla 1 by  $\frac{1}{10}$  in., tube very long, narrow, cylindric, 2-lipped, upper lip 2-lobed, lower 3-lobed, stamens 2; capsule 4-seeded, seeds ovoid, flattened, slightly warty. The leaves are used as a cure for Dhobies' itch, rhinacanthin is like chrysophanic acid.

**Graptophyllum hortense,**

ACANTHACEÆ.  
F. B. I. iv. 545.  
The Plains.

medium size, smooth, often variegated; leaves  $4\frac{1}{2}$  by  $1\frac{3}{4}$  in., shortly stalked, oblong, narrowed at both ends, margin smooth; flowers crimson in terminal ovate clusters, bracts and bracteoles narrow, very small, corolla tube curved, 2-lipped, upper lip 2-lobed, lower 3-lobed, stamens 2 large, 2 small (staminodes); capsule contracted into a long stalk, oblong, hard, seeds 2, flat, orbicular, pitted.

**Clerodendron serratum,**  
*Banbakri, barangi.*

VERBENACEÆ.  
F. B. I. iv. 592.  
The Plains, east  
of the Sutlej river.

hardly woody, stems annual from a woody rootstock, as it is usually burnt down in jungle fires; leaves 4-8 by  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., sometimes in circles of three, oblong, toothed, smooth, shortly stalked; flowers bluish-white in terminal branching racemes, when almost linear 6 by 1 in., when almost pyramidal 10 by 5 in., bracts  $\frac{1}{2}$ - $1\frac{1}{2}$  in., often coloured, corolla tube  $\frac{1}{3}$ - $\frac{1}{2}$  in., narrow, cylindric, mouth oblique, 2-lipped, lobes  $\frac{1}{3}$ - $\frac{1}{2}$  in., oblong, stamens 4, far protruding; drupe  $\frac{1}{4}$  in. diam., black, succulent, 1-4 stones. The root is used in Indian medicine as a febrifuge.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## COROLLA TWO-LIPPED.

**Clerodendron  
infortunatum,***Bhant.*

VERBENACEÆ.

F. B. I. iv. 594.

The Plains to  
1,000 ft.

medium size, bark with large raised corky excrescences, odour fetid; leaves 4-8 by 3-5 in., broadly ovate, hairy above, woolly or thinly hairy below, sometimes with sticky glands, slightly toothed; flowers white, tinged with red, in branching terminal racemes, 6-12 by 4-8 in., erect, sometimes leafy, upper part and calyces turning red, hairy, corolla tube nearly 1 in. long, cylindric, doubtfully 2-lipped, lobes  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, acute, stamens 4, much exceeding the lobes, style bifid; drupes  $\frac{1}{3}$  in. diam., black, succulent, enclosed in the enlarged bright red leathery calyx. The leaves are used as a febrifuge in Indian medicine.

**Plectranthus  
rugosus,***Pisumar, solei.*

LABIATÆ.

F. B. I. iv. 620.

Himalaya,

3-8,000 ft.

Simla (Collett).

Baluchistan

(Lace).

small, hoary with stellate down, branches slender, stiff, erect; leaves 1-1 $\frac{1}{2}$  in. long, ovate or oblong, toothed, bluntly tipped, velvety above, white woolly beneath; flowers white, spotted and streaked with purple, in clusters forming narrow leafy axillary or terminal racemes, calyx woolly,  $\frac{1}{8}$  in. long, bell-shaped, lengthened in fruit, teeth short-pointed, nearly equal, 2-lipped, corolla  $\frac{1}{8}$  in., 2-lipped, longer than the tube, lower lip longest, boat-shaped, stamens 4, in unequal pairs, lying along the lower lip, style unequally divided; nutlets 4, round or oblong, blunt. As the vernacular name implies, this plant is used to keep fleas away.

**Ocimum Basilicum,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

**Ocimum sanctum,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

**Orthosiphon pallidus,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

**Thymus Serpyllium,  
Thyme,***Banajwain, masho.*

LABIATÆ.

F. B. I. iv. 649.

Himalaya,

5-13,000 ft.

Baluchistan

(Lace).

small, slender, much branched, strongly scented, stems usually somewhat procumbent; leaves  $\frac{1}{8}$ - $\frac{1}{4}$  in., nearly sessile, gland-dotted, oblong, ovate, not toothed, blunt; flowers small, purple, in small clusters, crowded in short terminal spikes, corolla 2-lipped, upper lip almost erect, flat, notched, lower spreading, 3-lobed, stamens 4, equal, protruding; nutlets 4, nearly smooth. This plant is used in Indian medicine for diseases of the eyes and stomach.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## COROLLA TWO-LIPPED.

**Hyssopus officinalis**, small, smooth, stem below branched, woody, branches erect; leaves  $\frac{1}{2}$  in. long, sessile, lanceolate, not toothed; flowers bluish-purple in axillary or terminal spikes, calyx 2-lipped, 5-toothed, corolla 2-lipped, upper lip erect, notched, lower spreading, 3-lobed, middle lobe very broad, stamens 4, unequal, protruding; nutlets narrow, smooth, 3-cornered. This plant was once used in Europe as a tonic and stimulant.

*Zufah yabis.*  
LABIATE.  
F. B. I. iv. 649.  
Himalaya,  
8-11,000 ft.  
Baluchistan (Lace).

**Micromeria biflora**, dwarf, prostrate, hairy, woody, branches very numerous, tufted, leafy, slender, something like *Thymus* in appearance, but not scented; leaves  $\frac{1}{6}$ - $\frac{1}{4}$  in., sessile, ovate, short-pointed, toothed or not; flowers pink, stalked, small, in axillary circles of one to four, calyx 5-toothed equally, 13-nerved, corolla 2-lipped, upper lip erect, notched, lower 3-lobed, spreading, stamens 4 in unequal pairs; nutlets smooth.

LABIATE.  
F. B. I. iv. 650.  
Himalaya,  
1-7,000 ft.

**Micromeria hydaspidis**, very small, stem erect, rather stout, leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., shortly stalked, minutely toothed, ovate, blunt, flowers shortly stalked in continuous or interrupted crowded circular clusters forming spikes; otherwise like the last species.

LABIATE.  
F. B. I. iv. 650.  
Western Kashmir.

**Salvia ægyptiaca**, very small, rough, hairy, branches widely separating from the base, rigid; leaves  $\frac{3}{4}$  in., small, nearly sessile, few, linear, rigid, acute, minutely toothed; flowers  $\frac{1}{4}$  in. long, in small circular clusters on slender branching racemes, whitish lilac, bracts small, lower leaf-like, upper lanceolate, calyx glandular, hairy, 2-lipped, upper lip orbicular, minutely toothed, corolla 2-lipped, upper lip nearly straight, short, flattened, concave, stamens 2, style 2-fid; nutlets  $\frac{1}{12}$  in. long, narrow, oblong, black. The seeds are used in Indian medicine as an astringent.

*Tukhm malanga.*  
LABIATE.  
F. B. I. iv. 656.  
The Plains,  
1-2,000 ft.  
Baluchistan  
(Hughes-Buller).

**Stachys tibetica**, rootstock woody, thick, stems twiggy; leaves  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long, oblong to linear, blunt, shortly stalked, sometimes irregularly lobular; flowers pink, sessile, in small circular clusters, axillary, calyx  $\frac{1}{2}$  in., bell-shaped, tips long, corolla  $\frac{3}{4}$ -1 in. long, 2-lipped, upper lip erect, long, narrow, lower spreading, 3-lobed, middle lobe largest, stamens 4; nutlets  $\frac{1}{8}$  in. long, broadly oblong.

LABIATE.  
F. B. I. iv. 677.  
Northern Kashmir,  
10-14,000 ft.



## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## COROLLA TWO-LIPPED.

**Stachys parviflora,** see Herbs, Opposite, Exstipulate, Simple, Toothed, Corolla 2-lipped.

**Roylea elegans,** medium size, branches cylindric, pale brown, finely  
 LABIATÆ. woolly; leaves 1-1½ in., ovate, deeply toothed or lobed,  
 F. B. I. iv. 679. woolly beneath; flowers white, tinged with pink, ½ in.  
 Himalaya, long in circular axillary clusters, calyx 5-lobed, 10-ribbed,  
 2-5,000 ft. rigid, corolla 2-lipped, upper lip erect, hood-like, lower  
 Sutlej and Giri 3-lobed, spreading, mid lobe longest, margin even, sta-  
 Valleys (Collett). mens 4, unequal, outer or anterior pair longest; nutlets  
 ½ in. This plant is lemon scented.

**Otostegia limbata,** small, grey, spinous, branches white, woolly, cylindric,  
 LABIATÆ. spines ½-¾ in. long; leaves 1 in. long, nearly sessile, grey  
 F. B. I. iv. 679. on both sides, bracts spiny; flowers orange-white in  
 Salt Range, Lower circular clusters with bracteoles spiny, calyx 2-lipped,  
 hills west of the upper lip very short, 3-angled, lower very large, broad,  
 Jhelum, toothed, hairy, corolla ½ in. long, tube short, 2-lipped,  
 Rawalpindi. upper lip very long, hairy, stamens 4, protruding; nutlet  
 ⅓ in., flattened, smooth in the enlarged calyx which forms  
 a 5-angled toothed cup ⅔ in. diam.

**Phlomis Stewartii,** small, densely stellately woolly, stem stout, woody,  
 LABIATÆ. short, branches cylindric, spreading; leaves 3-5 by ¼-¾  
 F. B. I. iv. 692. in., very leathery, linear, lanceolate, awl-like, rough above;  
 Salt Range and flowers small, in circular clusters, 1 in. diam., bracts  
 Suliman Range, stout, narrowly linear, calyx ½ in., densely woolly, angled,  
 2,500-4,500 ft. teeth very short, turned back, corolla small, 2-lipped,  
 Baluchistan (Lace). upper lip concave, crest woolly, lower spreading, 3-lobed,  
 stamens 4, style unequally 2-fid; nutlets very small, 3-  
 cornered, top smooth.

## PETALS NONE.

**Boerhaavia elegans,** see Herbs, Erect, Opposite, Exstipulate, Simple,  
 Entire.

**Cyathula tomentosa,** see Herbs, Erect, Opposite, Exstipulate, Simple,  
 Entire.

**Cyathula capitata,** see Herbs, Erect, Opposite, Exstipulate, Simple,  
 Entire.

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Pupalla lappacea**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

**Haloxylon recurvum**, medium size, straggling, smooth, covered with a hoar frost-like bloom, dark brown, branches opposite, jointed, separating widely, stiff or bent back, ending in straight spines 2-6 in. long, joints of stems  $\frac{1}{2}$ - $\frac{3}{4}$  in. apart, of spikes  $\frac{1}{4}$  in.; leaves  $\frac{1}{3}$ - $\frac{1}{2}$  in., 3-angled or nearly cylindric, ovate, blunt or acute; flowers small, solitary or in spikes in the axils of leaves, bracteoles 2, sepals 5, concave, increasing in fruit and horizontally winged, stamens 5 or less on the margin or base of a cup-shaped depression; fruit one-seeded, in a glistening papery shallow cup.

**Haloxylon recurvum**,  
*Khar, laghme.*  
CHENOPODIACEÆ.  
F. B. I. v. 15.  
The Plains.  
Salt Range to  
5,200 ft.  
Baluchistan  
(Boissier).

**Haloxylon multiflorum**, small, pale, much branched, almost leafless, jointed branches, stem very stout, 4-6 in. high, branches in clusters; leaves consist of two broad very rounded tips on each joint; flowers on short spikes, bracteoles round, concave, sepals very short, obtuse, in fruit the sepals have round membranous fan-shaped wings and are  $\frac{1}{2}$  in. diam., stamens 5 with alternating rounded staminodes.

**Haloxylon multiflorum**,  
*Lana, gora lana, shori lana.*  
CHENOPODIACEÆ.  
F. B. I. v. 16.  
The Plains.  
Salt Range to  
2,000 ft.  
Baluchistan (Lace).

**Anabasis phyllophora**, dwarf, smooth, pale, almost leafless, stems many, erect, stock woody, joints long ending in two acute triangular teeth (leaves?), flowers in the axils of joint-leaves, fruiting calyx with three wings arching over one larger than the others, seed erect, circular, flattened; in other respects very like *Haloxylon*.

**Anabasis phyllophora**,  
CHENOPODIACEÆ.  
F. B. I. v. 18.  
The Plains by the  
Jhelum river.

**Anabasis setifera**, very like the last species, but the leaves are thick, fleshy, nearly cylindric with a bristle, soon falling off, axil of leaves woolly, floral leaves rounded, wings of fruiting calyx 3-5, transparent, circular with the base, heart-shaped.

**Anabasis setifera**,  
CHENOPODIACEÆ.  
F. B. I. v. 19.  
Salt Range.

**Viscum album**, perennial, woody, yellowish-green, smooth, parasitic, chiefly on the Rosaceæ, especially apricots, branches round, jointed; leaves 1-2 in., oblong or ovate, sessile, flat, leathery blunt; flowers green, male and female on different plants, clustered in the forks of branches, male  $\frac{1}{4}$  in. long, calyx lobes not persistent; berry  $\frac{1}{4}$  in. diam., white, round, glassy; also see *V. articulatum* and *V. japonicum* under *Leafless Plants*.

**Viscum album**,  
Mistletoe.  
LORANTHACEÆ.  
F. B. I. v. 223.  
Himalaya,  
8-7,000 ft.  
Simla, Mahasu  
(Collett).

## SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Euphorbia Tirucalli**, large, stem green, bark brown, fissured, branches numerous, at first slender like rushes, growing as thick as the finger, juice milky; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, soon falling off, obtuse, linear-oblong; flowers  $\frac{1}{12}$  in. long, top-shaped, two leaves at the base of the short flower stalks; capsule  $\frac{1}{4}$  in., dark brown, lobes flattened, velvety, seeds smooth, ovoid.  
*Shud, sehnr.*  
EUPHORBIACEÆ.  
F. B. I. v. 254.  
The Plains.  
Baluchistan  
(Hughes-Buller).
- Buxus sempervirens**, large or small, much branched, bark yellowish-grey, corky, fissured, branchlets 4-angled; leaves  $\frac{3}{4}$ -3 by  $\frac{1}{5}$ - $\frac{1}{3}$  in., linear, oblong, shining, leathery, tip acute, rounded or with a shallow notch, stalk very short; flowers in short, very dense axillary racemes, the terminal flower female, male flowers have 4 sepals in two rows, stamens equal in number to the sepals, female flowers have 6 sepals, 2 outer much smaller; capsule  $\frac{1}{2}$  in. long, ovoid, 3-cornered with 3 horns, thick like handles to an urn, seeds 3-6, small. On the Salt Range it is dwarfed; leaves  $\frac{1}{2}$ -1 in. long.  
**Box**,  
*Chikri, papri, shamshad.*  
EUPHORBIACEÆ.  
F. B. I. v. 267.  
Salt Range.  
Himalaya, 5-9,000 ft.  
Simla, Mashobra,  
Mahasu (Collett).  
Baluchistan.
- Ephedra pachyclada**, see Leafless Plants, Petals None.

## SHRUBS WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

- Stachys tibetica**, see Shrubs, Opposite, Exstipulate, Simple, Petals United, Corolla 2-lipped.
- Roylea elegans**, see Shrubs, Opposite, Exstipulate, Simple, Petals United, Corolla 2-lipped.

## SHRUBS WITH OPPOSITE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNITED.

- Jasminum officinale**, sometimes climbing, branches long, weak, slightly grooved, dark green; leaves 2-4 in., odd pinnate, leaflets 3-7, ovate, long-pointed, terminal leaflets 1-2 in.; flowers  $\frac{3}{4}$  in. long, white, fragrant, in terminal clusters of 1-10 flowers, calyx teeth nearly as long as the corolla tube, corolla top flat, circular, tube cylindrical,  $\frac{2}{3}$  in. long, lobes 5, spreading,  $\frac{1}{3}$  in. long, stamens 2, style 2-fid; berry deeply 2-lobed, oblong with rounded ends,  $\frac{1}{3}$  by  $\frac{1}{4}$  in.  
*Chamba, bansu.*  
OLEACEÆ.  
F. B. I. iii. 603.  
Himalaya,  
3-9,000 ft.  
Fagu, Narkanda  
(Collett).

## SHRUBS WITH OPPOSITE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNITED.

**Jasminum grandiflorum,**  
**Spanish Jasmine,**  
*Chambeli, jati.*  
 OLEACEÆ.  
 F. B. I. iii. 603.  
 Himalaya,  
 2-7,000 ft.  
 Simla (Collett).  
 Baluchistan  
 (Hughes-Buller).

sometimes climbing, branches angular, hanging down; leaves 3-4 in., odd pinnate, leaflets 3-7, sessile, ovate, end one  $\frac{1}{2}$ -1 in. long, the end leaflets often united to the next pair; flowers white, tinged often with pink outside, very fragrant, in loose clusters, calyx teeth linear, half the length of the corolla tube, corolla top flat, circular, tube  $\frac{3}{4}$  in. long, lobes 5,  $\frac{1}{2}$  in. long, stamens 2, style 2-fid; berry 2-lobed, with rounded ends,  $\frac{1}{4}$  in. long.

**Fraxinus xanthoxyloides,**

see Trees, Opposite, Exstipulate, Compound.

**Vitex trifolia,**  
*Pani-ki-sanbhalu,*  
*safed sanbhalu.*  
 VERBENACEÆ.  
 F. B. I. iv. 583.  
 The Plains.

large, bark thin grey; leaves digitately compound and simple, leafstalk 2 in. long, leaflets 3, sessile, 1-3 in. long, smooth above, short grey wool beneath, and on shoots and racemes; flowers lavender blue in branching terminal racemes 1-4 in. long, often leafy at the base, calyx  $\frac{1}{10}$  in., 5-toothed, corolla  $\frac{1}{3}$ - $\frac{1}{2}$  in., 2-lipped, 5-lobed, mid lobe of lower lip largest, stamens 4, protruding; drupe  $\frac{1}{6}$  in., black, stone bony, 1-4 celled. This and the next plant are used in Indian medicine as tonics, febrifuges and expectorants.

**Vitex Negundo,**  
*Wana, marwan,*  
*nirgandi.*  
 VERBENACEÆ.  
 F. B. I. iv. 583.  
 The Plains  
 to 5,000 ft.  
 Valleys below Simla  
 (Collett).

very like the last species, but the leaves have 5 leaflets, the centre one usually distinctly stalked, flowers somewhat smaller, darker blue.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Capparis spinosa,****The Caper,***Kakri, kander.*

CAPPARIDACEÆ.

F. B. I. i. 173.

The Plains to  
5,000 ft.Sutlej Valley  
(Collett).Choa Saidan Shah  
(Douie).

Baluchistan.

(Aitchison).

small, trailing, young parts with yellowish-white wool; leaves 1-2 in. long, broadly ovate, thick, abruptly terminating in a sharp point, stipules of two spines, straight or curved; flowers 1-3 in. diam., solitary, white, fading to purple, sepals 4, unequal, concave, petals 4, 1 in. long, stamens many, longer than the petals, purple; berry 1-3 in. long, fleshy, ribbed, red inside when ripe. Buds and unripe fruit pickled as a condiment, and ripe fruit eaten raw.

**Capparis aphylla,***Karil, kira.*

CAPPARIDACEÆ.

F. B. I. i. 175.

The Plains.

Baluchistan

(Stocks).

large, much branched, branches smooth, slender; leaves (only on young shoots)  $\frac{1}{6}$ - $\frac{1}{2}$  in. long, slender, ending gradually in a sharp point, soon falling off, stipules two, sharp, straight spines; flowers 1 in. diam., in short clusters on lateral short shoots, pinkish-yellow; fruit  $\frac{1}{2}$ - $\frac{2}{3}$  in. long, smooth, long-beaked, red when ripe. Buds and unripe fruit pickled as a condiment.

**Capparis sepiaria,***Hingarna, hius.*

CAPPARIDACEÆ.

F. B. I. i. 177.

The Plains to

2,000 ft.

medium size, sometimes climbing, wiry, straggling, branches woolly, stem thorny; leaves usually  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long, green, variable in shape, ovate, smooth above, downy beneath; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., white, in clusters with stalks, radiating from one point, petals narrow, oblong; berry  $\frac{1}{3}$  in. diam., round, black when ripe, one-seeded.

**Helicteres Isora,**  
**East Indian Screw**  
**Tree,***Marorphali, kupasi.*

STERCULIACEÆ.

F. B. I. i. 365.

The Plains.

large, branches thin, spreading, bark grey, young shoots covered with stellate hairs; leaves 3-6 by 2-4 in., alternate in two opposite rows on the branchlets, round-ovate, short-pointed, rough above, velvety beneath, stipules  $\frac{1}{4}$  in. long, linear; flowers 1-2 in. long, solitary, or two to four together in a cluster on a short stalk, axillary, calyx tubular, almost 2-lipped, crown woolly, petals 5, scarlet, 1 in. long, turned back, two lower much the largest, staminal tube 5-toothed at the apex, styles 5; fruit 2 in. long, consisting of five spirally twisted woolly follicles on a long stalk. From its twisted shape the fruit is considered good for the twisting pain of colic.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Melhania  
Hamiltoniana,**  
var. **abutiloides,**  
STERCULIACEÆ.  
F. B. I. i. 373.  
The Plains.

small, white felted, branches spreading; leaves 2-3 in. long, roundish-ovate, base deeply notched, apex long- or short-pointed, unequally toothed, velvety on both surfaces, leaf stalk 1 in., stipules bristly, equal in length to the leaf stalk; flowers yellow, 1-3, on axillary and terminal stalks, twice the length of the leaf stalks, bracteoles ovate-cordate, longer than the calyx, edges turned over, sepals 5, lanceolate, tipped with a sharp hard point, silky, petals 5, ovate with a broad tip, much longer than the sepals, withering before falling off, stamens 10, alternate ones fertile, united below into a very short tube, styles 5, united below; capsule ovoid, shorter than the sepals, silky, 5-valved, seeds many, oblong.

**Melhania  
futteyporensis,**  
STERCULIACEÆ.  
F. B. I. i. 373.  
The Plains.  
Tret, Choa Saidan  
Shah (Douie).

like the last species, but velvety, leaves oblong, long-pointed, a little larger, bracteoles equal to the sepals, capsule a little shorter than the sepals.

**Melhania  
tomentosa,**  
STERCULIACEÆ.  
F. B. I. i. 373.  
The Plains.

like the last species, but white felted, leaves smaller, oblong-lanceolate, thinly hairy with stellate hairs above, flower stalks terminal, about equal to the leaves, bracteoles shorter than the sepals, edges not turned down, flowers much smaller, seeds rough, angled.

**Grewia populifolia,**  
*Ganger, shikari  
mewa.*  
TILIACEÆ.  
F. B. I. i. 385.  
The Plains.  
Rawalpindi.  
Baluchistan  
(Boissier).

medium size, much branched, stellately hairy on young parts; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, variable, leathery, small toothed, smooth, stalk  $\frac{1}{2}$  in.; flowers white on solitary or 2-flowered stalks, opposite the leaves, sepals  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, petals notched, shorter than the sepals, stamens many, style one; drupes yellowish, 2-to 4-lobed, lobe size of a small pea, orange red, stones 1 to 4, 1-to 2-celled, edible.

**Grewia salvifolia,**  
*Gargas, bathar.*  
TILIACEÆ.  
F. B. I. i. 386.  
The Plains.  
Rawalpindi.

large, bark grey, white velvety on young parts; leaves  $2\frac{1}{2}$  by  $1\frac{1}{2}$  in., nearly smooth above, white velvety beneath, margin smooth or minutely toothed, stalk  $\frac{1}{4}$  in., stipules  $\frac{1}{3}$  in., linear, pointed; flowers yellow on 2 in. stalks, clustered in twos or threes in the axils of leaves, sepals  $\frac{1}{4}$  in., linear, petals  $\frac{1}{6}$  in., divided, stamens many, style one; drupe 1-to 4-lobed, small, not succulent, edible.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Grewia restita**, see Trees, Alternate, Stipulate, Simple.
- Grewia villosa**,  
*Jalidar, thamther.*  
TILIACEÆ.  
F. B. I. i. 388.  
The Plains. medium size, long soft hairs on young parts ; leaves 1-3 in., nearly round, toothed, rough above, hairy beneath, hairs on teeth, stalk  $\frac{1}{2}$ -1 in., stipules broad, leafy ; flowers dull yellow, sessile, in dense clusters, sometimes opposite the leaves, sepals hairy, oblong, ending in an angle; petals oblong, shorter than the sepals, stamens many, style one ; drupe  $\frac{1}{2}$  in. diam., round, rind hard, brittle, hairy, copper colour, stones 4, 1-to 2-seeded.
- Grewia polygama**,  
*Kukur bicha.*  
TILIACEÆ.  
F. B. I. i. 391.  
Salt Range.  
Himalaya,  
2-4,000 ft. medium size, stem short with spreading branches in two opposite rows ; leaves in two rows, 3-4 by  $\frac{1}{2}$ - $\frac{3}{4}$  in., nearly sessile, lanceolate, long-pointed, sharply toothed, downy above, white woolly beneath, stipules linear, sharp-pointed ; flowers hermaphrodite and one sexual, in slender axillary stalks, sepals linear, hairy without,  $\frac{1}{8}$ - $\frac{1}{4}$  in. diam., longer than the petals, stamens many, style one ; drupe  $\frac{1}{2}$  in. diam., whitish-brown, shining, sparsely hairy, somewhat 4-lobed, stones 4, one-seeded. It is stated that a decoction of the leaves cures dysentery quickly.
- Triumfetta tomentosa**, see Herbs, Alternate, Stipulate, Simple.
- Triumfetta rhomboidea**, see Herbs, Alternate, Stipulate, Simple.
- Triumfetta rotundifolia**,  
TILIACEÆ.  
F. B. I. i. 395.  
The Plains. small, with rough stellately hairy soft green stems ; leaves  $1\frac{1}{2}$  in. long, nearly round, nearly smooth above, cream coloured, woolly beneath, leathery, unequally toothed ; flowers yellow, in irregular-spaced racemes, sepals with sharp points, white woolly, petals 5, oblong, hairy at the base, stamens 15-25, style thread-like, stigma 5-toothed ; fruit globular, about the size of a pea, velvety, with hooked spines, with dilated bases, seeds 1-2 in each cell.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Reinwardtia trigyna**, small, tufted, erect, also with prostrate, stout, soft, rooting branches; leaves 1-3 in., narrowed into slender stalks, rounded and short-pointed tips, or lanceolate, long-pointed with minute teeth, stipules minute, awl-shaped, and soon falling off; flowers 1 in. across, yellow, in axillary or terminal clusters, sometimes solitary, look like prim-roses, sepals 5, green, lanceolate, long-pointed, petals 5, twisted, soon falling off, much longer than the sepals, stamens 5, united below with alternating staminodes, styles 3-4; capsule papery, size of a pea, much shorter than the sepals, splitting into 6-8 cells, seeds curved. A good border plant, stands clipping.
- and  
**R. tetragyna**,  
**Bush flax**,  
*Basant, bal basant.*  
LINACEÆ.  
F. B. I. i. 412.  
Himalaya,  
3-6,000 ft.  
Rawalpindi.  
Hazara (Barrett).
- Zizyphus Jujuba**, see Trees, Alternate, Stipulate, Simple.
- Zizyphus nummularia**, thorny, branches grey, branchlets in two rows, hairy when young; leaves  $\frac{1}{2}$ -1 in. long, ovate to round, minutely toothed, dark green and velvety above, pale and densely woolly beneath, stipules are two prickles, one straight, the other bent down, hooked; flowers small, yellow-green in axillary short clusters, which are less than  $\frac{1}{2}$  in., petals 5, bent down, stamens 5, styles 2-3; fruit round, red or black, fleshy, nearly  $\frac{1}{2}$  in. diam., with a woody 2-celled stone, this sweet acid fruit is eaten.
- Jhar-beri.*  
RHAMNACEÆ.  
F. B. I. i. 633.  
The Plains to  
3,000 ft.  
Baluchistan  
(Lace).
- Zizyphus vulgaris**, large, branches spreading and stiff, often without thorns; leaves  $\frac{3}{4}$ -2 $\frac{1}{2}$  in., ovate, rounded at both ends, finely toothed, smooth on both sides, stipular prickles, two stout, one straight, 1 in. long, the other curved; flowers few, greenish, clustered, axillary, petals 5, hood-shaped but bent down, stamens 5, styles 2-3; fruit round or oblong, succulent, red or black, shining.
- Sinji.*  
RHAMNACEÆ.  
F. B. I. i. 633.  
The Plains to  
6,500 ft.  
Hazara (Barrett).  
Rawalpindi.  
Baluchistan.  
(Boissier).
- Zizyphus oxyphylla**, medium size, bark brown, thin; leaves 1-2 by  $\frac{3}{4}$ -1 $\frac{1}{4}$  in., ovate-lanceolate, sharp-pointed, finely toothed, thin, smooth, stalk slender, stipular prickles two, slender, one straight,  $\frac{1}{2}$  in. long, the other curved; flowers in clusters in axils of leaves, greenish, petals 5, stamens 5, styles 2; drupe  $\frac{1}{4}$  in. long, ovoid, fleshy, 2-seeded, rarely one-seeded, black, very acid, stone thin, flattened.
- Phitni.*  
RHAMNACEÆ.  
F. B. I. i. 664.  
Himalaya, 1-7,000 ft.  
Simla, Mahasu  
(Collett).  
Hazara (Barrett).  
Rawalpindi.  
Baluchistan  
(Lace).



## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Zizyphus Ctenoplia,** medium size, bark rough, dark grey, branches long, straggling, often climbing, young parts covered with rusty velvet; leaves 1-2 by  $\frac{3}{4}$ -1 in., ovate-lanceolate, rounded at both ends, very slightly and minutely toothed, smooth above, rusty velvety beneath, stalk short, stout, stipular, prickles solitary, very short, curved; flowers in short clusters, smooth within, calyx woolly without, petals 5, inversely triangular, hood-shaped, bent down, stamens 5, styles 2; drupe  $\frac{1}{4}$  in. diam., 1- or rarely 2-celled, round or ovoid, black.  
*Makoh.*  
RHAMNACEÆ.  
F. B. I. i. 634.  
The Plains.
- Berchemia floribunda,** see Climbing Shrubs, Alternate, Stipulate, Simple.
- Berchemia lineata,** small, bark smooth, shining, young shoots minutely velvety; leaves  $\frac{1}{4}$ -1 in. long, ovate, or nearly round, nearly sessile, stipules bristle-like, very small; flowers  $\frac{1}{5}$ - $\frac{3}{8}$  in., 2 or 3 clustered, axillary or terminal, petals 5, linear, lanceolate, stamens 5, style one; fruit ovoid,  $\frac{1}{5}$ - $\frac{1}{4}$  in. long, succulent, blue, the base held by the calyx, 2-seeded.  
RHAMNACEÆ.  
F. B. I. i. 638.  
Himalaya,  
4-7,000 ft.  
Baluchistan  
(Lace).
- Berchemia Edgeworthii,** small, very like the last species, but with smooth branches, larger leaves, flowers with 6 petals, stipules  $\frac{1}{4}$  in. long, fruit  $\frac{2}{3}$  in. long.  
RHAMNACEÆ.  
F. B. I. i. 638.  
Himalaya,  
7-8,000 ft.
- Rhamnus persicus,** large, trunk short, ash coloured, with stiff, often spinous branches; leaves  $\frac{1}{2}$ -2 in., clustered, when on arrested branchlets, ovate, or oblong, toothed or not, woolly beneath, shortly stalked, stipules minute, soon falling; flowers few, shortly stalked in axillary clusters, calyx lobes 4, petals 4, small, linear, stamens 4, styles 4, branched; fruit  $\frac{1}{5}$  in. diam., top-shaped, 2-4-celled, held below by the calyx.  
*Nikki kander.*  
RHAMNACEÆ.  
F. B. I. i. 638.  
Salt Range.  
Himalaya,  
2-5,000 ft.  
Baluchistan  
(Lace).
- Rhamnus dahuricus,** see Trees, Alternate, Stipulate, Simple.  
or *virgatus,*
- Rhamnus purpureus,** see Trees, Alternate, Stipulate, Simple.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Rhamnus triqueter**, medium size, not thorny, bark roughish, dark grey, thin, with elevated dots; leaves 3-6 by 1-2½ in., ovate-oblong, long-pointed, finely toothed, smooth above, finely velvety beneath, stalk ¾ in. long, stipules minute, soon falling; flowers greenish in clusters on long branches of axillary racemes, 2-4 in. long, calyx lobes 5, triangular, petals 5, stalked, broad and notched at the apex, stamens 5, style 3-4 cleft; fruit 3-lobed, rarely 3-cornered, ½ in., seeds grooved.  
*Gaunt, gudlei, phulla.*  
RHAMNACEÆ.  
F. B. I. i. 639.  
Himalaya, 3-5,000 ft.  
Valleys below Simla (Collett).  
Hazara (Barrett).
- Sageretia theezans**, see Climbing Plants, Alternate, Stipulate, Simple.
- Sageretia Brandrethiana**, small, branches many, spinous; leaves nearly opposite, ¾-1 in., oblong with rounded ends, slightly toothed, smooth above, covered with dense white wool beneath, stalk very short, stipules small, soon falling; flowers minute in terminal and axillary branching racemes, calyx 5-fid, petals 5, stalked, hooded, stamens 5, stigmas 3; fruit ¼ in. diam., ovoid, succulent, 3-lobed, black, 3-seeded, edible, sweet like the bilberry.  
*Ganger, bajan.*  
RHAMNACEÆ.  
F. B. I. i. 642.  
The Plains, west of Jhelum, Peshawar. Salt Range.  
Hazara (Barrett).  
Baluchistan (Boissier).
- Crotalaria alata**, small, densely hairy; leaves 2-3 in. long, nearly sessile, ovate-oblong, tip rounded, thin, stipules forming wings running down the stem, persistent; flowers in 2-3 flowered racemes on long, often leafy, lateral stalks, small, ⅔ in. long, calyx silky, 2-lipped, petals 5, pale yellow, hardly protruding from calyx, stamens 10 in one bundle, style long, bearded above; pod 1¼-1¾ in. long, long-stalked, linear-oblong, smooth, seeds 30-40.  
LEGUMINOSÆ.  
F. B. I. iii. 69.  
The Plains to 5,000 ft.
- Crotalaria sericea**, medium size, silky velvety, stem thick, grooved; leaves 2-6 by 1-3 in., nearly sessile, ovate, tapering to the short stalk, tipped with a minute bristle, stipules small, leafy, persistent; flowers ¾-1 in. long in terminal racemes, 20-40 flowered, 8-12 in. long, calyx ½ in. long, teeth lanceolate, petals yellow, nearly twice as long as the calyx, stamens and style like the last species; pod 1½-2 in. long, nearly smooth, stalked, seeds many. The fibre is used for making cordage.  
*Sanni.*  
LEGUMINOSÆ.  
F. B. I. ii. 75.  
The Plains to 4,000 ft.  
Valleys below Simla (Collett).
- Crotalaria juncea**, see Shrubs, Alternate, Exstipulate, Simple.
- Taverniera nummularia**, see Shrubs, Alternate, Stipulate, Compound, Leaflets three.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Uraria lagopus**, see Shrubs, Alternate, Stipulate, Compound, Leaflets Three.
- Alysicarpus vaginalis**, see Prostrate Shrubs, Alternate, Stipulate, Simple.
- Alhagi maurorum** or **camelorum**, *Jawasa*.  
LEGUMINOSÆ.  
F. B. I. ii. 145.  
The Plains.  
Salt Range.  
Kashmir to 3,000 ft.  
Baluchistan (Boissier).  
small, with many axillary hard sharp thorns  $\frac{1}{2}$ -1 in. long; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, ovate-oblong, tip rounded with a fine bristle, leathery, stiff, drooping from the base of the spines or branchlets, stipules minute, awl-shaped; flowers reddish, on short stalks, 1-6 from a spine, calyx  $\frac{1}{12}$ - $\frac{1}{8}$  in., smooth, corolla nearly  $\frac{1}{2}$  in., stamens 10 in 2 bundles of 1 and 9; pod about 1 in. long, curved, constricted between the seeds, smooth, seeds 6-8. Manna, a sugary gum, exudes when the leaves appear, and forms small tears which are shaken off and eaten. This manna does not appear on the plants in India, but in Afghanistan and Persia.
- Desmodium gangeticum**, *Salpan*.  
LEGUMINOSÆ.  
F. B. I. ii. 168.  
The Plains to 5,000 ft.  
small, stems woody, slightly angular, branches grey felted; leaves 3-6 by  $1\frac{1}{2}$ -3 in., oblong, rounded at the base, smooth above, grey-haired beneath, stalk  $\frac{1}{2}$ -1 in., stipules  $\frac{1}{4}$  in., linear; flowers  $\frac{1}{5}$  in., white or lilac, in crowded axillary and terminal racemes, 6-12 in. long, calyx minute, teeth 5, lanceolate, petals 5, projecting outside the calyx, standard petal broad, wing petals 2, adhering to the two united petals (keel), stamens 10, 1 free, 9 united, style incurved at the end; pod  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, curved, lower border deeply indented, joints 6-8, one-seeded, covered with minute hooked hairs. The plant is used in Indian medicine as a febrifuge.
- Desmodium latifolium**,  
LEGUMINOSÆ.  
F. B. I. ii. 168.  
The Plains to 4,000 ft.  
like the last, but more erect, branches brown-felted, leaves ovate, thicker, brown-felted beneath, flowers purple, joints of pod 4-6.
- Prunus prostrata**, *Paltu, tara, ter*.  
ROSACEÆ.  
F. B. I. ii. 313.  
Himalaya, west of Sutelj, 5-10,000 ft.  
medium size, scraggy, branches grey, spreading, erect or prostrate; leaves  $\frac{1}{2}$ -1 in., ovate-oblong, rounded tip, toothed, smooth above, white and woolly beneath, narrowed into the short stalk; flowers red, nearly sessile, solitary or clustered, appearing with the leaves, calyx tube  $\frac{1}{4}$  in., cylindric, with 5 oblong blunt lobes, petals 5, round, longer than the calyx, stamens many, style one; fruit  $\frac{1}{3}$  in., ovoid, purplish-red, hardly edible, dry, stone one.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Prunus tomentosa**,  
ROSACEÆ.  
F. B. I. ii. 314.  
Kashmir, 5-6,000 ft. medium size, branches slender, spreading, branchlets woolly; leaves 1-1½ in., ovate-rounded, long-pointed, finely toothed, slightly hairy above, densely softly hairy beneath, stalk very short, hairy, stipules slender, segmented; flowers axillary, shortly stalked, solitary, calyx-tube ¼ in., lobes oblong, pointed, petals small, white; fruit scarlet, oblong, hairy, pointed at first, blunt, flattened when ripe.
- Prinsepia utilis**,  
*Bekhar, bekhal.*  
ROSACEÆ.  
F. B. I. ii. 323.  
Himalaya,  
4-8,000 ft.  
Simla, Mashobra  
(Collett).  
Hazara (Barrett). medium size, straggling, smooth, spinous, spines often leafy, green, pith divided by partitions; leaves 1½-5 by ½-1½ in., narrow, lanceolate, long-pointed, leathery, smooth, minutely toothed, dark green, stalk ½-½ in., stipules minute, soon falling off; flowers white, ¼ in. diam., in short axillary racemes, petals 5, round, stamens many in several rows; drupe ½-¾ in., oblong, the minute point, the remains of the style, is quite on one side, purple with bloom like a plum, stone smooth, one-seeded. Oil expressed from the seeds is used locally for food, illuminating, and as an external remedy in rheumatism.
- Spiræa bella**,  
*Kurkan.*  
ROSACEÆ.  
F. B. I. ii. 324.  
Himalaya,  
6-12,000 ft.  
Simla, Mahasu,  
common (Collett). medium size, branches erect, arching, slender or stout; leaves ½-2 in. long, broadly oblong, ovate, sharply irregularly toothed towards the tip, dark green above, waxy bluish-green below, stipules small, soon falling off; flowers pink, rarely white, in broad terminal much branching clusters, petals round, stamens 50-60; fruit of 5 carpels, velvety, carpel ½ in., dark brown.
- Spiræa canescens**,  
*Chakis.*  
ROSACEÆ.  
F. B. I. ii. 325.  
Himalaya,  
6-12,000 ft.  
Simla, Mashobra,  
common (Collett). medium size, softly hairy or velvety, branches grey, arching, densely leafy; leaves ½-¾ by ¼-½ in., ovate with tip broad, nearly sessile, toothed towards the tip, rather leathery, stipules small, soon falling off; flowers ½ in. diam., white or pinkish, in small branched clusters at the end of many lateral branchlets, often all turned to one side, carpels 5, hairy when ripe, and partially sunk in the calyx.
- Spiræa vacciniifolia**,  
ROSACEÆ.  
F. B. I. ii. 325.  
Himalaya,  
6-8,000 ft.  
Simla, Elysium Hill,  
Naldera, Shali  
(Collett).  
Hazara (Barrett). medium size, branches stiff, grey, hairy; leaves 1-1½ in. stalked, ovate, minutely toothed towards the tip, stipules small, soon falling off; flowers ½ in. diam., white, in broad terminal branching woolly clusters, carpels 5, when ripe smooth, minute, half sunk in the hairy calyx.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Cydonia vulgaris,**  
**The Quince,**  
*Bih.*

ROSACEÆ.

F. B. I. ii. 369.

The Plains to  
5,500 ft.

Baluchistan

(Hughes-Buller).

medium size, bark black, branches many; leaves with smooth margin, stipules ovate, uneven-sided; flowers solitary, white or pink, large, woolly, bracts leafy, toothed, sepals club-shaped, large, spreading, toothed, petals 5, stamens 20, styles 5; fruit like an apple, dented at the top and bottom, firm, fleshy, astringent, fragrant, 5-celled, seeds many. The seeds, *Bihidanah* or *Behdanah*, are used in Indian medicine as a demulcent in dysentery and an oil is also expressed from the seeds.

**Cratægus crenulata,**  
*Gingarū.*

ROSACEÆ.

F. B. I. ii. 384.

Himalaya,  
2,500-8,000 ft.

large, spiny, rigid, evergreen; leaves 1-2 in., linear oblong, blunt, minutely toothed, shining, very leathery, stipules soon falling off; flowers white,  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., on slender stalks in short, many-flowered clusters at the end of branchlets, calyx lobes 5, blunt, petals 5, round, stalked, stamens many, carpels 5; drupe round,  $\frac{1}{4}$  in. diam., orange-red, crowned with the calyx, 5 bony one-seeded nutlets.

**Cotoneaster**  
**baecillaris,**  
*Reus, kherbaba.*

ROSACEÆ.

F. B. I. ii. 384.

Salt Range,  
1,500-2,500 ft.

Himalaya,

4-10,000 ft.

Simla, Mashobra

(Collett).

Murree.

Hazara (Barrett).

large, bark bluish-grey, branches long, slender; used for walking sticks, hence the specific name; leaves 1-3 $\frac{1}{2}$  by  $\frac{3}{4}$ -1 $\frac{3}{4}$  in., ovate, or oblong-lanceolate, sharp-or blunt-pointed, narrowed into the stalk, smooth above, downy beneath, margin flat, stalk  $\frac{1}{4}$  in., stipules minute, bristle-like, very soon falling off; flowers white,  $\frac{1}{3}$  in. diam., in large, hairy or downy branched-clusters on short lateral leafy branchlets, calyx smooth, 5-toothed, petals 5, round, stamens 20, styles 2-5, free; fruit round,  $\frac{1}{4}$  in. diam., 2-celled, dark brown to black, crowned by the calyx. Variety—*C. affinis* or *rosea* like the above, but woolly under the leaves and on the calyx, petals pink.

**Cotoneaster**  
**acuminata,**  
*Dev-reus, rauns.*

ROSACEÆ.

F. B. I. ii. 385.

Himalaya,  
4,500-12,000 ft.

Hattu (Collett).

Chor Peak.

large, bark shining, dark bluish-grey, branches long, slender; leaves 1-2 $\frac{1}{2}$  by  $\frac{1}{4}$ - $\frac{3}{4}$  in., ovate-lanceolate, long-pointed, silky beneath, margin hairy, flat, stipules minute, bristle-like, soon falling off; flowers white,  $\frac{1}{4}$  in. diam., solitary or in hairy small, nearly sessile, clusters on short lateral leafy branchlets, calyx 5-toothed, reddish inside, petals 5, round, stamens 20, styles 2-5; fruit top-shaped,  $\frac{1}{3}$  in. long, bright red when ripe, crowned by the calyx.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Cotoneaster nummularia**,  
 ROSACEÆ.  
 F. B. I. ii. 386.  
 Kashmir,  
 3-11,000 ft.  
 Baluchistan  
 (Boissier).  
 small, straggling, nearly prostrate; branches thick, woody, dividing widely; leaves  $\frac{1}{3}$ - $1\frac{1}{2}$  in., round or with the blade wider at the tip, white or densely woolly beneath, falling off in the winter, stipules minute, bristle-like, soon falling off; flowers small, white, in crowded very short, woolly 2- to 5-flowered clusters, calyx usually woolly, petals 5, round, stamens 20, styles 2-5; fruit small, round, black, crowned by the calyx.

- Cotoneaster microphylla**,  
 see Prostrate Shrubs, Alternate, Stipulate, Simple.

## PETALS UNITED.

- Sida spinosa**,  
 see Herbs, Erect, Alternate, Stipulate, Simple, Toothed.
- Sida grewioides**,  
 see Herbs, Erect, Alternate, Stipulate, Simple, Entire.
- Sida rhombifolia**,  
 see Herbs, Erect, Alternate, Stipulate, Simple, Toothed.
- Sida cordifolia**,  
 see Herbs, Erect, Alternate, Stipulate, Simple, Toothed.
- Abutilon graveolens**,  
 see Herbs, Erect, Alternate, Stipulate, Simple, Entire.
- Hibiscus hirtus**,  
 see Shrubs, Alternate, Stipulate, Lobed.

- Hibiscus rosa-sinensis**,  
**Shoe flower**,  
*Jasum*,  
*angharachindi*.  
 MALVACEÆ.  
 F. B. I. i. 344.  
 The Plains to  
 5,000 ft.  
 Baluchistan  
 (Hughes-Buller).  
 medium size, woody, branched, not prickly; leaves ovate, long-pointed, nearly smooth, toothed at the apex, stipules sword-shaped; flowers red, 3 in. diam., on stalks longer than the leaves, axillary, bracteoles 6-7, linear, half the length of the calyx, calyx bell-shaped, sepals  $\frac{3}{4}$  in., lanceolate, united below the middle, corolla of 5 petals, united to the staminal tube, staminal tube longer than the corolla and of many filaments, styles 5, spreading; capsule roundish, many seeded, but does not seed in India. The petals were used to blacken shoes, hence the name, Shoe flower, they are also used as a demulcent.

- Plumbago zeylanica**,  
 see Herbs, Erect, Alternate, Stipulate, Simple, Entire.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Jatropha curcas**,  
*Rattan jot, japhrota.*  
EUPHORBIACEÆ.  
F. B. I. v. 383.  
The Plains and  
Himalaya to  
3,000 ft.
- large, bark grey, smooth, peeling in papery flakes, young parts hairy, juice milky; leaves 4-6 by 3-5 in., broadly heart-shaped, often 5-lobed, stalk 3-9 in. long, stipules with stiff hairs; flowers yellow in terminal clusters, sepals 5, yellowish, corolla tubular, pale yellow, hairy within, lobes 5, in males stamens many, in females styles united, 2-fid; capsule 1-1½ in. long, 3-lobed, oblong, seeds large, dark brown, smooth, oblong, purgative. The juice is sometimes used to stop bleeding and cure spongy gums.

- Bridelia stipularis**, see Climbing Plants, Alternate, Stipulate, Simple.

## PETALS NONE.

- Parrottia  
Jacquemontiana**,  
*Killar, pser.*  
HAMAMELIDACEÆ.  
F. B. I. ii. 426.  
Kashmir,  
5-9,000 ft.,  
common.  
Murree (Douie).  
Hazara (Barrett).
- large, stem stout, branches many, very like the hazel (*Corylus colurna*); leaves 2-3 in. diam., appearing with the flowers, round or broad-oblong, blunt, minutely toothed, stalk ½ in. long, stipules large, soon falling off; flowers very small, greenish-white, in sessile round heads, involucrel, bracts petal-like, yellowish-white, ¾ in. long, ovate with broad tips, calyx lobes 5-7, minute, woolly, oblong or linear-narrow, petals none, stamens 5-7, styles 2; capsules minute, in round heads, 1-1½ in. diam., woolly, splitting from the top, outer coat woody, inner coat horny, separating from the outer, seed narrow-oblong, with rounded ends. The twigs are used for basket-making and form the twig bridges of Kashmir. The wood is hard and heavy and used for making walking sticks and bows.
- Casearia graveolens**,  
*Chilla, naro, pimpri.*  
SAMYPDACEÆ.  
F. B. I. ii. 592.  
The Plains, east of  
Chenab, to 5,000 ft.
- large, bark dark grey with white specks, branchlets smooth; leaves 4-8 by 2½-4 in., oblong, with rounded ends or acute, minutely toothed, stalks ½-½ in. long, stipules ½ in. long, soon falling off; flowers greenish-yellow, smooth, many clustered in the axils of leaves, calyx 5-lobed, slightly velvety at the base, persistent, petals none, stamens 8, alternating with scales, style one, stigma simple or 3-fid; capsule ¾ in., 3-valved, oblong, smooth, seeds with a fleshy coat. The fruit is thrown into streams or tanks to poison fish.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Casearia tomentosa,***Chilla, bairi.*

SAMYDACEÆ.

F. B. I. ii. 593.

The Plains to  
3,000 ft. Suni.

Sutlej Valley

(Collett).

Kahuta, Letrar

(Douie).

Patiala.

large, bark light grey to dark brown, branchlets hairy; leaves 3-7 by  $1\frac{3}{4}$ -3 in., oblong, hairy, minutely toothed, stalks short, stipules minute, soon falling off; flowers hairy, greenish-yellow, many clustered in the axils of leaves, calyx 4 to 5 segments, hairy, petals none, stamens 8, alternate with hairy scales, style one, stigma simple or 3-fid; capsule  $\frac{3}{4}$  in. long, 3-valved, fleshy, yellow, 6-ribbed when dry, seeds with a red coat. The fruit is used as a diuretic.

**Calligonum****polygonoides,***Phog, phok.*

POLYGONACEÆ.

F. B. I. v. 22.

The Plains.

The Salt Range,

2,000 ft.

Baluchistan (Lace).

large, branches many, slender, pale, nearly leafless; leaves linear, minute, stipules (ochrea) short; flowers solitary or few, with sheaths, stalks  $\frac{1}{8}$ - $\frac{1}{6}$  in., sepals 5, flat, broad, red with broad white edges, stamens 12-18; nuts  $\frac{1}{2}$ -1 in. diam., oblong, 4-angled, hard, covered with many reddish-brown stiff bristles, seed 4-angled. The flowers are cooked and eaten.

**Polygonum chinense,**

POLYGONACEÆ.

F. B. I. v. 44.

Himalaya,

4-8,000 ft.

Simla.

The Glen (Collett).

medium size, rambling, stems and branches many, changing their course in a curve from joint to joint, angled, finely grooved; leaves 5 by  $1\frac{1}{2}$  in., rough with minute prickles, oblong-lanceolate, long-pointed, stalks shortly winged above, sometimes 2-eared at the base, stipules  $\frac{3}{4}$  in. long, tubular, white with long waving points; flowers white or pink, in heads  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., on stalks forming a large level cluster, bracts flat, ovate, sepals 5, stamens 8, styles 3, united half way up; nuts 3-angled, black, enclosed in the dry or fleshy calyx.

**Polygonum****polystachyum,***Amldandi, tror.*

POLYGONACEÆ.

F. B. I. v. 50.

Himalaya,

7-12,000 ft.

Matiana.

Narkanda (Collett).

medium size, stems angled, hairy, densely hairy at the ends of branches; leaves 4-9 by  $1\frac{1}{4}$ - $3\frac{1}{2}$  in., oblong-lanceolate, lower stalked or the upper nearly sessile, long-pointed, upper surface thinly hairy or smooth, lower densely hairy, stipules tubular, very long, hairy, pointed; flowers  $\frac{1}{4}$  in. diam., white or pinkish, in terminal branching racemes 6-18 in. long, bracts flat, short, blunt, sepals 5, spreading, 3 inner broadest, 2 outer narrow, stamens 8, styles 3, only joined below; nuts small, 3-angled, pale brown, not closed up tight in the calyx. The leaves and shoots are cooked and eaten.



## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Polygonum  
tortuosum,**  
*Niāla.*

POLYGONACEÆ.

F. B. I. v. 52.

Himalaya,  
9-16,500 ft.  
Lahul.

small, branches widely separating with nodular joints, smooth, shining, red brown; leaves 1-2 in. long, pale green, turning red, sessile, leathery, from oblong to round, blunt or acute, stipules tubular, short, ending abruptly; flowers  $\frac{1}{8}$  in. long on very short velvety stalks in dense branching racemes  $\frac{1}{2}$ -1 in. long, calyx lobes oblong, erect; nut pale, 3-angled, ovate, included in the calyx. The plant is used in Lahul for dyeing cloth a yellow colour.

**Piper  
brachystachyum,**

see Climbing Plants, Alternate, Stipulate, Simple.

**Euphorbia Nivulia,**  
*Senhur, thura.*

EUPHORBACEÆ.

F. B. I. v. 255.

Himalaya to  
3,000 ft.

large, smooth, fleshy, branches nearly cylindric in groups of four, juice milky, copious; leaves 6-12 in., linear, tip rounded, or ovate-oblong with broad and rounded tip, fleshy, smooth, stipules of two prickles on one tubercle, tubercles spirally or vertically arranged; flowers in clusters of three, consisting of bracts with stamens and in the centre a stalked 3-celled capsule often hanging over, styles 3-branched; capsule  $\frac{1}{4}$  in. broad divided, into 3 cells, one smooth seed in each cell.

**Euphorbia  
antiquorum,**  
*Tidhara-schud.*

EUPHORBACEÆ.

F. B. I. v. 255.

The Plains to  
2,000 ft.

large, smooth, fleshy, branches cylindric or somewhat angled, branchlets with 3 to 5 wavy wings, juice milky; leaves few, small, on the sides of the wings, the wings ovate-oblong with broad rounded tips, fleshy, shortly stalked, stipules are 2 thorns; flowers  $\frac{1}{2}$  in. broad, yellow fringed, in bracteate clusters, outer flowers stalked, inner sessile, bracteoles many, flowers otherwise like the last species; capsule  $\frac{1}{2}$  in. diameter, cells flattened, smooth.

**Euphorbia Royleana,**  
*Thor.*

EUPHORBACEÆ.

F. B. I. v. 257.

Salt Range.  
Himalaya,  
6,000 ft.

large, fleshy, smooth, branches straight, erect, 5-7 angled, the angles are wavy wings, the branches grow in clusters close to each other giving it the name of Candelabra tree; leaves 4-6 in. along the angles of the branches, soon falling off, sessile, broad and rounded, narrowing to the base, fleshy, smooth, stipules are 2 prickles; flowers  $\frac{1}{2}$  in. diam., yellow, in sessile axillary clusters; lobes 4, broad and round, fringed, flowers otherwise like the previous species of Euphorbia; capsules  $\frac{3}{4}$  in. diam., 3-angled, stalks  $\frac{1}{4}$ - $\frac{1}{2}$  in. long.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Phyllanthus parvifolius**,  
EUPHORBIACEÆ.  
F. B. I. v. 294.  
Himalaya,  
5-6,000 ft.  
Naldera, Theog  
(Collett).  
small, bark pale, foliage feathery, branchlets look like pinnate leaves; leaves  $\frac{1}{4}$ - $\frac{1}{3}$  in., in two rows, sessile, oblong, base narrow, tip rounded, pale below, stipules triangular, very minute, slender, tapering to a point; flowers, male and female, minute,  $\frac{1}{30}$  in., brown purple, stalked, solitary, axillary, sepals 6, oblong, blunt in males, stamens 3, rarely 5, in females styles 3; capsule  $\frac{1}{8}$  in. diam., round, somewhat lobed, with a hard and brittle smooth shell, seeds minutely marked with brown, smooth mottling.
- Phyllanthus simplex**,  
EUPHORBIACEÆ.  
F. B. I. v. 295.  
The Plains  
to 5,000 ft.  
Valleys below Simla  
(Collett).  
small, branches slender, flattened; leaves  $\frac{1}{3}$ -1 in., linear, oblong, in two rows, rather leathery, pale below, nearly sessile, stipules target-shaped, with wedge-shaped lobes at the base, fringed or smooth; flowers, male and female, minute,  $\frac{1}{30}$  in., brown purple, often 3 together, sepals 6, in males broadly oblong, stamens 3, in females styles 3, reflexed; capsule  $\frac{1}{10}$  in., indented, round, smooth, with a hard and brittle shell, seeds rough with minute processes.
- Baliospermum axillare**,  
*Dant hakun*.  
EUPHORBIACEÆ.  
F. B. I. v. 461.  
Himalaya, 2-3,000 ft.  
Kashmir.  
medium size, stem stout, branching from the base, nearly smooth; leaves, upper 2-3 in., small, lanceolate, lower 6-12 in., large, oblong, ovate or rounded, sinuate, toothed or 5-lobed, stalk thick, of upper leaves short, of lower as long as the blade, stipules of 2 glandular processes; flowers, male and female, in many axillary racemes, small, in males sepals 4-6, orbicular, stamens 10-30, in females sepals 5-6, lanceolate, styles 3, 2-fid; capsule  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, of three 2-valved cells, seeds oblong, smooth, mottled. The oils from the seeds and the powdered seeds are used in Indian medicine as a drastic purgative.
- Plecospermum spinosum**,  
EUPHORBIACEÆ.  
F. B. I. v. 491.  
Salt Range and  
Himalaya to  
3,000 ft.  
large, bark smooth, yellowish-brown, spines axillary, straight, thick; leaves 2-3 in. long, oblong with rounded ends or tip broad, blunt or short-pointed, margin smooth, surfaces smooth, stipules minute, stalk short,  $\frac{1}{6}$ - $\frac{1}{3}$  in.; flowers, male and female, in axillary stalked round heads, solitary or 2 or 3 together, male heads  $\frac{1}{4}$  in. diam., bracteolate, sepals 4, concave, blunt, stamens 4, female heads  $\frac{1}{2}$  in. diam., sepals 4, fleshy; fruit 1- to 2-seeded, lobed; berry  $\frac{1}{2}$  in. diam., velvety.
- Ficus clavata**,  
URTICACEÆ.  
F. B. I. v. 520.  
Himalaya to  
4,500 ft.  
Basantpur (Collett).  
large, shoots rough; leaves 4-8 in. long, oblong, long-pointed, smooth, toothed, stalks  $\frac{1}{5}$ - $\frac{1}{3}$  in., stipules  $\frac{1}{3}$  in., lanceolate; fruit a fig, round with a knob, or ovoid and broad at the top,  $\frac{1}{2}$  in. diam., surface uneven, axillary, solitary, stalk  $\frac{1}{8}$  in. long.

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Ficus palmata**, see Shrubs, Alternate, Stipulate, Lobed.
- Boehmeria platyphylla**, see Shrubs, Opposite, Stipulate, Simple.
- Pouzolzia viminea**,  
URTICACEÆ.  
F. B. I. v. 581.  
Himalaya to 5,000 ft.  
large, bark rough, grey, thin, stringy, branches slender, branchlets velvety or with hairs, stiff, and lying in lines; leaves  $\frac{1}{2}$ -5 by  $\frac{1}{5}$ -1 $\frac{1}{4}$  in., oblong or lanceolate, toothed, long-pointed, smooth or slightly hairy above, hairy, grey-felted beneath, base 3-nerved, stalk  $\frac{1}{2}$ -2 in. long; flowers in sessile dense axillary rounded clusters, in males calyx 3-5-lobed, stamens 4, in females calyx tubular, 3-5-lobed, style slender; achenes enclosed in the calyx, angled and margined.
- Villebrunea frutescens**,  
URTICACEÆ.  
F. B. I. v. 590.  
Valleys below Simla (Collett).  
large, bark dark grey, rough, branches very slender, slightly velvety; leaves 2-8 by 1-4 in., ovate, with long tail-like point, minutely toothed except at base, 3-nerved at base, rough above, pale or white-felted below, stalks slender,  $\frac{1}{2}$ -4 in. long, stipules  $\frac{1}{2}$  in., lanceolate, velvety; flowers, male and female, crowded in bracteolate, small, sessile, or nearly sessile clusters in axils of previous year's leaves, in males calyx 4-5-fid, stamens 4-5, in females calyx ovoid, narrowed to a minute mouth, stigma linear; achenes many, black, minute, partially inserted in a white juicy mass of the calyx and bracteoles. This plant yields a strong fibre.
- Debregeasia hypoleuca**,  
*Puruni, siaru.*  
URTICACEÆ.  
F. B. I. v. 591.  
Salt Range.  
Himalaya, 3-5,000 ft.  
Simla, Mahasu (Collett).  
Kotzi, Murree Hills (Douie).  
large, bark thin, dark grey, branches white, woolly; leaves narrow, 3-6 by  $\frac{1}{2}$ -1 $\frac{1}{4}$  in., linear-lanceolate, long-pointed, toothed, bases 3-nerved, rough above, white woolly beneath, stalks  $\frac{1}{10}$ - $\frac{1}{2}$  in., stipules divided; flowers, male and female, in rounded, sessile, axillary heads, bracteolate, in males sepals 4, shorter than the bracteoles, stamens 3-5, in females calyx fleshy, ovoid, mouth contracted, minute; fruit yellow,  $\frac{1}{3}$  in. diam., fleshy, dotted with the minute achenes. This plant yields a strong fibre.
- Quercus Ilex**,  
*Balut, kharanja.*  
CUPULIFERÆ.  
F. B. I. v. 602.  
Himalaya, 3-8,500 ft.  
large, shoots stellately velvety; leaves 1-3 in., very leathery, oblong or orbicular, margin smooth or spinous-toothed, velvety above when young, woolly or very velvety beneath, or smooth when old, nearly sessile, stipules soon falling off; flowers minute, in slender short clustered spikes, males in pendulous spikes, calyx bell-shaped, 4-7-lobed, stamens 6-12, females in erect spikes,

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

enclosed in bracts, calyx minutely toothed, styles 3-5; acorn cylindric, 1-1½ in. long, tip conical, cup very thick, grey, bracts closely pressed together, tips narrow.

## SEEDS WITH A TUFT OF LONG WHITE HAIRS.

**Salix Wallichiana,***Bwir, bhains.*

SALICINEÆ.

F. B. I. v. 628.

The Plains to  
9,000 ft.Simla, Mahasu,  
Fagu (Collett).

large, bark greenish-grey, young parts velvety or woolly becoming nearly smooth; leaves 2-5 in. long, lanceolate, long-pointed, margins usually even, green and hairy above, white silky velvet beneath, nearly sessile; flowers in spikes (catkins), hanging or erect, 1-4 in. long, appearing before the leaves, 1-3 leaves at the base, bracts black, male spikes 1 in. long, stout, stamens 2, female spikes 3-5 in., styles forked; capsules ¼ in., downy, slender, shortly stalked, stigmas erect, nearly sessile.

**Salix elegans,***Bail, bitsu, bada.*

SALICINEÆ.

F. B. I. v. 630.

Himalaya,  
6-11,000 ft.Jaku, Simla  
(Collett).

large, branches dark green, young parts grey velvety; leaves 1-3, ovate or oblong, pointed or blunt, finely toothed or not, smooth above, pale beneath, shortly stalked, often attacked by an orange fungus; flowers appearing after the leaves on leafy spikes (catkins), 1½-5 in. long, bracts yellow, velvety, male spikes compact, stamens 2, female spikes slender, drooping, much longer, stigmas nearly sessile, divided; capsules ½ in., conical, shortly stalked, smooth.

**Salix hastata,**

SALICINEÆ,

F. B. I. v. 630.

Himalaya,  
9-15,000 ft.Hathu, Marali  
(Collett).

small, shoots silky, branches dark brown or black; leaves 1-3 by ¾-2 in., acute or abruptly pointed, teeth small, stalk ¼-½ in., stipules large, broadly ovate; flowers appearing with the leaves, in nearly sessile spikes, with small leaves at the base, 1-7 in. long, silky, bracts oblong, blunt, just visible in the long silky hairs, male spikes 1-1½ in. long, compact, cylindric, stamens 2, female spikes 2-7 in. long, styles thread-like, stigmas divided, spreading, fruiting spikes 7 in.; capsules ¼-½ in. long, smooth, nearly sessile, ovoid, beaked.

**Salix viminalis,****The Osier,***Bitsu.*

SALICINEÆ.

F. B. I. v. 631.

Himalaya,  
5-9,000 ft.

large, branchlets slender, flexible; leaves 4-5 in., lanceolate, long-pointed, smooth above, silvery silky beneath, margins even, turned over, stipules linear-lanceolate; flowers appearing before the leaves, in bright yellow nearly sessile spikes, 1-4 in. long, bracts tipped with brown, or black silky hairs, male spikes nearly sessile, 1 in. long, erect, stamens 2, female spikes 2-4 in. long, style slender, stigmas slender, spreading; capsules ½ in., beaked

## SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

## SEEDS WITH A TUFT OF LONG WHITE HAIRS.

**Salix oxycarpa,**  
SALICINÆ.  
F. B. I. v. 636.  
Himalaya,  
6-11,000 ft.  
Simla.

large, shoots velvety at first ; leaves 2-4 by  $\frac{3}{4}$ - $1\frac{1}{4}$  in., lanceolate, pointed, teeth small, or none, smooth above, waxy greenish-blue beneath, stipules small, semi-lanceolate ; flowers appearing before the leaves on very long, stout, sessile spikes, bracts yellow in males or brown in females, in males stamens 2, united below, in females style very short, stigmas short ; capsules large,  $\frac{1}{10}$  in., sessile, silky.

## SHRUBS WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Helicteres Isora,**

see Shrubs, Alternate, Stipulate, Simple.

**Cratægus  
Oxyacantha,**

see Trees, Alternate, Stipulate, Lobed.

**Cratægus  
Clarkei,**

see Trees, Alternate, Stipulate, Lobed.

## PETALS UNITED.

**Hibiscus hirtus,**  
MALVACEÆ.  
F. B. I. i. 335.  
The Plains.

medium size, cultivated ; leaves 3 by 2 in., ovate, long-pointed, lower leaves often 3-lobed, toothed, hairy, stalk 2 in., hairy, stipules  $\frac{1}{2}$  in., linear ; flowers  $\frac{1}{2}$  in. diam., pink or white, spreading on long-jointed stalks, calyx lobes 5, not distended, linear-lanceolate, bracteoles 5-7, awl-shaped, without appendages, shorter than the sepals, corolla  $\frac{1}{2}$  in. diam., petals 5, joined with the staminal tube, which is 5-toothed ; capsule 5-valved, round, shorter than the calyx, seeds cottony. This plant yields a strong fibre.

**Hibiscus syriacus,**  
*Gurhal.*  
MALVACEÆ.  
F. B. I. i. 344.  
The Plains.  
Baluchistan  
(Hughes-Buller).

medium size, cultivated, not prickly ; leaves 2 in. long, ovate, 3-lobed, toothed, surface nearly smooth, stalk short ; flowers red, large, showy on stalks as long as leaf stalks, axillary, bracteoles 6-7, linear, half the length of the calyx, sepals 5, ovate, lanceolate, petals 5, broad at the tip, longer than the calyx, staminal tube with anthers all the way up ; capsule oblong, blunt, slightly hairy, seeds thinly hairy. This plant yields a stronger fibre than the last.

## SHRUBS WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNITED.

**Gossypium herbaceum,**  
Cotton,  
*Kapas.*  
MALVACEÆ.  
F. B. I. i. 346.  
The Plains to  
5,000 ft.  
Baluchistan  
(Hughes-Buller).

medium size, cultivated, hairy or nearly smooth; leaves heart-shaped, 3- to 7-lobed, lobes broadly ovate, long-pointed, long-stalked, stipules ovate-lanceolate, margin smooth or toothed; flowers yellow with a purple centre or all yellow or all purple on axillary, jointed, single-flowered stalks, bracteoles 3, large, leafy, heart-shaped, not divided below the middle, calyx cup-shaped, petals 5, spreading, staminal tube 5-toothed, style with 5 stigmas; capsule ovate, 3-5 valved, seeds 5-7 in each cell, ovoid, cotton white, rarely brownish, adherent to the seeds and overlying a greenish down. This plant is of Indian origin and is cultivated to yield cotton.

**Gossypium barbadense,**  
MALVACEÆ.  
F. B. I. i. 347.  
The Plains to  
5,000 ft.

medium size, branches and leaves black dotted, branches purple; leaves 3-5 lobed, lobes oblong, long-pointed, nearly smooth, long-stalked, stipules linear-lanceolate; flowers yellow with a purple spot, on thick stalks, axillary, jointed, single flowered, bracteoles 3, very large, deeply cut, leafy, cordate, calyx as in last species, petals with one margin within and one without the next one, staminal tube and styles like the last species; capsule oval, long-pointed, 3-5-celled, seeds black, covered with easily separable white or brownish cotton. This plant, as its name implies, was introduced from America, and is grown to yield cotton.

**Gossypium arboreum,**  
MALVACEÆ.  
F. B. I. i. 347.  
The Plains to  
5,000 ft.

large, perennial, branches purple with scattered hairs; leaves nearly smooth, deeply 5-7 lobed, lobes linear-oblong, contracted at the base, long-stalked, stipules sword-shaped; flowers large, purple, rarely white on axillary, jointed, single flowered stalks, bracteoles 3, large, heart-shaped, ovate, pointed, leafy, almost undivided, calyx as in the last species, petals spreading, staminal tube and style as in the last species; capsule about 1 in. long, oblong-pointed, seeds covered with adhering white cotton over a dense green down. This plant is of Indian origin and only grown to a limited extent in gardens chiefly round temples.

**Jatropha curcas,**

see Shrubs, Alternate, Stipulate, Simple.

## PETALS NONE.

**Baliospermum axillare,**

see Shrubs, Alternate, Stipulate, Simple.

## SHRUBS WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS NONE.

**Ficus palmata,**  
*Phagwar, dudi.*  
URTICACEÆ.  
F. B. I. v. 530.  
The Plains to  
5,000 ft.  
Baluchistan  
(Hughes-Buller).

large, bark smooth, grey; leaves 3-5 in. long, round-ovate, pointed, toothed, deeply palmately 5-lobed, rough above, felted beneath, stalk  $\frac{1}{2}$ -1 in. long, velvety-stipules soon falling off, ovate, pointed, velvety; figs  $\frac{1}{2}$ -1 in. diam., usually solitary, velvety, yellow when ripe, basal bracts 3, pointed, soon falling off, stalk  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, edible.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS THREE.

**Piptanthus nepalensis,**  
LEGUMINOSÆ.  
F. B. I. ii. 62.  
Himalaya,  
7-9,000 ft.

large, bark green; leaves of 3 digitate leaflets, stalk  $\frac{3}{4}$ - $1\frac{1}{2}$  in. long, stipules small, united, broadly triangular, velvety, soon falling off, leaflets sessile, 2-4 by  $\frac{1}{2}$ -1 in., lanceolate, long-pointed; flowers yellow, 1- $1\frac{1}{2}$  in. long, crowded in hairy racemes 4-5 in. long, bracts ovate, felted, soon falling off, calyx felted, bell-shaped, 2 upper teeth broad, 3 lower narrow, divided nearly to the base, petals all stalked, 1 in. long, stamens 10, ununited; pod 3-5 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., linear, flat, stalked, seeds 3-10.

**Argyrolobium flaccidum,**  
LEGUMINOSÆ.  
F. B. I. ii. 63.  
The Plains to  
9,000 ft.

small, covered with densely silky hairs; leaves of 3 digitate leaflets, leaf stalk short, stipules minute, linear, leaflets  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, pale, silky, nearly equal, lanceolate, shortly pointed; flowers small, yellow, few in short racemes on stalks longer than the leaves, calyx deeply 2-lipped, upper lip 2-toothed, lower 3-toothed, teeth narrow, petals smooth, hardly longer than the calyx, stamens 10, united; pod  $\frac{3}{4}$ -1 in. long, densely silky, 6-8 seeded.

**Ononis hircina,**  
LEGUMINOSÆ.  
F. B. I. ii. 85.  
Himalaya,  
5-7,000 ft.  
Baluchistan  
(Lace).

small, stems velvety; leaves with 3 pinnate leaflets, leaf stalks short, stipules large, leafy, attached to the leaf stalk, leaflets oblong, blunt, toothed; flowers reddish, in pairs, forming a close terminal leafy raceme, calyx bell-shaped,  $\frac{3}{8}$  in. long, teeth linear, longer than the tube, petals stalked, stamens 10, united; pod oblong, downy, not protruding from the calyx, 2-3 seeded.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS THREE.

**Indigofera trita,**

LEGUMINOSÆ

F. B. I. ii. 96.

The Plains.

small, branches many, rigid, widely separating, thinly covered with grey hairs lying flat against the stem; leaves with 3 leaflets, leaf stalk  $\frac{1}{4}$ - $\frac{3}{8}$  in. long, stipules minute, bristle-like, leaflets oblong with a broad tip, lateral leaflets nearly sessile,  $\frac{1}{2}$ -1 in. long, opposite, terminal leaflet 1-1 $\frac{1}{2}$  in. long, stalked; flowers  $\frac{1}{2}$  in. long, purplish red, on spike-like racemes, shorter than the leaves, 6-12-flowered, calyx  $\frac{1}{12}$ - $\frac{1}{8}$  in. long, grey, teeth bristle-like, corolla  $\frac{1}{4}$  in. long, stamens 10, all united but upper one, anthers with pointed tip; pod 1-1 $\frac{1}{4}$  in. long, bending down or spreading, very firm, 4-angled, without contractions, pointed, 8-10 seeded.

**Psoralea plicata,***Bakhtmal.*

LEGUMINOSÆ.

F. B. I. ii. 103.

The Plains.

Baluchistan

(Hughes-Buller).

small, branches many, stems silvery, warty, branchlets when bare somewhat spinous; leaves shortly stalked, leaflets 3,  $\frac{1}{2}$ -1 in. long, terminal leaflet largest, lateral ones oblique, blunt, margin wavy, gland-dotted beneath; flowers 2-3 in. long, yellow in short-stalked racemes, bracts ovate, very minute, calyx  $\frac{1}{8}$  in., covered with white hairs, teeth short, the lowest is the longest, corolla slightly projecting beyond the calyx, stamens 10, all united but the upper one; pod oblong, clasped by the calyx, one-seeded.

**Taverniera nummularia,**

LEGUMINOSÆ.

F. B. I. ii. 140.

The Plains.

Rawalpindi.

Kahuta.

Baluchistan

(Boissier).

small, branches many, slender, finely grey; leaves shortly stalked, stipules minute, lanceolate, thin and dry, leaflets 3, nearly round,  $\frac{1}{4}$ -1 in. long, oblong-ovate with broad tips; flowers red,  $\frac{1}{2}$  in. long, in racemes longer than the leaves, calyx  $\frac{1}{8}$ - $\frac{1}{6}$  in., thinly silky, stamens 10, united; pod roundish, 1-4 seeded. This plant is found on stony ground.

**Ebenus stellata,**

LEGUMINOSÆ.

F. B. I. ii. 140.

Himalaya,

4-8,000 ft.

Baluchistan

(Boissier).

small, stellately hairy, covered with spreading erect thorns 1- $\frac{1}{2}$  in. long; leaves odd pinnate, shorter than the spines, leaflets 3, lanceolate,  $\frac{1}{4}$ - $\frac{3}{4}$  in. long, margins even; flowers red, sessile, in crowded heads on axillary stalks, surrounded by lanceolate bracts, calyx  $\frac{1}{2}$  in. long, covered with long brown silky hairs, teeth bristle-like, feathery, corolla much shorter than the calyx, stamens 10, united except the upper one; pod flat, oblong, thin, enclosed in the calyx tube, seed one.



## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS THREE.

**Lespedeza sericea,**

LEGUMINOSÆ.

F. B. I. ii. 142.

Himalaya,

2-8,000 ft.

Simla (Collett).

Hazara, Kashmir.

small, branches long, tough, slender, velvety; leaves directed obliquely upwards, nearly sessile, crowded, overlapping, leaflets 3, tip notched,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, wedge-shaped, usually smooth above, white silky beneath; flowers  $\frac{1}{4}$  in. long, white or yellow tinged with purple in clusters of 2 to 4 in the leaf axils, all down the branch, stalks short, bracteoles linear, minute, calyx  $\frac{1}{2}$ - $\frac{1}{8}$  in. with short white hairs, teeth awl-like, very long, corolla  $\frac{1}{4}$  in., stamens 10, all united but the upper one; pod  $\frac{1}{8}$  in., thinly silky, hardly longer than the calyx, one-seeded.

**Lespedeza juncea,**

LEGUMINOSÆ.

F. B. I. ii. 142.

Kashmir, Simla,

4-8,000 ft.

smaller than the last, but very like it, the leaves less crowded, flowers pale purple.

**Lespedeza****Gerardiana,**

LEGUMINOSÆ.

F. B. I. ii. 142.

Himalaya,

5-10,000 ft.

Simla (Collett).

small, like *Lespedeza sericea*, but leaflets rather larger, flowers twice as large, pods  $\frac{1}{10}$  in., very small, concealed in the calyx.

**Lespedeza elegans,**

LEGUMINOSÆ.

F. B. I. ii. 143.

Kashmir, 5-6,000 ft.

small, branches slender, finely downy; leaves absent at the ends of branches, leaf stalk  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, leaflets  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, oblong, blunt, smooth above, grey silky beneath; flowers in clusters of 6-8, extending low down the branches and at the top forming leafless branching racemes, calyx  $\frac{1}{8}$ - $\frac{1}{4}$  in., very velvety, teeth linear, awl-like, very long, corolla half as long again as the calyx, stamens 10, all united but the upper one; pod sessile,  $\frac{1}{8}$  in. long, oblong, downy, one-seeded.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS THREE.

**Lespedeza  
macrostyla,**

LEGUMINOSÆ.  
F. B. I. ii. 143.  
Himalaya,  
2-6,000 ft.  
Sutlej and Giri  
Valleys  
(Collett).  
Synj.

small, but larger than the four preceding species, branches woody, densely velvety; leaves shortly stalked, leaflets 3, ovate with a broad tip,  $\frac{1}{2}$  in. long and nearly as broad, nearly smooth above, densely white silky below; flowers  $\frac{1}{2}$  in. long, deep red, clustered in racemes  $\frac{1}{2}$  in. long, bracts silky, ovate, concealing the buds, calyx  $\frac{1}{8}$  in., white silky, teeth lanceolate, corolla  $\frac{3}{8}$  in. long, stamens 10, all united but the upper one; pod shortly stalked,  $\frac{3}{8}$ - $\frac{1}{2}$  in. long, narrow to both ends, point  $\frac{1}{2}$  in. long, lower half feathery, one-seeded.

**Lespedeza eriocarpa,**

LEGUMINOSÆ.  
F. B. I. ii. 144.  
Himalaya,  
3-9,000 ft.  
Simla, Mashobra,  
Matiana, Shali  
(Collett).

as large as the last species, branches many, branchlets grooved, slender, angular, silky, leaves with stalks,  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, leaflets 3, ovate, wedge-shaped with a broad tip,  $\frac{1}{2}$ -1 in. long, stiff, somewhat leathery, smooth above, velvety pale below; flowers  $\frac{1}{2}$  in. long, deep red-purple in racemes 2-4 in. long, bracts not longer than the buds, calyx  $\frac{1}{8}$  in., silky, broad, teeth linear, awl-like, corolla  $\frac{3}{8}$ - $\frac{1}{2}$  in. long, stamens 10, all united but the upper one; pod ovate,  $\frac{1}{4}$  in. long, hairy, point as long as the pod, velvety at the base, one-seeded.

**Uraria picta,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Uraria lagopus,**

LEGUMINOSÆ.  
F. B. I. ii. 156.  
Himalaya to  
6,000 ft.  
Simla.

medium size, stem and branches from densely velvety to bristly, branches slender; leaves 5-6 in. long, lower leaflets 3, sometimes one, upper 5-9, ovate, blunt, tip notched,  $2\frac{1}{2}$ - $4\frac{1}{2}$  in. long, rough above, pale and felted beneath, stipules lanceolate, long-pointed, stalk 2-3 in. long; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, purple, very many, in terminal and axillary racemes, 6-12 in. long, bracts hairy, ovate,  $\frac{1}{3}$  in. long, pointed, calyx  $\frac{1}{6}$ - $\frac{1}{5}$  in. long, corolla just protruding from the calyx, stamens 10, all united but the upper one; pod sessile, 2- to 6-jointed, hairy, flattened, folded face to face within the calyx.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS THREE.

**Uraria neglecta,**  
(of Prain).

LEGUMINOSÆ.  
F. B. I. ii. 156.  
Himalaya,  
1-3,000 ft.  
(Duthie).

medium size, slender, velvety, branches woody; this plant is like *Uraria lagopus* but differs in its foliage, bracts and pods; leaves of one leaflet (simple) or three, leaflets 3-5 in. long, ovate-oblong, net-veined, entire, blunt-pointed or notched, rarely short-pointed, base rounded, smooth above, velvety beneath, terminal leaflet largest, stalked, lateral leaflets nearly sessile, stipules long-pointed from a broad base, hairy; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., purple, many on long hairy stalks, crowded in cylindrical terminal racemes, 3-6 in. long and about 1 in. broad, bracts overlapping in bud, ovate with a hard sharp point, hairy, soon falling off, calyx  $\frac{1}{4}$  in., hairy, teeth feathered, lower long, stamens and style like the last species; pod smooth; otherwise like the last species.

**Desmodium laxiflorum,**

LEGUMINOSÆ.  
F. B. I. ii. 164.  
Himalaya to  
6,000 ft.  
Kangra (Duthie).

medium size, branches somewhat angled, covered with short hairs; leaves 4-6 in. long, leaf stalk 1-2 in., stipules lanceolate, long-pointed, leaflets 3, ovate, pointed, sometimes broad at the tip and blunt, thin or almost leathery, smooth above, flattened hairs beneath; flowers small, white, tinged with blue, many in axillary and terminal racemes, the terminal often 12 in. long, bracts minute, linear, awl-like, calyx  $\frac{1}{4}$  in. long, hairy, teeth lanceolate, longer than the tube, stamens 10, all united but the upper one; pod 1-1 $\frac{1}{2}$  in. long, covered with minute hooked hairs, slightly contracted at the joints, 6-10 joints, flattened joints easily breaking and catching on to clothes by the hooked hairs.

**Desmodium podocarpum,**

LEGUMINOSÆ.  
F. B. I. ii. 165.  
Himalaya,  
2-7,000 ft.  
Simla (Collett).

small, branches velvety, angular; leaves 3-6 in. long, stalk 1-3 in. long, stipules small, bristle-like, leaflets 3, thin, 2-3 in. long, both surfaces nearly smooth, lower pale, ovate, with a broad tip, pointed, end leaflet roundish, somewhat pointed, with a triangular base; flowers  $\frac{1}{8}$  in. long, pink, in drooping racemes, few flowered, terminal racemes 12 in. long, much branched, bracts minute, linear, calyx  $\frac{1}{4}$  in. long, teeth triangular, very short, corolla  $\frac{1}{8}$  in., stamens 10, all united but the upper one; pod  $\frac{1}{2}$  in. long with 1-2 joints, joint  $\frac{1}{4}$  in. long, upper margin of pod straight, lower deeply indented.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS THREE.

**Desmodium floribundum**,  
LEGUMINOSÆ.  
F. B. I. ii. 167.  
Himalaya to  
7,000 ft.  
Simla (Collett).

large, stem hairy, branches angular, densely velvety; leaves 4-6 in. long, stipules lanceolate,  $\frac{1}{2}$  in. long, leaflets 3, somewhat leathery, 2-4 in. long, end one largest, ovate, blunt or pointed, both surfaces hairy, lower pale; flowers  $\frac{1}{2}$  in. long, pink purple, many, in axillary and terminal racemes, 3-6 in. long, often with the flowers directed to one side only, bracts long-pointed,  $\frac{1}{4}$  in. long, fringed with hairs, calyx  $\frac{1}{8}$  in. long, corolla  $\frac{3}{8}$ - $\frac{1}{2}$  in. long; pod sessile, very hairy,  $\frac{3}{4}$ -1 by  $\frac{1}{8}$  in., upper margin slightly, lower deeply indented, joints 6-8, longer than broad.

**Desmodium oxphyllum**,  
LEGUMINOSÆ.  
F. B. I. ii. 168.  
Himalaya to  
7,000 ft.  
Simla (Baker).

medium size, branches slender, smooth, cylindrical; leaves 3-5 $\frac{1}{2}$  in. long, stalk 1-1 $\frac{3}{8}$  in. long, leaflets 3, pointed, thin or somewhat leathery, smooth above, pale grey silky beneath, end one ovate-oblong with tip broad, gradually narrowed to a point, 2-4 in. long; flowers  $\frac{1}{2}$  in. long, many, in short axillary or terminal branching racemes, bracts lanceolate, long-pointed, fringed with hairs,  $\frac{1}{4}$  in. long, calyx 1 $\frac{1}{2}$  in., nearly smooth, teeth very short, corolla  $\frac{3}{8}$ - $\frac{1}{2}$  in. long, stamens 10, all united but the upper one; pod 2-3 in. long,  $\frac{1}{4}$  in. broad, shortly stalked, joints longer than broad, 6-8.

**Desmodium tiliaefolium**,  
*Chamra, pirhi kalimort*.  
LEGUMINOSÆ.  
F. B. I. ii. 168.  
Himalaya to  
9,000 ft.  
Simla, Mashobra  
(Collett).  
Murree (Douie).

medium size, branches spreading, branchlets velvety; leaves 4-6 in. long, leaflets 3, broadly ovate, 2-4 in. long, rather leathery, end one longest, silky beneath; flowers  $\frac{3}{4}$  in. long, pink, in numerous branching racemes, up to 12 in. long, calyx  $\frac{1}{8}$  in., downy, teeth triangular, shorter than the tube, corolla  $\frac{3}{8}$ - $\frac{1}{2}$  in., stamens 10, all united but the upper one; pod sessile, broad, 2-3 in. long, joints 6-9, longer than broad, upper margin slightly, lower deeply indented.

**Desmodium sequax**,  
LEGUMINOSÆ.  
F. B. I. ii. 170.  
Himalaya,  
4-7,000 ft.  
Simla (Collett).

large, branches with dense grey velvet when young; leaves 4-7 in. long, leaflets 3, ovate-lanceolate or lanceolate, gradually pointed, hairy above, more densely below, end leaflet 2 $\frac{1}{2}$ -4 by 5 $\frac{1}{2}$ -2 $\frac{1}{2}$  in.; flowers  $\frac{1}{4}$  in. long, pink, on lateral and terminal branching racemes, calyx  $\frac{1}{12}$  in., teeth lanceolate, stamens 10, all united but the

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS THREE.

upper one ; pod sessile,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long,  $\frac{1}{12}$  in. broad, 6-8 jointed, woolly with minute hooked hairs, upper margin slightly, lower deeply indented.

**Desmodium  
concinnum**,  
LEGUMINOSÆ.  
F. B. I. ii. 170.  
Himalaya,  
1-7,000 ft.  
Simla (Collett).

large, branches drooping, velvety ; leaves  $2\frac{1}{4}$ -4 in. long, leaflets 3, green, smooth above, grey hairy beneath, end leaflet 2-3 in. long, longest ; flowers dark,  $\frac{1}{4}$  in. long, blue, in lateral and terminal racemes, calyx  $\frac{1}{12}$  in., corolla  $\frac{1}{4}$ - $\frac{1}{3}$  in., stamens 10, all united but the upper one ; pod  $\frac{3}{4}$ -1 in. long,  $\frac{1}{8}$  in. broad, shortly stalked, curved, 4-6 jointed ; downy, upper margin wavy, lower deeply notched, upper margin of each joint hollowed out.

**Desmodium  
polycarpum**,  
LEGUMINOSÆ.  
F. B. I. ii. 171.  
The Plains to  
5,500 ft.  
Valleys below Simla  
(Collett).

small, branches angular, slender, hairy ; leaves  $1\frac{1}{2}$ -4 in. long, leaflets 3, broadly ovate, nearly smooth above, hairy pale beneath, end leaflet 1-2 by  $\frac{1}{2}$ -1 in., blunt ; flowers  $\frac{1}{4}$  in. long, purple or white, racemes terminal or lateral, shortly stalked, 1-3 in. long, calyx  $\frac{1}{12}$  in., teeth long-pointed, corolla less than  $\frac{1}{4}$  in., stamens 10, all united but the upper one ; pod  $\frac{1}{2}$ - $\frac{3}{4}$  in. long,  $\frac{1}{8}$  in. broad, 5-8 jointed, straight, hairy, upper margin straight, lower slightly notched.

**Desmodium  
triflorum**,

see Prostrate Herbs, Alternate, Stipulate, Compound.

**Desmodium gyrans**,  
**The Telegraph or  
Semaphore Plant**,  
LEGUMINOSÆ.  
F. B. I. ii. 174.  
Himalaya to  
7,000 ft.  
Valleys below Simla  
(Collett).

small, branches nearly cylindric, smooth ; leaves  $3\frac{1}{2}$ - $4\frac{1}{2}$  in. long, leaflets 3, oblong-lanceolate, blunt, end one 2-4 by  $\frac{3}{4}$ -1 in., lateral leaflets often one or both wanting,  $\frac{1}{2}$  in. long, moving by jerks, especially in sunlight ; flowers  $\frac{1}{2}$  in. long, pale yellow, in axillary or terminal racemes, 3-6 in. long, buds in pairs, enclosed in the bracts, calyx  $\frac{1}{12}$  in., teeth triangular, corolla  $\frac{1}{4}$  in., side petals tinged with pink or blue, stamens 10, all united but the upper one ; pod sessile, 1- $1\frac{1}{2}$  by  $\frac{1}{8}$ - $\frac{1}{5}$  in., curved like a sickle, 6-10 jointed, upper margin even, lower slightly notched.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS THREE.

**Cajanus indicus,****Pigeon pea,***Arhar dal.*

LEGUMINOSÆ.

F. B. I. ii. 217.

The Plains to  
6,000 ft.

medium size, much cultivated as a food-grain, branches many, grooved, silky; leaflets 3, oblong-lanceolate, pointed, densely silky beneath, stipules minute, lanceolate; flowers  $\frac{3}{4}$  in. long, yellow, streaked with red veins. in branching axillary or terminal racemes, calyx  $\frac{1}{4}$  in., corolla  $\frac{3}{4}$  in., stamens 10, all united but the upper one; pod 2-3 in. long, finely downy, often marked with reddish-purple streaks, seeds 3-5, the size of a small pea, yellow and red to brown or black. This plant is cultivated for its excellent pulse.

**Rhynchosia****Pseudo cajan,**

LEGUMINOSÆ.

F. B. I. ii. 223.

Himalaya,

3-9,000 ft.

Sutlej Valley

(Collett).

Hazara, Murree.

medium size, branches slender, twiggy, white-felted, longitudinally ribbed; leaves 1-3 by 1-4 in., grey green, velvety above, white woolly beneath, leaflets 3,  $\frac{1}{2}$ -2 by  $\frac{1}{4}$ -1 $\frac{1}{2}$  in., lateral sessile, terminal stalked, largest, oblong, apex triangular, stipules minute, soon falling off; flowers  $\frac{1}{2}$  in. long, yellow, in short-stalked close axillary clusters, calyx  $\frac{3}{8}$  in., 5-toothed, lowest tooth longest, linear bristly, all densely woolly, corolla  $\frac{1}{2}$ - $\frac{3}{8}$  in., stamens 10, all united but one, the uppermost; pod 1 by  $\frac{3}{8}$  in., straight, flattened, grey woolly, 1-2-seeded.

## LEAFLETS MANY.

**Indigofera tinctoria,****The Indigo Plant,***Nil.*

LEGUMINOSÆ.

F. B. I. ii. 99.

The Plains.

medium size, cultivated, branches twiggy, tough, angular, thinly covered with silvery hairs, lying flat against the stem; leaves 2-3 in. long with a stalk  $\frac{1}{2}$ -1 in. long, stipules minute, awl-like, leaflets 7-13, shortly stalked,  $\frac{3}{4}$ -1 in. long, ovate-oblong, or nearly circular, waxy bluish-green above, silvery beneath, bristle like; flowers reddish-yellow, very small on stalked, erect, spike-like racemes, many-flowered, shorter than the leaves, bracts awl-shaped, calyx  $\frac{1}{2}$  in., silvery, teeth as long as the tube, corolla longer than the calyx, stamens 10, all united but the upper one, anthers with pointed tip; pod 1-1 $\frac{1}{2}$  in. long,  $\frac{1}{12}$  in. thick, nearly smooth, 8-12-seeded, without contractions. This plant yields the indigo of commerce.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS MANY.

**Indigofera Gerardiana**,  
*Kenthi, kathu.*  
LEGUMINOSÆ.  
F. B. I. ii. 100.  
Salt Range and Himalaya,  
2-10,000 ft.  
Simla (Collett).  
Hazara (Barrett).

medium size, branches many, branchlets silvery with hairs lying flat against the stem; leaves  $1\frac{1}{2}$ -3 in. long, shortly stalked, leaflets 17-31, opposite,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, ovate with a broad tip, pale grey beneath, short white hairs above; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, pale red or purple, in racemes 2-4 in. long, stalked, 12-20-flowered, calyx obliquely bell-shaped, silvery hairy,  $\frac{1}{2}$  in. long, corolla silvery outside, stamens 10, all united but the upper one, anthers with pointed tip; pod  $1\frac{1}{2}$ -2 in. long, nearly cylindrical, smooth, 6-10-seeded.

**Indigofera atropurpurea**,  
LEGUMINOSÆ.  
F. B. I. ii. 101.  
Himalaya to 9,000 ft.  
Sutlej Valley near Rampur (Collett).

large, branchlets nearly smooth; leaves 6-9 in. long, stalk 1-3 in. long, leaflets 1-1 $\frac{1}{2}$  in. long, 5-13, opposite, blunt, green above, pale green below; flowers dark red purple,  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, on shortly stalked racemes, 4-8 in. long, bracts  $\frac{1}{3}$  in., long-pointed, longer than the buds, calyx  $\frac{1}{10}$  in. long, teeth short, triangular, corolla  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, stamens 10, all united but the upper one, anthers with pointed tip; pod 1-1 $\frac{1}{2}$  in. long, linear, smooth, 6-10-seeded.

**Indigofera hebetepala**,  
LEGUMINOSÆ.  
F. B. I. ii. 101.  
Himalaya, 6-15,000 ft.  
Mahasu, Theog, Narkanda (Collett).

large, branchlets nearly smooth; leaves 4-6 in. long, leaflets opposite, 13-17, 1-1 $\frac{1}{2}$  in. long, ovate, blunt, a few flatlying hairs on both surfaces; flowers  $\frac{1}{3}$  in. long, crimson red, in stalked loosely 12-20-flowered racemes, bracts boat-shaped, bristle-pointed, longer than the buds and enclosing them, corolla  $\frac{3}{8}$  in. long, stamens 10, all united but the upper one, anthers with pointed tip; pod 1 $\frac{1}{2}$ -2 in. long, smooth, straight, 8-10-seeded.

**Indigofera pulchella**,  
LEGUMINOSÆ.  
F. B. I. ii. 101.  
Himalaya to 5,000 ft.  
Valley below Simla (Collett).  
Hazara (Barrett).

medium size, trunk thick; leaves 3-6 in. long, shortly stalked, leaflets 11-19, opposite  $\frac{3}{4}$ -1 in. long, ovate-oblong, broad at the tip, blunt, often notched, pale green above, greenish-blue beneath, thinly covered with flatlying grey hairs; flowers bright pink fading to violet,  $\frac{1}{3}$  in. long, in shortly stalked racemes 1-4 in. long, bracts boat-shaped with a long point, longer than the buds, calyx  $\frac{1}{12}$  in. long, silvery, teeth short triangular, corolla  $\frac{3}{8}$ -1 in., bright red, stamens 10, all united but the upper one, anthers with pointed tip; pod 1 $\frac{1}{4}$ -1 $\frac{3}{4}$  in. long, smooth, straight, 8-12-seeded.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS MANY.

**Indigofera Dosua,**

LEGUMINOSÆ.

F. B. I. ii. 102.

Himalaya,

6-8,000 ft.

Simla, Mashobra

(Collett).

small, hairy or velvety; leaves 1-3 in. long, nearly sessile, leaflets 19-35, opposite, linear-oblong,  $\frac{1}{4}$ - $\frac{1}{3}$  in., hairy pale below; flowers  $\frac{1}{2}$  in. long, bright red in stalked racemes, 1-3 in. long, bracts  $\frac{1}{4}$  in. long, silky, pointed, longer than the buds, calyx  $\frac{1}{2}$  in. long, silky, teeth triangular, hard-pointed, corolla  $\frac{3}{8}$ - $\frac{1}{2}$  in., stamens 10, all united but upper one, anthers with pointed tip; pod 1-1 $\frac{1}{4}$  in. long, straight, nearly smooth, 8-12-seeded.

**Colutea arborescens,****Bladder senna,**

LEGUMINOSÆ.

F. B. I. ii. 103.

Himalaya,

8-11,000 ft.

Simla, Mahasu,

Matiana (Collett).

medium size, nearly smooth; leaves 2-6 in. long, leaflets 9-13, ovate with a broad tip,  $\frac{1}{4}$ - $\frac{1}{2}$  in., pale green, often with a notched tip; flowers  $\frac{3}{4}$  in. long, yellow with a tinge of red, in 3- to 4-flowered racemes equal to the leaves in length, calyx bell-shaped, teeth 5, short, the lowest longest, stamens 10, all united but the upper one; pod  $\frac{1}{2}$ -2 in. long, inflated, ovoid, seeds many, kidney-shaped. The leaves are mildly purgative.

**Sesbania ægyptiaca,***Jaint, jait.*

LEGUMINOSÆ.

F. B. I. ii. 114.

The Plains to

4,000 ft.

large, soft-wooded; leaves 3-6 in. long, leaflets 21-41, smooth, linear-oblong, pale green, very shortly stalked; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, pale yellow, tinged with purple, in axillary few-flowered racemes, 3-6 in. long, calyx  $\frac{1}{6}$  in., smooth, teeth short, triangular, stamens 10, all united but the upper one; pod 6-9 in. long, beaded, flexible, twisted, 20-30-seeded, divisions between the seeds. The seeds are used as an astringent in Muhammadan medicine.

**Sesbania aculeata,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Caragana brevispina,**  
*Bakrati.*

LEGUMINOSÆ.

F. B. I. ii. 116,

Himalaya,

5-9,000 ft.

Matiana, Narkanda

(Collett).

Kashmir, Kagan

Valley (Douie).

large, spinous, hairy, branchlets finely downy, old leaf stalks persistent, 2-4 in., spine-tipped; leaves even-pinnate, 2-3 in., clustered on short thick branchlets, stipules spinous, leaflets 8-16, opposite, ovate,  $\frac{1}{4}$ -1 in., upper surface smooth, lower silky, pale; flowers 1 in. long, bright yellow, in stalked few-flowered clusters, shorter than the leaves, calyx velvety, oblique, tubular, teeth fine, spine-tipped, stamens 10, all united but the upper one; pod 2-3 in. long, flattened, velvety, straight, cylindrical, woolly within, seeds 3-4. This plant is used for fattening goats.



## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS MANY.

- Tephrosia purpurea**, see Herbs, Erect, Alternate, Stipulate, Compound.
- Tephrosia villosa**, see Herbs, Erect, Alternate, Stipulate, Compound.
- Astragalus Falconeri**, see Herbs, Erect, Alternate, Stipulate, Compound.
- Astragalus trichocarpus**, see Herbs, Erect, Alternate, Stipulate, Compound.
- Astragalus chlorostachys**, small, branches many, slender, covered with short hairs; leaves 3-6 in. long, spreading, leaflets 13-17, oblong,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, blunt, waxy greenish-blue above, white silky beneath, stipules small, lanceolate; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, yellow green tinged with lilac, many crowded in erect racemes 3-6 in. long, bracts lanceolate, hardly longer than the buds, calyx velvety, half the length of the corolla, teeth very short, stamens 10, united all but the upper one; pod  $\frac{1}{2}$  in. long, smooth, oblong, pointed, narrowed into a stalk  $\frac{1}{2}$  in. long, seeds 6-10.
- Astragalus Stewartii**, like the last, but leaves densely white silky, bracts and calyx teeth with long bristles, the former protruding beyond the buds, pods completely 2-celled, seeds 6-10.
- Astragalus longicaulis**, like the last, but leaflets 21-25, narrow-oblong, pod 10-12 seeded.
- Astragalus graveolens**, small, branches many, rod-like, rounded; leaves 4-6 in. long, leaflets 17-19, round-oblong, opposite, firm, blunt, smooth on both surfaces,  $\frac{1}{2}$ -1 in. long, stipules leafy, 1-1 $\frac{1}{2}$  in long; flowers  $\frac{3}{4}$  in. long, yellow, on long-stalked racemes, 6-12 in. long, bracts linear, smooth, calyx  $\frac{3}{8}$  in. long, tubular, smooth, teeth half the tube's length, stamens 10, all united but the upper one; pod 1-1 $\frac{1}{4}$  in. long,  $\frac{1}{4}$  in. broad, smooth, stalked, 2-celled, 12-18-seeded.
- LEGUMINOSÆ.  
F. B. I. ii. 128.  
Himalaya,  
5-14,000 ft.  
Simla, Mahasu  
(Collett).
- LEGUMINOSÆ.  
F. B. I. ii. 129.  
Hazara, 5-9,000 ft.
- LEGUMINOSÆ.  
F. B. I. ii. 129.  
Kashmir.
- LEGUMINOSÆ.  
F. B. I. ii. 131.  
Himalaya,  
4-12,000 ft.  
Hazara (Douie).  
Murree.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS MANY.

**Astragalus  
Candolleanus,**  
LEGUMINOSÆ.  
F. B. I. ii. 132.  
Himalaya,  
8-13,000 ft.

small, stems woody, a few inches long below the tufts of leaves, many woody leaf stalks of old leaves, stipules lanceolate, membranous; leaves 3-4 in. long, leaf stalks 1-2 in., finely downy, leaflets 17-25, oblong, blunt, bluish waxy green,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, more or less silky; flowers  $1\frac{1}{2}$  in. long, yellow, in nearly sessile heads, many, bracts linear, calyx  $\frac{1}{2}$  in. long, densely silky, teeth linear, stamens 10, all united but the upper one; pod  $\frac{3}{4}$ -1 in. long, curved, shortly stalked, firm, 2-celled, narrowed to both ends, 12-16-seeded.

**Astragalus  
pyrrhotrichus,**  
LEGUMINOSÆ.  
F. B. I. ii. 133.  
Hazara,  
1-6,000 ft.

small, stem short, woody, covered with long fine brown hairs, no old leaf stalks as in the last; leaves 6-12 in. long, stipules  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, lanceolate, silky, leaflets 41-51, roundish,  $\frac{1}{4}$ - $\frac{3}{8}$  in. long, blunt with a fine point, covered with long silky hairs; flowers  $1\frac{1}{2}$  in. long, yellow, in close 6-12 flowered 1-4 in. stalked heads, bracts linear, bristle-like, feathery, calyx  $\frac{3}{4}$ - $\frac{7}{8}$  in. long, very silky, teeth bristle-like, nearly as long as the tube, stamens 10, all united but the upper one; pod nearly sessile, oblong, silky, 2-celled, 10-12-seeded.

**Astragalus  
malacophyllus,**  
LEGUMINOSÆ.  
F. B. I. ii. 133.  
Himalaya,  
8-11,000 ft.

small, stem one foot long, densely velvety; leaves 2-4 in. long, stipules lanceolate,  $\frac{3}{8}$ - $\frac{1}{2}$  in. long, leaflets 31-41, densely silky, oblong, blunt,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long; flowers  $1\frac{1}{2}$  in. long, yellow, in shortly-stalked close heads, bracts linear, bristle-like, calyx  $\frac{1}{2}$  in. long, densely silky, teeth linear, stamens 10, all united but the upper one; pod  $\frac{1}{2}$  in. long, sessile, 2-celled, silky, 8-10-seeded.

**Astragalus  
polyacanthus,**  
LEGUMINOSÆ.  
F. B. I. ii. 134.  
The Plains to  
12,000 ft.  
Rawalpindi.  
Hazara (Douie).  
Murree.

small, branchlets short, armed with the old leaf stalks  $1\frac{1}{2}$ -2 in. long; leaves  $1\frac{1}{2}$ -3 in. long, stipules triangular, leaflets 9-13, oblong, slightly silky, pale bluish green,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long; flowers yellow, usually in twos, sessile, in the axils of leaves,  $1\frac{1}{4}$  in. long, calyx  $\frac{1}{2}$  in. long, tubular, silky, teeth short, linear, stamens 10, all united but the upper one; pod  $\frac{1}{2}$  in. long, oblong, sessile, 2-celled, seeds 15-20.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS MANY.

**Astragalus**  
**cicerifolius**,  
LEGUMINOSÆ.  
F. B. I. ii. 134.  
Himalaya,  
10-17,000 ft.

small, densely armed with the old leaf stalks, 3-6 in. long; leaves 3-6 in. long, leaflets  $\frac{1}{4}$ - $\frac{3}{8}$  in. long, 31-41, blunt, lanceolate with a broad tip, pale green, soon falling off, stipules lanceolate; flowers  $1\frac{1}{2}$  in. long, yellow, 3-4, on shortly, stalked heads in the axils of leaves, calyx  $\frac{1}{2}$  in. long, with a few black or brown hairs, teeth bristle-like, stamens 10, all united but the upper one; pod  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, oblong, densely silky, 2-celled, narrowed to the point, seeds 15-20.

**Astragalus**  
**multiceps**,  
*Kandiara, sarmul.*  
LEGUMINOSÆ.  
F. B. I. ii. 134.  
Himalaya,  
8-12,000 ft.

small, main stem very short, branchlets with tufts of leaves very close together, armed with the old leaf stalks  $1\frac{1}{2}$ -3 in. long; leaves  $1\frac{1}{2}$ -3 in. long, stipules  $\frac{1}{4}$  in. long, lanceolate, leaflets 21-31, oblong-ovate with broad tip,  $\frac{1}{12}$ - $\frac{1}{8}$  in. long; covered with grey silky hairs; flowers 1 in. long, yellow, one or two together in leaf axils, sessile or nearly so, bracts linear,  $\frac{1}{8}$  in. long, calyx  $\frac{1}{4}$  in. long, silky, teeth linear, bristle-like, stamens 10, all united but the upper one; pod sessile, oblong,  $\frac{1}{2}$  in. long, covered with fine grey silky hairs, seeds 12-14.

**Astragalus**  
**zanskarensis**,  
LEGUMINOSÆ.  
F. B. I. ii. 134.  
Himalaya,  
10-14,000 ft.

small, main stem short, branchlets with closely crowded leaves, lower parts armed with the old leaf stalks 3-4 in. long; leaves 3-4 in. long, lanceolate, leaflets 21-25, oblong, blunt, soon falling off,  $\frac{1}{4}$ - $\frac{3}{8}$  in. long; densely brown, silky velvet, stipules  $\frac{1}{2}$  in. long, flowers yellow,  $1\frac{1}{4}$  in. long, in few- to six-flowered shortly-stalked heads, bracts linear, bristle-like, feathery, calyx  $\frac{1}{2}$ - $\frac{5}{8}$  in. long, tubular, densely silky, teeth bristle-like, stamens 10, all united but the upper one; pod shortly stalked, seeds up to 20.

**Astragalus**  
**leptocentrus**,  
LEGUMINOSÆ.  
F. B. I. ii. 135.  
Himalaya, 14,000 ft.

small, main stem lengthened, armed with the old leaf stalks, 2-3 in. long, velvety, branches velvety, branchlets with closely clustered leaves; leaflets 21-31, oblong, blunt,  $\frac{1}{8}$ - $\frac{3}{8}$  in. long, grey brown silky velvet on both surfaces; flowers  $1\frac{1}{4}$  in. long, yellow, 1 or 2 together, without a stalk common to both, in the leaf axils, calyx  $\frac{1}{2}$  in. long, densely silky, teeth linear, bristle-like, stamens 10, all united but the upper one; pod oblong,  $\frac{1}{2}$ - $\frac{5}{8}$  in. long, sessile, silky, 2-celled, 12-14-seeded.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS MANY.

**Astragalus bicuspis,**

LEGUMINOSÆ.

F. B. I. ii. 135.

Hazara.

small, generally like *A. polyacanthus* above, branches densely silky, stem lengthened, armed with the old leaf stalks, 1-2 in. long; leaflets 13-17, oblong, blunt,  $\frac{1}{4}$ - $\frac{3}{8}$  in. long, shaggy stipules,  $\frac{1}{4}$ - $\frac{3}{8}$  in. long, lanceolate, sharp-pointed; flowers yellow, 1 in. long, 1 to 3 together, not on a common stalk, in the leaf axils, calyx  $\frac{1}{2}$  in. long, shaggy, stamens 10, all united but the upper one; pod  $\frac{3}{8}$ - $\frac{1}{2}$  in. long, shaggy, nearly sessile, oblong, 2-celled, seeds 8-10.

**Astragalus strobiliferus,**

LEGUMINOSÆ.

F. B. I. ii. 135.

Himalaya,  
8-13,000 ft.

very small, branches many, armed with the old leaf stalks 1-2 in. long; leaflets 11-13, lanceolate with a broad tip, short-pointed,  $\frac{1}{4}$ - $\frac{3}{8}$  in. long, hairy, stipules thin, triangular; flowers  $\frac{3}{8}$  in. long, yellow, sessile in the leaf axils, scarcely showing above the stipules, calyx  $\frac{1}{4}$  in. long, thick, white velvety, corolla scarcely showing beyond the calyx lobes, withering *in situ*, stamens 10, all united but the upper one; pod sessile, silky, seeds 3-4.

**Sophora****Moorcroftiana,**

LEGUMINOSÆ.

F. B. I. ii. 249.

Kashmir.

small, branches many, densely grey, downy, armed with the spinous persistent stipules; leaves  $1\frac{1}{2}$ -2 in. long, leaflets 11-17, soon falling off, broad, ovate, blunt with a bristle-like point,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, rather leathery, pale green, silky on the both surfaces; flowers  $\frac{1}{2}$  in. long, yellow, in axillary racemes, calyx  $\frac{1}{4}$  in., densely grey silky, teeth short, corolla  $\frac{1}{2}$  in., stamens 10, ununited; pod 3-4 in. long, 5-6-seeded, velvety.

**Sophora mollis,****Himalayan****Laburnum,***Kun, malan, kathi.*

LEGUMINOSÆ.

F. B. I. ii. 251.

Salt Range, Hazara.

Himalaya to

6,000 ft.

Choa Saidan Shah

(Dowie).

Baluchistan

(Aitchison).

small, branches finely grey, downy; leaves 5-10 in. long, pale green, often appearing after the flowers are in bloom, leaflets 21-41, ovate,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, nearly sessile, finely grey, downy, leaflets often altered into long curling processes; flowers  $\frac{3}{4}$  in. long, yellow, in axillary racemes 2-3 in. long, calyx  $\frac{1}{3}$  in. long, tubular, teeth short, blunt, 2 upper united, stamens 10, all free; pod stalked, smooth, 3-4 in. long, 4-6, one-seeded, 4-winged joints, often separated by linear constrictions, nearly 1 in. long. This plant is poisonous to all cattle but goats.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## LEAFLETS MANY.

**Cassia occidentalis,**  
**Coffee Senna,***Kasunda.*

LEGUMINOSÆ.

F. B. I. ii. 262.

The Plains.

Gurgaon.

Baluchistan

(Hughes-Buller).

medium size, often annual, nearly smooth, spreading; leaves 6 in. long, with a bluish-waxy gloss, stalk with a single gland at the base, leaflets 6-10, 1-3 in. long, opposite, shortly-stalked, ovate-oblong, or lanceolate, long-pointed, offensive when crushed; flowers  $\frac{1}{2}$  in., yellow, veined with orange, in axillary shortly-stalked clusters, forming branching terminal racemes, bracts  $\frac{1}{2}$  in. long, ovate, long-pointed, white tinged with pink, soon falling off, calyx 5-fid to the base, lobes blunt, petals 5, broad, nearly equal, stamens 10, 3 upper without anthers, 2 lateral pairs with small anthers, 3 lower longer and with larger anthers, anthers brown, style incurved; pod 4-5 by  $\frac{1}{3}$  in., curved, cylindrical with slight contractions, flattened, seeds 15-30, pale brown. A common weed originally introduced from America. The seeds are used by negroes as a substitute for coffee.

**Cassia Sophera,***Kasunda.*

LEGUMINOSÆ.

F. B. I. ii. 262.

The Plains.

like the last species, but larger, with larger leaves and more leaflets, petals scarcely veined, pods not flattened, nor cylindrical, with slight contractions, seeds dark brown.

**Cæsalpinia**  
**pulcherrima,**

see Trees, Alternate, Stipulate, Compound.

## FLOWERS IN SPIKES OR SMALL ROUND HEADS.

**Dichrostachys**  
**cinerea,***Vertuli.*

LEGUMINOSÆ.

F. B. I. ii. 238.

Delhi (Duthie).

large, branches rigid, thorny, branchlets many, velvety, terminating in spines; leaves bipinnate, 1-2 in. long, pinnae 16-20, stalked glands at the base of each pair, leaflets 24-30, minute, strap-shaped, sessile, leathery,  $\frac{1}{12}$ - $\frac{1}{8}$  in. long; flowers minute, yellow, on spikes, shortly-stalked, axillary, flowers at the base of the spike with white, red or purple staminodes,  $\frac{1}{2}$  in. long; pod 2-3 by  $\frac{1}{4}$ - $\frac{3}{8}$  in., 6-10-seeded, dry, smooth.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## POD-BEARING PLANTS.

## PETALS UNUNITED.

## FLOWERS IN SPIKES OR SMALL ROUND HEADS.

**Mimosa rubicaulis**, large, branches reddish when young, straggling, *Shiah kanta, ral.*  
 slender, grooved, grey downy, armed with many small  
 LEGUMINOSÆ. hooked spines; leaves bipinnate, 6-9 in., mid-rib prickly,  
 F. B. I. ii. 291. stipules awl-shaped, pinnæ 8-12, 1-2 in. long, bristle-  
 The Plains to like gland between each pair, leaflets 20-24,  $\frac{1}{4}$  in. long,  
 4,000 ft. linear-oblong, with a recurved rigid point; flowers minute,  
 Valleys below Simla reddish, turning to white in heads,  $\frac{3}{8}$ - $\frac{1}{2}$  in. broad, on short  
 (Collett). stalks in the axils of leaves at the top of the branchlets,  
 Rawalpindi. corollas  $\frac{1}{2}$ - $\frac{1}{4}$  in., stamens ununited, 8,  $\frac{1}{8}$  in. long; pod curved,  
 Valley below Murree. 3-4 by  $\frac{1}{2}$  in., 6-10-seeded, joints square, separating from the  
 sutures.

**Mimosa hamata**, like the last, but pinnæ fewer and the sutures of the  
 LEGUMINOSÆ. pods armed with large hooked prickles.  
 F. B. I. ii. 291.  
 The Plains.  
 Baluchistan  
 (Hughes-Buller).

## NOT POD-BEARING PLANTS.

## PETALS UNUNITED.

**Spiræa vestita**, see Herbs, Erect, Alternate, Stipulate, Lobed.

**Spiræa Aruncus**, see Herbs, Erect, Alternate, Stipulate, Compound.

**Spiræa sorbifolia**, large, branches smooth except at first, when rather  
 ROSACEÆ. hairy; leaves even- rarely odd- pinnate, 8-12 in. long,  
 F. B. I. ii. 324. stipules linear, awl-shaped, leaflets 12-18 or 13-19, nar-  
 Himalaya, rowly lanceolate, 2-4 in., sharply toothed, long-pointed,  
 7-10,000 ft. end one, if present, may be lobed; flowers  $\frac{1}{4}$  in. diam.,  
 Simla (Collett). white, in terminal branching racemes, 6-12 in. long, calyx  
 Hazara (Barrett). cup-shaped, 5-lobed, petals 5, rounded stamens about 20,  
 rarely united at the base; carpels 5, smooth or velvety.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

- Rubus niveus**,  
ROSACEÆ.  
F. B. I. ii. 335.  
Himalaya,  
6-10,000 ft.  
Kashmir.  
large, stem stout, branches rambling, often purple without bristles or gland-tipped hairs, young often quite smooth or felted, prickles short, scattered, pale; leaves pinnately compound, leaflets 3, rarely 5, 1-5 in. long, entire or lobulate, toothed, short- or long-pointed, smooth above, white-felted beneath, terminal leaflet sometimes cordate, leaf stalk 1-2 in., slender with 1-2 prickles, stipules thread-like; flowers  $\frac{1}{4}$ -1 in. diam., pink, axillary or in few-flowered clusters on a long stalk, nodding, bracts thread-like, calyx 5-lobed, persistent, lobes  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, ovate-lanceolate, velvety, spreading or reflexed in fruit, petals 5,  $\frac{1}{5}$ - $\frac{1}{4}$  in. diam., broad ovate, much smaller than the calyx, lobes erect, concealing the stamens, stamens very many; fruit round, large or small, of few or many, dry or fleshy drupes, acid, stones minute, pitted.
- Rubus macilentus**, see Prostrate Shrubs, Alternate, Stipulate, Compound.
- Rubus ellipticus**, see Prostrate Shrubs, Alternate, Stipulate, Compound.
- Rubus fruticosus**, see Prostrate Shrubs, Alternate, Stipulate, Compound.
- Rubus antennifer**, see Prostrate Herbs, Alternate, Stipulate, Compound.
- Rubus purpureus**, see Prostrate Shrubs, Alternate, Stipulate, Compound.
- Rubus pungens**, see Prostrate Shrubs, Alternate, Stipulate, Compound.
- Rubus biflorus**,  
*Akhreri, dher.*  
ROSACEÆ.  
F. B. I. ii. 338.  
Himalaya,  
7-9,000 ft.  
Simla (Collett).  
large, branches spreading, covered with white powder-like white-wash, prickles many, small, recurved; leaves odd pinnate, stalk 1-2 in., prickly, stipules  $\frac{1}{4}$  in. long, linear-lanceolate, leaflets 3 or 5, ovate-lanceolate, 1-1 $\frac{1}{2}$  in. long, end one longer, doubly toothed, often lobulate, velvety above, white or felted beneath; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., white, 1-3, together on slender drooping stalks, calyx lobes 5, broad, long-pointed, petals 5, lobes rounded, stamens many; fruit round,  $\frac{3}{4}$  in. diam., a column in the centre covered with 20-30 very small drupes, succulent, sweet, red, or orange, a minute stone in each drupe, pitted.

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Rubus lasiocarpus,***Pakana, guracha, kharmach.*

ROSACEÆ.

F. B. I. ii. 339.

Himalaya,

4-10,000 ft.

Simla, Mahasu

(Collett).

Hazara (Barrett).

large, branches spreading; smooth, pendulous, purple, often rooting at the tips, prickles small, flattened, few, often curved; leaves 3-10 in. long, midrib and stalks prickly, stipules  $\frac{1}{4}$  in., linear, awl-shaped, leaflets 5-9, ovate, lateral leaflets  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., end one rather larger, often lobed, green smooth above, white felted beneath; flowers  $\frac{1}{3}$ - $\frac{2}{3}$  in. diam., dark pink, in clustered woolly small branching racemes, calyx woolly, teeth 5, lanceolate, pointed, longer than the petals, petals 5, round, stamens many; fruit same as the last species, but the drupes change to black from blue, they are much eaten by Europeans and Indians.

**Potentilla fruticosa,****Shrubby Potentilla,***Spang jha, merino.*

ROSACEÆ.

F. B. I. ii. 347.

Himalaya,

8-12,000 ft.

Hattu (Collett).

medium size, branches rigid or robust, sometimes prostrate, very leafy; leaves crowded, odd pinnate, stipules large, membranous, blunt, leaflets 3-7, ovate-lanceolate,  $\frac{1}{3}$ - $\frac{2}{3}$  in., pointed, densely silky hairy above, smooth beneath; flowers yellow, many, silky, calyx lobes 5, ovate or lanceolate, petals 5, much longer than the calyx, stamens many; achenes many, hairy.

**Potentilla Salessovi,**

ROSACEÆ.

F. B. I. ii. 348.

Kashmir.

Lahul, 11-14,000 ft.

small, silky, stem woody, 1 in. thick; leaves 4-6 in., stipules membranous with a tail-like point, stalk thick; leaflets 7-9, oblong, blunt, coarsely bluntly toothed beyond the middle, white or green beneath, base rounded; flowers 1 in. diam., white, very many, stalked in branching leafy clusters, calyx woolly, lobes 5, ovate or lanceolate, petals 5, oblong-ovate with a broad termination, longer than the calyx, stamens many; achenes minute, hairy, enclosed in the hairs of the fruit base. The fine powder under the leaves causes sneezing.

**Rosa macrophylla,****Rose,***Ban Gulab, tumbi, shingari.*

ROSACEÆ.

F. B. I. iii. 366.

Himalaya,

4-10,000 ft.

Simla, Mashobra,

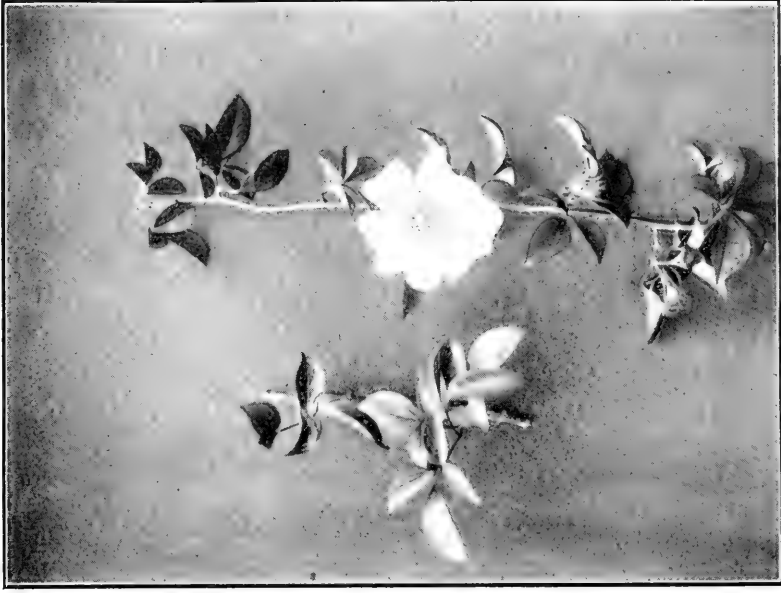
Matiana,

Narkanda (Collett).

Hazara (Barrett).

medium size, prickly or smooth, prickles straight or curved with dilated bases; leaves 2-8 in. long., stalk velvety, stipules large, broad, spreading, leaflets 7-11, nearly smooth, ovate, acute, teeth small, regular, lateral leaflets smaller the further they are from the end leaflet, which is  $\frac{3}{4}$ -3 in. long; flowers 1- $2\frac{1}{2}$  in. diam., pink, solitary or in clusters, calyx lobes 5, narrow, thread-like, longer than the petals, tip often broad, toothed, petals 5, broad, stamens many, styles ununited; fruit red, sometimes 2 in. long, crowned by the persistent calyx lobes; achenes large,  $\frac{1}{3}$  in. long, few or many.





The united petals of a rose.



The united petals of *Beaumontia grandiflora*.  
One flower in section.



## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Rosa Webbiana,**  
*Kugina, sikanda.*  
ROSACEÆ.  
F. B. I. ii. 366.  
Himalaya,  
5-13,500 ft.

medium size, smooth, prickles many,  $\frac{1}{4}$ - $\frac{3}{4}$  in., straight or curved with long bases, yellow; leaves  $\frac{1}{2}$ -2 in., stipules small, leaflets 4-10, oblong or round,  $\frac{1}{4}$ - $\frac{3}{4}$  in., base rounded; flowers 1-3 in. diam., pink, solitary, calyx round or oval, bristly, lobes long-pointed, tips broad, persistent, petals 5, heart-shaped with the broad part at the tip, stamens many, styles ununited; fruit ovoid or round,  $\frac{1}{2}$ -1 in. diam., crowned by the persistent calyx lobes; achenes many,  $\frac{1}{8}$  in. long, pale.

**Rosa sericea,**  
ROSACEÆ.  
F. B. I. ii. 367.  
Himalaya,  
9-13,000 ft.  
Hattu, Baghi  
(Collett).  
Chor.

small, branches quite smooth and unarmed or prickly only or bristly and glandular, prickles  $\frac{1}{2}$ -1 $\frac{3}{4}$  in., turned up, brown, broad, flattened; leaves 1-3 in., close set, stipules oblong, thin, with a short-pointed tip, leaflets 7-9, oblong, acutely toothed towards the rounded tip, silky beneath; flowers 2-2 $\frac{1}{2}$  in. diam., solitary, white or straw colour on short lateral shoots, calyx tube bristly glandular, lobes 5, velvety, ovate-lanceolate, persistent; petals 4, cordate with broad tips, stamens many, styles ununited; fruit nearly round, or pear-shaped, silky or smooth, crowned by the persistent calyx lobes; achenes few,  $\frac{1}{8}$  in. long.

**Aralia cachemirica,**  
*Banakhor, churial.*  
ARALIACEÆ.  
F. B. I. ii. 722.  
Kashmir,  
9-12,000 ft.  
Himalaya,  
7-8,000 ft.  
Theog, Narkanda  
(Collett).  
Changlagalli (Douie).

medium size; leaves pinnate or bi- or tri-pinnate, end pinna with 5-9 leaflets, leaflets 3 $\frac{1}{2}$ -1 $\frac{1}{2}$  in., oblong, long-pointed, heart-shaped at the base, minutely toothed, hairy above, smooth beneath; flowers small, white, many, in round umbels, in simple or branching racemes, small or 12 in. long, calyx 5-toothed, petals 5, reflexed, stamens 5; fruit small, succulent; drupe round, black,  $\frac{1}{10}$  in. diam., 5-ribbed, containing 5 bony one-seeded nuts.

## PETALS UNITED.

**Leea aspera,**  
*Kumala, holma.*  
VITACEÆ.  
F. B. I. i. 665.  
The Plains to  
7,000 ft.  
Simla (Collett).  
Kashmir.

large, robust, branches grooved, spreading; leaves large, lower bipinnate, upper pinnate or the lower pinnae 3-lobed, leaflets 3-6 in. long, heart-shaped at the base, oblong, sides not parallel, long-pointed, both surfaces rough, round-toothed, stipules sheathing; flowers yellow green, small in spreading leaf-opposed, nearly smooth clusters, calyx 5-toothed, petals 5, oblong, united and also to the staminal tube, stamens 5, united below into a 5-lobed

## SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNITED.

tube, style short ; berry  $\frac{1}{3}$  in. diam., nearly round, flattened at the top, 3-6-celled and seeded, black, succulent, edible, seeds wedge-shaped.

## PETALS NONE.

**Zanthoxylum  
alatum,**  
*Tejbal, timru.*  
RUTACEÆ.  
F. B. I. i. 493.  
Himalaya to  
6,000 ft.  
Simla (Collett).  
Kasauli.  
Hazara (Barrett).

large, strongly aromatic, bark corky, strong prickles on the branches, leaf stalks and midribs of leaves and leaflets, branchlets dotted with white specks ; leaves unequally pinnate, 2-6 in. long, two stipular spines at the base of the winged leaf stalk, leaflets 5-9, opposite, sessile, lanceolate, 2-4 in. long, gland-dotted, margin with a few small teeth ; flowers small, yellow, crowded on small velvety lateral branching racemes, calyx 6-8 lobed, petals none, stamens 6-8 in male flowers, 1 to 5 oblique one-celled carpels in female flowers ; fruit of 1-5, small, pale, red, round drupes, one seed in each carpel, black, shining, used as a condiment ; the branches are used as tooth brushes.

**Phyllanthus  
parvifolius,**

see Shrubs, Alternate, Stipulate, Simple, Petals None.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Anona squamosa,**  
**Custard Apple,**  
*Sharifa, sitaphal.*  
ANONACEÆ.  
F. B. I. i. 78.  
The Plains as far  
north as Gurdaspur  
(Watt).

large, nearly evergreen ; leaves 2-3 by  $\frac{3}{4}$ -1 $\frac{1}{2}$  in., oblong, blunt or long-pointed, base narrowed, bluish-green beneath, velvety when young, membranous, stalked ; flowers 1 in. long, white, solitary on short branchlets, sepals 3, small, triangular, united at the base, petals 3, outer 1 in. long, narrow-oblong, fleshy, inner 3 minute or wanting, stamens many, style one ; fruit 2-4 in. across, yellowish-green, fleshy, edible, covered with a yellowish-green skin, tubercled like crocodile skin, seeds many, oblong, brownish-black, with a swelling at the notch. A native of the West Indies, cultivated for its fruit.

**Farsetia  
Jacquemontii,**  
*Faridmuli, lathia.*  
CRUCIFERÆ.  
F. B. I. i. 140.  
The Plains in sandy  
places, Sirsa.

small. branches rigid, hoary, with hairs flattened to the twigs, twiggy ; leaves  $\frac{1}{4}$ -1 in., linear ; flowers large, in spikes, sepals 4, hairy, pointed, pouched at the base, petals 4, half as long again as the sepals with long stalks ; stamens 6 ; capsules 1 $\frac{1}{2}$ -2 in. by  $\frac{1}{8}$ - $\frac{1}{6}$  in., flattened, linear, sessile, valves flat, seeds nearly round, broadly winged, in two series.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Farsetia Hamiltonii**,  
*Faridbuti*.  
CRUCIFERÆ.  
F. B. I. i. 140.  
The Plains.  
Shahpur (Douie).  
Patiala.

small, branches more rigid and woody and more densely velvety than the last species, long, erect and twiggy; leaves linear, very narrow; flowers small in long spicate racemes, sepals 4, hairy, blunt, margins thin, papery, petals 4, ovate, with a broad tip, a little longer than the sepals, long-stalked, pink, stamens 6; capsules linear,  $\frac{1}{2}$ -1 by  $\frac{1}{20}$  in.; seeds as above but in one series.

**Farsetia ægyptiaca**,  
*Muli*.  
CRUCIFERÆ.  
F. B. I. i. 140.  
Salt Range  
(Edgeworth).  
Choa Saidan Shah  
(Douie).

small, branches rigid, hoary, forked, twiggy; leaves linear; flowers large, in spikes, not close set, calyx cylindrical, sepals 4, blunt,  $\frac{1}{4}$ - $\frac{1}{3}$  in., hoary, petals 4, linear, blunt, twice as long as the sepals, stamens 6; capsules  $\frac{1}{2}$ - $\frac{3}{4}$  by  $\frac{1}{8}$ - $\frac{1}{4}$  in., broad, erect, seeds as above in two series.

**Dipterygium**  
**glaucum**.  
CRUCIFERÆ.  
F. B. I. i. 164.  
The Plains.  
Multan  
(Edgeworth).

small, branches many, widely separating, smooth, or leaves and stem slightly rough with sticky glands; leaves  $\frac{1}{6}$ - $\frac{1}{2}$  in. long, ovate, oblong, shortly stalked; flowers small, few in bracteate racemes, sepals 4, short, petals 4, stamens 6, free; capsules  $\frac{1}{6}$  in., drooping, wrinkled transversely, seeds solitary, winged.

**Physorhyncus**  
**brahvicus**,  
CRUCIFERÆ.  
F. B. I. i. 165.  
Salt Range (Vicary).

small, smooth, leafy; leaves 1-4 in., fleshy, ovate, oblong, lower stalked, upper linear-lanceolate, narrowed at the base, running down the stem slightly, with ear-shaped lobes; flowers large, white, in long racemes, sepals 4, erect, petals 4, stamens 6; capsules 2-jointed,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, lower joint seedless, upper large, ovoid, 2-celled, cells 2-4-seeded with long conical beak, seeds flattened.

**Xylosma**  
**longifolium**,

see Trees, Alternate, Exstipulate, Simple.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Tamarix gallica,**  
**Tamarisk,**  
*Jhau, pilchi, lai.*  
 TAMARISCINEÆ.  
 F. B. I. i. 248.  
 The Plains.  
 Delhi, Lahore.

large, branches slender, jointed; leaves minute, scale-like, not sheathing, overlapping at first, distant later, usually green; flowers  $\frac{1}{8}$  in. diam., shortly stalked, crowded in long slender spiked branched racemes, white or pink, bracts shorter than the flowers, half sheathing, membranous, short-pointed, sepals persistent, triangular, blunt, petals longer than the sepals, stamens 5, styles 3; capsules  $\frac{1}{4}$  in. long, narrowed from an ovoid base.

**Tamarix salina,**  
*Ghwa.*  
 TAMARISCINEÆ.  
 F. B. I. i. 248.  
 North-West  
 Frontier Province.  
 Esakheyl.

medium size, smooth, bluish-green, leaves minute, scale-like, heart-shaped, somewhat sheathing, bracts equaling the flowers in length, linear, stigmas sessile; in other respects like the last species. The twigs of this and the other species are used for weaving baskets. The galls are used in tanning and the manna as a mild aperient.

**Tamarix dioica,**  
*Kachlei, panj-  
 pilchi.*  
 TAMARISCINEÆ.  
 F. B. I. i. 249.  
 The Plains.

small, branches long, drooping; leaves minute, scale-like, sheathing, greyish-green with a broad white margin, smooth, long-pointed; flowers in two sexes, purple-pink in rather short compact stalked spikes, bracts nearly as long as the flowers, triangular, long-pointed, reddish-brown, stamens 10, styles 3; capsule oblong, tapering, twice as long as the withered sepals and petals.

**Myricaria germanica,**  
*Ghaz, bis, humbu.*  
 TAMARISCINEÆ.  
 F. B. I. i. 250.  
 Hazara, 7-8,000 ft.  
 (Barrett).

medium size, branches many, parallel to the stem, stem slender, with fine parallel lines, with bluish-green waxy gloss when young; leaves small, linear-lanceolate; flowers small, pink-purple, on short stalks in lateral or terminal spike-like racemes, 1-18 in. long, bracts ovate-lanceolate, three to four times as long as the short flower stalks, with broad thin margins, sepals 5, ununited, lanceolate, equal in length to the petals, petals 5, stamens 10, alternately long and short, united for half their length, stigmas 3, sessile; seeds many, with a tuft of hairs, usually stalked.

**Skimmia Laureola,**  
*Ner, barru.*  
 RUTACEÆ.  
 F. B. I. i. 499.  
 Himalaya,  
 6-10,000 ft.  
 Simla, Mahasu  
 (Collett).  
 Murree, Hazara  
 (Barrett).

small, strongly aromatic, evergreen, bark white, stringy; leaves 3-6 in. long, oblong, lanceolate, smooth, gland-dotted, shining, crowded at the end of branches; flowers male and female  $\frac{1}{2}$  in. diam., white or yellow, in crowded erect terminal branching racemes,  $1\frac{1}{2}$ -2 in. long, calyx 5-lobed, persistent, petals 4-5, oblong, much longer than the calyx, stamens 4-5, imperfect in female flowers, stigma 2-5-lobed; drupe  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, red, ovoid, with 2-5 one-seeded stones. The leaves are used for flavouring food.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Citrus medica,**  
**Lemon or Lime,**  
*Nimbu.*

RUTACEÆ.

F. B. I. i. 514.

The Plains.

large, bark greenish-grey, smooth, long axillary spines ; leaves jointed to stalk, stalk often winged, 3-6 in. by 1-2½ in., ovate, lanceolate, smooth, leathery ; flowers ½-1 in. long, white, sweet-scented, solitary or in axillary clusters, calyx cup-shaped, 3-5-toothed or entire, petals 4-8, often tinged with pink, oblong, fleshy, gland-dotted, stamens 20-40 ; fruit 2-4 in. long, ovoid, oblong or round, rind thick or thin, yellow when ripe, pulp cellular and juicy, usually acid.

**Olax nana,**

OLACINEÆ.

F. B. I. i. 576.

Himalaya to

5,000 ft.

small, dwarfed by jungle fires, root stock woody with annual ribbed shoots 2 ft. high ; leaves 1½-2½ by ¼-½ in., oblong-lanceolate, nearly sessile, smooth and light green above, greenish with a bloom beneath, margins turned back ; flowers nearly ½ in. across, solitary, calyx minute, increases in fruit, petals 3, oblong-lanceolate, stamens 3, staminodes 5-6, bifid, longer than the stamens ; fruit the size of a pea, round, one-seeded.

**Gymnosporia or**  
**Celastrus**

**Royleana or spinosa,**  
*Gwala darim, kandu.*

CELASTRINEÆ.

F. B. I. i. 620.

Himalaya to

3,000 ft.

Salt Range.

Hazara (Barrett).

medium size, smooth, densely branching, stiff, straight, axillary spines not bearing leaves ; leaves ¾-1½ in. by ½-1 in., smooth, ovate or round, toothed ; flowers many, white, in short axillary clusters, calyx lobed, lobes obtuse, minutely fringed, petals 5, oblong, stamens 5 ; capsule 3-angled, ¼ in. diam., cells 1-seeded, seeds 3, half enclosed in a red fleshy outer coat.

**Gymnosporia**

**Wallichiana or**  
**Celastrus rigida,**  
*Pataki.*

CELASTRINEÆ.

F. B. I. i. 621.

North-West

Frontier Province.

Peshawar.

Rawalpindi.

medium size, branches much zig-zagged, spines 1-8 in. long, bearing leaves and flowers, leaves 1-1½ by ¾-1 in., ovate with a broad tip, round toothed, leathery, flowers in clusters, shorter than the leaves, fruit somewhat inflated, three and one-seeded cells ; in other respects like the last species.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Gymnosporia** or  
**Celastrus montana**,  
*Talkar, mareila,*  
*sherawane.*

CELASTRINEÆ.

F. B. I. i. 621.

The Plains to  
2,000 ft.

large, branches stiff and nearly straight, spines axillary, straight, 1-2 in. long, often bearing leaves and flowers, leaves 1-3 by  $\frac{1}{4}$ -2 in., linear, ovate to roundly ovate, minutely toothed or not, leathery, flowers small, greenish-white, axillary or on the spines, much branched clusters, shorter than the leaves, bracts, calyx lobes and petals fringed, fruit round or ovoid, black, size of a pea, 1-3-celled, cells one-seeded; in other respects like the *ast* species.

**Rhus Cotinus**,  
**The wig tree**,  
**Venetian Sumach**,  
*Tung, bhan, tittri.*

ANACARDIACEÆ.

F. B. I. ii. 9

Himalaya,  
3-5,000 ft.

Hazara (Barrett).  
Valleys below Simla  
(Collett).

large, bark reddish-brown, branchlets red, young parts grey woolly; leaves 2-4 by  $1\frac{1}{2}$ -3 in., stalks,  $1\frac{1}{2}$ -3 in. long, ovate or round, polished above, slightly woolly beneath; flowers very small,  $\frac{1}{10}$  in. diam., pale yellow, few on very slender long stalks forming loose feathery, pale purple bunches, sepals linear, oblong, petals longer than the sepals, stamens 5, styles 3; drupe  $\frac{1}{5}$  in. long, compressed, reddish, covered with white hairs. The wood under the name of Young Fustic is much used in Europe for dyeing wool scarlet or orange. The bark and leaves are used for tanning.

**Crotalaria Burhia**,  
*Khip, sis, kharsan.*

LEGUMINOSÆ.

F. B. I. ii. 66.

The Plains to  
4,000 ft.

Sargodha (Douie).

small, branches numerous, stiff, ending sometimes in spines, with fine pale felt; leaves  $\frac{1}{4}$ - $1\frac{1}{2}$  in. long, few, scattered, almost sessile, silky, ovate or lanceolate; flowers yellow, 6-12, in terminal racemes, flower stalks very short with 2 bracteoles, calyx densely silky, teeth lanceolate, corolla yellow with reddish veins, hardly protruding, stamens 10, united, style long, hairy above; pod 2-4-seeded, hardly longer than the calyx, oblong, hairy. The fibre is sometimes used in place of hemp.

**Crotalaria albida**,

LEGUMINOSÆ.

F. B. I. ii. 71.

The Plains to  
7,000 ft.

Simla (Collett).

small, branches many, firm, round, slender, somewhat silky; leaves nearly sessile, 1-2 in. long, firm, gland-dotted, narrow, oblong, smooth above, silky beneath; flowers  $\frac{1}{3}$  in. long, pale yellow, usually in terminal racemes, calyx top-shaped,  $\frac{1}{4}$  in. long, thinly silky, longer in fruit, teeth long, 3 lower linear, 2 upper broader and blunter, corolla pale yellow, rarely tinged with lilac, hardly protruding, stamens 10, united, style long, hairy above pod  $\frac{1}{2}$ - $\frac{3}{8}$  in. long, sessile, twice as long as the calyx, smooth, oblong, seeds 6-12.



## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Crotalaria juncea**, medium size, cultivated, branches stiff, slender, silky; leaves  $1\frac{1}{2}$ -3 in. long, at somewhat distant spaces, linear or oblong, both surfaces shining with short brown silky hairs; flowers 1 in. long, in 12-20-flowered racemes, 6-12 in. long, bracts minute, linear, calyx  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, covered with rusty velvety hairs, teeth very deep, linear, corolla bright yellow, smooth, protruding a little out of the calyx, stamens 10, united, style long, hairy above; pod  $1-1\frac{1}{4}$  in. long, covered with silky hairs; seeds 10-15. The fibre is much used for making cordage and sacking.  
*Sanai, arjha san.*  
LEGUMINOSÆ.  
F. B. I. ii. 79.  
The Plains.
- Itea nutans**, large, bark dark grey; leaves 4-6 by  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., ovate, oblong, long-pointed, glandular-toothed, leathery, dark green, shining above, leaf stalk  $1-1\frac{1}{2}$  in. long, stout; flowers  $\frac{1}{10}$  in. long, white, in clusters of 3-7, forming velvety drooping racemes 4-8 in. long, calyx velvety, tube bell-shaped, lobes 5, persistent, petals 5, twice the length of the calyx lobes, linear, erect, stamens 5; capsule  $\frac{1}{5}$  in. long, separating into 2 valves through the cell partition and the style, seeds many.  
*Lelar, garkath.*  
SAXIFRAGACEÆ.  
F. B. I. ii. 408.  
Himalaya,  
3-6,000 ft.  
Sutlej Valley, Suni  
(Collett).
- Osbeckia stellata**, see Shrubs, Opposite, Exstipulate, Simple.
- Lagerstrœmia indica**, see Shrubs. Opposite, Exstipulate, Simple.
- Opuntia Dillenii**, medium size, stem flat or round or angled, fleshy, armed with barbed bristles in clusters; leaves fleshy, soon falling off; flowers orange red, solitary, sessile, calyx lobes 3-many, small, overlapping, petals many, free or shortly united below, stamens many; fruit one-celled, pulpy, seeds many, oblong or kidney-shaped; coccus cacti, the cochineal insect, lives on this plant. It is much used for hedges.  
**Prickly Pear,**  
**Cactus,**  
*Nagphana.*  
CACTACEÆ.  
F. B. I. ii. 657.  
The Plains to  
7,000 ft.  
Native of South  
America.
- Andrachne** small, branches slender, round, smooth; leaves  $1-3\frac{1}{2}$   
**cordifolia**, by  $\frac{1}{2}$ - $1\frac{1}{2}$  in., long-stalked, thin, margin smooth, ovate, oblong, tip rounded, base rounded, stalk  $\frac{1}{4}$ - $\frac{3}{4}$  in. long; flowers  $\frac{1}{6}$  in. diam., green, on long, slender axillary stalks, the males in clusters, females solitary, calyx 5-lobed, petals 5, stamens 5, females without petals, styles 3, divided into 2 long branches; fruit  $\frac{1}{4}$  in. diam., round with a depression above, seeds 6, triangular.  
*Kurkni, gurguli, bersu.*  
EUPHORBACEÆ.  
F. B. I. v. 283.  
Himalaya,  
5-8,000 ft.  
Simla, Mashobra  
(Collett).  
Changlagalli (Douie).

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

*Flowers, minute, in heads.***Vernonia cinerascens,**  
COMPOSITÆ.F. B. I. iii. 237.  
The Plains.  
The Salt Range.  
Waziristan.  
Baluchistan.

medium size, much branched, grey velvety, branches grooved, white; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., oblong, rounded, tapering to a narrow base, often with an abrupt tip, sometimes toothed, gland-dotted, velvety on both surfaces; flowers  $\frac{1}{4}$  in. diam., purple, in solitary heads, on the ends of the branches of flat-topped clusters, bracts round the heads,  $\frac{1}{8}$  in., in many series, linear, inner longest, calyx of hairs (pappus)  $\frac{1}{8}$  in., white, persistent, corollas smooth, slender, all tubular, teeth 5, narrow, anther bases blunt, style-arms long, hairy all round, short-pointed; achenes (seeds)  $\frac{1}{10}$  in., 5-ribbed, tapering to the base, covered with rather stiff hairs.

**Pluchea ovalis,**  
COMPOSITÆ.F. B. I. iii. 272.  
The Salt Range  
(Aitchison).

large, branches with broad green toothed wings; leaves 2- $2\frac{1}{2}$  by  $\frac{3}{4}$ -1 in., sessile, oblong, coarsely toothed, tips rounded; flowers white, yellow or lilac in heads in compound hairy terminal leafless flat clusters, heads  $\frac{1}{4}$  in. diam., discoid, flowers all tubular, outer bracts of heads short-pointed; seeds small, 4-5-angled, smooth, tuft of hairs on top, slender.

**Pluchea Wallichiana,**  
COMPOSITÆ.F. B. I. iii. 272.  
The Plains  
(Falconer and  
Stewart).

large, velvety with glands and hairy, branches not winged; leaves 1-2 in. long, sessile, oblong and ovate with broad tip, slightly toothed, rigid, nerves prominent above and below; flowers white, yellow or lilac in heads in compound terminal flat leafless clusters, heads  $\frac{1}{4}$  in. diam., flowers all tubular, outer bracts of heads woolly, somewhat pointed. seeds small, 4-5-angled, tuft of hairs reddish.

**Pluchea lanceolata,**  
*Sarmeî, reshamî.*  
COMPOSITÆ.F. B. I. iii. 272.  
The Plains.

small, greyish, hairy, velvety, branches slender; leaves 1-2, oblong, sessile, narrowed to the base, margin smooth or toothed at the tip, nerves oblique, prominent on both surfaces; flowers white, yellow or lilac in heads in compound flat leafless clusters, heads  $\frac{1}{4}$  in. diam., longer than broad, bracts of heads short-rounded, blunt, outer ones with grey hairs. A weed of cultivation. The leaves are aperient and are used to adulterate senna.

**Pluchea arguta,**  
COMPOSITÆ.F. B. I. iii. 273.  
The Plains  
(Aitchison).

medium size, branches stout, velvety with glands; leaves 1- $1\frac{1}{2}$  by  $\frac{1}{6}$ - $\frac{2}{3}$  in., lanceolate or ovate with broad tips, coarsely toothed, base with ear-shaped projections or not; flowers white, yellow or lilac in heads, stalked solitary or few, almost in clusters, heads  $\frac{1}{2}$ - $\frac{1}{2}$  in. diam., bracts of heads narrow, sharp-pointed, rigid.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

*Flowers, minute, in heads.***Inula Cappa,**

COMPOSITÆ.

F. B. I. iii. 295.

Himalaya,

4-6,000 ft.

Valleys below Simla  
(Collett).

Hazara (Barrett).

medium size, scented, branches thick, densely woolly as also under surface of leaves and flower clusters; leaves 3-6 by 1-2½ in., leathery, sessile or shortly-stalked, toothed, silky velvety beneath, teeth close set; flowers all tubular or a few radiate, in many heads, ⅓ in. diam., yellow, in rounded clusters, bracts round the heads linear, stiff, sharp-pointed, outer ones shortest, seeds (achenes) ⅓ in., silky, tufts of hairs (pappus) ⅓ in., grey, hairs thickened at the ends.

**Inula cuspidata,**

COMPOSITÆ.

F. B. I. iii. 296.

Himalaya,

4-7,000 ft.

Simla (Collett).

medium size, nearly smooth, branches slender; leaves 5 by 2 in., stalked, ovate-lanceolate, thin, long-pointed, young velvety, old rough above; flowers ⅓ in. diam., yellow, outer ones radiate in many heads, on slender stalks crowded in broad terminal clusters, bracts of heads linear, sharp-pointed, stiff, seeds ⅓ in., tufts of hairs (pappus) ⅓ in., yellowish, hairs thickened at the tip.

**Pulicaria crispa,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Pulicaria glaucescens,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

*Flowers not in heads.***Gaultheria nummularioides,**

see Prostrate Shrubs, Alternate, Exstipulate, Simple.

**Gaultheria tricophylla,**

see Prostrate Shrubs, Alternate, Exstipulate, Simple.

**Cassiope fastigiata,**

ERICACEÆ.

F. B. I. iii. 459.

Himalaya,

10-14,000 ft.

Hattu (Collett).

Marali.

small, dense tufts of parallel erect branches, 6-12 in. high; leaves ⅓ in., ovate, oblong, overlapping, pressed against the branches, thickened on the back, hairy; flowers white, on solitary stalks or in twos or fours, sepals ⅓-⅓ in., short-pointed, nearly smooth, margins often toothed and membranous, corolla ¼-½ in., widely bell-shaped, fleshy; capsule round, point depressed.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Rhododendron  
campanulatum,**  
*Cherailu, sarngar,*  
*gaggar yurmi.*  
ERICACEÆ.  
F. B. I. iii. 466.  
Himalaya,  
9-14,000 ft.  
The Chor (Collett).  
Marali.

medium size, bark thin, grey; leaves 3-5 in. long, oblong, rounded at both ends, crowded at the end of branches, leathery, dark green, smooth above, cinnamon-felted beneath; flowers mauve, in large clusters, stalks as long as the corolla tube, bracts silky, calyx teeth broadly triangular, small, corolla bell-shaped, 1-1½ by ½-1 in., lobes 5, stamens 10; capsule cylindrical, 1 in. long, curved, seeds linear, oblong, flattened. The powdered leaves are mixed with tobacco and used as snuff in colds.

**Rhododendron  
lepidotum,**  
*Talisfur, talisri.*  
ERICACEÆ.  
F. B. I. iii. 471.  
Himalaya,  
8-15,000 ft.  
Simla, Jacko, Hattu  
(Collett).  
Marali.

small, scented, young parts covered with silvery and golden scales, branches rough; leaves ¾-1 in. long, ovate with broad tips, base narrow, nearly sessile at the ends of branches, smooth above, silvery beneath; flowers red, yellow or purple, solitary or 2-3 together, stalks ½-1½ in. long, very rough, calyx teeth oval, corolla tube short, lobes round, spreading, ⅕-⅙ in. long, stamens 8-10, hairy below; capsule ¼-⅓ by ⅙-¼ in., erect. The smoke of the leaves is used in Indian medicine as a stimulant.

**Rhododendron  
Anthopogon,**  
*Nichni, kai zaban,*  
*tazak tzun.*  
ERICACEÆ.  
F. B. I. iii. 472.  
Himalaya,  
11-16,000 ft.  
The Chor (Collett).  
Marali.

small, scented, branchlets rough and scaly; leaves 1-1½ in. long, broad, oblong, shining above, cinnamon-felted beneath, stalk ⅕-¼ in. long; flowers yellowish-white in small terminal clusters, calyx teeth oblong, thin, margins hairy, corolla tubular, mouth dilated, tube ⅕ in. long, lobes ovate with broad tips, spreading, stamens 6-8; capsule ⅕ in. long, ovoid. The leaves are used for the same purpose as those of the last species.

**Mæsa indica,**

see Trees, Alternate, Exstipulate, Simple.

**Myrsine africana,**  
*Bebrang, kakhum,*  
*shamshad.*  
MYRSINÆÆ.  
F. B. I. iii. 511.  
Salt Range.  
Himalaya,  
1-8,500 ft.  
Simla (Collett).  
Murree (Douie).

small or large, branchlets rusty velvety; leaves ½-1½ in. long, nearly sessile, lanceolate, gland-dotted, sharply toothed; flowers small, nearly sessile, in clusters of 3-8, calyx 4-lobed, free, persistent, corolla 4-lobed, rotate, stamens 4, stigma rounded, style 2-4-branched; berry ⅓ in. diam., red, round, edible. The fruit is sold in bazaars as a strong purging vermifuge.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Myrsine semiserrata**, large, bark ashy, smooth; leaves 2-5 by  $\frac{1}{2}$ -1 $\frac{1}{2}$  in.,  
*Parvana, gogsa.* smooth, leathery, lanceolate, sharply-toothed towards the tip, gland dotted, stalk  $\frac{1}{10}$ - $\frac{1}{4}$  in. long; flowers in axillary clusters, stalks  $\frac{1}{4}$  in. long, calyx and corolla 4- rarely 5- lobed,  $\frac{1}{10}$  in. diam., stamens 4, rarely 5, style with 2-4 flat spreading branches; berry red, round,  $\frac{1}{6}$ - $\frac{1}{5}$  in. diam.
- gaunia.*  
 MYRSINEÆ.  
 F. B. I. iii. 511.  
 Himalaya,  
 3-9,000 ft.  
 Simla, The Glen  
 (Collett).
- Embelia robusta**, large, bark brown with horizontal cracks on the  
*Bayabirang.* branches, and small warty excrescences; leaves 3 $\frac{1}{2}$ -7 by 2-3 $\frac{1}{4}$  in., oblong or lanceolate with broader tip, base narrowed, margin undulate, short-pointed, rusty velvety beneath, nerves prominent, stalk glandular, usually grooved; flowers small, in simple or clustered racemes of 1-2 in. in length, calyx 5-lobed, persistent, petals 5, oblong, reflexed, stamens 5 on the petals, styles short, persistent; fruit a dry berry, red, round with ribs and crowned by the style; seed usually one, round, with a hollow base. The fruit is used for the same purpose as that of *Myrsine africana*.
- MYRSINEÆ.  
 F. B. I. iii. 515.  
 The Plains to  
 5,000 ft., near  
 the Jumna.
- Ardisia humilis**, large, smooth, branched; leaves 4-8 by 1 $\frac{1}{2}$ -3 $\frac{1}{2}$  in.,  
 MYRSINEÆ. oblong or ovate with broad tip, short-pointed, leathery, fleshy, margin smooth; flowers pink,  $\frac{1}{2}$  in. diam., in axillary clustered racemes, stalks 1-2 in. long, bracts soon falling off, calyx lobes 5, blunt, oval, corolla 5-lobed, stamens 5; fruit, round, black when ripe, size of a pea, crowned with the style, full of pink juice, seed one.
- F. B. I. iii. 529.  
 The Plains to  
 5,000 ft.
- Reptonia buxifolia**, large, spinous or not, branches grey; leaves 1 $\frac{1}{2}$  by  
*Gurgura.*  $\frac{2}{3}$  in., shortly-stalked, ovate with a broad blunt tip, base narrowed, margin smooth, recurved, leathery, smooth above, slightly velvety beneath; flowers small, greenish-yellow, sessile in axillary tufts, calyx lobes 5, round, overlapping, corolla tube short, lobes 5, oblong, blunt, stamens 5, alternating with 5 processes; fruit  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., round, fleshy, edible, one- or rarely two-seeded, seed round with hollowed base.
- MYRSINEÆ.  
 F. B. I. iii. 534.  
 Peshawar.  
 Salt Range.  
 Trans-Indus Hills,  
 2-3,000 feet.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Rhazya stricta**,  
*Vena, gandra, vargalum.*  
APOCYNACEÆ.  
F. B. I. iii. 640.  
Salt Range.  
Peshawar.  
Trans-Indus Plains.

small, smooth, stout, series of stems in clumps, milky juice from young parts; leaves 3-4 by  $\frac{1}{2}$ - $\frac{3}{4}$  in., oblong-lanceolate, short-pointed, sessile, leathery and yellow when dry; flowers white, in dense terminal short axillary stoutly branched and shortly-stalked clusters, bracts awl-like and persistent, calyx short, lobes 5, short-pointed, corolla circular, tube cylindric,  $\frac{1}{3}$  in., lobes 5, short, broad, overlapping to the left, stamens 5, above the middle of corolla tube, but not protruding; follicles 2, erect, 2-3 by  $\frac{1}{4}$  in., slightly flattened, rather leathery, seeds  $\frac{1}{3}$  in. long, angularly flattened, shortly winged. The leaves, flowers and fruit are used in rheumatism and other joint affections: the dried fruit is used to coagulate milk.

**Nerium odorum**,  
**Oleander**,  
*Kaner, ganhira.*  
APOCYNACEÆ.  
F. B. I. iii. 654.  
The Plains to  
5,000 ft.  
In dry ravines.  
Hazara (Barrett).

medium size, bark silvery grey, from young parts a milky juice exudes; leaves in whorls of three, 4-6 by  $\frac{1}{2}$ -1 in., linear, lanceolate, thick, leathery, long-pointed, dark green, shining above, rough and dotted beneath, stalk short; flowers red, pink, or white, usually sweet-scented, sometimes double, in large terminal branching clusters, sepals broad, awl-pointed, corolla  $1\frac{1}{2}$  in. across, funnel shaped, lobes spreading, rounded, overlapping to the left, tube  $\frac{3}{4}$  in. long, 5 fringed scales on throat, stamens inserted near the mouth of the tube forming a cone, each prolonged up in a long thread-like hairy appendage; follicles narrow, 6-9 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., straight, united below, seeds many, crowned with a tuft of hairs. The leaves are poisonous to all animals but goats. An oil extracted from the root bark is used in skin diseases, especially in leprosy. A yellow resin present in this plant is an active heart poison.

**Ehretia obtusifolia**,  
*Chamror, bari kunder, khabarra.*  
BORAGINACEÆ.  
F. B. I. iv. 142.  
Salt Range.

medium size; leaves oblong-ovate, with broad blunt tip, 1-1 $\frac{2}{3}$  in. long, wedge-shaped at the base; flowers larger than *Ehretia lœvis*, which see under Trees, Alternate, Exstipulate, Simple.

**Heliotropium zeylanicum**,

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Heliotropium dasycarpum**,

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Heliotropium Elchwaldi**,

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Breweria latifolia**,  
CONVOLVULACEÆ.  
F. B. I. iv. 224.  
The Plains of the  
Western Punjab.  
small, stiff, rough, much branched, densely silky; leaves  $\frac{1}{4}$ - $\frac{3}{4}$  in., oblong with rounded ends, margins entire; flowers  $\frac{1}{4}$  in., pinkish, sessile, 1-3 together, axillary, bracts small, calyx lobes 5, long-pointed, very silky, corolla funnel-shaped, barely 5-lobed, folding at the angles, stamens 5, enclosed in the corolla tube, styles 2, nearly ununited from the base; capsule  $\frac{2}{5}$  in., ovoid, 4-seeded, seeds ovoid, oblong, smooth.
- Cressa cretica**,  
CONVOLVULACEÆ.  
F. B. I. iv. 225.  
The Plains.  
small, stem 6-18 in. high; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, sessile, oblong, short-pointed; flowers small, in terminal spikes or clusters or sessile in the axils of upper leaves, sepals  $\frac{1}{8}$  in. long, equal, corolla  $\frac{1}{8}$  in. long, funnel-shaped, white or pink, lobes 5, reflexed, stamens 5, projecting beyond the corolla, styles 2, linear; capsule 4-valved, seeds 4, smooth.
- Solanum dulcamara**,  
**Woody Nightshade**,  
*Ruba barik*.  
SOLANACEÆ.  
F. B. I. iv. 229.  
Himalaya,  
4-8,000 ft.  
Narkanda (Collett).  
small, branches long, trailing, smooth or velvety, leaves 1-3 in. long, ovate, oblong or lobed, long-pointed, smooth, stalk 1 in. long; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., purple, in loose hanging clusters, calyx teeth 5, blunt,  $\frac{1}{20}$  in. long, corolla lobes 5, curved back, stamens 5, anther tips meeting above; berry  $\frac{1}{4}$  in. diam., round, red, seeds many,  $\frac{1}{8}$  in. diam., smooth. This plant is used as a diuretic, diaphoretic and alterative.
- Solanum**  
**verbascifolium**,  
*Kala mewa, tiari, ola*.  
SOLANACEÆ.  
F. B. I. iv. 230  
The Plains to  
5,000 ft.  
Valley below Simla  
(Collett).  
large, woolly with star-shaped hairs at end of branches and flower stalks, bark light grey; leaves 7-9 by 3-5 in., oblong, narrowed at both ends, margins smooth, tip long-pointed; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., white, crowded in stalked branched clusters, corolla woolly without, stamens 5, anther tips meeting above; berry  $\frac{1}{3}$  in. diam., round, smooth, yellow, seeds many,  $\frac{1}{8}$  in. diam.
- Withania somnifera**,  
*Asgard, ak, aksan*.  
SOLANACEÆ.  
F. B. I. iv. 239.  
The Plains.  
Lahore.  
small, thinly woolly branches round; leaves 2-4 in. long, ovate, short-pointed, stalk  $\frac{1}{4}$ - $\frac{1}{2}$  in.; flowers greenish-yellow, axillary, sessile or shortly-stalked in clusters, or solitary, calyx in flower  $\frac{1}{5}$  in., in fruit  $\frac{3}{4}$  in., bell-shaped, 5-6-toothed, in fruit enlarged and nearly round, papery, corolla bell-shaped,  $\frac{1}{4}$ - $\frac{1}{2}$  in., lobes 3-6, short; berry round,  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., seeds many,  $\frac{1}{12}$  in. diam. The root is narcotic and diuretic.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Withania coagulans,** small, greyish from minute star-shaped hairs; leaves  
**The Cheesemaker,** 1-2 in. long, oblong, blunt, thick, narrowed at the base,  
*Panirband,* very shortly stalked; flowers  $\frac{1}{2}$  in. diam., pale yellow,  
*spinbajja.* mealy from the minute star-shaped hairs outside, in short  
 SOLANACEÆ. stalked hanging axillary clusters, calyx  $\frac{1}{5}$  in. in flower,  
 F. B. I. iv. 240.  $\frac{2}{3}$  in. in fruit, velvety, corolla bell-shaped, lobes turned  
 The Plains to back; berry and seeds as in the last species *W. somnifera*.  
 3,000 ft. The fruit is emetic when fresh, anodyne and carminative  
 Sutlej Valley when dry. It is used as an efficient substitute for animal  
 (Collett). rennet.  
 Shahpur (Douie).

**Lycium europæum,** small, spinous; leaves  $\frac{1}{2}$ -1 in. long, often clustered  
*Kangu, mral,* at the joints, linear-oblong; flowers  $\frac{1}{2}$  in. diam., purplish  
*chirchitta.* white, solitary or in clusters at the joints, calyx  $\frac{1}{8}$  in.,  
 SOLANACEÆ. often 2-lipped, teeth 5, not larger in fruit, corolla funnel-  
 F. B. I. iv. 240. shaped, lobes 5-4, half the length of the tube, stamens  
 The Plains to 5-4 on the corolla tube, smooth at the base; berry  $\frac{1}{8}$  in.  
 5,000 ft. diam., nearly round, many-seeded. The berries are edible  
 and considered to be aphrodisiac.

**Lycium barbarum,** like the last species except that the corolla lobes are  
*Barghauna.* more than half as long as the tube. It is called the Tea  
 SOLANACEÆ. plant in South Africa.  
 F. B. I. iv. 241.  
 The Plains to  
 3,000 ft.  
 Lahore.

**Lycium ruthenicum,** like the last species except that the leaves are  
*Khichar, kitserma.* linear, calyx is 3-4-lobed and the stamens are hairy at  
 SOLANACEÆ. the base.  
 F. B. I. iv. 241.  
 Kashmir, 6-9,000 ft.

**Bridelia stipularis,** see Climbing Plants, Alternate, Stipulate, Simple.

## PETALS NONE.

**Flacourtia** see Trees, Alternate, Exstipulate, Simple.  
**Ramontchi,**



## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Dodonæa viscosa,***Sanatta, mendu, ghuraske.*

SAPINDACEÆ.

F. B. I. i. 697.

The Plains to 4,000 ft.

Salt Range.

Hazara (Barrett).

medium size, evergreen, young leaves and shoots sticky with yellow resinous dots, smooth red branchlets; leaves  $1\frac{1}{2}$ -3 by  $\frac{1}{5}$ -1 in., lanceolate with a broad tip to linear wedge-shaped, leathery, nearly sessile; flowers small, yellow, in short terminal racemes, sepals 5, ovate, petals none, stamens usually 8; capsule 3-(or 2-4-) celled, valves winged on the back, wings membranous, round, broad, seeds 1-3. This plant forms excellent hedges.

**Bosia Amherstiana,**

AMARANTACEÆ.

F. B. I. iv. 716.

Himalaya,

4-7,000 ft.

Simla (Collett).

Diktali in Giri Valley.

medium size, stout, smooth, branches long, straggling; leaves 3-7 by 1-4 in., ovate, shortly stalked, short-pointed, base pointed or rounded, narrowed into the stalk; flowers  $\frac{1}{6}$  in. diam., green with white margins, nearly sessile, crowded in axillary, simple or branched spikes, never longer than the leaves, or in branched terminal racemes, sexes usually separate, sepals 5, rounded, concave, stamens 5, bracteoles 2-4; berries  $\frac{1}{6}$  in. diam., round, red.

**Ærua javanica,***Bõi kalan.*

AMARANTACEÆ.

F. B. I. iv. 727.

The Plains.

small, grey, woolly, stem rounded, 2-3 ft., branched,  $\frac{1}{4}$  in. thick; leaves 1-4 in., flat or with margins curved down, sessile or narrowed into the stalk, linear or oblong; flowers  $\frac{1}{10}$  in. long, covered with white wool in long spikes, sexes usually separate, sepals 4-5, woolly, stamens 4-5, joined below, alternating with linear staminodes in a cup, styles short or long; fruit dry, ovoid, surrounded by the sepals, with one seed.

**Eurotia ceratoides,**

CHENOPODIACEÆ.

F. B. I. v. 8.

Himalaya,

8-14,000 ft.

small, grey with star-shaped hairs; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, linear-oblong, blunt, floral leaves narrower, margin often curved down; flowers minute, no petals, fruiting bracts with long red brown silky hairs  $\frac{1}{3}$  in. long, stamens 4, sepals 4, in female flowers bracts 4, joined together, stigmas 2, seed one.

**Suæda fruticosa,**

Shrubby Suæda,

*Lana, khashkhasa, zamai.*

CHENOPODIACEÆ.

F. B. I. v. 12.

The Plains.

small, stem and branches slender, the latter many; leaves  $\frac{1}{6}$ - $\frac{1}{2}$  in. long, linear and  $\frac{1}{2}$  cylindrical, blunt, floral leaves very small, fleshy; flowers minute on leafy spikes, bracteate and 2 bracteolate, 5-lobed, equal or unequal, stamens 5, short, styles 3, seed coat black, shining. The leaves are used in ophthalmia and used in making coarse soda (*sajji*).

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Salsola foetida,** small, pale grey, much branched; leaves minute, fleshy, nearly round, floral leaves longer, overlapping;  
**Saltwort,** flowers small, solitary, axillary or on short spikes, bracteoles leaf-like, sepals 4-5, concave,  $\frac{1}{10}$  in. across, silvery white, winged, stamens 5 or less on separate flowers from those with the 2-3 linear stigmas, which are often turned down, the little flowers look like silver stars among the leaves, galls  $\frac{1}{4}$ - $\frac{3}{4}$  in. diam., often found on the branchlets. Manna is sometimes obtained from the surface of the leaves and the plant is used in making coarse soda.

CHENOPODIACEÆ.  
 F. B. I. v. 18.  
 The Plains.

**Salsola verrucosa,** large, stout, like the last species, but the flowers are larger,  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., dark brown.

CHENOPODIACEÆ.  
 F. B. I. v. 18.  
 North-West  
 Frontier Province.

**Daphne oleoides,** small, branches many, velvety; leaves sessile, 1-2 $\frac{1}{2}$  in. long, ovate or lanceolate with broad tip, sharp-pointed or blunt, sometimes a little hairy; flowers  $\frac{1}{3}$  in. long, pinkish white, in terminal clusters, calyx tubular, lobes 4, spreading, ovate, no bracts, stamens 8 in 2, series, nearly sessile; fruit  $\frac{1}{4}$ - $\frac{1}{2}$  in. long; berry dry or fleshy, orange or scarlet, seed one. The leaves are poisonous to camels. The bark is considered to be an alterative and used in diseases of the bones.

THYMELÆACEÆ.  
 F. B. I. v. 193.  
 Himalaya,  
 3-9,000 ft.  
 Simla (Collett).  
 Hazara (Barrett).

**Daphne cannabina,** medium size, branches smooth, leafy at the tips; leaves 2-4 in. long, nearly sessile, lanceolate, rather leathery; flowers  $\frac{1}{2}$  in. long, white, sessile, in bracteate terminal clusters, calyx tubular, woolly outside, scented, lobes 4, ovate, stamens 8, in 2 series, nearly sessile; berry  $\frac{1}{2}$  in. long, ovoid, orange to red, fleshy. The plant supplies a useful fibre which is used in paper-making, especially in Nepal paper.

THYMELÆACEÆ.  
 F. B. I. v. 193.  
 Himalaya,  
 5-7,000 ft.  
 Simla (Collett).

**Wikstræmia** small, branches slender, silky, velvety; leaves 1-3 in., shortly stalked, oblong-lanceolate, thin, often with a white bud in the axil; flowers yellow or white, in axillary or terminal few clusters or spikes without bracts, calyx tube  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, lobes 4, spreading, short, blunt, scales 1-4, linear within the tube, stamens 8, short, within and upon the tube, in 2 rows; fruit  $\frac{1}{4}$  in. long, narrowly ovoid, black, within the calyx tube at first. This plant is also used in paper-making and the fibre forms good cordage.

**canescens,**  
*Bhat niggi, thilak.*  
 THYMELÆACEÆ.  
 F. B. I. v. 195.  
 Himalaya,  
 5-9,000 ft.  
 Narkanda,  
 Patarnala (Collett).

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Elæagnus umbellata**, medium size, spinous, branches dark; leaves 1-3  
*Ghain, kankol mirch, bammewa.* by  $\frac{1}{2}$ -1 in., oblong-lanceolate, blunt, smooth or with star-shaped hairs above, silvery scaly beneath, stalk  $\frac{1}{4}$  in.;  
 ELÆAGNACEÆ. flowers white, scented, silvery without, in small axillary  
 F. B. I. v. 201. clusters, appearing with the leaves, calyx  $\frac{1}{2}$  in. long, silvery,  
 Himalaya, tube slender, funnel-shaped, teeth 4, broadly triangular,  
 3-10,000 ft. stamens 4; fruit  $\frac{1}{3}$  in. long, oblong, succulent, edible, stone  
 Simla, Mashobra bony, ribbed, woolly within. The seeds and flowers are  
 (Collett). used as a stimulant in coughs, and as a substitute for black  
 Hazara (Barrett). pepper.
- Hippophae rhamnoides**, large, spinous, bark dark grey, rough with vertical  
**Sea Buckthorn,** furrows, branches stiff with silvery twigs and leaves;  
**Sallow-Thorn,** leaves  $\frac{1}{2}$ -2 by  $\frac{1}{10}$ - $\frac{1}{4}$  in., linear, oblong to ovate with  
*Kala bisa, tserkar, sirma.* broad tip, rather leathery, smooth above, felted beneath,  
 ELÆAGNACEÆ. with grey or rusty scales; flowers male in axillary clusters,  
 F. B. I. v. 203. female solitary, calyx in male in 2 segments, in female  
 Himalaya, in the 2-toothed, in male stamens 4; fruit  $\frac{1}{4}$  in. long, ovoid,  
 beds of streams, orange or scarlet, succulent, acid but edible, seed oblong,  
 7-12,000 ft. shining. The fruit is very acid and used as a syrup for  
 Lahul, Pangi. coughs.
- Hippophae salicifolia**, large, spinous, willow-like, leaves 2-4 in., linear-  
*Surch, dhur chuk, chuma.* lanceolate, dark green above, covered with stellate hairs  
 ELÆAGNACEÆ. and few scales beneath; otherwise like the last species.  
 F. B. I. v. 203.  
 Himalaya,  
 5-10,000 ft.  
 Sutlej Valley  
 (Collett).
- Osyris arborea**, large, young shoots sharply 3-angled; leaves 1-2 in.  
*Dalmi, dalima.* long, nearly sessile, oblong-ovate, tip short-pointed;  
 SANTALACEÆ. flowers very minute, yellow-green, nearly sessile, calyx  
 F. B. I. v. 232. 3-4-lobed, male flowers in axillary clusters, female one  
 Himalaya, to three together on long stalks; fruit  $\frac{1}{4}$  in., round,  
 1-7,000 ft. yellow to red, seed one, round. The leaves are made  
 Simla (Collett). into Bischar tea, which is drunk in Ladak, but is very  
 nauseating.
- Euphorbia Tirucalli**, see Shrubs, Opposite, Exstipulate, Simple.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Sarcococca pruniformis**,  
EUPHORBIACEÆ.  
F. B. I. v. 266.  
Himalaya,  
5-9,000 ft.  
Simla (Collett).  
Hazara (Barrett).  
Murree.

small, smooth, evergreen, branches green, rounded; leaves 3-4 by  $\frac{1}{2}$ -1 in., nearly sessile, lanceolate, long-pointed, dark-green, margin smooth; flowers  $\frac{1}{2}$  in. long, pale yellow in short axillary racemes, in male flowers sepals 4, oblong, blunt, stamens 4, in female flowers sepals 4-6 of small overlapping scales, styles 2, long, recurved; fruit  $\frac{1}{3}$  in. long, ovoid, purple, stones 2-3.

**Flueggia microcarpa**,  
EUPHORBIACEÆ.  
F. B. I. v. 328.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).

large, smooth, branchlets angled, flattened; leaves in 2 rows, 1-3 in. long, shortly stalked, ovate or round, thin; flowers minute, yellow-green, in dense axillary clusters on separate stalks, male and female flowers on different plants, male sepals 5, round, oblong, concave, spreading, stamens 5, opposite sepals, around 3 styles, long, linear, erect, female shortly stalked in clusters of 3-6, sepals erect, 5, styles 3-4, reflexed and each divided into 2 or 3, pointed narrow lobes; fruit  $\frac{1}{6}$ - $\frac{1}{5}$  in. diam., dry, a few  $\frac{1}{3}$  in.; white, fleshy, minutely dotted, seeds 3-6, minutely dotted.

**Flueggia Leucopyrus**,  
EUPHORBIACEÆ.  
F. B. I. v. 328.  
The Plains.

like last species, but branches twisted, spinous, leaves smaller, 1 in. long at most, longer stalked.

**Salix hastata**, see Shrubs, Alternate, Stipulate, Simple.

**Juniperus communis**,  
**Juniper**,  
*Patthar, lewar,*  
*pama.*  
CONIFERÆ.  
F. B. I. v. 646.  
Himalaya,  
5-14,000 ft.  
Hattu (Collett).  
The Chor  
(Bamber).

small, dense, erect, prostrate at high elevations, greyish-green; leaves  $\frac{1}{4}$ - $\frac{3}{4}$  in., linear, straight in threes, pointed, concave above, convex below, male cones  $\frac{1}{2}$  in. long, many, ovoid, female cones minute, bud-like, consisting of many overlapping bracts, fruits compound like a berry, purple black with a bloom, the bracts just visible, seeds 3. The berries are used in the distillation of gin, also as a diuretic: the wood and leaves are burnt in the Punjab for incense.

## SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Juniperus pseudosabina,**  
*Bhil, bhentri.*  
CONIFERÆ.  
F. B. I. v. 646.  
Himalaya,  
9-15,000 ft.  
Hazara (Barrett).

medium size, bark dark coloured; leaves of two kinds, those on lower branches  $\frac{1}{3}$  in. long, linear, sharp-pointed, spreading, those on the terminal branchlets  $\frac{1}{10}$  in. long., broadly ovate, closely overlapping, tips free, back keeled; flowers like the last species; fruit erect, ovoid,  $\frac{1}{4}$ - $\frac{2}{3}$  in., one seeded.

**Juniperus recurva,**  
**Weeping Blue Juniper,**  
*Bettar, bhedara, guggal.*  
CONIFERÆ.  
F. B. I. v. 647.  
Himalaya,  
7,500-15,000 ft.  
The Chor  
(Collett).

medium size to small prostrate shrub, bluish-green, branches twiggy with hanging branchlets; leaves in whorls of 3,  $\frac{1}{5}$  in. long, curved, linear, sharp-pointed, flat and bluish-green above, curved and pale green below, cones terminal, male yellow; fruit ovoid,  $\frac{1}{3}$ - $\frac{1}{2}$  in., dark purple, seed solitary. The smoke of the burning green wood acts as a violent emetic: the leaves and wood are burnt as incense.

## SHRUBS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Ribes Grossularia,**  
**Rough Gooseberry,**  
*Amlanch, kansi, teila.*  
SAXIFRAGACEÆ.  
F. B. I. ii. 410.  
Himalaya,  
9-12,000 ft.  
Pangi (Watt).

small, usually 3 prickles beneath each leaf axil, stems smooth or with many prickly hairs; leaves nearly round with 3-5 lobes, often toothed, hairy beneath; flowers stalked in clusters of 1-3 flowers, stalks with bracts at the base and 2 bracteoles at the middle, calyx tube long, lobes 4-5, produced above the fruit, petals 4-5, small, stamens 4-5; berry  $\frac{1}{2}$  in. long, oblong, inedible, seeds several.

**Ribes orientale,**  
*Kaghak, nangke.*  
SAXIFRAGACEÆ.  
F. B. I. ii. 410.  
Kashmir,  
8-12,000 ft.  
Baltistan.  
Kaghan.

medium size, sticky with glands and minutely hairy; leaves 1-1 $\frac{1}{2}$  in. diam., round, kidney-shaped, minutely toothed, 3-5 lobed; flowers small, greenish, in erect crowded racemes, bracts  $\frac{1}{5}$  in. long, linear, calyx tube hardly produced above the fruit, lobes 4-5, petals 4-5, stamens 4-5; berry  $\frac{1}{5}$  in. long, yellowish-red, velvety with minute glands, seeds several.

## SHRUBS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Ribes glaciale,**  
*Kukuliya, mangle,*  
*durwai.*

SAXIFRAGACEÆ.  
F. B. I. ii. 410.  
Himalaya,  
7-12,000 ft.  
Hattu (Collett).  
The Chor.

small, smooth, often epiphytic; leaves 1-3 in. diam., cordate, 3-5-lobed, acute, often long-pointed, midlobe largest, pale beneath; flowers  $\frac{1}{4}$  in. diam., greenish-brown, in glandular racemes, 1-2 in. long, erect in flower, hanging down in fruit, male and female flowers usually on different plants, bracts narrowly lanceolate, longer than the flower stalks, calyx lobes oblong, 4-5, petals 4-5, stamens 4-5; berries  $\frac{1}{4}$  in. long, smooth, red, sour, scarcely edible.

**Ribes nigrum,**  
**Black currant,**  
*Muradh, beli,*  
*shaktekas.*

SAXIFRAGACEÆ.  
F. B. I. ii. 411.  
Himalaya,  
7-12,000 ft.  
Changlagalli  
(Douie).  
The Chor.

small, velvety; leaves 2-4 in. diam., scented, long-stalked, lobes 3 or 5, smooth above, dotted with minute yellow glands below; flowers  $\frac{1}{3}$  in. diam., green tinged with purple, stalks of lower flowers longest, in smooth drooping racemes 2-3 in. long, calyx tube produced above the fruit, gland-dotted, lobes 4-5, petals 4-5, stamens 4-5; berry  $\frac{1}{3}$  in. diam., black, seeds several. The fruit is as large and palatable as the English Black currant.

**Ribes rubrum,**  
**Red currant,**  
*Dak, phulanch,*  
*nabar.*

SAXIFRAGACEÆ.  
F. B. I. ii. 411.  
Himalaya,  
8-12,000 ft.  
Mahasu, Narkanda  
(Collett).  
Changlagalli  
(Douie).

small, nearly smooth; leaves 2-3 in. diam., long-stalked, hairy at the base, ovate lobes 3-5, acute, toothed, smooth or with few hairs above; flowers  $\frac{1}{3}$  in. diam., greenish-yellow, stalks short, bracts shorter than the stalks, in smooth pendulous racemes 3-6 in. long, calyx tube above the fruit, lobes short, blunt, 4-5, petals 4-5; berry  $\frac{1}{4}$  in. diam., red, rarely black, smooth, too acid to be palatable.

## PETALS UNITED.

**Artemisia parviflora,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Artemisia vulgaris,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Artemisia vestita,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

## SHRUBS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

- Tricholepis tibetica**,  
COMPOSITÆ.  
F. B. I. iii. 382.  
Northern Kashmir,  
8-12,000 ft.
- small, branches clustered above, slender, twiggy, ending in a stiff flower stalk with a small erect head; leaves 1-3 in. long, sessile, leathery, very narrow, blunt, lobed, upper  $\frac{1}{2}$ -1 by  $\frac{1}{10}$ - $\frac{1}{8}$  in., ovate, linear, margin not lobed; flowers scarlet, in heads  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., bracts round heads, outer ovate, needle-pointed, inner lanceolate, needle-pointed,  $\frac{1}{2}$  in. long, corollas  $\frac{1}{2}$  in. long; fruit (achenes)  $\frac{1}{6}$  in. long, rather ribbed, a brush of hairs on top of each achene,  $\frac{1}{3}$  in. long.
- Solanum dulcamara**,  
see Shrubs, Alternate, Exstipulate, Simple.
- Solanum indicum**,  
*Kandyari*.  
SOLANACEÆ.  
F. B. I. iv. 234.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).
- small, branches many, very prickly, prickles stout, flattened, often recurved; leaves 3-6 by 1-4 in., ovate, lobed, star-shaped hairs above, woolly beneath, nerves prickly, stalks 1 in. long; flowers  $\frac{3}{4}$ -1 in. diam., in lateral woolly racemes, calyx 5 lobed,  $\frac{1}{6}$  in., triangular, very woolly, corolla lobes 5, broad, triangular, woolly without, stamens 5, forming a cone; berry yellow,  $\frac{1}{3}$  in. diam., round, smooth, protruding beyond the calyx lobes, seeds  $\frac{1}{8}$  in. diam., discoid. The root is said to be aphrodisiac.
- Solanum Melongena**,  
**The Egg-plant**,  
*Brinjal, bengan*.  
SOLANACEÆ.  
F. B. I. iv. 235.  
The Plains to  
4,000 ft.
- small, prickly or unarmed; leaves 3-6 by 2-4 in., stalk 1 in., ovate lobed, star-shaped hairs beneath; flowers blue, 1-1 $\frac{1}{4}$  in. diam., in short small clusters, calyx lobes  $\frac{1}{4}$ - $\frac{1}{2}$  in., oblong, linear, corolla shortly lobed, stamens 5, forming a cone, berry 1-9 in., purple green, seeds very many, discoid. Generally cultivated.
- Solanum coagulans**,  
*Bari mauhari, tingi*.  
SOLANACEÆ.  
F. B. I. v. 236.  
The Plains.
- very like the last species, but the berry is only 1 in. diam., and yellow. The fruit is sometimes eaten fresh or pickled.
- Nannorhops**  
**Ritchiana**,  
**Dwarf Palm**,  
*Mazri, kilu*.  
PALMACEÆ.  
F. B. I. vi. 429.  
N.-W. Frontier  
Province.  
Salt Range to  
3,000 ft.
- large, stem 8-10 ft. high, 4 in. diam.; leaves 2-3 ft. in diam., round, split into segments, stalk 6-12 in., margins toothed, sheathing; flowers small on a spike (spadix) with branches and branchlets forming a pyramid 2-3 ft. long, flowers in pairs, one sessile, the other stalked, contained in a small spathe (sheathing bract), the whole pyramid contained in a large spathe, sepals and petals 3 each, stamens 3 or 6; drupe round, size of a pea to a bullet, one-seeded. The leaves are made into matting, baskets and cordage.

## SHRUBS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS NONE.

**Ricinus communis,**  
**The Castor Oil**  
**Plant,**  
*Arend, bedanjir,*  
*harnauli.*  
 EUPHORBIACEÆ.  
 F. B. I. iv. 457.  
 The Plains.

large, stem hollow, young shoots bluish-green; leaves 6-24 in. diam., green to red, round, 5-7 lobed, lobes toothed, membranous, oblong to linear, sharp- or long-pointed, stalk 4-12 in. long; flowers  $\frac{1}{2}$  in. diam., in terminal erect branching racemes, male and female on different plants, male flower calyx membranous, 3-5 segments, petals none, stamens very many, female flower calyx like a folding bract or spathe, soon falling off, ovary 3-celled, styles short or long, undivided or in 2 or 3 parts; capsule  $\frac{1}{2}$ -1 in. long, oblong, smooth or with tubercles, seeds 3, oblong, spotted. The oil is used as a purgative, also as a lubricant and an illuminant. The plant is cultivated and is probably indigenous, and not a mere escape.

## SHRUBS WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Glycosmis**  
**pentaphylla,**  
*Ban nimbu, potali,*  
*girgitti.*  
 RUTACEÆ.  
 F. B. I. i. 499.  
 The Plains to  
 5,000 ft.

small, evergreen, smooth; leaves of 3-5 leaflets, rarely one, stalk stout, leaflets 4-9 in. long, ovate, lanceolate, blunt or pointed, dark green, smooth; flowers small, white, scented, in erect, terminal or axillary, branched racemes, calyx 4-5-lobed, lobes broad, petals 4-5, stamens 8-10; fruit  $\frac{1}{3}$  in. diam., round with a depression, white or pink, pulp sweetish, edible. The twigs are used as toothsticks.

**Murraya exotica,**  
*Marchula, juti,*  
*bibsar.*  
 RUTACEÆ.  
 F. B. I. i. 502.  
 The Plains to  
 5,000 ft.  
 Sutlej Valley  
 (Collett).  
 Rawalpindi.

large, bark ash-coloured, smooth, young parts velvety; leaves 4-5 in. long, leaflets 3-7, 1-3 in. long, shortly stalked, dark green, smooth, ovate, oblique at the base, notched at the tip or pointed, gland dotted; flowers 1 in. long, white, scented, in short axillary or terminal clusters, rarely solitary, calyx 5-lobed, lobes minute, short-pointed, petals 5, lanceolate, stamens 10; berry  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, red, ovoid, pointed at each end, wrinkled, 1-2-seeded.

**Murraya Koenigii,**

see Trees, Alternate, Exstipulate, Compound.

**Limonia acidissima,**  
*Beli.*  
 RUTACEÆ.  
 F. B. I. i. 507.  
 The Plains to  
 4,000 ft.  
 Valleys below Simla  
 (Collett).

large, armed with long spines, smooth, bark white, corky; leaves 3-6 in. long, stalk with broad wings, leaflets 5-9,  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long, sessile, ovate, lanceolate, long-pointed, gland dotted, toothed, tip notched; flowers  $\frac{1}{3}$  in. diam., white, scented, in short axillary, often leafy racemes, calyx 4-lobed, persistent, petals 4, gland dotted, larger than the calyx, stamens 8; berry  $\frac{1}{3}$  in. diam., round, yellow turning to purple, acid, smooth, seeds 2-4.



## SHRUBS WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Feronia Elephantum,** see Trees, Alternate, Exstipulate, Compound Leaves.

**Picrasma quassioides,** large, branches spotted, stout, bark very bitter, young parts velvety; leaves 10-18 in. long, leaflets 9-15, 2-4 in. long, sessile, ovate, lanceolate, long-pointed, toothed, the lowest pair much the smallest; flowers  $\frac{1}{5}$  in. across, green in axillary branching racemes, calyx 4-5-lobed, very small, petals 4-5, much larger than the calyx, leathery and persistent in fruit, stamens 4-5, hairy at the base; fruit of 3-5 drupes, size of a pea, red or black, each one-seeded, sometimes eaten. The bark, wood, and root are very bitter, and might be used as a tonic instead of Quassia.

*Puthorin, tithu, hala.*  
SIMARUBACEÆ.

F. B. I. i. 520.

Himalaya,

3-5,000 ft.

**Rhus parviflora,** medium size, bark grey, smooth, young, rusty woolly; leaves of 3 leaflets, stalk 1-2 in., rusty woolly, leaflets 1-3 by  $\frac{1}{2}$ -2 in., the terminal one much the largest and often narrowed into a margined stalk, ovate with a broad tip, toothed, slightly hairy above, rusty woolly beneath; flowers  $\frac{1}{10}$  in. diam., yellow-green, in hairy terminal, often leafy, branching racemes 12 in. long, calyx lobes 4-6, ovate, hairy without, petals 4-6, twice as long as the calyx lobes, oblong, stamens 4-10; drupe  $\frac{1}{8}$  in. ovoid, shining brown, seed one. The fruit (*tantarik*) is sold in the bazar as substitute for tamarind.

**Rhus parviflora,**

**Sumac,**

*Tungla, tumra.*

ANACARDIACEÆ.

F. B. I. ii. 9.

Himalaya,

2-5,000 ft.

**Rhus mysorensis,** small, branches springy, woody, often spinous, branchlets scurfy, leaves of 3 leaflets, stalk  $\frac{1}{2}$ - $\frac{3}{4}$  in., scurfy, leaflets  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long, terminal much the largest, all sessile, scurfy beneath, tinged with red, flowers  $\frac{1}{12}$  in. diam., in slender scurfy axillary or terminal branching racemes; in other points like the last species. The bark is sometimes used for tanning.

**Rhus mysorensis,**

*Dasarni, dasan.*

ANACARDIACEÆ.

F. B. I. ii. 9.

The Plains.

N.-W. Frontier

Province.

Sulliman Range,

3-5,000 ft.

## PETALS UNITED.

**Jasminum humile,** small, smooth, branches angular, green; leaves 2-4 in. long, leaflets 2-10, 2-3 by  $\frac{3}{4}$ -1 $\frac{1}{4}$  in., ovate, acute or blunt at both ends; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, yellow, in terminal clusters, many, calyx teeth 5,  $\frac{1}{16}$  in., triangular, corolla united, lobes  $\frac{1}{3}$  by  $\frac{1}{5}$  in., flat, circular, 5, stamens 2 in the corolla tube; berries 2-lobed or 1-lobed, oblong with rounded ends, seeds one in each lobe. An aromatic essential oil is obtained from the flowers by native perfumers.

**Jasminum humile,**

*Chamba, jai, shing.*

OLEACEÆ.

F. B. I. iii. 602.

Himalaya,

2-5,000 ft.

Salt Range.

Simla (Collett).

Murree (Douie).

## ERECT HERBS.

HERBS, ERECT, WITH OPPOSITE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

- Spergula arvensis,** medium size, annual, branched from the root, knotty, often sticky; leaves  $\frac{1}{2}$ -2 in., in opposite clusters, linear, half cylindrical, grooved below, rather fleshy, stipules thin, **Corn Spurry,** dry, small; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in. diam., in forked terminal CARYOPHYLLACEÆ. clusters on long stalks, turned back after flowering, sepals 5, F. B. I. i. 243. blunt, green, unjoined, petals 5, white, blunt, slightly longer than the sepals, stamens 10, styles 5; capsule nearly round, shining, longer than the calyx, opening by 5 valves, (Collett). seeds many, keeled or narrowly winged, granular.
- The Plains to 7,000 ft. Simla (in corn fields)
- Spergula pentandra,** much the same as the last species, but leaves with bluish-green waxy gloss, not grooved below, petals sharp-pointed, styles 3, seeds smooth, flattened, broadly winged. CARYOPHYLLACEÆ. F. B. I. i. 243. The Plains to 7,000 ft. (in corn fields).
- Spergula rubra,** small, annual, stems 6-8 in. long; leaves  $\frac{1}{2}$ -1 in. long, linear, flat, fleshy, stipules split, broad, silvery; **Sand Spurry,** flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., pink or white, sepals 5, lanceolate, blunt, margins thin, dry, petals 5, ovate with broad tips, shorter than the sepals, stamens 5 or 10, styles 3; capsule ovoid, longer than the calyx, seeds many, pale brown, rough, not winged. In Bentham and Hooker's CARYOPHYLLACEÆ. British Flora this plant is called *Spergularia rubra*. F. B. I. i. 244. The Plains. Shahpur (Douie).
- Drymaria cordata,** large, annual, smooth, found in shady moist places, branches forking into two, slender, 1-2 ft.; leaves flat, stalked, ovate or round, tipped with an abrupt point, stipules of a few bristles, soon falling off; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in. diam., in axillary or terminal clusters, stalks slender, bracts with thin edges, sepals 5, green, petals 5, 2-lobed, lobes narrow, not longer than the sepals, stamens 3-5, styles short; capsule 3-angled, 3-valved, seeds one to many, round, flattened, rough with hard projections. CARYOPHYLLACEÆ. F. B. I. i. 244. The Plains to 7,000 ft.

HERBS, ERECT, WITH OPPOSITE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

**Polycarpon**  
**Lœflingia**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 245.  
The Plains.

small, annual, smooth or velvety, common in gardens and waste places; leaves  $\frac{1}{4}$ - $\frac{3}{4}$  in. long, flat, sharp-pointed or blunt, wedge-shaped, linear-oblong, stipules small, thin, soon falling off; flowers  $\frac{1}{8}$  in. diam., in clusters at the end of branches or in their forks, sepals 5, keeled, petals 5, thin, notched or not, stamens 3-5, style divided into three; capsule one-celled, seeds many, ovoid, grooved.

**Polycarpœa**  
**corymbosa**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 245.  
The Plains to  
7,000 ft.  
Giri Vally (Collett).

small, annual or perennial, much branched, grey woolly or velvety; leaves  $\frac{1}{2}$ -1 in. long, flat, narrow, linear, long- or short-pointed or blunt, stipules lanceolate or awl-shaped, thin; flowers  $\frac{1}{6}$  in. diam., white, in terminal silvery much branched clusters, sepals 5, thin, lanceolate, much longer than the petals and capsule, often coloured, petals 5, margin smooth or 2-toothed, stamens 5, style one, tip 3-toothed; capsule 3-valved, seeds many, ovoid or flattened.

**Portulaca quadrifida**, see Prostrate Herbs, Opposite, Stipulate, Simple.

PETALS UNITED.

**Argostemma**  
**verticillatum**,  
RUBIACEÆ.  
F. B. I. iii. 43.  
Himalaya,  
2-6,000 ft.  
Simla (Collett).

small, annual, slender, nearly smooth, growing on wet rocks; leaves 1-4 in. long, in fours, sessile, unequal, lanceolate or ovate-lanceolate, stipules minute; flowers  $\frac{1}{3}$  in. diam., white, shining in terminal stalked clusters, calyx 5-toothed, teeth short-pointed, corolla wheel-shaped, 5-lobed, stamens 5, style slender, stigma round; capsule thin, 2-celled, seeds many.

**Hedyotis hispida**,  
RUBIACEÆ.  
F. B. I. iii. 60.  
Himalaya to  
5,000 ft.  
Valleys below Simla  
(Collett).

small, annual, stems angular, rough, much branched, sometimes prostrate; leaves  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long, sessile, very variable in width, linear-lanceolate, short- or long-pointed, margins turned in, stipules very short with many stiff bristles; flowers small, white, 2-6 in sessile axillary rounded clusters, calyx lobes 4, short-pointed, persistent, roughly bristly, corolla bell- or funnel-shaped, lobes 4, ovate or linear, stamens 4 in the throat of the corolla, style thread-like, stigma 2-lobed; capsule ovoid or round, 2-celled, seeds many, minute.

HERBS, ERECT, WITH OPPOSITE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Hedyotis stipulata**, see Prostrate Herbs, Opposite, Stipulate, Simple.

**Oldenlandia corymbosa**,  
RUBIACEÆ.  
F. B. I. iii. 64.  
The Plains to  
6,000 ft.  
Annandale, Simla  
(Collett).  
Murree Hills (Douie).  
small, annual, slender, minutely bristly; leaves  $\frac{1}{2}$ -2 in. long, linear-lanceolate, short-pointed, margins often curved back, stipules small, thin, with long or short teeth or bristles; flowers white, small, solitary on long slender axillary stalks, or 2-4 in a small cluster, calyx tube ovoid, teeth 4, narrow-pointed, corolla flat and circular topped, lobes 4, tube short, stamens 4, within the corolla tube, style short, stigma 2-lobed; capsule round, not ribbed, 2-celled, opening at the top, seeds many, minute.

**Oldenlandia aspera**,  
RUBIACEÆ.  
F. B. I. iii. 68.  
The Plains.  
small, annual, thick, stem rough, branching in threes; leaves 2-3 in. long, in clusters, narrow linear, short-pointed, margins turned under, leathery, stipules thin with 1-3 terminal bristles; flowers  $\frac{1}{5}$  in. long, blue, nearly sessile, solitary or in pairs in 3 branching clusters, calyx teeth 4, much shorter than the corolla tube, awl-shaped, corolla funnel-shaped, tube  $\frac{1}{10}$  in. long, slender, lobes 4, stamens 4, within the corolla tube, style short, stigma 2-lobed; capsule  $\frac{1}{6}$  in. diam., round, rough, seeds many, angled.

**Oldenlandia coccinea**,  
RUBIACEÆ.  
F. B. I. iii. 69.  
Himalaya,  
3-8,000 ft.  
Simla, on grassy  
slopes (Collett).  
small, annual, slender, stem minutely bristly, often unbranched; leaves  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long, distant, in pairs, narrowly lanceolate, short-pointed, rough, margins curved back, stipules bristly; flowers  $\frac{1}{4}$  in. diam., scarlet, axillary or terminal, solitary or 2-4 in small clusters, stalks short, lengthened in fruit, calyx teeth 4, very long, equal to the corolla tube, corolla tube  $\frac{1}{8}$  in. long, lobes oblong, stamens 4 in the tube, style short, stigma 2-lobed; capsule  $\frac{1}{8}$ - $\frac{1}{4}$  in. long, oblong or round, seeds many, angled.

**Anotis calycina**,  
RUBIACEÆ.  
F. B. I. iii. 73.  
Himalaya,  
3-7,000 ft.  
Simla, Mashobra  
(Collett).  
small, annual, slender, smooth, stems 4-angled, tufted; leaves  $\frac{1}{4}$ -1 by  $\frac{1}{3}$ - $\frac{1}{2}$  in., ovate or ovate-lanceolate, shortly stalked, long-pointed, stipules thin with short bristles on margins; flowers small, white or lilac, axillary or terminal, solitary on slender stalks or 2-4 in a small cluster, calyx ovoid, teeth 4, minute, widely separated in fruit, corolla short, tubular, 4-lobed, stamens 4, nearly sessile at the mouth of the corolla tube, style slender, 2-branched, projecting; capsules in pairs, opening at the top by 2 valves, seeds many, minute.

## HERBS, ERECT, WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

- Spermacoe stricta**, small, annual, stems and branches usually square, angles rough with curved-back prickles; leaves 1-2 by  $\frac{1}{8}$ - $\frac{1}{2}$  in., linear or ovate, short-pointed, leathery, smooth or rough, margins turned down, stipules joined to the leaf stems forming a short tube with long marginal bristles; flowers  $\frac{1}{8}$  in. long, white, many in dense rounded axillary heads, bracteoles thread-like, longer than the calyx, calyx ovoid, teeth usually 4, linear, persistent, corolla funnel-shaped, 4-lobed, lobes linear, acute, stamens 4 on the throat of the corolla, style thread-like, stigma round; capsule  $\frac{1}{8}$  in. long, narrow at the base, thin, crowned with the calyx teeth, dividing into 2 one-seeded half fruits, seeds oblong, polished.
- RUBIACEÆ.**  
F. B. I. iii. 200.  
The Plains to 6,000 ft.  
Valleys below Simla (Collett).

- Rubia tibetica**, see Herbs, Erect, Opposite, Exstipulate, Simple.

## PETALS NONE.

- Mollugo hirta**, see Prostrate Herbs, Opposite, Stipulate, Simple.

- Mollugo stricta**, small, annual, smooth, much branched; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, narrowly lanceolate, nearly sessile, short-pointed, stipules membranous, soon falling off; flowers  $\frac{1}{16}$  in. long, orange or pink, in many terminal branching clusters, sepals 5,  $\frac{1}{16}$  in. long, distinct, persistent, petals none, stamens 3-5, styles 3, short, ununited; capsule round, within the persistent calyx, seeds many, dark-brown, rough with minute points.
- FICOIDEÆ.**  
F. B. I. ii. 663.  
The Plains to 5,000 ft.  
Valleys below Simla (Collett).

- Pouzolzia indica**, see Prostrate Herbs, Opposite, Stipulate, Simple.

- Pouzolzia pentandra**, see Prostrate Herbs, Opposite, Stipulate, Simple.

- Pouzolzia hirta**, see Prostrate Herbs, Opposite, Stipulate, Simple.

- Elatostemma pusillum**, see Herbs, Unbranched, Alternate, Stipulate, Simple.

- Elatostemma sureulosum**, see Herbs, Unbranched, Opposite, Stipulate, Simple.

## HERBS, ERECT, WITH OPPOSITE STIPULATE SIMPLE LEAVES

## LEAF MARGINS TOOTHED.

## PETALS UNUNITED.

**Bergia  
ammannioides,**

ELATINÆÆ.

F. B. I. i. 251.

The Plains,  
in wet places.

small, annual, smooth or slightly hairy, lower branches prostrate; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, sessile, linear-lanceolate, short-pointed, sharply toothed; flowers  $\frac{1}{2}$  in., sessile or nearly so, in dense clusters, sepals 5, lanceolate, toothed, petals 5, stamens 5; capsule 5-celled, valves brittle, edges turned in, seeds ovoid, many.

**Impatiens Roylei,**

GERANIACEÆ.

F. B. I. i. 468.

Himalaya,  
6-8,000 ft.  
Mahasu (Collett).  
Changlagalli  
(Douie).

large, annual, smooth, stems succulent; leaves  $2\frac{1}{2}$ -6 in., lanceolate, sharply toothed, teeth gland-tipped, long-pointed, stalked, stipules of gland-tipped bristles; flowers  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. long minus the spur, pale pink in terminal racemes or clusters, sometimes branching racemes, sepals 3, 2 lateral minute greenish, one lower (lip) petal-like, coloured pink, cup-shaped, prolonged into a hollow curved spur  $\frac{1}{4}$  in. long, petals 3, one upper (standard) broad with a green tip between the 2 side lobes, 2 lower (wings) with lateral lobes, broad, notched on the margin with a little hollow at the base within, stamens 5, anthers cohering above the 5-toothed stigma with filaments clasping the ovary; capsule linear, club-shaped, beaked, nodding, 5-valved, the valves when ripe, if shaken, curl up elastically and jerk out the numerous large broad seeds.

**Impatiens Thomsoni,**

GERANIACEÆ.

F. B. I. i. 469.

Inner range of the  
Himalaya,  
9-10,000 ft.

like the last species, but a little smaller, a little bristle-like gland between the teeth on the leaf margin, stipules of cushion-like tubercles, lateral sepals ovate-lanceolate, spur long, upper petal not lobed, capsule narrowly club-shaped.

**Impatiens sulcata,**

GERANIACEÆ.

F. B. I. i. 469.

Himalaya,  
7-12,000 ft.  
Simla, Mahasu  
(Collett).

large, like *Impatiens Roylei*, but the stem grooved; flowers darker pink or purple, capsule longer, less clubbed.

**Impatiens  
amplexicaulis,**

GERANIACEÆ.

F. B. I. i. 469.

Himalaya,  
6-12,000 ft.  
Simla (Collett).

like *Impatiens Thomsoni*, but stem 4-angled, upper leaves alternate, sessile, stem-clasping, lower leaves opposite, flowers fewer and smaller, capsule hardly clubbed,  $1-1\frac{1}{4}$  in. long.

## HERBS, ERECT, WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS NONE.

- Euphorbia hypericifolia**,  
EUPHORBIACEÆ.  
F. B. I. v. 249.  
The Plains to  
7,000 ft.  
Simla (Collett).  
Murree Valleys  
(Douie).  
small, annual, slender, smooth, juice milky; leaves  $\frac{1}{2}$ -1 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., shortly stalked, oblong, tip rounded, margins toothed except at the base, margins may be reddish, stipules minute, bristly, divided or none; flowers minute in terminal or axillary clusters, often with two floral leaves at the base, 4 sepals or teeth 4 with 5 green glands in the angles, stamens several, surrounding a 3-angled ovary on a stalk hanging down on one side, styles 3, very short, branched; capsule 3-lobed, velvety, splitting into 3 valves, one smooth seed in each cell. The seeds, *hazardana*, are given in children's colic.
- Euphorbia Emodi**,  
EUPHORBIACEÆ.  
F. B. I. v. 250.  
Himalaya,  
4-7,500 ft.  
Valleys below Simla  
(Collett).  
Kulu, Chamba,  
Lahul.  
small, annual, hairy, purplish, juice milky, branches straggling from the short stout stem; leaves  $\frac{1}{4}$ - $\frac{3}{4}$  in., in rather distant pairs, green with a purple blotch, oblong or linear-oblong, tip blunt, stipules toothed, fringed; flower clusters  $\frac{1}{16}$  in. long, nearly sessile and solitary, like the last species but glands purple with white or rose coloured ends, styles slender; capsule shortly stalked, smooth, slightly angled, seeds angled with slight projections.
- Euphorbia pilulifera**,  
*Dudhi*.  
EUPHORBIACEÆ.  
F. B. I. v. 250.  
The Plains to  
4,000 ft.  
Valley below  
Simla (Collett).  
Bhera (Douie).  
small, annual, juice milky, stem and branches 1-2 ft., very hairy, leaves  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. long, oblong-lanceolate, tip sharp, stalked, toothed, stipules minute, linear, flower clusters  $\frac{1}{30}$  in., many in terminal and axillary, sessile or stalked bunches, glands small, round, capsule  $\frac{1}{2}$ - $\frac{1}{4}$  in. diam., hairy, seeds ovoid; in other respects like the other species of Euphorbia. The plant is used as a purgative.
- Euphorbia Clarkeana**,  
see Herbs, Prostrate, Opposite, Stipulate, Simple.
- Urtica pilulifera**,  
**The Roman Nettle**,  
URTICACEÆ.  
F. B. I. v. 548.  
Himalaya,  
5-7,000 ft.  
Simla (Collett).  
small, annual, covered with stinging hairs; leaves 1-3 in. long, ovate, teeth very long, often linear, sharp-pointed, thin, stalked; flowers minute, green, male in slender branching spikes, female in round heads, both on the same plant, male sepals 4, concave, ovate, stamens 4, curled up in bud, straightening with a jerk when the flower opens, female sepals 4, flat, unequal, stigma of a small tuft of hairs; carpel held by the sepals, flattened. An introduced European weed found near houses.

HERBS, ERECT, WITH OPPOSITE STIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS NONE.

**Urtica parviflora,**  
*Berain, shishona.*

URTICACEÆ.  
F. B. I. v. 548.  
Himalaya,  
5-12,000 ft.  
Simla (Collett).

medium size, root perennial, stem annual, slender but little branched, with blunt angles, covered with stinging hairs; leaves 2-4 by 1-2½ in., ovate or lanceolate, long-pointed, wrinkled, teeth small, irregularly jagged, stalk ¼-2 in. long, stipules united, ovate-oblong; flowers minute, green, in slender spreading axillary and terminal branching pyramidal clusters, male and females on the same plant and like those of the last species.

**Urtica dioica,**  
**The English Nettle,**  
*Bichua.*

URTICACEÆ.  
F. B. I. v. 548.  
Salt Range.  
Himalaya,  
7-10,000 ft.  
Simla, Hattu  
(Collett).

like the last, but often stouter, stem grooved, teeth large, regular, stipules ununited, male and female flowers on separate plants.

**Pilea peploides,**  
URTICACEÆ.  
F. B. I. v. 554.  
Upper Himalaya,  
Lahul.

small, stem and branches 3-5 in., tufted, succulent, smooth; leaves ½-¾ in. long, round, ovate, tip rounded, margin toothed above the middle, or entire, 3-nerved, base wedge-shaped, stalk ½-¾ in. long, stipules minute; flowers minute, green, sessile in clusters on the slender branches of stalked spreading axillary racemes 2-4 in. long, male and female flowers on the same plant, male sepals 4, stamens 4, anthers white, female sepals 3, unequal, stigma of a tuft of hairs; carpel nearly round, minute, smooth.

**Pilea umbrosa,**  
URTICACEÆ.  
F. B. I. v. 556.  
Himalaya,  
4-9,000 ft.  
Simla, in shady  
places (Collett).

large, hairy, leaves 3-5 by 2-3½ in., ovate, broadly toothed, base wedge-shaped, tip tail-like, sharp-pointed, stalk 1-3 in., stipules nearly persistent, large, flowers as in the last species, but dorsal female sepal much the longest; achenes minute, ⅓₀ in., pale, with a raised intra-marginal ridge.



## HERBS, ERECT, WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS NONE.

- Pilea scripta** large, smooth, branched; leaves 3-10 by 1-3 in.,  
 URTICACEÆ. lanceolate, narrowed to both ends, tip tail-like, teeth small,  
 F. B. I. v. 556. shallow, stalk  $\frac{1}{2}$ -2 in. long, stipules short; flowers like  
 Himalaya, the last species; carpels rough.  
 4-7,000 ft.  
 Simla, in shady  
 places (Collett).

- Elatostemma** see Herbs, Prostrate, Opposite, Stipulate, Simple.  
**sureulosum,**

## HERBS, ERECT, WITH OPPOSITE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Fagonia arabica or** small, annual, green, spiny with glandular woody  
**cretica,** branches; leaves small, 1-3-lobed, leaflets linear, short-  
*Usturgar.* pointed, stalk often leaf-like, stipules of 2 spines longer  
 ZYGOPHYLLACEÆ. than the leaflets; flowers small, pale rose-coloured,  
 F. B. I. i. 425. on solitary stalks between the spines, sepals 5, soon  
 The Plains. falling off, oblong-lanceolate, half the length of the petals,  
 Common in fields. petals 5, closed, soon falling off, stamens 10, style and  
 Rawalpindi. stigma undivided; capsule velvety, 5-cornered, 5-celled,  
 2 seeds in each cell. An infusion of the leaves is used as  
 a cooling medicine and as an antiseptic for wounds.

- Fagonia Bruguieri,** see Herbs, Prostrate, Opposite, Stipulate, Simple.

- Geranium pratense,** medium size, stout, root stock perennial, joints swol-  
**Cranes Bill,** len, hairs spreading; leaves 2-3 in. diam., sometimes  
**Meadow Geranium,** alternate, round, cut into 7-9 segments, short-pointed,  
 GERANIACEÆ. stalks long, stipules small, lanceolate; flowers  $1\frac{1}{2}$ -2 in.  
 F. B. I. i. 429. diam., blue-purple, in pairs on axillary bracteate glandular  
 Kashmir, and hairy stalks, sepals 5, long-tipped, petals 5, stalked,  
 7-10,000 ft. alternate with 5 glands, spreading, stamens 10, 5 long  
 The Chor near alternating with 5 short, filaments flattened, narrowed  
 Simla. upwards, united below, styles 5; capsule 5-lobed and  
 celled, cells one-seeded, the capsule and styles elongate,  
 the styles curl up with a jerk, ejecting the seeds.

## HERBS, ERECT, WITH OPPOSITE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Geranium rectum**, medium size, root stock stout, perennial, stem slender, slightly hairy and leafy, leaves 3-4 in. diam., 5-angled, 7-lobed, divided to below the middle, lobes sharp-pointed, thin, slightly hairy on both surfaces, long-stalked, stipules lanceolate, flowers  $1\frac{1}{4}$  in. diam., on long stalks, bracts awl-shaped; the other characters are like those of the last species.  
GERANIACEÆ.  
F. B. I. i. 429.  
Kashmir.
- Geranium collinum**, small, woolly or glandular-velvety, stems many, unbranched, flowering 6-10 in. high; leaves sometimes alternate, round, 5-7-lobed to below the middle, segments wedge-shaped, blunt, 3-5-lobed, stipules small, ovate, short-pointed; flowers and capsule like *G. pratense* above.  
GERANIACEÆ.  
F. B. I. i. 429.  
Kashmir.
- Geranium palustre**, very like the last species, but taller with large flowers or **grandiflorum**, 2 in. diam., leaves 5-angled with 5 lobes cut pinnately.  
GERANIACEÆ.  
F. B. I. i. 430.  
Kashmir.
- Geranium Wallichianum**, large, perennial, hairy, root thick, stem stout, much branched; leaves 3-4 in. broad, 5-angled, deeply 3-5 lobed, segments long-pointed, sharply toothed, stalked, stipules  $\frac{1}{2}$ -1 in. long, very broad, blunt; flowers  $1\frac{1}{2}$ -2 in. diam., blue-purple, on long stalks, bracts large, sepals 5, ending in a long bristle, petals 5, tip broad with a shallow notch, stamens, styles and capsule like *G. pratense* above. This plant is used as an astringent especially in the case of sore eyes.  
*Liljahri*.  
GERANIACEÆ.  
F. B. I. i. 430.  
Himalaya,  
7-11,000 ft.  
Simla (Collett).  
Murree (Douie).  
Hazara (Barrett).
- Geranium Tuberaria**, medium size, slender, hairy and glandular, root tuberous, perennial; leaves  $1\frac{1}{2}$ -3 in. diam., sometimes alternate, round, kidney-shaped, divided into 5-7 parts, segments very spreading, much divided, radical leaves long-stalked, stipules variable; flowers 1 in. diam., in nearly umbelled clusters of 2 surrounded with shortly-stalked leaves, main flower stalk very hairy and glandular, bracts leafy, much divided, sepals 5, small, blunt with a fine abrupt point, petals 5, large, rounded with a notch, stamens 5, filaments slender; capsule  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. long, erect, hairy, styles very short, the beaks do not separate as in other species.  
GERANIACEÆ.  
F. B. I. i. 431.  
Kashmir.
- Geranium pusillum**, see Prostrate Herbs, Opposite, Stipulate, Lobed.

## HERBS, ERECT, WITH OPPOSITE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Geranium rotundifolium,** see Prostrate Herbs, Opposite, Stipulate, Lobed.
- Geranium molle,** see Prostrate Herbs, Opposite, Stipulate, Lobed.
- Geranium lucidum,** see Prostrate Herbs, Opposite, Stipulate, Lobed.
- Geranium Robertianum,** medium size, annual or biennial, softly hairy, usually glandular and strongly scented, often red, stem 1-2 ft. high, succulent; leaves 1-3 in. broad, triangular, oblong cut to the base into 3-5 pinnately lobed segments, central segment longest, lobes short-pointed, stalk long, stipules  $\frac{1}{4}$  in. long, ovate; flowers  $\frac{1}{2}$  in. diam., red pink streaked with white in 2-flowered clusters on long stalks, sepals 5, broad, long-pointed, petals 5, narrow, smoothly stalked, twice as long as the sepals, not notched, stamens 5; capsule  $\frac{3}{4}$ -1 in. long, beaks separating upwards and attached above by silky hairs. This plant was formerly much used in European medicine in fevers, consumption and as a gargle.
- Herb-Robert,**  
GERANIACEÆ.  
F. B. I. i. 432.  
Himalaya,  
6-8,000 ft.  
Kashmir, Narkanda  
(Collett).  
Murree (Douie).
- Erodium ciconium,** small, annual, velvety and sticky, branches stout, swollen at the joints, leaves ovate, cut into 2 or 3 segments, segments divided into small toothed lobes, stipules ovate-lanceolate, long-pointed, thin, dry, flowers small, purple on long 2- to many-flowered stalks, bracts thin, dry, finely hairy with an abrupt point, sepals 5, ovate, thin with 3 glandular hairy nerves, ending in a long bristle-like point, petals 5, alternating with glands, broad at the tip, stamens 5, alternating with 5 staminodes; in other characters like *Geranium pratense* except the beaks being pitted at the top and the styles silky on the inner surface.
- Erodium malacoides,** small, annual, softly hairy, stem erect or widely spreading; leaves ovate-oblong, blunt or sharp-pointed, velvety, cut into 3 lobes only, not again subdivided, stipules large, thin, dry, blunt or sharp-pointed; flowers small, lilac on 3- to many-flowered stalks, bracts ovate, thin, dry, finely hairy, sepals 5, thin, 2 outer 5-, and 3 inner 3-nerved, the bristle point hairy, petals 5, tip broad, 9-nerved, stamens 5 with 5 staminodes; carpels stalked, 3-angled, beaks 4-5 times as long as the cell, with stiff brown hairs for  $\frac{1}{4}$  of its length, pits on the beaks with a deep fold.
- Cannabis sativa,** see Herbs, Erect, Alternate, Stipulate, Lobed.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

**Dianthus**  
**Caryophyllus,**  
**Carnation,**  
**Clove Pink,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 214.  
N.-W. F. Province,  
Attock (Falconer).

medium size, perennial, smooth, greyish-green, branched and leafy below, jointed and thickened at the joints; leaves 4-6 by  $\frac{1}{3}$  in., linear, grooved, pointed; flowers 1-1 $\frac{1}{2}$  in. diam., pink, fragrant, in loosely branched clusters, bracts 4, broad, with an abrupt point, much shorter than the calyx, calyx 1-1 $\frac{1}{4}$  in. long, tubular, 5-toothed, petals 5, stalked, smooth, toothed, stamens 10, inserted with the petals, on a long process, styles 2; capsule ovoid, 4-toothed, seeds discoid, with a central groove.

**Dianthus crinitus,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 215.  
Salt Range.  
N.-W. F. Province.  
Peshawar.  
Baluchistan (Lace).

like the last species, but the bracts 4-8 are lanceolate and long-pointed, branches rigid, clusters few-flowered, petals white, scented, fringed nearly to the base.

**Tunica stricta,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 215.  
Kashmir.

medium size, annual, slender, smooth, branched from the base; leaves radical,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, numerous, linear with the tip broad and narrowing to the base, stem leaves linear; flowers  $\frac{1}{6}$  in. long, white, in clusters of very few flowers without bracts on straight slender stalks, calyx 5-toothed and ribbed, top-shaped, petals 5, stalked, linear, oblong, margin even, stamens 10, ovary 1-celled, styles 2; capsule oblong, opening by 4 teeth, seeds many, boat-shaped, wrinkled on the edges and keel.

**Acanthophyllum**  
**macrodon,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 216.  
N.-W. F. Province.  
Waziri Hills  
(Stewart).

small, perennial, tufted, spinous, minutely velvety; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, pale green, stiff with a hard sharp-pointed tip, horizontal, flat above, convex below,  $\frac{1}{20}$ - $\frac{1}{15}$  in. diam. at the base; flowers  $\frac{3}{4}$  in. long, pink, terminal, solitary, bracts 4, linear, with thin papery margins, rough with projecting processes, recurved, calyx cylindric, 5-toothed, teeth spiny with very narrow, thin, papery margins, petals 5, narrow, long-stalked, stamens 10, styles 2, ovary 1-celled; capsule ovoid or oblong, 1-2-seeded, seeds almost kidney-shaped, laterally flattened, margin notched.

## HERBS, UPRIGHT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

**Saponaria Vaccaria,**  
*Musng.*

CARYOPHYLLACEÆ.

F. B. I. i. 217.

The Plains to  
10,000 ft.Simla in cornfields  
(Collett).

Murree (Douie).

Hazara (Barrett).

Baluchistan (Lace).

medium size, annual, smooth, a weed of cultivation, robust, branches none or only a few; leaves 1-3 by  $\frac{1}{2}$ - $\frac{3}{4}$  in., radical leaves oblong, short-pointed, stem leaves sessile, base rounded or heart-shaped, linear-oblong; flowers pink, in terminal many-flowered forked clusters, calyx  $\frac{1}{2}$  in. long, cylindric, ovoid in fruit, 5-toothed, with 5 broad, green nerves, petals 5, stalked, short, irregularly toothed, broad at the tip, stamens 10, styles 2; capsule included in the calyx, broadly ovoid, opening at the top by 5 teeth, seeds many, round, large, black. This plant is used as a substitute for soap. This plant is found very rarely in cornfields in the south of England, but commonly seen on the continent of Europe.

**Silene conoidea,**

CARYOPHYLLACEÆ.

F. B. I. i. 218.

The Plains to  
8,000 ft.Simla in cornfields  
(Collett).

Gujrat District.

Sargodha (Douie).

Hazara (Barrett).

Rawalpindi.

Baluchistan (Lace).

medium size, annual, sticky from velvety glands, branches forking; leaves 2-4 in. long, radical leaves broad at the tip narrowing to the stalk, stem leaves oblong or lanceolate, sometimes very narrow, sessile, short-pointed; flowers pink, few, erect in terminal branching racemes, calyx 1 in. long, base thrust-in., 5-toothed, teeth long, sharp-pointed,  $\frac{1}{3}$ rd the length of the calyx, swollen out in fruit, petals 5, broad at the tip, small, margin even or toothed, stalk has an ear-like projection, 2 scales, stamens 10, 5 joined to the petals, styles 3, ovary stalked; capsule ovoid, shining, pointed, hard, enclosed in the inflated calyx, seeds many, shaped like a spiral shell with 5 dorsal and 5 lateral rows of tubercles.

**Silene Moorcroftiana,**

CARYOPHYLLACEÆ.

F. B. I. i. 219.

Himalaya,  
10-13,000 ft.

medium size, perennial, stems many, stock woody, densely tufted, flowering branches erect, slender, dividing or not at the top, velvety; leaves radical, broad at the tip, narrowing to the base, stem leaves shorter, linear, long- or short-pointed or blunt; flowers white or reddish in terminal or nearly terminal clusters of 1 to 3 flowers, calyx 1-1 $\frac{1}{4}$  in. long, tubular, sticky, base projecting inwards, slender below the middle, nerves 10, dark, teeth short, blunt, with thin papery margins, petals divided into 2, the segments strap-shaped, protruding from the calyx, stalk with a long tooth on both sides, also 2 long scales, stamens 10, 5 joined to the petals, styles 3 on a stalk longer than the capsule; capsule ovoid, seeds flattened, not grooved, with 5 rows of lateral and dorsal tubercles.

HERBS, ERRECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

**Silene arenosa,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 219.  
The Plains.  
N.-W. F. Province.  
Peshawar.  
Attock.  
Baluchistan.

small, annual, slender, bluish-green, sticky, much branched from the root, velvety, leaves  $\frac{3}{4}$ - $1\frac{1}{2}$  in. long, stiff, narrow, long-pointed, margins rolled up, flowers  $\frac{2}{3}$  in. long in few-flowered widely dividing clusters, stalks  $\frac{1}{2}$ -1 in. long, thread-like, calyx  $\frac{1}{2}$ - $\frac{2}{3}$  in. long, club-shaped, slender, 10-ribbed, base pushed inwards, teeth with thin papery margins, petals with the blade divided, lobes linear, stalk with a tooth on each side, scales 2, small, lanceolate, capsule oblong, the style stalk equal to the capsule; for other characters see the last species. The flowers open at night.

**Silene tenuis,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 219.  
Himalaya,  
8-12,000 ft.

small, perennial, smooth or sticky with glands, many stems from the root, slender, unbranched, leaves 1-3 in., short- or long-pointed, narrow, linear or lanceolate, often with scattered hairs, flat, radical leaves slightly broadened upwards, flowers  $\frac{1}{2}$  in. long, dirty yellow or brown, often in a circle in short racemes, stalks  $\frac{1}{6}$ - $\frac{1}{4}$  in., bracts short, in a circle, awl-shaped, calyx bell-shaped,  $\frac{1}{3}$ - $\frac{1}{2}$  in., thin, base rounded or abrupt, 10-nerved, teeth blunt, spreading, petals divided, stalk with 2 teeth, hairy, scales short, oblong, capsule oblong, seeds with 5 dorsal and lateral rows of tubercles; other characters like the last species.

**Silene Griffithii,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 220.  
Himalaya,  
7-11,000 ft.

medium size, perennial, stout, velvety or hairy, stems divided or not; leaves  $2\frac{1}{2}$ -4 by  $\frac{3}{4}$ - $1\frac{1}{4}$  in., radical leaves lanceolate with a broad tip ending in a broad stock, stem leaves oblong, sessile, velvety on both surfaces, flowers white, in opposite axillary irregularly 3-flowered clusters, shortly stalked, calyx  $\frac{3}{4}$ -1 in. long, cylindric, barely dilated above except in fruit, teeth short-pointed, not bordered with white, nerves 10, green, base rounded or abrupt, petals deeply 2-lobed, lobes divided into 3-6 parts, no scales, no teeth on stalks of petals, capsule oblong, ovary shortly stalked, seeds minute, sides flat or convex, back grooved; other characters like the last species. This plant is used in Lahoul with an alkali as a substitute for soap.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

**Silene Webbiana**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 220.  
Himalaya, Sirmur.

medium size, slender, very like *Silene viridiflora* Linn., leaves  $1\frac{1}{2}$  in. broad, stem leaves ovate, stem clasping, long-pointed, 5-9-nerved, flowers greenish-white, drooping in loose opposite long-stalked clusters, calyx  $\frac{3}{4}$  in., very slender, 10-nerved, swollen in fruit, teeth with thin edges, petals long, blade divided, lobes strap-shaped, scales 2, styles 3, capsule cylindric, oblong; other characters like the last species.

**Cucubalus baccifer**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 221.  
Himalaya,  
5-8,000 ft.

medium size, rambling, velvety with curly white hairs; leaves 1-2 by  $\frac{3}{4}$ -1 in., ovate-lanceolate, short-pointed, thin with scattered hairs, narrowed into the stalk, upper leaves sessile; flowers greenish-white, nodding, in 1-3-flowered loose leafy clusters or solitary in the forks of the branches, calyx  $\frac{1}{2}$  in., 5-toothed, broadly bell-shaped, 10-nerved, base rounded, teeth large, broad, almost short-pointed, petals 5, 2-lobed, stalk narrow, toothed at the top, blade of petal with 2 scales at the base, stamens 10, styles 3; capsule round, black, the size of a pea, tip crowned with a projection, shining, dry or fleshy, becoming thin, seeds minute, many, kidney-shaped with a lateral depression.

**Lychnis coronaria**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 222.  
Kashmir Valley,  
in groves and fields  
(Jacquemont).

medium size, perennial, covered with white wool, sparingly branched; leaves 3-5 in., lanceolate with a broad tip narrowed to the stalk, stem leaves oblong; flowers red purple, on long stalks, calyx  $\frac{3}{4}$ -1 in., top-shaped, 10-nerved, teeth 5, twisted to the left, petals 5, 1 in. or more in length, with 2-toothed stiff scales at the stalk, heart-shaped with a notch at the margin, broad, stamens 10, styles 5; capsule nearly sessile, within the calyx, 5-valved, valves with an even margin, seeds many, doubly convex.

**Lychnis  
Cachemiriana**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 224.  
Kashmir (Royle).

medium size, straight, stout, unbranched, with grey hairs; leaves 2-3 by  $\frac{1}{2}$ - $\frac{2}{3}$  in., narrow, ovate to linear-lanceolate, slightly rough; flowers white, large, erect or nodding in nearly terminal contracted clusters, calyx  $\frac{3}{4}$ -1 in. long, green, oblong, teeth 5, short- or long-pointed, nerves many, branching, petals 5, blade  $\frac{1}{3}$  in. long, stalk woolly, blade 2-fid, lobes divided, stamens 10, styles 5; capsule ovoid, 5-fid, on a woolly stalk, seeds many, kidney-shaped, granulate.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

**Lychnis Stewartii,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 224.  
Himalaya, Upper  
Chenab and  
Chamba River,  
8-11,000 ft.  
(Stewart).

small, stiff, slender, upper part sticky and woolly, leafy; leaves 2 by  $\frac{1}{16}$ - $\frac{1}{12}$  in., very narrow, linear, spreading, 1-nerved, keeled by the stout mid-rib, margins turned in; flowers  $\frac{3}{4}$  in. long, white, nodding, solitary or in opposite pairs with 2 linear bracts above the middle, in the upper leaf axils, calyx  $\frac{1}{3}$  in. long, oblong, velvety, nerves green faint, free or united, teeth 5, rounded, edges thin with long curled hairs, petals 5, heart-shaped with a notched margin, blade very short, scales 2, notched, divided into two, curved back, stalk very broad with a tooth on each side, petals projecting beyond the calyx, stamens 10, styles 3, very short; capsule ovoid, projecting out of the calyx, 10-fid, stalk woolly.

**Lychnis indica,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 225.  
Himalaya,  
5-10,000 ft.  
Simla (Collett).  
Changlagalli  
(Douie).

medium size, leafy, branches dividing into forked pairs, very slightly velvety; leaves 1-5 by  $\frac{1}{3}$ - $2\frac{1}{2}$  in., ovate-lanceolate to orbicular, lower leaves stalked; flowers creamy white inside and purplish outside, erect or nodding in open or close many-flowered branching sticky hairy clusters, stalks without bracts, calyx  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, velvety, bell-shaped, nerves 10-15, simple or branched, teeth 5, broad, blunt, rarely short-pointed, petals 5, much longer than the calyx, blade 2-fid or divided into several processes, 2 erect crisped scales at the base of the blade, forming with other petal scales a crown over which the anthers project, stamens 10, styles 5, twisted, silvery; capsule ovoid, teeth 5, simple or bifid, stalk short, velvety, seeds many, minute, very dark, kidney shaped, granulate.

**Lychnis nutans,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 225.  
Himalaya,  
9-12,000 ft.  
Murree, Hattu  
(Collett).

very like the last species, but smaller, calyx more rounded and shorter, petals purple and blade shorter and less divided.

**Lychnis pilosa,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 226.  
Himalaya,  
9-12,000 ft.

very like the last species, but covered with long hairs and the seeds with longer projections.



HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

**Holosteum  
umbellatum,**

see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Cerastium  
dahuricum,**

CARYOPHYLLACEÆ.

F. B. I. i. 227.

Himalaya,

10-11,000 ft.

Muree (Stewart).

Matiana, Hattu

(Collett).

large, perennial, stems stout, ascending among shrubs to 12 ft. or straggling over grass, smooth; leaves  $1\frac{1}{2}$ -2 in., large, oblong, sessile or forked, or united, blunt or short-pointed, margin projecting; flowers  $\frac{3}{4}$  in. diam., white, long-stalked without bracts in forking clusters, sepals 5, oblong, ends rounded or almost pointed, shining with thin margins,  $\frac{2}{5}$  in., ovate-lanceolate, petals 5, 2-lobed, heart-shaped, twice the length of the sepals, stalks bearded, stamens 10, styles 5; capsule straight, twice the length of the calyx, many-nerved, teeth re-curved, seeds flattened, many.

**Cerastium  
vulgatum,**

**Mouse-ear  
chickweed,**

CARYOPHYLLACEÆ.

F. B. I. i. 228.

The Plains to

15,000 ft.

small, annual, velvety, more or less sticky, a weed of cultivation, stems many, simple or branched, stout or slender; leaves  $\frac{1}{2}$ -1 in., lower broad at the tip narrowing to the stalk, upper oblong or ovate, blunt or short-pointed; flowers  $\frac{1}{6}$ - $\frac{1}{3}$  in. diam., in clusters few- or many-flowered, open or crowded, or in umbels or heads, sepals 5, lanceolate, about  $\frac{1}{5}$  in. long, margins broad, petals 5, rarely none, equal to the sepals in length, shortly lobed, stamens 10, sometimes 5 or less, styles 5; capsule cylindrical, much longer than the calyx, often curved, like a horn (cerastos), whence the name is derived, teeth straight, seeds many, flattened.

**Cerastium Thomsoni,**

CARYOPHYLLACEÆ.

F. B. I. i. 228.

Himalaya,

at Kishtwar and

Lahul,

10-12,000 ft.

small, hairy, very glandular, branched only at the base; leaves  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long, linear-oblong, almost short-pointed, straight; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., white, in few-flowered nearly umbel-like clusters, bracts with narrow thin margins, stalks slender, sepals 5, oblong-lanceolate, short-pointed, coloured below the thin tips, much smaller than the petals, petals 5, broad, capsule cylindrical, twice the calyx, teeth 10, seeds many, flattened.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

**Stellaria crispata,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 229.  
Himalaya,  
6-10,000 ft.  
The Glen.  
Simla, in shady  
places (Collett).  
Baluchistan (Lace).

large, straggling, slightly velvety above, stems quadrangular, shining with a line of fine hairs, joints often hairy; leaves 3-8 in. long, lanceolate or oblong, rather leathery, tips slender, margin more or less crisped, sessile, long-pointed; flowers small, white, in much branched clusters, terminal, sepals  $\frac{1}{6}$  in., 5, oblong-lanceolate, long-pointed, margin narrowly thin and dry, often sticky, petals 5, 2-fid, as long as or twice as long as the sepals, stamens 10, styles 3; capsule short, 3-celled, seeds one or two, granulated.

**Stellaria paniculata,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 229.  
Himalaya,  
7-9,000 ft.  
Fagu, Narkanda  
(Collett).

medium size, very like the last species but the stem is reclining and the leaves are not crisped, flowers are smaller, petals notched, shorter than the sepals, capsule equal to the calyx, seeds wrinkled.

**Stellaria media,**

see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Stellaria bulbosa,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 231.  
Himalaya,  
6-9,000 ft.  
Jammu to Murree  
(Jacquemont).  
Hazara (Barrett).

small, smooth, rootstock creeping, bearing small round underground branches with buds or eyes, stem slender, erect, unbranched with a line of hairs; leaves 2-6 pairs, 1-1 $\frac{1}{2}$  in. long, ovate with a broad tip or unequally lanceolate, almost short-pointed, rather fleshy, sessile or narrowed into a stalk, margins rarely hairy; flowers of two kinds, the lower on the plant from slender stalks being minute without petals bearing ripe seeds, the nearly large flowers,  $\frac{1}{2}$  in. diam., rarely producing seed, sepals 4 or 5, green, oblong-lanceolate or lanceolate,  $\frac{1}{2}$ - $\frac{2}{3}$  in., shorter than the petals, petals 4 or 5, white, ovate-oblong, shortly 2-lobed, stamens 10, with purple anthers, styles 2, thread-like; capsule 8-angled, valves 4, divided to the base, seeds few, large, furnished with excrescences on the surface.

**Stellaria glauca,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 233.  
Himalaya, Lahul  
(Jaeschke).

medium size, perennial, slender, quite smooth, stem quadrangular; leaves 1-2 in. long, sessile, oblong or linear-lanceolate, long-pointed, base rounded, margins thickened; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., white, on nearly solitary terminal rather stout straight stalks, bracts thin, sepals 4 or 5, more or less united at the base, linear-oblong, long- or short-pointed, green, petals 4 or 5, broad, 2-lobed, twice

HERBS, UPRIGHT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

as long as the sepals, stamens 10, slender, styles 3, rarely 4; capsule broadly ovoid, 4-6-valved, valves undivided, equal in length to the sepals, seeds many, very granulate.

**Arenaria Meyeri**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 236.  
N.-W. F. Province.  
Peshawar (Stewart).  
Baluchistan.

small, annual, covered with spreading glandular hairs, stem cylindric, branches in parallel clusters; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., linear, awl-shaped, recurved; flowers  $\frac{1}{4}$  in. diam., white, in clusters, sepals 5,  $\frac{1}{3}$  in. long, green, erect, rigid, sharp, margins white, petals 5, very short, ovate-oblong, not divided, stamens 5-7, styles 3; capsule oblong, much shorter than the sepals, 3-valved, seeds many, red-brown, round, notched, flattened.

**Arenaria foliosa**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 236.  
Himalaya,  
9-13,000 ft.

small, perennial, quite smooth, branched from the base, slender, leafy; leaves  $\frac{1}{3}$ - $\frac{2}{3}$  by  $\frac{1}{17}$  in., spreading, never stiff or sharp, very narrow, linear, bright green; flowers  $\frac{1}{4}$  in. diam., white, on the long-stalked, almost umbelled, clusters, bracts and bracteoles leathery, concave, short-pointed, calyx rounded and not thickened at the base, sepals 5,  $\frac{1}{8}$  in., leathery, sharp, petals 5, longer than the sepals, stamens 5, styles 3; capsules ovoid, larger than the sepals, valves 3, recurved, seeds many, small, pale brown, kidney-shaped, granulate on the back.

**Arenaria kashmirica**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 236.  
Himalaya,  
6-7,000 ft.  
Lahul (Jaeschke).

very like the last species, but glandular, velvety, leaves stiffer and sharper, flowers smaller with longer petals.

**Arenaria holosteoides**,  
*Kakua, gaudial*.  
CARYOPHYLLACEÆ.  
F. B. I. i. 241.  
Himalaya,  
7-12,000 ft.  
Murree (Douie).  
Baluchistan  
(Boissier).

large, slender, pliable, smooth or velvety, much-branched; leaves 1-3 in., linear or linear-oblong, sessile, base broad, short- or long-pointed; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., white, nodding in few-flowered clusters, flower stalks slender, widely separated, no bracts, calyx not thickened at the base, sepals 5, blunt, linear-lanceolate to broadly ovate-oblong, green with thin edges, smooth or very hairy and glandular at the back, petals 5, equal to or longer than the sepals, tip with a shallow notch, broad, stamens 5, styles 2-3, thread-like, long; capsule nearly round, shorter than the calyx, very thin, 2-6 valved to the base, seeds  $\frac{1}{8}$ , red brown or blackish, with rows of sharp tubercles.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

**Hypericum perforatum,**  
**Common St. John's Wort,**

*Bassant, dendlu.*

HYPERICACEÆ.

F. B. I. i. 255.

Himalaya,

3-8,000 ft.

Simla, in shady forest (Collett).

medium size, perennial, stem 2-angled, lowest branches rooting; leaves  $\frac{3}{4}$  in. long, oblong or ovate, blunt, dotted with translucent glands, pale below with black dots, sessile; flowers 1 in. diam., yellow, in terminal or axillary short-stalked clusters, sepals 5,  $\frac{1}{6}$  in. long, united at the base, linear, short-pointed, petals 5, persistent, with black glandular edges, stamens many, in 3 bundles, anthers black-dotted, styles 3, as long as the stamens, ovary 3-celled; capsule  $\frac{1}{2}$  in. long, ovoid, seeds many, small. This plant was used in Arabic medicine. A red dye can be obtained from the flowers.

**Hypericum elodeoides,**

HYPERICACEÆ.

F. B. I. i. 225.

Himalaya,

6-12,000 ft.

Simla, Narkanda, in shady forest (Collett).

medium size, perennial, stems round, lowest branches rooting, leaves 1-1 $\frac{1}{2}$  in. long, ovate, blunt or lanceolate, short-pointed, base stem-clasping, margins black-dotted, flowers  $\frac{3}{4}$  in. diam., in clusters of branching racemes, sepals 5,  $\frac{1}{4}$  in. long, narrowly lanceolate, black-dotted and streaked, margins with gland-tipped teeth, petals 5, persistent, black-dotted and streaked; in other characters like the last species.

**Vahlia viscosa,**

SAXIFRAGACEÆ.

F. B. I. ii. 399.

The Plains.

small, annual or biennial, velvety with sticky glands; leaves  $\frac{1}{2}$ -1 in. long, nearly sessile, oblong, narrowed at both ends, short-pointed; flowers  $\frac{1}{8}$  in. long, white, nearly sessile, in pairs or solitary in nearly all the axils of the upper leaves, calyx tube united to ovary and above it, lobes 5, ovate and short-pointed; persistent in fruit, petals 5,  $\frac{1}{6}$  in. long, ovate with a broad tip united to the ovary, stamens 5 and styles 2, both  $\frac{1}{8}$  in. long; capsule  $\frac{1}{8}$  in. diam., one celled, nearly round, splitting at the top between the styles, seeds minute, many, smooth.

**Ammannia pentandra,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Petals none.

**Ammannia baccifera,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Petals none.

**Ammannia salicifolia,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Petals none.

**Ammannia senegalensis,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Petals none.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

**Ammannia  
multiflora,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Petals none.

**Epilobium  
angustifolium,  
French Willow or  
Rosebay,**

ONAGRACEÆ.

F. B. I. ii. 582.

Himalaya,  
8-12,000 ft.

medium size, smooth; leaves 3-6 by  $\frac{3}{4}$  in., nearly sessile, short-pointed, margin even or minutely toothed; flowers  $\frac{3}{4}$  in., rose purple, in spikes at the ends of branches, bracts narrow, soon falling off, calyx tube scarcely produced above the ovary, covered with close white wool, linear, teeth 4, lanceolate, long-pointed, purplish, almost petal-like, petals 4,  $\frac{1}{2}$ - $\frac{5}{8}$  in., ovate with a broad tip, stalked, stamens 8, on the ovary, bent on one side, 4 shorter, style cylindric, hairy above the base, stigmas 4, distinct, spreading; capsule linear, 4-celled, splitting from the apex,  $2\frac{1}{2}$ - $3\frac{1}{2}$  in., velvety, valves 4, recurved, seeds many, narrowly ovoid, smooth, crowned with a tuft (coma) of dirty yellow silky hairs.

**Epilobium  
latifolium,**

ONAGRACEÆ.

F. B. I. ii. 583.

Himalaya,  
11-14,000 ft.  
Kashmir.

small, smooth, leaves  $1\frac{1}{2}$ -3 by  $\frac{1}{4}$ - $\frac{3}{4}$  in., oblong, narrowed to both ends, margin even or minutely toothed, blunt or short-pointed, flowers on stalks in the axils of distant leaves, no bracts; for other characters see the last species.

**Epilobium  
organifolium,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

PETALS UNITED.

**Rubia tibetica,**

RUBIACEÆ.

F. B. I. iii. 204.

Himalaya,  
10-14,000 ft.  
Kulu (Hay).

small, perennial, rough, root thick, woody, bundles of stems each  $\frac{1}{4}$  in. thick, stout, with glistening white bark, erect, annual shoots clustered together, simple or branching, nodes of the stems covered with thin bases of old leaves; leaves  $\frac{1}{2}$ -1 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., sessile, broadly ovate, round or lanceolate, often in a circle of 4 leaves, leathery, margins and midrib rough; flowers  $\frac{1}{4}$  in. diam., in axillary or terminal clusters, shorter than the leaves, or solitary on long axillary stocks, calyx tube ovoid or round, no teeth, corolla bell-shaped, lobes 4-5, lanceolate, short-pointed, stamens 4-5, anthers round, style 2-branched, ovary 2-celled; fruit  $\frac{1}{8}$  in. diam., smooth, round or almost 2-lobed, seeds 2, small.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Rubia albicaulis**, see Climbers, Opposite, Exstipulate, Simple.

**Galium boreale**,  
**Northern Galium**,  
RUBIACEÆ.  
F. B. I. iii. 205.  
Himalaya,  
5-11,000 ft.  
Kashmir, Lahul.

medium size, perennial, smooth or velvety, branches square; leaves 1-2 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., 4 in a circle, lanceolate, blunt, stiff, margins rough, sessile, 3-nerved from the base; flowers minute, white, in nearly erect axillary and terminal many-flowered clusters with ovate bracts, calyx tube ovoid or round, teeth none, corolla wheel-shaped, lobes 4, nearly pointed, stamens 4 in the corolla tube, anthers 2-lobed, style short, 2-branched, ovary 2-celled; fruit  $\frac{1}{12}$  in. diam., 2-lobed, dry, covered with hooked hairs, seeds 2, small, flat on one side, convex on the other.

**Galium triflorum**,  
RUBIACEÆ.  
F. B. I. iii. 205.  
Himalaya,  
6-10,000 ft.  
Mashobra, Mahasu,  
Narkanda (Collett).

small, perennial, smooth, stems sometimes straggling, leaves long and short,  $1\frac{1}{2}$ - $2\frac{1}{2}$  by  $\frac{1}{4}$ - $\frac{1}{2}$  in. and  $\frac{1}{2}$ -1 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., the long leaves sessile, the short stalked, 6-8 in a circle or the short 4 in a circle, lanceolate, not 3-nerved from the base, flowers whitish-yellow, minute in axillary or terminal few-flowered clusters; otherwise like the last species.

**Galium vestitum**,  
RUBIACEÆ.  
F. B. I. iii. 206.  
Himalaya,  
7-10,000 ft.  
Rogi, Chini  
(Collett).

small, perennial, stems stout, ascending, leaves  $\frac{1}{4}$ - $\frac{2}{3}$  in., short, blunt, oblong, hairy, sessile, in circles of 4-6, clusters of flowers small, terminal and axillary, flowers minute, fruit very small, covered with hooked bristles; otherwise like the last species.

**Galium tricorne**,  
**Corn Galium**,  
RUBIACEÆ.  
F. B. I. iii. 207.  
The Plains, Waziri,  
and Attock Hills,  
Kashmir, to  
13,000 feet.

medium size, annual, very rough, stem stout, branches square, leaves 1- $1\frac{1}{2}$  by  $\frac{1}{8}$ - $\frac{1}{6}$  in., linear, stiff, 6-8 in a circle, point rigid, tapering, flowers white, minute on long or short, stout, axillary, 1-3-flowered stalks, corolla lobes ovate, short-pointed, fruit smooth,  $\frac{1}{6}$  in. diam.; otherwise like the last species.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

- Galium verum,**  
**Ladies' bedstraw,**  
 RUBIACEÆ.  
 F. B. I. iii. 208.  
 Himalaya,  
 5-10,000 ft.  
 Kashmir, Lahul.
- small, perennial, smooth, stem velvety upwards leaves  $\frac{1}{2}$ -1 by  $\frac{1}{12}$ - $\frac{1}{8}$  in., 8-10 in a circle, linear, point rigid tapering, sessile, margins turned in, flowers bright yellow minute in very many short many-flowered clusters fruit  $\frac{1}{10}$  in. diam., smooth; otherwise like the last species.
- Galium tenuissimum,**  
 RUBIACEÆ.  
 F. B. I. ii. 208.  
 The Plains at  
 Rawalpindi,  
 Kashmir,  
 5-6,500 ft.
- small, annual, very slender, the plant appears broad above and narrow below, the stem dividing into two, the branches into two or three, rough with the roughness directed downwards, leafy at the forks only, leaves  $\frac{1}{2}$ - $\frac{3}{4}$  by  $\frac{1}{10}$  in., 6 in a circle, linear, rough, with scattered bristles, margins turned in, flowers white or yellowish, minute, in large loose-flowered clusters on long slender stalks, corolla lobes sharp, stiff-pointed, fruit  $\frac{1}{12}$  in. diam.; otherwise like the last species.
- Galium setaceum,**  
 RUBIACEÆ.  
 F. B. I. iii. 208.  
 The Plains, Hissar  
 (Aitchison).
- small, annual, stems round, minutely rough or smooth, leaves  $\frac{1}{2}$ - $\frac{3}{4}$  by  $\frac{1}{10}$  in., upper fliform, short-pointed, bristly, margins turned in, lower shorter, broader at the tip, not bristly, flowers most minute, yellow, in terminal and lateral few-flowered clusters on slender stalks equal to or longer than the leaves, fruit  $\frac{1}{20}$  in., smooth or with a few hooked hairs; otherwise like the last species.
- Galium ceratophylloides,**  
 RUBIACEÆ.  
 F. B. I. iii. 209.  
 Kashmir, 8,500 ft.  
 Pusiana (Clarke).
- small, stems hardly branching, short, 4-angled, very slender, quite smooth, leaves  $\frac{1}{2}$  in., in close set circles of six, rather weak, finely long-pointed with bristles, minutely rough towards the tip, flowers very minute, yellowish in axillary 3-flowered clusters on erect stalks shorter than the leaves with 2 awl-like bracts at the tip, corolla segments lanceolate, long-pointed; otherwise like the last species.
- Galium verum,** see Herbs, Prostrate, Opposite, Exstipulate, Simple.
- Asperula cynanchica,**  
**Squinancywort,**  
 RUBIACEÆ.  
 F. B. I. iii. 209.  
 Himalaya, Kashmir,  
 8,000 ft.
- small, perennial, smooth, rarely almost velvety, stock woody, stems many, slender, round, branches square, leaves  $\frac{1}{4}$ - $\frac{2}{3}$  by  $\frac{1}{12}$ - $\frac{1}{8}$  in., small, linear-oblong, blunt, lower in circles of 4, upper in pairs, flowers  $\frac{1}{10}$  in. long, pink or white, in slender clusters or heads at the naked tips of branches with 2 small linear oblong bracts, corolla funnel-shaped, lobes 4, triangular, shorter than the tube, fruit  $\frac{1}{12}$  in. diam.; otherwise like Galium.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

- Asperula brachyantha**,  
RUBIACEÆ.  
F. B. I. iii. 209.  
Himalaya, Kashmir,  
7-12,000 ft.
- very like the last species, but with shorter leaves in pairs, shorter blunter bracts, and longer woolly corolla, flowers more in heads.
- Valerianella dentata**,
- see Herbs, Unbranched, Opposite, Exstipulate, Simple.
- Valerianella Szovitziana**,
- see Herbs, Unbranched, Opposite, Exstipulate, Simple.
- Scabiosa Olivieri**,
- see Herbs, Erect, Opposite, Exstipulate, Lobed.
- Scabiosa speciosa**,
- see Herbs, Erect, Opposite, Exstipulate, Lobed.
- Spilanthes Acemella**,
- see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Anagallis arvensis**,  
**Pimpernel**,  
*Jonkmari*.  
PRIMULACEÆ.  
F. B. I. iii. 506.  
The Plains to  
7,000 ft.  
Simla in fields  
(Collett).  
Baluchistan (Lace).
- small, annual, slender, branches square, growing from the base; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., ovate or lanceolate, short-pointed, dotted with glands; flowers bright blue, rarely scarlet,  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., open in sunlight on solitary axillary slender stalks, longer than the leaves, erect in flower, bent down in fruit, calyx segments 5, narrow lanceolate, long-pointed, nearly as long as the corolla, corolla wheel-like, segments 5, with a few hairs, stamens 5, very hairy, ovary one-celled, style thread-like; capsule size of a small pea, round, opening by a circular slit round the middle, seeds many, minute, 3-angled. This plant is used by Indians to cure cerebral diseases.
- Cynanchum Vincetoxicum**,  
ASCLEPIADACEÆ.  
F. B. I. iv. 22.  
Himalaya,  
7-11,000 ft.  
Shali, Sangri,  
Patarnala (Collett).
- small, perennial, velvety or smooth, juice milky; leaves 2 by  $1\frac{1}{2}$  in., broadly ovate, shortly stalked, pointed; flowers  $\frac{1}{8}$  in. diam., yellow, in sessile or stalked branching racemes or flat clusters, axillary, calyx segments 5, corolla wheel-shaped, lobes 5, smooth, a ring of 5 erect triangular oblong or rounded scales (corona) united to the staminal tube, stamens 5, united, flattened, anthers 2-celled, projecting over the stigmas, forming a 5-angled disk, carpels 2; follicles 2-4 in. long, smooth, slender, tapering, seeds many, flattened, winged, and crowned with a brush of fine hairs.



HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Cynanchum  
glaucum,**

ASCLEPIADACEÆ.

F. B. I. iv. 22.

Himalaya,

5-9,000 ft.

Simla, Mashobra

(Collett).

medium size, perennial, woolly or velvety, pale or with a bluish-green waxy gloss, juice milky; leaves 1-3 by  $1\frac{1}{2}$ - $2\frac{1}{3}$  in., ovate, oblong or lanceolate, leathery, short- or long-pointed, stalk  $\frac{1}{4}$ - $\frac{1}{2}$  in. long; flowers  $\frac{1}{6}$  in. diam., yellow, in nearly sessile velvety umbelled clusters, calyx segments 5, corolla lobes 5, hairy within, coronal lobes 5, rounded, broad, fleshy, stamens, etc., as in the last species; follicles 2-4 in., slender, seeds  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, broadly ovoid, concave on one side, convex on the other, crowned with a bunch of fine hairs.

**Cynanchum  
Arnottianum,**

ASCLEPIADACEÆ.

F. B. I. iv. 22.

Kashmir, 6-8,000 ft.

Dunglagalli (Douie).

very like the last species; but sometimes with the leaves in circles, and the corolla smaller and dark purple.

**Cynanchum  
Jacquemontianum,**

ASCLEPIADACEÆ.

F. B. I. iv. 26.

Kashmir.

Baluchistan

(Boissier).

small to medium size, perennial, smooth, branches many, slender, from a woody stock, juice milky, leaves  $1-1\frac{1}{2}$  by  $\frac{1}{2}$ - $\frac{2}{3}$  in., small, lanceolate, from a broad heart-shaped base, finely long-pointed, stalk  $\frac{1}{4}$ - $\frac{1}{3}$  in., flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., many, in level clusters on stalks longer than the leaves, calyx segments ovate, corolla velvety within, corona equal to the corolla, 5-fid, lobes finely lanceolate, simple or divided with a small flat process below; otherwise like the last species.

**Ceropegia Wallichii,**

ASCLEPIADACEÆ.

F. B. I. iv. 67.

Himalaya,

4-8,000 ft.

Simla, Prospect and

Elysium Hills, Shali

(Collett).

small, velvety, stem  $\frac{1}{3}$  in. diam.; leaves 2- $2\frac{1}{2}$  in., ovate or rounded, nearly sessile, tip blunt, short-pointed or rounded; flowers  $\frac{3}{4}$ -1 in. long, dark red purple, in crowded stalked clusters on a very short axillary main stalk, bracts bristly, calyx segments 5, narrow,  $\frac{1}{4}$  in. long, thread-like, corolla tube narrow, base swollen, mouth funnel-shaped, sharply 5-angled, lobes  $\frac{1}{3}$  in. long, erect, narrow, tips joining, within it 10 coronal scales, in 2 series, outer united in a short 10-lobed cup joined to the staminal tube, inner longer, linear, erect, ununited, stamens 5, united into a very short tube, anther tips blunt; follicles smooth, tapering,  $2\frac{1}{2}$  in., long-pointed, seeds crowned with a bunch of hairs.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

**Caralluma edulis,**  
*Chang, pippu, situ.*  
 ASCLEPIADACEÆ.  
 F. B. I. iv. 76.  
 The Plains,  
 Rawalpindi, Multan.

small, fleshy, branched or not, stem and branches 4-grooved, nearly round, sometimes leafless; leaves  $\frac{1}{2}$  in. long, soon falling off, ovoid-lanceolate, short-pointed, fleshy; flowers  $\frac{1}{3}$  in. diam., purple within, solitary or in pairs in the upper leaf axils, calyx lobes 5, short-pointed, corolla smooth, broadly bell-shaped, lobes 5, narrow, ovate-lanceolate, tube enlarged, coronal scales in a ring, joined to the staminal column, 5-lobed, lobes 2-pointed, with a process on the inner face which overlaps the anthers, staminal column very short, anthers short, with a shallow notch at a rounded apex, resting on, or joined to the stigma, stigma flat; follicles slender, smooth, round, seeds crowned with a bunch of hairs. This plant is eaten by the poor as a vegetable.

**Exacum tetragonum,**  
**Titahana.**  
**Ava ohiretta,**  
 GENTIANACEÆ.  
 F. B. I. iv. 95.  
 The Plains to  
 5,000 ft.

medium size to large, stem square, a little branched below; leaves 5 by  $1\frac{1}{2}$  in., short-pointed, or  $1\frac{1}{2}$  by  $\frac{2}{3}$  in., nearly blunt, 5-nerved, sessile or stem clasping, broadly lanceolate; flowers blue,  $1\frac{1}{4}$  in. diam., in terminal branching racemes, calyx deeply 4-lobed, lobes  $\frac{1}{2}$ - $\frac{2}{3}$  in. long, ovate, long-pointed, keeled, or sometimes barely 3-winged, corolla wheel-shaped, lobes 4,  $\frac{3}{4}$  in. long, oblong, short-pointed, stamens 4, on the corolla tube, anthers  $\frac{1}{4}$  in., straight, style  $\frac{1}{2}$  in. long, thread-like, stigma round; capsule  $\frac{1}{3}$  in. diam., nearly round, seeds very many, minute. This plant is used by Indians as a tonic bitter in place of Chiretta.

**Exacum**  
**pedunculatum,**  
 GENTIANACEÆ.  
 F. B. I. iv. 97.  
 The Plains to  
 3,000 ft.

small, stem square, much branched; leaves  $1\frac{3}{4}$  by  $\frac{1}{2}$  in., oblong with rounded ends or lanceolate, 3-nerved, nearly sessile; flowers  $\frac{2}{3}$  in. diam., blue, in many-flowered terminal rigid stalked clusters on main stalks  $\frac{1}{8}$ - $\frac{1}{2}$  in. long, calyx lobes 4,  $\frac{1}{6}$ - $\frac{1}{5}$  in. long, ovate, long-pointed, wing distinct, lanceolate, corolla wheel-shaped, lobes 4,  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, oblong with rounded ends, stamens 4, anthers  $\frac{1}{3}$  in., style long, stigma nearly round; capsule  $\frac{1}{6}$  in., nearly round, valves 2, seeds very many, minute. This plant is used by Indians as a bitter tonic in place of gentian.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Hoppea  
dichotoma,**GENTIANACEÆ.  
F. B. I. iv. 100.  
The Plains to  
3,000 ft.

very small, annual, smooth, stem square, much branched; leaves  $\frac{1}{4}$  in. long, ovate, sessile; flowers  $\frac{1}{2}$  in., white, in sessile 2-3-flowered dense or loose clusters, calyx  $\frac{1}{2}$  in., bell-shaped, lobes 4, ovate, long-pointed, thin, marginal nerve green, corolla bulging on one side, shorter than the calyx, tube  $\frac{1}{20}$  in., lobes short, triangular, stamens 4, 1 perfect, 3 barren, in the throat of the corolla, style short, stigma hardly divided; capsule nearly round, very small, seeds very many, minute, nearly black.

**Enicostema  
littorale,**

*Chota kirayata.*  
GENTIANACEÆ.  
F. B. I. iv. 101.  
The Plains to  
1,500 ft.

small, annual, smooth, stem round or square, branched, spaces between leaves short; leaves 2 by  $\frac{1}{2}$  in., or smaller and nearly linear, ovate-lanceolate, sessile; flowers  $\frac{1}{5}$  in. long, white or bluish in sessile axillary clusters, calyx  $\frac{1}{10}$  in., deeply divided into 5 lobes, which are narrowly oblong and blunt, corolla funnel-shaped, tubular, tube  $\frac{1}{8}$  in., lobes 5,  $\frac{1}{10}$  in., spreading, oblong with rounded ends, stamens 5, in the upper part of corolla tube, scales at the base, anthers oblong, short-pointed, within the tube, style short, linear, stigma round; capsule  $\frac{1}{8}$ - $\frac{1}{6}$  in., oblong with rounded ends, seeds many, nearly round, larger than those of the last species. This plant is bitter and used in place of quinine or chiretta.

**Erythræa  
ramosissima,**

GENTIANACEÆ.  
F. B. I. iv. 101.  
The Plains,  
1-2,000 ft.  
Ludhiana,  
Hoshiarpur  
(Thomson).  
Baluchistan  
(C. B. Clarke).

small, branched, very leafy; leaves  $1\frac{1}{2}$  by  $\frac{2}{5}$  in., sessile, stem leaves oblong, short-pointed or with rounded ends; flowers  $\frac{1}{4}$  in., pink, in sessile bracteate clusters, calyx  $\frac{1}{3}$  in., tubular, teeth 5, lanceolate or linear, with a prominent ridge, equal to the corolla tube, corolla tube  $\frac{1}{4}$  in., lobes 5, spreading, stamens 5, near the mouth of the corolla tube, short, linear, style linear, stigmas oblong; capsule  $\frac{1}{3}$  in., oblong, nearly 2-celled, seeds very small.

**Erythræa  
Roxburghii,**

see Herbs, Unbranched, Exstipulate, Simple.

**Erythræa Meyeri,**

see Herbs, Unbranched, Exstipulate, Simple.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Erythræa  
babylonica,**  
GENTIANACEÆ.  
F. B. I. iv. 102.  
The Plains.  
Lahore.  
Rawalpindi (Douie).

small, stem unbranched below, square with sharp angles, leaves  $\frac{1}{2}$ - $\frac{1}{6}$  in., radical leaves 2, none when in flower, stem leaves oblong, distant from one another, flowers  $\frac{3}{8}$  in., pink, nearly sessile, in equally branching clusters, calyx  $\frac{1}{3}$  in., nearly as long as the corolla tube; otherwise like *Erythræa ramosissima*. Douie notes that the pedicels and calyx are longer in the Rawalpindi specimens.

**Canscora diffusa,**  
GENTIANACEÆ.  
F. B. I. iv. 103.  
The Plains to  
4,000 ft.

small to medium size, annual, stem square, densely branched above; leaves  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., 3-nerved, often stalked, lower leaves lanceolate or oblong with a rounded end, upper passing into ovate, short-pointed, sessile, thin bracts; flowers  $\frac{1}{4}$  in., pink, on slender zigzag stems in loosely spreading leafy terminal clusters, bracts  $\frac{1}{2}$  in., leaflike, a few uppermost linear, calyx  $\frac{1}{5}$  in., tubular, 4-toothed, round, keeled, teeth lanceolate-linear, corolla tube  $\frac{1}{5}$  in., cylindric, lobes 4,  $\frac{1}{6}$  in. long, nearly 2-lipped, stamens 4, one larger perfect on the corolla throat, 3 smaller lower down, style linear, stigmas 2, short; capsule  $\frac{1}{5}$  in. oblong, seeds minute, dark brown, many-sided.

**Canscora decussata,**  
*Sankhahuli.*  
GENTIANACEÆ.  
F. B. I. iv. 104.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).

small to medium size, annual, stems square, angles winged, leaves  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., sessile, oblong-lanceolate, 3-nerved, flowers  $\frac{1}{2}$  in., white, on stalks in the forks of erect winged branches of clusters, calyx  $\frac{1}{3}$ - $\frac{1}{2}$  in., with narrowly lanceolate wings, corolla tube equal to the calyx in length, lobes  $\frac{1}{4}$  in., ovate, with broad blunt tips; otherwise like the last species, but the capsule and seeds much larger. This plant and the preceding are used as laxatives and nerve tonics by Indians.

**Gentiana  
Mooreroftiana,**  
GENTIANACEÆ.  
F. B. I. iv. 108.  
Himalaya,  
8-12,000 ft.  
Kashmir, Lahul.

small, nearly smooth, stem with 4 lines running down it, branched; leaves 1 by  $\frac{1}{2}$  in., oblong-pointed or with the ends rounded, narrow below, bases sometimes joined; flowers  $\frac{1}{2}$ -1 in., blue, in nearly terminal racemes, calyx tubular, tube  $\frac{1}{10}$  in., lobes 4-5, linear,  $\frac{1}{3}$  in., corolla tubular, funnel-shaped, mouth  $\frac{1}{8}$  in. diam., lobes 4-5, stamens 4-5, within the tube, style short or none, stigmas 2; capsule  $\frac{2}{3}$  in., lanceolate, dividing into 2, seeds very many, small, yellow brown. All the gentians are bitter stomachic tonics and are used by the natives of India.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

***Gentiana tenella*,**  
*Tita.*GENTIANACEÆ.  
F. B. I. iv. 109.  
Kashmir,  
10-14,000 ft.small, sometimes straggling, stem with 4 lines, branched, leaves  $\frac{1}{2}$  by  $\frac{1}{4}$  in., oblong or ovate, lowest broad at the tip narrowed to the stalk, flowers bluish,  $\frac{1}{2}$  in. diam., on terminal solitary stalks 1-3 $\frac{1}{2}$  in. long, calyx tube barely any, lobes 5,  $\frac{1}{2}$  by  $\frac{1}{10}$  in. oblong with the end rounded, unequal, corolla tubular, tube  $\frac{1}{2}$  by  $\frac{1}{5}$  in., lobes  $\frac{1}{4}$  in., oblong with the end rounded, capsule  $\frac{2}{3}$  in., oblong linear, sessile; otherwise like the last species.***Gentiana aquatica*,**GENTIANACEÆ.  
F. B. I. iv. 110.  
Kashmir,  
13-16,000 ft.small, branches many from the base, little divided, leaves  $\frac{1}{4}$ - $\frac{1}{3}$  in., stem leaves  $\frac{1}{5}$  in. ovate or with a broad tip, margins turned in, usually blunt, with a bristle at the tip; flowers blue,  $\frac{1}{10}$  in., on solitary terminal stalks  $\frac{1}{8}$ - $\frac{1}{2}$  in. long, calyx  $\frac{1}{4}$ - $\frac{1}{3}$  in., lobes 5,  $\frac{1}{8}$  in., lanceolate, short-pointed, smooth, margins even, erect, corolla tube hardly longer than the calyx, lobes 5, short, with folds, bifid between the lobes, capsule  $\frac{1}{3}$  by  $\frac{1}{8}$ - $\frac{1}{6}$  in., short, ovoid with broad top, flattened, stalk  $\frac{2}{3}$  in. long, capsule projecting beyond the calyx, seeds 3-angled, not much longer than broad; otherwise like the last species.***Gentiana quadrifaria*,**GENTIANACEÆ.  
F. B. I. iv. 111.  
Himalaya,  
3-10,000 ft.  
Simla, Matiana  
(Collett).  
Kashmir.small, annual or biennial, branching from the base, stems many; leaves green, radical leaves persistent, rosulate, 1-1 $\frac{1}{2}$  in., ovate or lanceolate, stem leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., leathery; flowers  $\frac{1}{3}$  in. long, blue, in terminal, 3-5 flowered stalked clusters, calyx shorter than the corolla tube, teeth 5, lanceolate, rigid, often irregularly toothed, corolla  $\frac{1}{4}$ - $\frac{1}{2}$  in., lobes 5, with small bifid folds between, stamens and style as in *G. Moorcroftiana*; capsule  $\frac{1}{2}$  by  $\frac{1}{8}$ - $\frac{1}{6}$  in., ovoid, nearly projecting from the calyx, seeds many, small, smooth, 3-angled.***Gentiana decemfida*,**GENTIANACEÆ.  
F. B. I. iv. 112.  
The Plains  
from 1-3,000 ft.  
Sutlej Valley, Suni  
(Collett).  
Hoshiarpur.small, annual, branches ascending; leaves silvery, shining, radical leaves 1 by  $\frac{1}{3}$  in., nearly sessile, ovate with an abrupt bristle point, stem leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., stiff, uppermost lanceolate; flowers  $\frac{1}{3}$  in. long, blue, in lateral and terminal shortly stalked clusters, calyx  $\frac{1}{3}$  in., lobes 5,  $\frac{1}{6}$  in., narrowly lanceolate, glistening, corolla  $\frac{1}{2}$  in., hardly longer than the calyx, lobes 5, folds bifid, stamens and styles as in the last species; capsule  $\frac{1}{2}$  by  $\frac{1}{8}$  by  $\frac{1}{6}$  in., shortly oblong with rounded ends, enclosed in the calyx, stalk  $\frac{1}{4}$  in., seeds many, very small, oblong with the ends rounded and barely 3-angled.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

**Gentiana argentea,**

GENTIANACEÆ.

F. B. I. iv. 112.

Himalaya,  
7-12,000 ft.Simla (Collett).  
Murree (Douie).

small, annual, almost exactly like the last species, but the leaves are more silvery and the uppermost leaves surround the flowers which are closely clustered almost into a head.

**Gentiana capitata,**

GENTIANACEÆ.

F. B. I. iv. 113.

Himalaya,  
4-12,000 ft.

Simla (Collett).

small, annual, stems branched or not, bare of leaves below; leaves  $\frac{1}{2}$  by  $\frac{1}{4}$ - $\frac{1}{3}$  in., green, broadly ovate with a broad tip, thick, shining with a bristle at the tip; flowers  $\frac{1}{4}$  in. long, blue or white, sessile, clustered in leafy heads  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., calyx  $\frac{1}{4}$  in., lobes  $\frac{1}{8}$  in., 5, oblong, short-pointed, edges thin, corolla  $\frac{1}{4}$ - $\frac{1}{2}$  in., lobes 5, folds with a notch at the tip, stamens and style as in the last species; capsule  $\frac{1}{6}$  in. long and broad, round, flattened, stalk  $\frac{1}{6}$  in., nearly enclosed in the calyx, seeds many, very small, oblong, with rounded ends, nearly twice as long as broad, smooth, 3-angled.

**Gentiana carinata,**

GENTIANACEÆ.

F. B. I. iv. 113.

Himalaya,  
8-12,000 ft.

Kashmir.

small, annual, stem branched; radical leaves  $1\frac{3}{4}$  by  $\frac{1}{3}$  in., persistent, oblong-lanceolate, sessile, short-pointed, stem leaves similar, smaller, curved; flowers nearly sessile, lateral and terminal clustered, calyx tube  $\frac{1}{4}$  in., lobes 5,  $\frac{1}{6}$  in., shorter than the tube, lanceolate, long-pointed, erect, corolla  $\frac{1}{2}$  by  $\frac{1}{6}$  in., tubular, fringed, lobes 5, folds bifid, stamens and style as in the last species; capsule  $\frac{1}{3}$  by  $\frac{1}{8}$  in., oblong with rounded ends, flattened, seeds many, small, oblong with rounded ends, nearly 3-angled, smooth.

**Gentiana****cachemirica,**

GENTIANACEÆ.

F. B. I. iv. 115.

Himalaya,  
9-12,000 ft.

Kashmir.

small, annual, branches often long, leafy and numerous from the root; radical leaves 1 by  $\frac{1}{3}$  in., ovate, oblong, broader at the tip, short-pointed with a bristle at the point, stem leaves  $\frac{1}{3}$ - $\frac{2}{3}$  in.; flowers 1-1 $\frac{1}{4}$  in., blue, solitary, sessile, calyx tube  $\frac{1}{3}$  in., bell-shaped, lobes 5,  $\frac{1}{4}$  in., oblong with a broad tip, a broad space between the lobes, corolla 1-1 $\frac{1}{4}$  in., tubular with a bell-mouth, lobes 5,  $\frac{1}{2}$  in., ovate, short-pointed, erect, folds between the lobes, stamens and styles as in last species; capsule  $\frac{1}{3}$  by  $\frac{1}{6}$  in., seeds many, small, round, glistening, white.

**Gentiana venusta,**

see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Gentiana nubigena,**

see Herbs, Unbranched, Simple, Entire.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Gentiana Kurroo,** see Herbs, Unbranched, Simple, Entire.

**Gentiana detonsa,**

GENTIANACEÆ.  
F. B. I. iv. 118.  
Kashmir,  
9-15,000 ft.

medium size, much branched; leaves  $1\frac{1}{2}$  by  $\frac{1}{4}$  in., oblong-linear, much apart, hardly joined at the base; flowers  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long, scattered on small stalks, in clusters on main stalks, 1-8 in. long on branches, calyx tube  $\frac{1}{2}$  in., cylindrical, funnel-shaped, lobes 4,  $\frac{1}{3}$  in., 2 lobes ovate-lanceolate, 2 lanceolate, corolla tube 1 by  $\frac{1}{4}$  in., lobes 4,  $\frac{2}{3}$  in., fringed or toothed, stamens and style as in the last species; capsule  $\frac{3}{4}$  in., stalk  $\frac{1}{3}$  in., seeds nearly oblong, minutely scaly and netted.

**Gentiana contorta,**

GENTIANACEÆ.  
F. B. I. iv. 118.  
Himalaya,  
5-8,000 ft.  
Simla, Summer Hill  
(Collett).

small, annual, branching, leaves 1 by  $\frac{1}{3}$  in., ovate, stems 2-7-flowered; flowers  $1-1\frac{1}{4}$  in. long, blue, on stalks,  $\frac{1}{4}$ - $\frac{3}{4}$  in., in racemes, calyx tube  $\frac{1}{3}$  in., cylindrical, funnel-shaped at the mouth, lobes 4,  $\frac{1}{3}$  in., ovate, short-pointed, unequal, corolla tube  $\frac{2}{3}$  in. with 4 large oblong glands within near the base, lobes 4,  $\frac{1}{3}$  in., stamens and style as in the last species; capsule  $\frac{1}{2}$  by  $\frac{1}{5}$  in., stalk  $\frac{1}{6}$  in., oblong, seeds many, minute, almost round, finely netted.

**Jaeschkea  
gentianoides,**

GENTIANACEÆ.  
F. B. I. iv. 119.  
Himalaya,  
Kashmir,  
8-13,000 ft.

medium size, stiff, slender, slightly grooved; leaves  $1\frac{1}{2}$  by  $\frac{1}{4}$  in., narrowly lanceolate, sessile, bases shortly united; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in., blue, many, in branching racemes, calyx lobes 5,  $\frac{1}{4}$  by  $\frac{1}{20}$  in., lanceolate, short-pointed, nearly 3-striate, corolla  $\frac{1}{6}$  enlarging to  $\frac{1}{2}$  in., tubular, with a tendency to lateral bulging, lobes 5, short, triangular-lanceolate, in fruit  $\frac{1}{6}$  by  $\frac{1}{6}$  in., stamens 5, on the bulge in the corolla tube, anthers blue or greenish, style linear-short, stigma 2-lobed; capsule  $\frac{1}{3}$  in., oblong, with the ends rounded, flattened, very shortly stalked, seeds 10-30,  $\frac{1}{20}$  in., much larger than in any of the last 11 species.

**Jaeschkea  
latisejala,**

GENTIANACEÆ.  
F. B. I. iv. 119.  
Kashmir,  
9-13,000 ft.

very like the last species, but with a thicker stem and broader leaves, sepals broader, even circular, and capsule sessile.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Pleurogyne  
carinthiaca,**

GENTIANACEÆ.

F. B. I. iv. 120.

Himalaya, Kashmir,  
10-13,000 ft.

small, annual, branching from the base; radical leaves 1 by  $\frac{1}{3}$  in., sometimes persistent, ovate, with a broad tip, stem leaves  $\frac{1}{2}$  by  $\frac{1}{4}$  in., ovate, narrowed at the base; flowers  $\frac{3}{4}$  in., blue, on stalks  $\frac{1}{4}$  to 2 in. long, calyx lobes 5,  $\frac{1}{4}$ - $\frac{1}{3}$  by  $\frac{1}{8}$  in., blunt or very short-pointed, corolla tube very short, lobes  $\frac{1}{2}$  by  $\frac{1}{4}$  in., blue with green veins, fringed near the base, stamens 5, on the corolla tube, filaments somewhat flattened, stigma sessile; capsule  $\frac{1}{2}$  in., oblong, short-pointed, sessile, carpels separating, seeds small, very many, nearly round, smooth.

**Pleurogyne  
spathulata,**

GENTIANACEÆ.

F. B. I. iv. 120.

Kashmir, 13,000 ft.  
Lahul (A. Kerner).

very like the last species, but radical leaves are longer, linear, narrowing from the broad tip to the base, stem leaves are longer and narrower, and corolla lobes are longer.

**Swertia  
purpurascens,  
Chiretta,**

GENTIANACEÆ.

F. B. I. iv. 121.

Himalaya,  
5-12,000 ft.  
Kashmir, Dalhousie,  
Dharmasala, Simla,  
Mashobra (Collett).  
Changlagalli,  
Murree (Douie).

medium size, annual, stem rounded or with 4 ridges, branched; leaves  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., oblong or lanceolate, 3-1-nerved, lowest leaves blunt, uppermost short-pointed, smooth, base narrowed; flowers  $\frac{1}{2}$  in. across, purple or dark red, with a darker ring at the base of the corolla lobes, in branching leafy many-flowered racemes, calyx lobes barely united at the base, 5,  $\frac{1}{6}$  in., oblong, 1-nerved, corolla wheel-shaped, lobes 5,  $\frac{1}{4}$  in., ovate, short-pointed, turned back, one horse-shoe-shaped naked depression or gland at the base of each lobe, stamens 5, dilated below into a tube, not united to the corolla, anthers long-pointed, style long, stigmas 2, nearly linear; capsule sessile, oblong, dividing into two, seeds many,  $\frac{1}{50}$  in. diam., round, smooth, light yellow. This plant is used as a substitute for true chiretta, see *S. Chirata* on the next page.

**Swertia paniculata,**

GENTIANACEÆ.

F. B. I. iv. 122.

Kashmir,  
Himalaya,  
5-8,000 ft.  
Simla, Mashobra.  
(Collett).

very like the last species, but the corolla lobes are white in the upper half with two purple spots at the base forming a ring with gaps, one depression at the base of each lobe, ovate, naked, stamens united to the corolla and not joined into a tube, capsule long-pointed, seeds smaller.



HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Swertia tetragona**,  
GENTIANACEÆ.  
F. B. I. iv. 122.  
Himalaya,  
5-8,000 ft.  
Kashmir, Simla,  
Mashobra (Collett).

very like the last species, but stem more square, corolla lobes white with 2 hairy oblong glands on each lobe, no style, 2 stigmas consisting of 2 closely placed half round plates.

**Swertia cordata**,  
GENTIANACEÆ.  
F. B. I. iv. 123.  
Himalaya,  
4-12,000 ft.  
Simla, Mashobra  
(Collett).  
Kuldana near  
Muree (Douie).

medium size, annual, stem 4-ridged; leaves  $1\frac{1}{4}$  by  $\frac{3}{4}$  in., ovate, short-pointed, 3-5-nerved, base often heart-shaped, sessile; flowers  $\frac{1}{2}$ - $\frac{2}{3}$  in., yellowish-white, margin streaked with purple in many-flowered branching racemes, calyx lobes  $\frac{1}{3}$  by  $\frac{1}{8}$  in., 5, ovate-lanceolate, short-pointed, barely united corolla lobes 5,  $\frac{1}{4}$ - $\frac{1}{3}$  in., oblong, short-pointed or blunt, one large circular sticky naked yellowish spot at the base of each lobe, stamens 5, linear, hardly united at the base, style cylindric, stigmas 2, half round; capsule  $\frac{1}{2}$  by  $\frac{1}{3}$ , often barely  $\frac{1}{4}$  in., seeds  $\frac{1}{5}$  in., nearly round, covered with raised rows of glands. In North Kashmir the flowers are often double.

**Swertia Chirata**,  
**Chiretta**,  
*Charayata*.  
GENTIANACEÆ.  
F. B. I. iv. 124.  
Himalaya,  
4-10,000 ft.  
Kashmir, Simla,  
Chadwick Falls,  
Mashobra, Matiana  
(Collett).  
Jaku (Bomford).

medium size to large, annual, stem 4-ridged at the top, rounded below; leaves 2 by  $\frac{3}{4}$  in., broadly lanceolate, lower often much larger and stalked, stem leaves nearly sessile, oblong, with rounded ends, short-pointed, 5-nerved; flowers nearly  $\frac{3}{4}$  in. diam., bright green-yellow with purple nerves, in large leafy many-flowered branching racemes, sessile or on short-clustered flower stalks, calyx lobes 4,  $\frac{1}{6}$  in., lanceolate, distinctly united, corolla lobes 4,  $\frac{1}{4}$  in., ovate, long-pointed, 2 glandular depressions at the base of each lobe with a fringe of long white or pink hairs, stamens 4, linear, ununited, style cylindric, stigmas 2, oblong; capsule  $\frac{1}{4}$  in. and more, ovate, short-pointed, seeds  $\frac{1}{10}$  in., many-angled, smooth. This plant is exported to the plains and to Europe to supply a bitter tonic, more appreciated in India than in England.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Swertia alata,**  
**Chiretta.**

*Hatmul, bui.*

GENTIANACEÆ.

F. B. I. iv. 125.

Himalaya,

4-6,000 ft.

Kashmir, Simla  
above Lalpani,  
Naldera (Collett).  
Dharampur,  
Brogh (Bomford).

medium size, stem winged, branching, 4-angled when not winged, leaves  $1\frac{3}{4}$  by  $\frac{3}{4}$  in., ovate, short-pointed, 5-nerved, stem leaves nearly sessile, flowers  $\frac{1}{2}$  in. across, bright green-yellow with purple veins in large leafy many-flowered branching racemes, one slit-like gland on each lobe, fringed, covering a minutely velvety margined glandular depression; in other points very like the last species.

**Swertia angustifolia,**

*Pahari kiretta.*

GENTIANACEÆ.

F. B. I. iv. 125.

Himalaya,

2-7,000 ft,

east of the Chenab.

Simla, Mashobra  
(Collett).

Dharampur  
(Bomford).

medium size, 4-ridged or 4-winged; leaves  $2\frac{1}{4}$  by  $\frac{1}{4}$  in., linear-lanceolate, nearly 1-nerved, sessile, narrowed at the base, upper stem leaves barely stalked; flowers  $\frac{1}{2}$  in. across, white or pale blue with darker dots in many-flowered branching racemes, calyx lobes 4, barely united,  $\frac{1}{2}$ - $\frac{2}{3}$  in., oblong-linear, often longer than the corolla lobes, sometimes shorter, corolla lobes  $\frac{1}{4}$ - $\frac{1}{3}$  in., 4, one large green circular naked depression partly covered by a scale, stamens 4, linear, anthers oblong; capsule  $\frac{1}{3}$  by  $\frac{1}{2}$  in., ovate, seeds  $\frac{1}{10}$  in., many-angled, glistening along the edges.

**Swertia pulchella,**

GENTIANACEÆ.

F. B. I. iv. 125.

Himalaya,

1-4,000 ft.

Kangra.

very like the last species, but leaves nearly 3-nerved, calyx lobes lanceolate, much shorter generally than the corolla, corolla lobes ovate-lanceolate, the depression on the corolla lobes is smaller than in the last species.

**Swertia speciosa,**

GENTIANACEÆ.

F. B. I. iv. 128.

Kashmir, Sonamerg.

The Chor (Collett).

medium size to large, root stock perennial, stem annual, hollow, thick; radical leaves long stalked, stem leaves 5 by 2 in., ovate, 7-nerved, long-pointed, bases united, stem-clasping, tube at the base  $\frac{1}{4}$ - $\frac{1}{2}$  in.; flowers  $1\frac{1}{2}$  in. diam., bright grey in small branching narrow racemes on a short main stalk, calyx lobes 5,  $\frac{1}{3}$  by  $\frac{1}{6}$  in., ovate, short-pointed, toothed, much overlapping at the base, corolla lobes 5,  $\frac{3}{4}$  by  $\frac{1}{3}$  in., oblong with a broad tip narrowed to the base, long-pointed, 2 glandular depressions at the base on each lobe nearly united, long-fringed, stamens 5, linear, flattened, anthers ovate, small, stigmas 2, nearly sessile; capsule  $\frac{2}{3}$ - $\frac{3}{4}$  by  $\frac{1}{2}$  in., seeds  $\frac{1}{8}$  in. diam., smooth.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

**Swertia petiolata,**  
GENTIANACEÆ.  
F. B. I. iv. 128.  
Kashmir,  
9-12,000 ft.  
Gulmarg, Tragbol.

medium size to large, root stock perennial, stem annual, thick; radical leaves long stalked, lower stem leaves  $3\frac{1}{2}$  by 1 in., oblong, joined into a tube  $\frac{1}{4}$ -1 in., stalk 2-3 in., leaves at the base of the branched racemes  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., sessile, hardly joined together, upper stem leaves stalked or sessile; flowers 1-1 $\frac{1}{2}$  in. diam., bright grey or nearly white with blue-green nerves, in small 3-5-flowered branching racemes on main stalks,  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long, calyx lobes 5,  $\frac{1}{3}$  by  $\frac{1}{8}$  in. or  $\frac{1}{2}$  by  $\frac{1}{6}$  in., lanceolate, short-pointed, corolla lobes 5,  $\frac{1}{2}$  by  $\frac{2}{3}$  by  $\frac{1}{6}$ - $\frac{1}{2}$  in., short-pointed with round glands or toothed with long glands, 2 glands yellow, depressed, much fringed on each lobe, stamens 5, style very short, stigmas short; capsule  $\frac{1}{2}$  by  $\frac{1}{4}$  in., seeds very rough with glandular ridges.

**Swertia Thomsoni,**  
GENTIANACEÆ.  
F. B. I. iv. 129.  
Kashmir,  
Sonamerg, 9,250 ft.

very like the last species, but sepals  $\frac{1}{4}$  by  $\frac{1}{10}$  in., short-pointed, corolla lobes  $\frac{1}{3}$  by  $\frac{1}{2}$  in., nearly blunt, 2 yellow gland spots at the base of each lobe, not well defined, usually naked, rarely minutely hairy, capsule  $\frac{1}{4}$  by  $\frac{1}{2}$  in., seeds  $\frac{1}{20}$ - $\frac{1}{16}$  in., round, partly winged, smooth, glistening with a very minute network.

**Swertia cuneata,**  
GENTIANACEÆ.  
F. B. I. iv. 129.  
Himalaya,  
11-14,000 ft.

medium size, rootstock perennial, stem annual, hollow; leaves 3 by  $\frac{3}{4}$  in., usually blunt, stem leaves oblong with a broad tip narrowed to the base or stalked; flowers 1 in. diam., blue, on long main stalks, solitary or in 3-flowered clusters, each flower on a minor stalk  $\frac{1}{4}$ -2 in. long, calyx lobes barely united,  $\frac{1}{4}$ - $\frac{1}{2}$  in., narrowly oblong, blunt, short-pointed or with a broad tip, narrowed to the base with a bristle at the tip, corolla lobes  $\frac{1}{3}$ - $\frac{1}{2}$  by  $\frac{1}{8}$ - $\frac{1}{6}$  in., blunt, 2 glands on each lobe fringed with hairs  $\frac{1}{8}$  in. long or hardly any, glands linear vertical near the edge of each lobe, stigmas 2, half circular plates; capsule  $\frac{1}{3}$  in., seeds blackish brown.

**Swertia cœrulea,**  
GENTIANACEÆ.  
F. B. I. iv. 129.  
Himalaya,  
5-9,000 ft.  
Chamba (Clarke).  
Kagan (Barrett).

very like the last species, but small, the flowers are in linear dense branching racemes on short main stalks, sepals narrowly lanceolate, corolla lobes rather longer, bright blue to purple with green veins, ovate, short-pointed, glands small, oblong, with oblong small fringed scales, stigmas sessile, semi-circular, capsule larger, narrowly oblong, seeds yellow brown.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Halenia elliptica,**

GENTIANACEÆ.

F. B. I. iv. 130.

Himalaya,

6-12,000 ft.

Kashmir, Mashobra,

Mahasu, in woods

(Collett).

small to medium size, stems 4-sided, angles narrowly winged; leaves 1-2 by  $\frac{3}{4}$ - $1\frac{1}{4}$  in., ovate, blunt, sessile, 5-nerved, stem leaves 1 by  $\frac{1}{2}$  in., short-pointed, lower often stalked; flowers  $\frac{1}{3}$  in. diam., pale blue, axillary, and forming a loose terminal branching raceme, calyx split nearly down to the base into 4 segments,  $\frac{1}{3}$  in., lanceolate, corolla bell-shaped, divided more than half way down into 4 lobes, the pit at the base of each lobe is prolonged into a hollow spur  $\frac{1}{6}$ - $\frac{1}{3}$  in. long, upturned, stamens 4, joined to the base of the corolla, style very short, cylindrical, stigma 2-lobed, small; capsule  $\frac{1}{3}$ - $\frac{1}{2}$  in., sessile, ovate, splitting nearly to the base, seeds  $\frac{1}{16}$  in. and more, smooth, yellow, fewer and larger than in most of the *Swertias*.

**Trichodesma indicum,**

*Chota kupha, kallri buti, ratmandu, nila krai.*

BORAGINACEÆ.

F. B. I. iv. 153.

The Plains to

5,000 ft.

Valleys below Simla

(Collett).

Nurpur, Kangra,

Rawalpindi, Hazara,

Choa Saidan Shah

(Dowie).

Baluchistan

(C. B. Clarke).

small, annual, rough with hairs on tubercles and elsewhere; leaves 1-4 in., sessile, lanceolate, stem-clasping, lower opposite, upper often alternate, short-pointed; flowers  $\frac{3}{4}$ -1 in. across, pale blue turning to pink, then white, solitary on drooping axillary stalks, becoming terminal racemes by the lessening number of floral leaves, calyx  $\frac{1}{3}$  in., conical, divided into 5 lobes, which are prolonged below into 5 recurved tails, lobes lanceolate, finely long-pointed, covered with grey or white silky hairs, corolla tube  $\frac{1}{3}$  in., lobes  $\frac{1}{3}$  in., ovate, abruptly tapering into a fine point, a yellow glandular spot at the base of each, stamens 5, short, woolly, anthers lanceolate, joining to form a woolly cone, tips bare, twisted, style terminal, not divided, stigma small; fruit oblong with rounded ends, 4-ridged, separating into 4 rough nutlets,  $\frac{1}{6}$  in.

**Trichodesma africanum,**

BORAGINACEÆ.

F. B. I. iv. 154.

The Plains.

Baluchistan

(Boissier).

small, annual, very like the last, but rougher with stiff hairs, leaves ovate-oblong, long stalked, racemes generally lateral and dividing into two, flowers slightly smaller, nutlets with prominent margins fringed with barbed hairs.

STAMENS FOUR.

**Buchnera hispida,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

STAMENS FOUR.

**Plantago  
amplexicaulis,**

see Herbs, Unbranched, Opposite, Exstipulate, Simple.

STAMENS TWO.

**Veronica Anagallis,  
Water Speedwell,**

SCROPHULARIACEÆ.

F. B. I. iv. 293.

The Plains to  
9,000 ft.

Valleys below Simla.

Mashobra (Collett).

Baluchistan (Lace).

medium size, perennial, nearly smooth, stem hollow; leaves 2-6 by  $\frac{1}{3}$ - $\frac{2}{3}$  in., oblong-ovate, stem-clasping; flowers  $\frac{1}{6}$ - $\frac{1}{3}$  in. diam., blue or purplish, in axillary racemes, 3-6 in. long, bracts shorter than the flower stalks, calyx 4-fid, segments  $\frac{1}{16}$ - $\frac{1}{4}$  in. long, corolla  $\frac{1}{6}$ - $\frac{1}{3}$  in. diam., 4-lobed, stamens 2, pink, style linear; capsule  $\frac{1}{8}$ - $\frac{1}{6}$  in., notched, flattened, seeds few, biconvex.

**Veronica verna,  
Vernal Speedwell,**

SCROPHULARIACEÆ.

F. B. I. iv. 296.

Himalaya,

5-7,000 ft.

small, stem slender, nearly smooth, sometimes branched from the base, very leafy; leaves  $\frac{1}{3}$ - $\frac{1}{2}$  in., overlapping or the lower far apart, sessile, oblong, sometimes lobed; flowers small, blue, nearly sessile along the stem forming with the leaves a spike, calyx 4-fid, segments unequal, linear-lanceolate, corolla 4-lobed, shorter than the calyx, stamens 2, style linear; capsule  $\frac{1}{8}$  in. diam., indented above the base, narrow, keeled, seeds much flattened.

**Veronica  
serpyllifolia,  
Thyme-leaved  
Speedwell,**

SCROPHULARIACEÆ.

F. B. I. iv. 296.

Himalaya,

8-13,000 ft.

Narkanda (Collett).

small, smooth, or glandular-velvety, branched from the base; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., rather leathery, sessile, rounded or oblong, floral leaves alternate; flowers white or blue in racemes 1-4 in. long, lower bracts leaf-like, upper narrow, calyx 4-fid, segments  $\frac{1}{8}$ - $\frac{1}{6}$  in., oblong with few hairs, shorter than the corolla, corolla  $\frac{1}{4}$  in. diam., 4-lobed, stamens 2, style linear; capsule broadly heart-shaped, shorter than the calyx, seeds much flattened.

**Barleria acanthoides,**

ACANTHACEÆ.

F. B. I. iv. 484.

The Plains.

Kirana Hill

(Edgeworth).

Baluchistan

(Boissier).

small, grey, prickly; leaves  $1\frac{1}{4}$  by  $\frac{1}{2}$  in., ovate with the tip rounded and broad, almost sessile, bracts none, bracteoles 2, linear, spine tipped, rigid, often toothed; flowers white,  $2\frac{1}{2}$  in. long, solitary or in crowded one-sided spikes, sepals 4 in 2 pairs, outer pair ovate, corolla  $2\frac{1}{4}$  by  $\frac{1}{8}$ - $\frac{1}{6}$  in., nearly linear, lobes 5, nearly equal, ovate, stamens 2 and 2 aborted ones also, style long; capsule  $\frac{2}{3}$  in., 4-sided.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

## STAMENS TWO.

**Barleria cristata,**  
*Tadrelu, bansa siyah.*

ACANTHACEÆ.

F. B. I. 488.

The Plains to  
6,000 ft.Valleys below Simla  
(Collett).

Hazara (Douie).

large, hairy, branching; leaves 2-4 by 1 in., shortly stalked, ovate-lanceolate, short-pointed; flowers  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. long, purplish blue or white, in short crowded head-like, nearly sessile, axillary spikes, bracts none, bracteoles  $\frac{1}{3}$ - $\frac{2}{3}$  in., linear-lanceolate, toothed, sepals 4 in 2 pairs, outer sepals  $\frac{3}{4}$  in., toothed, nearly spinous, corolla  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. long, 5-lobed, lobes  $\frac{1}{2}$  in., ovate, tube funnel-shaped, stamens 2, 2 aborted much smaller, style long; capsule  $\frac{1}{2}$  in., oblong with a short point, seeds 4 or less, silky. The seeds are supposed to cure snake-bite, the leaves and roots to reduce swelling.

## COROLLA TWO-LIPPED.

## STAMENS TWO.

**Martynia diandra,**

see Herbs, Erect, Opposite, Exstipulate, Lobed.

**Nelsonia campestris,**

ACANTHACEÆ.

F. B. I. iv. 394.

The Plains to  
4 000 ft.

small, annual, woolly, with trailing flower stems 1-3 ft. long; leaves of the main stem 4-8 in. long, oblong with rounded ends, stalked, flowering stem leaves nearly sessile,  $\frac{1}{2}$ -2 in.; flowers  $\frac{1}{2}$  in., purple or white, in crowded ovate or cylindric mostly sessile spikes  $\frac{1}{2}$ -2 in. long, terminal on lateral branches, bracts  $\frac{1}{8}$ - $\frac{1}{4}$  in., ovate, blunt, woolly with glands, green, calyx  $\frac{1}{8}$  in., green, marked with longitudinal lines, hairy or nearly papery, corolla  $\frac{1}{6}$  in., tube slender, 2-lipped, lobes 5, blunt, spreading, stamens 2, attached above the middle of the tube, style 2-lobed; capsule  $\frac{1}{6}$ - $\frac{1}{5}$  in., oblong, short-pointed, seeds 8-12, yellowish with brown granular marks, roundly oblong with rounded ends.

**Andrographis  
polysperma,**

see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Andrographis  
echioides,**

ACANTHACEÆ.

F. B. I. iv. 505.

The Plains.

small to medium size, annual, velvety and with spreading white hairs; leaves  $2\frac{1}{2}$  by 1 in., oblong, blunt, sessile, base narrowed; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in., pink or white with purple, in dense hairy sticky axillary racemes about the length of the leaves on very short flower stalks, bracts small, bracteoles minute or none, calyx deeply 5-lobed, lobes  $\frac{1}{6}$ - $\frac{1}{4}$  in., linear, in fruit sometimes  $\frac{1}{2}$  in., corolla  $\frac{1}{3}$ - $\frac{1}{2}$  in., tubular, 2-lipped, white or pink with dark purple lower lip, velvety, stamens 2, filaments hairy, anthers protruding,

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS TWO.

white bearded, style slender, minutely divided at the tip; capsule  $\frac{1}{3}$  by  $\frac{1}{6}$  in., short-pointed at both ends, oblong, 2 to 3 times as long as broad, seeds 6-12, bony, wrinkled, twice as long as broad.

**Justicia Betonica,**

ACANTHACEÆ.

F. B. I. iv. 525.

The Plains.

large, branches round, smooth, tips velvety; leaves 4-1 $\frac{3}{4}$  in., ovate-lanceolate, dotted on both surfaces, leaf stalk  $\frac{1}{3}$  in.; flowers  $\frac{1}{2}$  in. long, white, with rose spots, on short stalked continuous usually terminal spikes, bracts  $\frac{2}{3}$ - $\frac{1}{3}$  in., white with green nerves, ovate-short-pointed, bracteoles  $\frac{1}{3}$ - $\frac{1}{2}$  in., like the bracts, calyx 5-segmented, segments  $\frac{1}{6}$  in., linear-lanceolate, velvety, corolla 2-lipped, upper lip 2-lobed, lower 3-lobed, stamens 2, anthers 2-celled, lower cell white tailed, style bifid, thread-like; capsule  $\frac{2}{3}$  in., club-shaped, velvety, 4-seeded, seeds ovoid, somewhat flattened, smooth.

**Justicia**

**heterocarpa,**

ACANTHACEÆ.

F. B. I. iv. 531.

The Plains.

Ferozepore (Vicary).

small, covered with minute grey velvety down; leaves 1 by  $\frac{1}{2}$  in., ovate, with minute lines nearly smooth, stalk  $\frac{1}{3}$  in.; flowers minute, solitary to four together, axillary, bracts and bracteoles small, linear, calyx divided into 5, segments  $\frac{1}{8}$  in., linear, minutely velvety, corolla  $\frac{1}{6}$  in., 2-lipped, upper lip shortly 2-lobed, lower lip shortly 3-lobed, transversely marked, stamens 2, anthers ovate, lower part white tailed, style filiform, bifid; capsules of two kinds in nearly every axil, normal capsule  $\frac{1}{8}$ - $\frac{1}{6}$  in., oblong, ends rounded, short-pointed, scarcely stalked, velvety, 4-seeded, abnormal capsule winged, crested, one-seeded, seeds in normal capsules rough, almost hairy, in abnormal capsules the one seed is larger and smooth.

**Justicia pubigera,**

ACANTHACEÆ.

F. B. I. iv. 536.

Himalaya,

4-7,000 ft.

Simla (Collett).

large, stems round, hairy; leaves 2 $\frac{3}{4}$ -1 $\frac{1}{4}$  in., shortly stalked, ovate-lanceolate, hairy on both surfaces, long-pointed; flowers purplish-red, in axillary, stiff loose clusters, forming terminal leafy branching erect racemes, bracts  $\frac{1}{8}$ - $\frac{1}{6}$  in., linear, bracteoles none or minute, calyx 5-parted, segments  $\frac{1}{3}$  in., linear, velvety, corolla  $\frac{2}{3}$  in. long, velvety, straight, tubular, 2-lipped, lower lip  $\frac{1}{3}$  in. long, 3-lobed, recurved, upper lip erect, notched, stamens 2, anther-cells distinct, upper blunt, lower white tailed, style minutely 2-lobed capsule  $\frac{1}{2}$  in., velvety, stalked, seeds 4 or less

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS TWO.

**Justicia diffusa,**

ACANTHACEÆ.

F. B. I. iv. 538.

Himalaya,  
to 3,000 ft.

small, stems 4-angled, smooth or minutely velvety; leaves  $3\frac{1}{4}$ - $4\frac{1}{4}$  in., oblong, long-pointed at both ends, stalk  $\frac{1}{4}$  in., somewhat hairy; flowers  $\frac{1}{4}$  in., in slightly hairy slender terminal or axillary spikes, bracts  $\frac{1}{6}$  in., linear, shorter than the calyx, bracteoles  $\frac{1}{10}$ - $\frac{1}{8}$  in., lanceolate, calyx 5-segmented, segments  $\frac{1}{6}$  in., like the bracts, lanceolate, minutely hairy above, stamens 2, style like the last species; capsule  $\frac{1}{8}$ - $\frac{1}{6}$  in., 4-seeded.

**Justicia simplex,**

ACANTHACEÆ.

F. B. I. iv. 539.

Himalaya to  
7,000 ft.  
Simla (Collett).

small, hairy, branched, grooved; leaves 1- $1\frac{1}{4}$  in., ovate or lanceolate, short-pointed, hairy, shortly stalked; flowers small, pale purple, crowded in densely hairy cylindrical spikes  $\frac{3}{4}$ -1 in. long, terminal or axillary, bracts as long as the calyx, green-keeled, very hairy, short-pointed, lanceolate, bracteoles hairy, linear, calyx 4-segmented, segments hairy, lanceolate; corolla  $\frac{1}{8}$  in., 2-lipped, upper lip erect, narrow, notched, lower wider, 3-lobed, stamens and style as in the last species; capsule  $\frac{1}{8}$  in.

**Dicliptera**

**Roxburghiana,**  
var. **bupleuroides,**

*Kirch, somni.*

ACANTHACEÆ.

F. B. I. iv. 553.

The Plains to  
6,000 ft.

Simla (Collett).

Common in the hilly  
districts of the area.

large, hairy, loosely spreading, stems grooved; leaves 2-5 by  $\frac{3}{4}$ - $2\frac{3}{4}$  in., long-pointed, ovate-lanceolate, stalked, somewhat velvety; flowers pink, spotted with purple or white, crowded in axillary clusters towards the ends of branches, bracts  $\frac{1}{2}$  by  $\frac{1}{5}$  in., often 3-nerved, long-pointed, bracteoles linear, calyx 5-parted, segments linear, corolla  $\frac{3}{4}$  in. long, velvety, tube cylindrical, twisted, 2-lipped, upper lip erect, notched, lower recurved, 3-toothed, stamens 2, anther-cells blunt, style minutely 2-lobed; capsule  $\frac{1}{4}$  in., 2-celled, winged, seeds 4, warted. *Laksmanna*, the drug derived from this plant, is a good tonic.

**Peristrophe**  
**bicalyculata,**

*Atri lat.*

ACANTHACEÆ.

F. B. I. iv. 554.

The Plains.

small, spreading, hairy; leaves 2 by 1 in., ovate, long-pointed, leaf stalk  $\frac{1}{4}$  in.; flowers rose or purple in axillary or terminal clusters, bracts 1-4 together, linear, short-pointed,  $\frac{1}{3}$  in. long, long-stalked, calyx deeply 5-lobed, segments equal, linear, lanceolate, corolla  $\frac{1}{3}$ - $\frac{1}{2}$  in., tube slender, deeply 2-lipped, upper lip hardly notched, lower shortly 3-lobed, stamens 2, anthers ovoid, style thread-like, minutely 2-cleft; capsule  $\frac{1}{3}$ - $\frac{1}{2}$  in., seeds 4, flattened, covered with minute papillæ.



## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

## COROLLA TWO-LIPPED.

## STAMENS FOUR.

**Antirrhinum**  
**Orontium,**  
**Corn Snap Dragon,**  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 253.  
 The Plains to  
 6,000 ft.  
 Simla, in fields  
 (Collett).  
 Dharmpur  
 (Bomford).  
 Kahuta (Douie).

small, annual or biennial, slender, smooth below, glandular above, branched from below; leaves opposite below, alternate above,  $\frac{1}{2}$  in., linear, rarely oblong-lanceolate; flowers  $\frac{1}{2}$  in. long, pale pink, with purple streaks, solitary and sessile in the axils of the upper leaves, calyx lobes 5, linear, over-topping the corolla, corolla  $\frac{1}{2}$  in. long, flattened, bulged at the base, 2-lipped, upper erect, 2-lobed, lower lip horizontal, 3-lobed, base broad, bearded, closing the throat, which is forced open by bees, stamens 4 in unequal pairs, within the corolla, style thread-like, stigmas 2-lobed; capsule  $\frac{1}{2}$  in. long, ovoid, velvety, 2-celled, many seeded, anterior cell opening by one pore, posterior by two toothed pores, or both cells by one pore, seeds minute, oblong, abruptly ended, wrinkled or pitted.

**Mimulus gracilis,**  
**Monkey Flower,**  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 259.  
 The Plains to  
 3,000 ft.  
 Kashmir.  
 Hazara.  
 Rawalpindi (Douie).

small, annual, stem stout, 4-angled, branching from the base; leaves  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., linear-oblong, sessile, half stem-clasping, rather fleshy, blunt, sometimes slightly toothed; flowers  $\frac{1}{2}$  in. long, white or pale blue, spotted with yellow, solitary on axillary stalks, longer than the leaves, calyx  $\frac{1}{3}$  in. long, tubular, lobes 5, short, 5-keeled, corolla  $\frac{1}{2}$  in. long, tube cylindrical, 2-lipped, upper lip erect, 2-lobed, lower lip horizontal, 3-lobed, throat with 2 ridges, stamens 4, in unequal pairs within the corolla, style slender, stigma 2-lobed, flat; capsule less than  $\frac{1}{3}$  in., ovoid with one end broader, flattened, opening by valves, enclosed in the calyx, seeds many, minute, oblong.

**Herpestis,**  
**Hamiltoniana,**  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 272.  
 The Plains to  
 3,000 ft.

small, annual, smooth, stem very stout, much branched; leaves  $\frac{1}{2}$ -1 in., linear-lanceolate, sometimes slightly toothed, often minutely dotted, nerves barely visible, short-pointed; flowers minute, blue, sessile in the axils of the leaves, calyx  $\frac{1}{8}$  in., lobes 5, unequal, upper ovate-heart-shaped, corolla tube  $\frac{1}{8}$  in., cylindrical, lips 2, spreading, upper notched or 2-lobed, lower 3-lobed, stamens 4, in unequal pairs within the corolla, anthers close together, style linear, dilated at the top, stigma 2-lobed; capsule round, 2-grooved, opening by 2 or 4 valves, seeds many, very minute.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

**Vandellia crustacea,**

SCROPHULARIACEÆ.

F. B. I. iv. 279.

The Plains to  
3,000 ft.

Sutlej Valley  
(Collett).

small, annual, found in marshes, much and widely branched from the root in threes, smooth or slightly hairy; leaves  $\frac{1}{2}$ -1 in., sometimes toothed, ovate or lanceolate, shortly stalked; flowers  $\frac{1}{2}$  in. long, pale purple, solitary on axillary straight slender stalks,  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long, or crowded towards the ends of branches, calyx  $\frac{1}{10}$  in. and in fruit  $\frac{1}{6}$  in., shortly 5-lobed, longer than the capsule, nearly bell-shaped, not angled, corolla 2-lipped, upper lip erect, notched, lower broader, horizontal, 3-lobed, stamens 4, in unequal pairs, 2 anterior longer with curved filaments spurred near the base, 2 posterior, usually included, anthers touching or joining in pairs under the upper lip, style curved, stigma flat, 2-lobed; capsule shorter than the calyx, oblong-ovate, blunt, opening through the lines of junction, seeds wrinkled.

**Vandellia erecta,**

SCROPHULARIACEÆ.

F. B. I. iv. 281.

The Plains.

very like the last species, but smaller, and more erect, quite smooth, leaves sessile oblong with rounded ends, flower stalks twice as long as the leaves, calyx lobes shorter than the rounded ovoid capsule.

**Ilysanthes parviflora,**

SCROPHULARIACEÆ.

F. B. I. iv. 283.

The Plains.

small, annual, usually much branched, found in marshes; leaves  $\frac{1}{4}$ -1 in., ovate with ends rounded or linear-oblong, sessile, usually untoothed; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in. long, white or blue, on threadlike stalks  $\frac{1}{4}$ - $\frac{1}{2}$  in. long in the axils of leaves or at the end of branches in racemes, calyx half the length of the corolla, lobes narrowly lanceolate, corolla 2-lipped,  $\frac{1}{6}$ - $\frac{1}{4}$  in., tube cylindric, upper lip erect, concave, notched, lower larger, spreading, 3-lobed, stamens 4, 2 upper perfect, enclosed in the corolla, filaments thread-like, anthers meeting, 2 lower 2-lobed, one lobe glandular, the other smooth, style single, stigma round, consisting of 2 plates; capsule ovate, oblong, short-pointed, longer than the calyx.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

- Striga lutea**, small, annual, rough or hairy, slender, branched  
 SCROPHULARIACEÆ. or not; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, linear, sessile, upper alter-  
 F. B. I. iv. 299. nate, sometimes reduced to floral bracts; flowers  $\frac{1}{2}$  in.  
 The Plains to long, yellow, sometimes white, scarlet or purple, sessile,  
 6,000 ft. solitary, axillary, forming terminal spikes, calyx tubular,  
 Valleys below Simla 10-rarely, 15-ribbed, 5-toothed, corolla variable in size,  
 (Collett). tube slender, twice as long as the calyx, bent in at  
 Dharpur the top, 2-lipped, upper lip usually short notched or  
 (Bomford). deeply cut, lower divided into three, stamens 4 in unequal  
 pairs, within the corolla, anthers one-celled, vertical,  
 fixed at the back portion of the stamen behind the anther,  
 sometimes pointed, style thickened above, stigma un-  
 divided; capsule nearly round, splitting through the cells,  
 seeds very many, netted.
- Striga euphrasioides**, small, slender to stout, branched, rough or cover-  
 SCROPHULARIACEÆ. ed with stiff hairs, leaves  $\frac{1}{4}$ -2 in., often 1- to 2-toothed,  
 F. B. I. iv. 299. linear, flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, white, at distant intervals  
 The Plains to in a terminal spike, calyx  $\frac{1}{4}$  in., 15-ribbed, lobes as long  
 4,000 ft. as the tube, bell- or funnel-shaped in fruit, corolla  $\frac{1}{2}$ - $\frac{3}{4}$  in.,  
 Chakwal (Douie). tube velvety at the bend; otherwise like the last species.
- Sesamum indicum**, see Herbs, Erect, Opposite, Exstipulate, Simple,  
 Toothed, Corolla 2-lipped, Stamens Four.
- Hygrophila**, small to medium size, found in wet places, near-  
**salicifolia**, ly smooth; leaves  $2\frac{1}{2}$  by  $\frac{1}{2}$ - $\frac{2}{3}$  in., lanceolate, smooth, nearly  
 ACANTHACEÆ. sessile, narrowed at both ends, marked in lines by rap-  
 F. B. I. iv. 407. hids; flowers  $\frac{1}{2}$ - $\frac{2}{3}$  in., pale purple, sessile, in bracteate  
 The Plains. and bracteolate axillary circles, bracts  $\frac{1}{4}$ - $\frac{1}{3}$ , ovate or oblong,  
 round at the end, bracteoles  $\frac{1}{8}$ - $\frac{1}{4}$  in., lanceolate, short-  
 pointed, half as long as the calyx, calyx  $\frac{1}{3}$ - $\frac{1}{2}$  in., divided  
 half way down in flower, all the way down in fruit, lobes  
 5, linear, covered with bristly hairs, corolla-tube dilated  
 near the mouth, 2-lipped, upper lip erect, concave, notched  
 or 2-lobed, lower broad, 3-lobed, stamens 4, in equal or  
 unequal pairs, style long, hairy, stigma linear, undivided;  
 capsule  $\frac{1}{2}$ - $\frac{2}{3}$  in., narrowly oblong, 20-28-seeded, seeds ovoid,  
 flattened, white hairs spring up when wetted.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

**Hygrophila spinosa,**  
*Talmakhana, gokula*  
*kanta, gokshura.*  
ACANTHACEÆ.  
F. B. I. iv. 408.  
The Plains to  
3,000 ft.

medium size to large, found in wet places, stout, hairy, stems in clusters; leaves 3-7 in. long, lanceolate or oblong-lanceolate, pointed at both ends, nearly sessile, covered with scattered white hairs; flowers 1 in. long, pale blue or purple to white in large dense hairy axillary clustered circles with 6 straight stout spines  $\frac{1}{2}$ - $1\frac{1}{2}$  in., bracts  $\frac{1}{2}$ -1 in., lanceolate, bracteoles  $\frac{1}{4}$ - $\frac{1}{3}$  in., narrow, calyx 4-lobed, lobes  $\frac{1}{3}$ - $\frac{1}{2}$  in., lanceolate, upper one largest, lower blunt, toothed or divided into two, corolla 1 in. long, upper lip 2-lobed, stamens as in the last species; capsule  $\frac{1}{2}$  in., shorter than the calyx, 4-8-seeded. The plant is used as a diuretic in Southern India with great success.

**Lepidagathis**  
**purpuricaulis,**  
ACANTHACEÆ.  
F. B. I. iv. 519.  
The Plains.  
Hoshiarpur  
(Aitchison).

small to medium size, leafy, branches many, smooth or hairy, often purple; leaves 1-5 in., lanceolate or ovate-lanceolate, sometimes in unequal pairs, larger narrowed at both ends, smooth, smaller nearly ovate, somewhat velvety; flowers  $\frac{1}{4}$  in., white with brown spots at the base of the lower lip, sessile, in axillary sessile solitary or clustered oblong hairy spikes,  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, bracts  $\frac{1}{3}$  by  $\frac{1}{6}$  in., marked with longitudinal lines, lanceolate or ovate-lanceolate with a bristle point, bracteoles  $\frac{1}{4}$  in., linear curved, calyx nearly divided to the base into 5 segments, one segment large,  $\frac{1}{3}$ - $\frac{1}{2}$  by  $\frac{1}{5}$  in. broad, the others  $\frac{1}{3}$  in. linear, corolla  $\frac{1}{4}$  in., tubular, suddenly dilated in the middle, 2-lipped, upper lip erect, notched, lower 3-lobed, longer, stamens 4, in unequal pairs, anthers 2-celled, cells oblong, blunt, stigma round; capsule  $\frac{1}{3}$  in., 4-seeded, oblong, seeds flattened, hairs rise upon being wetted.

**Lepidagathis hyalina,**  
ACANTHACEÆ.  
F. B. I. iv. 521.  
The Plains to  
4,000 ft.

medium size, perennial; leaves 3 by  $1\frac{1}{2}$  in., ovate or oblong, stalked, upper narrow, hanging down, stalk  $\frac{1}{2}$  in.; flowers white with brown spots at the base of the lower lip, crowded in oblong or ovoid, one-sided, terminal or axillary spikes  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, bracts nearly  $\frac{1}{2}$  in., lanceolate, long-pointed with an abrupt point, bracteoles  $\frac{1}{3}$  in., linear-lanceolate with an abrupt point, calyx nearly divided to the base in 5 segments, segments linear-lanceolate,  $\frac{1}{3}$  in., with scattered hairs, outer segment larger; corolla, stamens, style, capsule and seeds as in last species.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

**Ocimum basilicum,**

**Sweet basil,**

*Furrunj-mushk, tulsi, baburi, niyazbo, panr.*

LABIATÆ.

F. B. I. iv. 608.

The Plains to

2,000 ft.

Cultivated, but indigenous in the low hills (Aitchison).

Baluchistan

(Hughes-Buller).

medium size, strongly scented, many oil glands, smooth or velvety; leaves  $1\frac{1}{2}$ -2 in., ovate, sometimes toothed, stalk very slender, usually slightly hairy; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, in clustered circles, 6-10-flowered, in bracteate spikes and racemes, bracts stalked, ovate, minute, soon falling off, calyx 5-toothed, upper tooth rounded, shorter than the others, 2 lower teeth ovate-lanceolate with a bristle point, 2 lateral shorter than the lower, corolla  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, white, pink or purplish, 2-lipped, tube short, upper lip nearly equally 4-lobed, lower lip curved down, not lobed, stamens 4, protruding, twice as long as the corolla, bent, hairy at the bend, stigma bifid; nutlets 4,  $\frac{1}{8}$  in. each, very black, oblong with rounded ends, minutely dotted, convex on one side and flattened on the other, when wetted become coated with mucilage. These seeds form one of the ingredients of *Char-tukm*, a preparation well-known to Indian druggists. They are used as a demulcent in genito-urinary diseases. The dried leaves are used as a substitute for cloves, and as a seasoning for culinary purposes.

**Ocimum sanctum,**

**Sacred basil,**

*Kala tulsi, ban tulsi.*

LABIATÆ.

F. B. I. iv. 609.

The Plains to

6,000 ft.

Baluchistan

(Boissier).

medium size, perennial, cultivated, doubtfully indigenous, often woody below, much branched, bushy, often with a purplish tinge, leaves 1-2 $\frac{1}{2}$  in., oblong, blunt or sharp-pointed, sometimes almost toothed, base narrowed, floral leaves sessile, ovate-lanceolate or heart-shaped, flowers very small, white, pink or purplish on small stalks in very slender bracteate racemes, bracts as in the last species, calyx short, 2 lower teeth with very long bristle points, longer than the upper which is broadly oblong, lateral broadly ovate, shorter than the lower, corolla scarcely extending beyond the calyx, calyx in fruit  $\frac{1}{8}$  in. long, on a slender stalk, widely bell-shaped, thin, nutlets nearly round, nearly smooth, pale reddish-brown; other characters are like the last species. The leaves and seeds are used for the same purposes as the last species. It is worshipped by the Hindus and a plant is to be found in every Hindu's garden.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

INNER PAIR LONGEST.

**Nepeta linearis,** see Herbs, Prostrate, Opposite, Exstipulate, Simple.

**Nepeta connata,** see Herbs, Prostrate, Opposite, Exstipulate, Simple.

**Origanum vulgare,** medium size, scented, to some extent covered with  
**Wild marjoram,** hairs; leaves  $\frac{1}{2}$ -1 in., broadly ovate, stalked, sometimes  
*Mirzanjosh, sathra.* toothed; flowers very small, pink, crowded in many 4-  
 LABIATÆ. sided spikes  $\frac{1}{4}$ -1 in. long, in clusters or heads at the end  
 F. B. I. iv. 648. of branches or forming terminal branching racemes, floral  
 Himalaya, leaves like bracts, lanceolate, longer than the calyx, over-  
 7-12,000 ft. lapping, often tinged with purple, calyx bell-shaped, 5-  
 Simla (Collett). toothed, 10-13-nerved, throat hairy, corolla barely 2-lipped,  
 upper lip erect, nearly flat, notch lower spreading, 3-lobed,  
 stamens 4, in unequal pairs, just protruding, style divided;  
 nutlets 4, smooth. This plant is used as a pot herb, it  
 yields a volatile oil which is aromatic and stimulant.

**Thymus Serpyllum,** see Shrubs, Opposite, Exstipulate, Simple, Corolla  
 2-lipped.

**Hyssopus officinalis,** see Shrubs, Opposite, Exstipulate, Simple, Corolla  
 2-lipped.

**Micromeria biflora** see Shrubs, Opposite, Exstipulate, Simple, Corolla  
 and **hydaspidis,** 2-lipped.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

INNER PAIR LONGEST.

**Calamintha**  
**Clinopodium,**  
**Wild basil,**  
LABIATÆ.  
F. B. I. iv. 650.  
Himalaya,  
4-12,000 ft.  
Simla, Mashobra  
(Collett).  
Changlagali (Douie).

medium size, rootstock woody, stems slender, almost unbranched, hairy; leaves 1-2 in., ovate, just pointed, hardly toothed; flowers  $\frac{2}{3}$ -1 in., purple or pink, in large crowded compact circular clusters, each surrounded by many, long, linear, hairy bracts, equal in length to the calyx, calyx  $\frac{1}{3}$  in., 2-lipped, curved, hairy, 13-nerved, upper lip 3-toothed, lower bifid, teeth nearly equal, very slender, corolla hairy, tube straight, 2-lipped, upper lip erect, flattish, lower spreading, 3-lobed, stamens 4, in unequal pairs under the upper lip, style lobes equal; nutlets 4, minute, nearly round, smooth.

OUTER PAIR LONGEST.

**Brunella vulgaris,**  
**Self-heal,**  
*Austakhadus.*  
LABIATÆ.  
F. B. I. iv. 670.  
Himalaya,  
4-11,000 ft.  
Simla, common on  
roadsides (Collett).  
Kashmir.  
Murree (Douie).

small, perennial, rootstock creeping, stem erect or partially so, thinly hairy; leaves 1-2 in., stalked, ovate or oblong, sometimes toothed, pointed or blunt, upper leaves sessile; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, violet purple, rarely white, in clustered circles of 6, crowded in erect, terminal spikes 1-2 in. long, with a pair of sessile leaves at the base, floral leaves bract-like, hairy, purple edged, broadly ovate, short-pointed, calyx tinged with purple, bell-shaped, 2-lipped, upper lip broad, 3-toothed, lower lip deeply bifid, mouth closed after flowering, corolla tube longer than the calyx, 2-lipped, upper lip erect, hood-like, notched, lower spreading, 3-lobed, mid-lobe largest, minutely toothed, stamens 4 in unequal pairs under the upper lip, with a small projection below the anthers, style lobes awl-shaped; nutlets 4, oblong, smooth. The plant is used in Indian medicine as an expectorant and anti-spasmodic.

**Stachys parviflora,**

see Herbs, Opposite, Exstipulate, Simple, Toothed.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

OUTER PAIR LONGEST.

**Leuc ashyssofolia,**

LABIATÆ.

F. B. I. iv. 690.

The Plains at the  
foot of the

Himalaya

to 3,000 ft.

Valleys below Simla  
(Collett).

small, perennial, hairy, rootstock stout, woody, branches many; leaves 1-2½ by ¼ in., linear, blunt, often stiff, margins turned in; flowers ¾ in. long, white, in small axillary and terminal circular clusters, ½-¾ in. diam., bracts few, slender, awl-shaped, calyx ¼ in., an inverted cone, smooth, mouth wide, abruptly cut off, smooth, teeth 10, very minute, erect, corolla tube cylindric, within the calyx, 2-lipped, upper lip erect, hood-like, very hairy, lower much longer, 3-lobed, mid-lobe the largest, not toothed, stamens 4, in unequal pairs, under the upper lip, outer or anterior pair longer, style awl-shaped, undivided; nutlets 4, ovoid, blunt, 3-cornered.

**Leucas aspera,**

*Chota-hal-kása.*

LABIATÆ.

F. B. I. iv. 690.

The Plains.

small, annual, stem stout, hairy or bristly, much branched; leaves 1-3 in., linear or oblong, sometimes larger and ⅔ in. broad, also minutely toothed; flowers ⅔-1 in., white, in terminal and axillary clustered circles, often 1 in. diam., hairy, bracts long, linear and thread-like, calyx ⅓-⅔ in., tubular, curved, smooth below, green, rough, ribbed above, teeth 10, short, triangular, upper lip produced; corolla, stamens, style and nutlets as in the last species. The plant is fragrant and used as a pot herb, in chronic skin diseases and painful swellings the juice is useful.

PETALS NONE.

**Silene apetala,**

CARYOPHYLLACEÆ.

F. B. I. i. 218.

The Plains.

Peshawar (Vicary,

Stewart).

medium size, annual, stem branched or not, grey-velvety; leaves 1-1½ in., linear-oblong, long-pointed; flowers ¼-⅓ in., long, green (as the petals, if present, are enclosed within the green calyx), in irregular clusters in one-sided racemes, bracts sharp-pointed, calyx ¼-⅓ in., bell-shaped base, a reversed cone with 5 short teeth, and 10 green hairy ridges, petals none or if any, minute, red, stamens 10, styles 3 (rarely 5); capsule round, shortly stalked, 3-6-valved, seeds flat, grooved with a double corrugated margin.



HERBS, UPRIGHT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

**Stellaria media,**

see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Ammannia  
pentandra,**

LYTHRACEÆ.

F. B. I. ii. 568.

The Plains, in moist  
places.

small, annual, smooth, much branched with many flowers; leaves 1 in. long, oblong with rounded ends, sessile, floral leaves bract-like, oblong, broad-based; flowers small, solitary, sessile in the axils of leaves, bracteoles awl-shaped, as long as the calyx, calyx teeth 10, 5 of which are accessory, lanceolate, long-pointed, petals, if any, pink, 5, stamens 8, inserted about the middle of the calyx tube, style thread-like or short; capsule round, depressed, 3-celled, seeds many, black, half round, hollowed on the flat side.

**Ammannia baccifera,**  
*Dadmari.*

LYTHRACEÆ.

F. B. I. ii. 569.

The Plains, in moist  
places.

small, annual, rarely large, smooth; leaves 2-5 in. long, narrow, but blunt-pointed, narrow at the base; flowers small in dense clusters forming knots on the stem, bracts thread-like, shorter than the flower stalks, calyx widely bell-shaped, teeth 4, broadly triangular, accessory folds or teeth very small, petals none, or very minute, stamens and style as in the last species; capsule like the last, but opening all round, about the middle, seeds like the last. The leaves are used for blistering.

**Ammannia  
salicifolia,**

LYTHRACEÆ.

F. B. I. ii. 569.

The Plains.

medium size, annual, smooth, branched, leaves 2 by  $\frac{1}{2}$  in., lanceolate, rounded at the base, sessile; other characters like the last species.

**Ammannia  
senegalensis,**

LYTHRACEÆ.

F. B. I. ii. 570.

The Plains to  
5,000 ft.  
Common in rice  
fields.

medium size, annual, smooth, branches 4-angled; leaves 1-2 in. long, lanceolate, sessile, nearly forked at the base, flowers minute in small shortly-stalked clusters, calyx bell-shaped, 4 short teeth, petals, if any, 4, pink, stamens 6 or 8; capsule  $\frac{1}{12}$  in. diam., round, larger than the calyx tube, red when ripe, seeds as in the last species.

**Ammannia  
multiflora,**

LYTHRACEÆ.

F. B. I. ii. 570.

The Plains.

very like the last species, but the flowers and capsule are smaller.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

**Oxybaphus  
himalaicus,**

*Punac, bhans.*

NYCTAGINACEÆ.

F. B. I. iv. 708.

Himalaya,

6-9,000 ft.

Kulu (Edgeworth).

large, glandular hairy, sticky, branched; leaves  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., ovate, short-pointed, leaf stalk  $\frac{1}{2}$ -1 in. long; flowers small, pink, solitary on long slender axillary stalks forming a loose cluster, one bract forming a 5-toothed cup,  $\frac{1}{4}$  in. long, surrounding the calyx, calyx pink, tube short-lobed, lobes soon falling off, stamens 4, united below, enclosed within the calyx tube; fruit  $\frac{1}{5}$  in. long, ovoid, rough, black. This plant is used for fodder.

**Boërhaavia elegans,**

*Sant.*

NYCTAGINACEÆ.

F. B. I. iv. 709.

The Plains.

Kahuta (Douie).

Baluchistan.

large, shrubby, much branched; leaves 1- $1\frac{1}{2}$  in. long, few, linear-oblong or oblong-lanceolate, blunt, fleshy with a hoar-frostlike bloom; flowers minute, in very large two or three times divided clusters on very long slender main and minor stalks, calyx funnel-shaped, 5-lobed, petals none, stamens 1-5, projecting; fruit  $\frac{1}{10}$  in. long, narrowly oblong with rounded ends, strongly ribbed, quite smooth. The seeds are eaten. The leaves are used as a diuretic.

**Cyathula tomentosa,**

AMARANTACEÆ.

F. B. I. iv. 722.

Himalaya,

2-6,500 ft.

Simla (Collett).

large, felted or woolly, branches nearly 4-angled; leaves 2-10 in. long, oblong, pointed at both ends, rarely round, shortly stalked,  $\frac{1}{4}$ - $\frac{1}{2}$  in.; flowers white, shining, in small clusters crowded in round heads forming terminal spikes, each cluster containing one or two perfect flowers and many imperfect ones consisting of hooked sepals, spikes 2-6 in. long, stalked, calyx 5-fid, segments narrowly lanceolate, 2 or all ending in hooked extremities, lengthening with age, stamens 5, alternate, with 5 fringed staminodes united below, style slender, stigma rounded; fruit dry, bladder-shaped, 2-nerved, seed one, ovate, shining.

**Cyathula capitata,**

AMARANTACEÆ.

F. B. I. iv. 722.

Himalaya,

6-9,000 ft.

Simla (Collett).

very like the last, only more slender and flowers collected in heads about one inch in diam.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS NONE.

**Pupalia lappacea,**

AMARANTACEÆ.  
F. B. I. iv. 724.  
The Plains to  
3,000 ft.  
Baluchistan.

large, straggling, felted, branches rounded; leaves 2-4 in., broadly ovate to lanceolate and short-pointed, base sharp-pointed, leaf stalk  $\frac{1}{4}$ - $\frac{1}{2}$  in.; flowers in small, distant or adjacent clusters,  $\frac{1}{4}$  in. diam., calyx of 5 sepals, green, 3-nerved, densely woolly, reduced in imperfect flowers to a process, bearing stellately spreading hooked bristles, petals none, stamens 5, nearly free below, staminodes none, style slender, stigma roundish; fruit ovoid, flattened, seed one.

**Nothosærua brachiata,**

AMARANTACEÆ.  
F. B. I. iv. 726.  
The Plains.

medium size, annual, branched from the base, branches slightly velvety, spreading; leaves 1-2 in., ovate, blunt or short-pointed, thin, green, stalk  $0\frac{1}{4}$  in.; flowers very minute, woolly, in axillary solitary or clustered little spikes,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, white, calyx of 3-5, thin, colourless sepals  $\frac{1}{50}$  in. long, silky, one-nerved, petals none, stamens 1-2, ununited, staminodes none, stigma nearly sessile; fruit minute, oblong, flattened, seed one.

**Achyranthes aspera, The Prickly Chaff Flower,**

*Latjira, chichra, kutri.*  
AMARANTACEÆ.  
F. B. I. iv. 730.  
The Plains to  
7,000 ft.  
Simla (Collett).  
Rawalpindi.  
Baluchistan  
(Boissier).

large, straggling, branched or not, branches long and rambling; leaves 3-5 by 2-3 in., ovate or round, thick, leathery, velvety or felted, shortly stalked; flowers shining, dull green or purplish, soon bending down, crowded in long rigid terminal unbranched spikes, 6-18 in. long, bracts and bracteoles somewhat spiny, calyx  $\frac{1}{6}$ - $\frac{1}{4}$  in. long, 5-fid, segments stiff, lanceolate, short-pointed, longer than the bracteoles, petals none, stamens 5, alternating and united below with 5 fringed staminodes, style long, stigma rounded; fruit oblong, enclosed in the calyx, seed one, oblong. This plant is used as a diuretic, the ash contains much potash.

**Achyranthes bidentata,**

AMARANTACEÆ.  
F. B. I. iv. 730.  
Himalaya,  
4-6,000 ft.  
Simla (Collett).

very much like the last species, but much larger, leaves long-pointed with a slender tip, bracteoles usually reduced to a spine, and staminodes toothed, not fringed.

**Atriplex hortensis,**

see Herbs; Alternate, Exstipulate, Simple.

**Atriplex crassifolia,**

see Herbs, Alternate, Exstipulate. Simple.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS NONE.

**Pouzolzia pentandra**, see Prostrate Herbs, Opposite, Exstipulate, Simple.

## LEAF MARGINS TOOTHED.

## PETALS UNUNITED.

**Dianthus  
Cachemiricus**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 214.  
Kashmir.

small, perennial, stem jointed, much branched from the base, slender, smooth; leaves 1-1½ in., very narrow, grooved, mid-rib stout, margin slightly toothed, thickened; flowers terminal, solitary, bracts 4, lanceolate with long, slender or leafy points, calyx 5-toothed, 1 in. long, teeth ovate-lanceolate, long-pointed, margins thin, petals 5, long-stalked, smooth, blade ½-¾ by 1 in., margin toothed, stamens 10 and ovary one-celled, all on a long stalk, styles 2; capsule opening by 4 teeth.

**Dianthus  
Jacquemontii**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 214.  
Kashmir.

small, stems many, slender from a woody stock, leaves 1-1½ in., narrow, leathery, flat above, short-pointed, radical slightly toothed, stem leaves hardly toothed, with thickened margins, flowers usually solitary, bracts 4, very broad, suddenly contracted into a thickened and blunt point, calyx ¾-1 in., teeth long with sharp stiff points, petals 5, long-stalked, blade broad, rather deeply toothed; otherwise like the last species.

**Dianthus angulatus**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 215.  
Himalaya,  
7-13,000 ft.

small, stems many, stiff, much branched, from a stout woody stock, leaves radical, 3-6 in., stem leaves ½-1½ in., linear, short-pointed, flowers pink, solitary, terminal, bracts 4-6, pointed, calyx ½-¾ in., tubular, petals 5, long-stalked, blade fringed; otherwise like the last species.

**Silene inflata**,  
**Bladder Campion**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 218.  
Himalaya,  
5-11,000 ft.  
Simla, Mashobra,  
Narkanda (Collett).

large, with a greenish-blue gloss, jointed, smooth or velvety, perennial; leaves 1-2 in. long, ovate or oblong, stem leaves sessile, margins minutely toothed, short-pointed; flowers ½-¾ in. diam., white, in drooping many-flowered clusters, bracts thin, dry, calyx ¾ in. long, ovoid, puffed out, base indented, 5-toothed, 10 or 20-veined, teeth broadly triangular, petals 5, stalked, blade deeply 2-lobed with pouch-like enlargement, stamens 10, styles 3; capsule round, opening above by 6 teeth, seeds many, concave in front, convex at the base, with lines of excre-  
sences.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNUNITED.

- Silene Falconeriana**, large, perennial, stems several from the woody stock, branched, velvety and sticky below; leaves  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., linear-lanceolate, narrow, velvety or smooth, minutely toothed; flowers white, in loose opposite axillary clusters, flower stalks slender, bracts minute, calyx  $\frac{1}{2}$  in., tubular, narrow, teeth short, blunt, petals 5, very narrow, stalked, blade blunt without scales, stamens 10, styles 3; capsule ovoid, seeds minute; many, sides flat or convex, back grooved.  
**CARYOPHYLLACEÆ.**  
 F. B. I. i. 220.  
 Himalaya,  
 3-9,000 ft.  
 Simla, on grassy slopes (Collett).
- Saxifraga imbricata**, see Herbs, Unbranched, Opposite, Exstipulate, Simple.
- Epilobium angustifolium**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.
- Epilobium latifolium**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.
- Epilobium hirsutum**, large, robust, covered with soft white hairs; leaves 1-3 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., lanceolate, stem-clasping, teeth small, sharp; flowers  $\frac{1}{2}$  in. long, pink-purple, axillary, forming long or short terminal leafy racemes, calyx tube on the ovary, linear, 4-angled, teeth 4, short-pointed, falling off after flowering, petals 4, erect or spreading, notched, stamens 8,  $\frac{3}{8}$  in. long, alternate ones shorter, stigmas 4, distinct, spreading; capsule 2- $3\frac{1}{2}$  in., hairy, 4-celled, valves 4, splitting and curving down from the seed-bearing column, seeds very many, small, crowned by a tuft of long silky hairs.  
**GREAT WILLOW HERB,**  
**CODLINS AND CREAM,**  
**ONAGRACEÆ.**  
 F. B. I. ii. 583.  
 The Plains to 7,000 ft.  
 Kotgarh, Sutlej and Giri Valleys in wet places (Collett).  
 Shahpur Dist. (Douie).
- Epilobium parviflorum**, very like the last species, but the stigmas do not curve down and the leaves are not stem-clasping.  
**Hoary Epilobe,**  
**ONAGRACEÆ.**  
 F. B. I. ii. 584.  
 Himalaya,  
 5-7,000 ft.  
 Simla, Sutlej Valley (Collett).

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNUNITED.

**Epilobium roseum,** large, stem round, hairs sometimes in lines, the bases  
 var. **cylindricum,** and of the leaves sometimes passing down the stem in lines,  
**Dalhousianum,** leaves stalked, linear-lanceolate, capsules long-stalked,  
**Pale Epilobe,** seeds ovoid with the top broad, flowers  $\frac{1}{4}$  in., stigmas  
 combined; in other respects like the previous species.

ONAGRACEÆ.

F. B. I. ii. 584.

Himalaya,

6-10,000 ft.

Simla (Collett).

**Circæa lutetiana,** medium size, perennial, velvety; leaves 2 by  $1-1\frac{1}{4}$   
**Enchanter's** in., ovate-lanceolate, not transparent, long-stalked, nar-  
**Nightshade,** rowed to the base, short-pointed, widely toothed; flowers  
 ONAGRACEÆ.  $\frac{1}{5}$  in. diam., white or pinkish, in terminal and lateral ra-  
 F. B. I. ii. 589. cemes, calyx ovoid, 2-lobed, hardly produced above the  
 Himalaya, ovary, lobes reflexed, falling off after flowering, bracts  
 7-10,000 ft. none, petals 2, notched, stamens 2, style thread-like, stigma  
 Mashobra in woods almost 2-lobed; capsule  $\frac{1}{8}$  in., pear-shaped with the broad  
 (Collett). end uppermost, 2-celled, rough with hooked bristles, seeds  
 one in each cell.

**Circæa cordata,** like the last species, but stouter and more hairy,  
 leaves long-pointed, capsule ovoid.

ONAGRACEÆ.

F. B. I. ii. 589.

Himalaya,

7-9,000 ft.

Simla in woods

(Collett).

Dalhousie, Chamba

(C. B. Clarke).

**Circæa alpina,** small, smooth, leaves  $\frac{1}{2}$ -1 in. across, broadly ovate,  
**Alpine Circæa,** blunt or short-pointed, thin, capsule hardly hairy, very  
 ONAGRACEÆ. small, seed one; otherwise like the last species.

F. B. I. ii. 589.

Himalaya,

7-11,000 ft.

Mashobra, Mahasu

(Collett).

HERBS, UPRIGHT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

**Bryophyllum calycinum**,  
*Zukm-haiyat*,  
CRASSULACEÆ.  
F. B. I. ii. 413.  
The Plains to  
3,000 ft.  
Sutlej Valley  
(Collett).

large, perennial, smooth, stem hollow, sprouts on damp ground from the notches on the margin of leaves; leaves 3-6 in. long, ovate or oblong, fleshy, toothed, stalked, blunt, rarely compound, with 3 leaflets; flowers 2 in. long, reddish-green, drooping, cylindrical in a large terminal branching raceme, calyx tubular, swollen, green tinged with red and spotted with white, 4-toothed, corolla tubular, twice as long as the calyx, green, lobes 4, tinged with red, short-pointed, spreading, stamens 8, in 2 series on the corolla-tube, styles 4; fruit of 4 carpels, many-seeded, enclosed in the persistent calyx and corolla. The leaves are applied to wounds. Roxburgh states that the plant was introduced into the Calcutta Botanical Gardens and has spread from there.

**Kalanchoe spathulata**,  
*Tatara, rugru,*  
*haiza ka patta.*  
CRASSULACEÆ.  
F. B. I. ii. 414.  
Himalaya,  
1-3,000 ft.  
Valleys below  
Simla (Collett).

large, perennial, stout, smooth; leaves 4-8 in. (upper 3-4 in.), fleshy, toothed, oblong, narrowed to the stalk; flowers  $\frac{3}{4}$ -1 in. long, yellow, in a large terminal branched flat-topped cluster, calyx 4-lobed, divided nearly to the base, lobes triangular, short-pointed, corolla tubular, tube flask-shaped, twice the length of the calyx, lobes 4, spreading, short-pointed, stamens, style and capsule as in the last species. This plant is said to be a cure for cholera, it acts as a strong purge and is poisonous to goats and cattle.

**Morina persica**,  
*Bekh-akwar.*  
DIPSACEÆ.  
F. B. I. iii. 216.  
Himalaya,  
6-9,000 ft.  
Simla (Collett).  
Hazara (Barriett).  
Baluchistan (Lace).

large, like thistles from the spiny leaves; leaves 6 by 1 in., oblong or linear, sessile, doubly spinous-toothed, velvety or smooth; flowers  $1\frac{1}{2}$  in. long, pinkish-white, sessile, crowded in the axils of the upper leaves forming a terminal interrupted spike, bracteoles few among the flowers, spinous, also united, bracteoles forming a tubular cup (involucl) round the base of the flower, calyx tubular, 2-lipped, notched, corolla 1-1 $\frac{1}{2}$  in., tube long, slender, mouth oblique, 5-lobed, stamens 2, fertile, as long as the corolla lobes, style almost protruding, stigma disc-like; fruit an achene in each flower, enclosed within the persistent involucl, tip free.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

**Morina longifolia,**

DIPSACEÆ.

F. B. I. iii. 216.

Himalaya,

9-14,000 ft.

Mahasu, Theog,

Hattu (Collett).

very like the last species, but with larger leaves, flowers more pink, calyx lobes not spinous, and stamens shorter.

**Morina Coulteriana,**

DIPSACEÆ.

F. B. I. iii. 216.

Himalaya,

9-13,000 ft.

Patarnala (Clarke).

very like the last species, but smaller, flowers yellow, leaves singly, not doubly spinous toothed, calyx lobes spinous.

## FLOWERS, MINUTE, IN HEADS.

**Scabiosa Olivieri,**

see Herbs, Erect, Opposite, Exstipulate, Lobed.

**Scabiosa****Candolliana,**

DIPSACEÆ.

F. B. I. iii. 219.

Himalaya,

3-5,000 ft.

medium size, rootstock perennial, stems tufted, but little branched; leaves  $1\frac{1}{2}$  by  $\frac{1}{8}$  in., linear, slightly toothed; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, purple, in terminal half round small heads,  $\frac{1}{2}$  in. diam., surrounded by short overlapping ovate bracts, involucre  $\frac{1}{8}$ - $\frac{1}{6}$  in., calyx mouth with 5 short teeth, barbed bristles  $\frac{1}{3}$  in. long, corolla tubular, 5-toothed or in some expanded into long rays, stamens 4, styles thread-like, stigma round; achenes crowned with the involucre and the persistent calyx bristles. This plant is closely akin to *Scabiosa arvensis* of Britain.

**Scabiosa speciosa,**

see Herbs, Erect, Opposite, Exstipulate, Lobed.

**Ageratum****conyzoides,**

COMPOSITÆ.

F. B. I. iii. 243.

The Plains to

5,000 ft.

Sutlej Valley

(Collett).

medium size, annual, softly hairy; leaves 3 by  $1\frac{1}{2}$  in., lanceolate or ovate, stalked, minutely round-toothed; flower heads many, all the flowers alike,  $\frac{1}{4}$  in. diam., in dense rounded clusters, bracts of the heads narrow, nearly equal, ribbed, short-pointed, in 2 series, flowers tubular, pale blue, calyx (pappus) of 3-5 linear, short-pointed, minutely barbed scales, united in a toothed cup-like ring, corolla-tube dilated upwards, lobes 5, short, style-arms short; achenes  $\frac{1}{16}$  in., angled, black, sticky.



HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS.

**Siegesbeckia  
orientalis,**

COMPOSITÆ.

F. B. I. iii. 303.

The Plains to

5,000 ft.

Simla (Collett).

Murree.

medium size, sticky with crisped hairs, a common weed near cultivation, much branched, often purplish; leaves 1-5 in. long, triangular ovate, deeply toothed, upper leaves almost without teeth, leaf stalks winged; flowers yellow, rarely white, radiate with ray flowers, in heads  $\frac{1}{4}$  in. diam., arranged in leafy branching racemes, bracts sticky in 2 rows, outer 5 long, narrow, spreading, inner shorter, erect, receptacles flat, covered with small concave scales, calyx hairs (pappus) none, outer corollas with rays (ligules) 2 or 3-lobed, inner corollas 3-5-lobed; achenes curved, angled, blunt at the base.

**Blainvillea latifolia,  
or rhomboidea,**

COMPOSITÆ.

F. B. I. iii. 305.

The Plains to

5,000 ft.

Below Sipi (Collett).

medium size, annual, stiff, much branched, roughly hairy; leaves 2-4 in. long, stalked, ovate or ovate-lanceolate, hairy on both surfaces, short- or long-pointed, slightly round-toothed, upper leaves sometimes alternate; flowers yellow or white, outer rayed in heads  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., terminal at the end of branches or axillary, bracts few in 2 rows, outer broad, leaf-like, inner passing into scales, receptacle covered with rigid concave scales each holding a flower, pappus of 2-5 unequal bristles joined into a ring, rays of outer flowers 2- or 3-toothed, corolla of inner (disk) flowers 5-toothed; achenes 3-angled, inner ones often flattened.

**Schlerocarpus  
africanus,**

COMPOSITÆ.

F. B. I. iii. 305.

The Plains to

5,000 ft.

Valleys below Simla,  
in cornfields

(Collett).

medium size, annual, roughly hairy; leaves  $1\frac{1}{2}$ -3 in., ovate, short-pointed, toothed, stalked; flowers yellow, in sessile or stalked heads in the forks or at the end of branches, heads  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., bracts few, leaf-like, outer spreading, receptacle covered with large ribbed scales, rays of outer flowers broad, notched, spreading, corolla of disk flowers 3-5-toothed, pappus (calyx hairs) none; achenes curved, ribbed, enclosed by the rough boat-shaped scales of the receptacle.

## HERBS, UPRIGHT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS.

**Spilanthes acmella,***Akarkarha,*  
*pokar-mul.*

COMPOSITÆ.

F. B. I. iii. 307.

The Plains to  
5,000 ft.

Dharmpur.

medium size, annual, velvety or hairy; leaves  $\frac{3}{4}$ - $1\frac{1}{2}$  in., ovate-lanceolate, stalked, toothed, sometimes entire; flowers white or yellow, in discoid or rayed conical heads,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, solitary on long stalks, bracts of the heads green, lanceolate, in 2 rows, receptacle conical, covered with concave scales, pappus none or 1 or 2 bristles, outer ray flowers one row female, white or yellow, ligule short, inner disk flowers 2-sexual, tubular, 4-5-toothed; achenes flattened, enclosed in a scale. The seeds are pungent and are used medicinally for toothache and as a pot herb.

**Guizotia abyssinica,**

COMPOSITÆ.

F. B. I. iii. 307.

The Plains, east of  
the Sutlej.  
Gurgaon.

medium size, annual, velvety, leafy upwards, stout; leaves 3-5 in., upper often alternate, ovate-lanceolate, or lanceolate-oblong, or linear, sessile, half stem-clasping, blunt-pointed, sharply toothed; flowers inner tubular, outer ligulate, yellow, in stalked axillary or terminal heads,  $\frac{1}{2}$ -1 in. diam., bracts of heads 5, almost in 2 series, outer almost leaf-like, broadly oblong or ovate, blunt, green, inner like the scales of the floor of the head, pappus hairs none, outer corollas ligulate, few, 2-3-toothed, inner tubular, 5-toothed, anther-bases abrupt, entire, style-arms hairy; achenes smooth, flattened, tip rounded.

**Bidens cernua,****Bur-Marigold,**

COMPOSITÆ.

F. B. I. iii. 309.

Kashmir.

Chamba,

5-6,000 ft.

(Thompson).

medium size, stout, annual, smooth; leaves 3-5 in., base toothed, sometimes nearly united; flowers yellow, in drooping clustered or nearly solitary discoid heads,  $\frac{2}{3}$ -1 in. diam., bracts in 2 rows, united below, outer green, inner dry, thin, receptacle scales narrow, flat, nearly as long as the flowers, pappus of 2-4, stiff, barbed bristles, flowers tubular, 5-toothed; achenes flattened, slender, black, sometimes thickened and armed with recurved spines.

## STAMENS FIVE.

**Wahlenbergia  
gracilis,**

see Herbs, Erect, Alternate, Exstipulate, Simple.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

STAMENS FOUR.

**Scrophularia  
calycina,**

SCROPHULARIACEÆ.

F. B. I. iv. 253.

Himalaya,

9-12,000 ft.

Narkanda, Hattu,

Chor (Collett).

medium size, annual, stem stout, angular, smooth below, sticky from glands above; leaves 1-4 in., upper alternate, ovate, ovate and heart-shaped or oblong, shortly stalked, short-pointed, coarsely toothed; flowers small, greenish-purple, in opposite stalked crowded clusters forming erect stiff terminal branching leafless racemes, calyx 5-fid, segments lanceolate, long-pointed, corolla tube globular, lobes 5, short, flat, 4 upper equal, erect, lowest spreading, stamens 4, in unequal pairs, turned downwards, enclosed in the corolla, staminode one, ovate, sharp-pointed, style long, stigma minute; capsule  $\frac{1}{4}$ - $\frac{1}{3}$  in., ovoid, long-pointed, seeds several, oblong.

**Scrophularia**

**Scopolii,**

SCROPHULARIACEÆ.

F. B. I. iv. 254.

Himalaya,

6,000 ft.

Kashmir, Murree,

Hazara (Fleming,

Clarke).

large, stout, smooth or slightly velvety, branched, leaves 1-3 in., upper alternate, ovate, oblong, or heart-shaped-ovate, coarsely toothed, stalk  $\frac{1}{2}$ -1 in., flowers small, greenish, in loose-flowered erect clusters, lower axillary, upper alternate, forming long straight narrow leafless branching racemes 12 in. or more in length, main flower stalk and lesser flower stalks short, stout, erect, calyx lobes 5, rounded, margins thin, dry, 2 upper corolla lobes longer than the others, stamens enclosed in the corolla, staminode round, capsule ovoid, beaked, seeds wrinkled; in other respects like the last species.

**Scrophularia**

**polyantha,**

SCROPHULARIACEÆ.

F. B. I. iv. 255.

Himalaya,

4-11,000 ft.

large, annual, stout and smooth below velvety, sticky above, stem slightly 4-angled; leaves 2-8 in., upper alternate, ovate or ovate and heart-shaped, round-toothed, sometimes lobed at the base, leaf stalk  $\frac{1}{2}$ -1 in. long, sometimes with projections; flowers very small, greenish, in stiff erect very large branched leafless racemes, flower stalks short, calyx 5-fid, segments rounded, margins thin, dry, corolla 5-lobed, very short, 2 upper lobes much longer than the lateral, stamens 5, in unequal pairs, far-protruding, staminode broad, style thread-like; capsule round, seeds somewhat wrinkled.

**Mazus rugosus,**

see Herbs, Unbranched, Opposite, Exstipulate, Simple.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

STAMENS FOUR.

**Buchnera hispida,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 298.  
The Plains to  
9,000 ft.  
Valleys below Simla  
(Collett).  
Dharmpur.

small to medium size, annual, stiff, slender, bristly, often branched above; leaves 1-2 by  $\frac{3}{4}$ -1 $\frac{1}{2}$  in., lower oblong or ovate, broad at the apex, upper linear-oblong or lanceolate, toothed or not, blunt-pointed; flowers  $\frac{1}{2}$  in. long, white or pale purple, sessile, solitary, in the axils of leaves forming terminal spikes, 6-10 in. long, calyx  $\frac{1}{8}$  in., tubular, 5-toothed, bristly, corolla lobes 5, spreading, nearly equal, stamens 4 in unequal pairs, enclosed in the corolla, style short, stigma round; capsule oblong, shorter than the calyx. seeds very many, oblong, netted.

**Verbena officinalis,**

see Herbs, Erect, Opposite, Exstipulate, Lobed.

**Hemigraphis  
latebrosa,**  
var. **rupestris,**  
ACANTHACEÆ.  
F. B. I. iv. 423.  
Koti above Kalka.

medium size, branches many, spreading, velvety; leaves 2 $\frac{1}{2}$  by 1-1 $\frac{1}{2}$  in. long, pointed at both ends, ovate, toothed, leaf stalk 1-1 $\frac{1}{2}$  in., on the secondary flowering branches much smaller, bracts ovate, scarcely longer than the calyx, except in the outermost flowers where they are stalked; flowers  $\frac{2}{3}$ - $\frac{3}{4}$  in., blue, sessile in dense heads, terminal or nearly axillary on short branchlets, bracteoles none, calyx 5-fid, segments linear-lanceolate, nearly equal,  $\frac{1}{3}$ - $\frac{1}{4}$  in., whitish, hairy, corolla narrowly tubular, funnel-shaped, tube white or yellowish, lobes blue, 5, rounded, stamens 4, in unequal pairs, just enclosed in the corolla, longer pair bearded in the upper half, shorter pair smooth, anthers triangular, sharp-pointed, style long, lobes unequal; capsule  $\frac{1}{4}$  in., linear, hairy, seeds 6, hairy when wet.

**Strobilanthes  
atropurpureus,**  
ACANTHACEÆ.  
F. B. I. iv. 472.  
Himalaya,  
6-10,000 ft.  
Simla, Matiana  
Hattu (Collett).  
Murree (Douie).

small to medium size, perennial, flowering at intervals of several years, growing in forests and swampy ground, velvety, sometimes sticky, stem 4-angled or furrowed; leaves 2-4 by 1 $\frac{1}{2}$ -2 in., ovate or ovate-lanceolate, smooth, round- or sharp-toothed, tapering into a winged stalk; flowers 1 $\frac{1}{4}$  in., blue, solitary or in pairs at intervals on spikes 1-6 in. long, bracts leaflike, persistent, bracteoles linear, calyx 5-fid, segments linear, corolla-tube curved, cylindrical below, dilated above, pale blue, lobes 5, dark blue, nearly equal, rounded,  $\frac{1}{2}$ - $\frac{3}{4}$  in. across, stamens 4, in unequal pairs on the corolla tube, alternate with the lobes, anther-bases blunt, style tip curved back; capsule  $\frac{3}{4}$  in. long, oblong, sticky, seeds  $\frac{1}{2}$  in., 4 or less.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

STAMENS FOUR.

**Acrocephalus capitatus,**

LABIATÆ.

F. B. I. iv. 611.

The Plains to 5,000 ft., in moist places.

small, annual, slightly velvety, branched from the base or not; leaves  $\frac{1}{2}$ -1 in., ovate or lanceolate, coarsely toothed, narrowed to the stalk; flowers  $\frac{1}{6}$  in., pale purple, sessile, crowded in stalked terminal round heads,  $\frac{1}{2}$  in. diam., with 2 spreading leaves at the base, calyx 2-lipped, upper lip undivided, flat, lower shorter, 4-toothed, corolla tube very short, nearly equally 4-lobed, stamens 4, nearly equal, enclosed in the corolla, toothless, style 2-fid; nutlets smooth.

**Pogostemon plectranthoides,**

LABIATÆ.

F. B. I. iv. 632.

Himalaya, 1-5,000 ft.

Sutlej Valley.

Suni (Collett).

large, perennial, strongly scented, velvety, bushy, branches round, often purple; leaves 3-6, ovate, stalked, long-pointed, coarsely and irregularly toothed; flowers  $\frac{1}{4}$  in., pinkish-white, in large circular clusters in many cylindrical spikes, forming terminal erect branching racemes, floral leaves bract-like, hairy, glandular, ovate, short-pointed, calyx tubular, 5-toothed, teeth nearly equal, corolla-tube curved, longer than the calyx, 4-lobed, lobes nearly equal, blunt, stamens 4, nearly equal, protruding far, lilac, bearded with long lilac beaded hairs, style 2-fid; nutlets smooth.

**Dysophylla crassicaulis,**

LABIATÆ.

F. B. I. iv. 640.

Himalaya, 2-4,000 ft.

Kashmir.

Chamba, Kulu.

medium size, annual, smooth, strongly smelling, found in swamps; leaves 4-6 in a circle, 1-2 in. long, narrowly oblong or lanceolate, toothed, blunt; flowers minute, blue purple, in large circles crowded on slender cylindrical terminal spikes 1-4 in. long, bracts lanceolate broad towards the tip, calyx minute, ovoid, 5-toothed, teeth erect or converging, corolla minute, 4-lobed, upper lobe 2-fid or undivided, lower spreading, stamens 4, protruding, very long, bearded, style 2-fid; nutlets very small, circular, flattened, pale, shining.

**Elsholtzia incisa,**

LABIATÆ.

F. B. I. iv. 644.

Himalaya,

3-5,000 ft.

medium size to large, branches 4-angled; leaves 1-2 in., broadly ovate, blunt-pointed, coarsely round-toothed, stalk long, winged above; flowers very small, white, in very slender cylindrical spikes 2-4 in. long, bracts small, slender, calyx sessile, sticky, 5-toothed, bell-shaped, enlarged in fruit, corolla 4-lobed, upper lobe nearly erect, notched, the others spreading, stamens 4, in unequal pairs, protruding, not bearded, style 2-lobed, lobes awl-like; nutlets smooth, shining.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

## STAMENS FOUR.

**Elsholtzia strobilifera,**

LABIATÆ.

F. B. I. iv. 645.

Himalaya,

5-10,000 ft.

Simla (Collett).

small to medium size, slightly hairy; leaves  $\frac{1}{2}$ -1 in., ovate, stalked, round-or sharp-toothed; flowers minute, pale purple on cylindric hairy or velvety cone-like spikes  $\frac{1}{2}$ -1 $\frac{1}{2}$  in., bracts broad, thin, fringed, forming cups nearly concealing the flowers, calyx thin, transparent, tubular, corolla-tube slender, longer than the calyx, lobes 4, stamens and style as in the last species; nutlets red-brown, shining.

**Elsholtzia cristata,**

LABIATÆ.

F. B. I. iv. 645.

Himalaya,

1-9,000 ft.

Simla (Collett).

Changlagalli (Douie).

small to medium size, nearly smooth, fragrant; leaves 1-4 in., lanceolate, coarsely toothed, long-stalked, long-pointed, thin, gland-dotted beneath; flowers very small, pink purple in broad velvety one-sided spikes 1-2 $\frac{1}{4}$  in., bracts stalked leaf-like, round with a sharp abrupt point, calyx tubular, hairy, corolla tube curved, stamens, style and nutlets as in the last species.

**Perilla ocimoides,***Bhanjira.*

LABIATÆ.

F. B. I. iv. 646.

Himalaya,

2-5,000 ft.

Valleys below Simla

(Collett).

medium size, annual, aromatic, shaggy; leaves 3-5 in., ovate or rounded, blunt, sharp-or round-toothed, stalk 1-3 in.; flowers white, small, in pairs on long one-sided erect axillary and terminal simple or branching racemes, bracts lanceolate, as long as the flowers, calyx bell-shaped, 5-toothed, becoming much larger, 2-lipped in fruit, corolla 5-lobed, stamens 4, hardly protruding, style 2-fid; nutlets nearly round, netted. The oil, seed and leaves are eaten.

**Mentha sylvestris,****Horse Mint,***Podina, mushk tara.*

LABIATÆ.

F. B. I. iv. 647.

Himalaya,

4-12,000 ft.

Simla, in wet places

(Collett).

Baluchistan

(Aitchison).

medium size, perennial, strongly scented; leaves 1-3 in., lanceolate, ovate or oblong, sharply-toothed, nearly sessile, short-pointed, grey velvety above, white felted below; flowers small, lilac, in large clusters, crowded on axillary and terminal cylindric tapering spikes 1-3 in., bracts lower leaf-like, upper smaller, lanceolate, calyx sharply 5-toothed, bell-shaped, hairy, corolla 4-lobed, lobes erect, nearly equal, stamens 4, equal, protruding, not bearded, style-arms short; nutlets netted: *var. incana* is generally grey-felted. This plant is cultivated, and is used as a carminative.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

## STAMENS FOUR.

**Mentha arvensis,**  
**Corn Mint,**  
*Pudinah.*

LABIATÆ.

F. B. I. iv. 648.

Kashmir,

5-10,000 ft.

Baluchistan

(Maynard).

medium size, hairy or smooth, leaves 1-2 in., flowers in round axillary head-like clusters; in other respects like the last species. This plant is much cultivated, it is used as a carminative, diuretic, and stimulant.

**Micromeria biflora**  
and **hydaspidis,**

see Shrubs, Opposite, Exstipulate, Simple, Corolla 2-lipped.

## STAMENS TWO.

**Lycopus**  
**europæus,**  
**Gipsywort,**  
*Jalnim.*

LABIATÆ.

F. B. I. iv. 648.

The Plains to

7,000 ft.

Matiana, in marshy  
ground (Collett).

Kashmir,

3-6,000 ft.

medium size to large, perennial, slightly hairy, root stock creeping or with runners; leaves oblong, narrowed to each end, nearly sessile, toothed, or pinnately divided; flowers small, very many, bluish-white, in dense axillary clusters, calyx bell-shaped, deeply 5-toothed, teeth equal, narrowly lanceolate, corolla bell-shaped, slightly longer than the calyx, 4-lobed, stamens 2, rather long; nutlets 4, smooth, longer than the calyx tube, ovate, with a broad tip. This plant is used as a cooling medicine.

## COROLLA ONE-LIPPED.

**Blepharis sindica,**  
ACANTHACEÆ.  
F. B. I. iv. 479.  
The Plains.

small, rough or prickly; leaves 1-2 in., linear or narrowly oblong, velvety, toothed or spinous; flowers  $\frac{1}{2}$ - $\frac{2}{3}$  in., blue, in few- or many-flowered, 2-3 in. long spikes, bracts 1 in. or more, ovate with spreading lanceolate tips, prickly, hairy within and without, bractlets  $\frac{1}{3}$  in., linear, hairy, shorter than the bracts, calyx 4-lobed, 2 outer lobes  $\frac{2}{3}$  in., ovate, 2 inner  $\frac{1}{3}$  in., narrowly ovate, corolla tube ovoid, horny, one-lipped, the lower broad, 3-lobed, stamens 4, in unequal pairs, thick, rigid, anterior pair have a process above the anthers, anthers densely bearded, style linear, very shortly 2-fid; capsule  $\frac{1}{3}$  in. oblong with rounded ends, flattened, shining brown, seeds 2,  $\frac{1}{4}$  in., prickly.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGIN TOOTHED.

PETALS UNITED.

COROLLA ONE-LIPPED.

**Blepharis edulis**,  
ACANTHACEÆ.  
F. B. I. iv. 479.  
The Plains.  
Baluchistan  
(Stocks).

very like the last, but larger with large leaves and larger corolla.

**Teucrium  
Royleanum**,

see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Teucrium  
quadrifarium**,  
**Germander**,  
LABIATÆ.  
F. B. I. iv. 701.  
Himalaya,  
4-8,000 ft.  
Simla (Collett).

large, stout, stem square, nearly round below, hairy; leaves 2-3 in., ovate or oblong-ovate, shortly-stalked, base heart-shaped, short-pointed, toothed, often wrinkled; flowers  $\frac{1}{2}$  in. long, purple, sessile, in pairs on one side of erect branching racemes, bracts  $\frac{1}{2}$  in., broadly ovate, abruptly ending in a long point, hairy near the base, concealing the flowers, red purple, calyx  $\frac{1}{6}$  in., upper lip rounded, 2 lower short-pointed or blunt, corolla 1-lipped, upper lip none, lower lip 5-lobed, long, broad, lateral lobes tooth-like, short-pointed, terminal lobe broad, concave, stamens 4, in unequal pairs, protruding from the corolla tube, style undivided; nutlets minute, wrinkled.

COROLLA TWO-LIPPED.

STAMENS TWO.

**Bonnaya brachiata**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 284.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).

small, erect or prostrate, rigid, annual, quite smooth; leaves  $\frac{1}{2}$ -1 $\frac{1}{2}$  in., oblong, blunt or short-pointed, sessile, sharply deeply toothed; flowers  $\frac{1}{4}$  in. long, white, spotted or tinged with pink, bracteate, on short axillary stalks, forming terminal racemes, calyx 5-lobed, segments linear, corolla 2-lipped, upper lip erect, undivided, lower broad, 3-lobed, stamens 2 only, as one pair are aborted, stigma flat, 2-lobed; capsule narrow, cylindric, much longer than the calyx, seeds many, wrinkled.



HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS TWO.

**Mosla dianthera**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 647.  
Himalaya,  
1-6,000 ft.  
The Plains to  
6,000 ft.

medium size, annual, strongly scented, slender, slightly velvety; leaves 1-1½ in., ovate, short-pointed, toothed, stalked; flowers ¼ in. long, white or purplish, in twos on one-sided terminal and axillary racemes, bracts very minute or the lower leafy, calyx bell-shaped, 5-toothed, nearly equal or 2-lipped, base pouched, corolla 2-lipped, upper lip notched, lower 3-lobed, lips short, stamens 2 on the posterior side, short, erect, apart, staminodes 2; nutlets 4, round, smooth or netted.

**Salvia glutinosa**,  
**Sage**,  
LABIATÆ.  
F. B. I. iv. 653.  
Himalaya,  
6-9,000 ft.  
Simla (Collett).  
Baluchistan (Lace).

large, perennial, very sticky, hairy, strongly scented; leaves 4-7 by 2-4 in., ovate-oblong, 2 processes sticking out at the base, like a a barbed arrow head, toothed, leaf stalk 1-3 in.; flowers 1-1½ in., yellow, shortly stalked in large branched erect spreading racemes, floral leaves very small, calyx widely bell-shaped, ½ in., upper lip ovate, short-pointed, corolla tube longer than the calyx, 2-lipped, upper lip dotted with purple, long, curved, flattened from side to side, concave, lower wide, 3-lobed, stamens 2, wide apart, each dividing into 2 horns, upper horn with a perfect anther, lower with none, style long, curved, projecting from the concavity of the upper lip, 2-fid; nutlets 4, triangular, ⅓ in. smooth.

**Salvia hians**,  
LABIATÆ.  
F. B. I. iv. 653.  
Himalaya,  
8-11,000 ft.  
Kashmir (Falconer).

very like the last species, but leaf stalk much longer, often 10 in., leaves broader, calyx much wider, corolla 1½ in., blue, lips shorter, nutlets larger.

**Salvia asperata**,  
LABIATÆ.  
F. B. I. iv. 654.  
Himalaya,  
5-6,000 ft.  
Kashmir (Falconer).

medium size, perennial, rough, branched, somewhat glandular and hairy; leaves 3-6 by 2-3 in., oblong-ovate, heart-shaped, blunt, round-toothed, leaf stalk long, floral leaves 1 in. diam., or less, rounded, bristly, tipped with a sharp hard point; flowers ¾ in. long, white, arranged in distant 6-10-flowered circles on an erect spike, calyx ½ in. long, widely bell-shaped, hairy, stiff, 2-lipped, upper lip 3-toothed, corolla tube short, slender, stamens 2, as in the

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS TWO.

last species, but the horns connected by hard projections, bent backwards and the imperfect anther abruptly dilated, style and nutlets as in the last species but smaller.

**Salvia**

**Moorcroftiana,**  
*Kali jarri, hahu,*  
*papra.*

LABIATÆ.

F. B. I. iv. 654.

Himalaya,  
4-9,000 ft.

Shali, Solon  
(Collett).

Sanawar.

Rawalpindi.

Hazara (Douie).

medium size to large, stout, woolly; leaves 6-12 by 3-5 in., oblong or rounded, heart-shaped, blunt, round-toothed, upper surface nearly smooth or cottony, closely wrinkled, under surface white-felted, thick, stalk green bordered and veined, round and abruptly pointed; flowers 1 in. long, pale blue, lilac or whitish, in distant 6-10-flowered circles round an erect spike, calyx  $\frac{1}{3}$  in., bell-shaped, teeth spinous, upper lip 3-toothed, rough; corolla, stamens, style and nutlets as in the last species but larger. This plant is used in colic and dysentery.

**Salvia lanata,**

LABIATÆ.

F. B. I. iv. 654.

Himalaya,  
5-8,000 ft.

Simla (Collett).

Murree.

very like the last species, but rather smaller, more woolly, leaves not stalked, flowers  $\frac{3}{4}$  in. long, blue-grey.

**Salvia dumetorum,**

LABIATÆ.

F. B. I. iv. 655.

Kashmir, 6,000 ft.

(Falconer, Clarke).

large, perennial, very stout, much branched, hairy, felted or velvety; leaves 3-4 by  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., ovate or oblong, heart-shaped, doubly round-toothed, somewhat wrinkled above, leaf stalk 1-4 in., floral leaves small, rounded with a hard sharp point  $\frac{1}{8}$  in. long; flowers  $\frac{1}{2}$ - $\frac{2}{3}$  in. long, blue, in stieky distant 6-flowered circles round an erect spike, calyx  $\frac{1}{4}$  in., nearly sessile, ovate, bell-shaped, 2-lipped, upper lip curved back with 3 converging teeth, lower abruptly 2-toothed; corolla, stamens, style and nutlets as in the last species.

HERBS, ERRECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS TWO.

**Salvia plebeia**, medium size, annual, stem stout, roughly velvety ;  
*Sathi, samunder-sok.* leaves 1-3 in., ovate or oblong, toothed, blunt, stalked,  
 LABIATÆ. floral leaves small, upper lanceolate ; flowers  $\frac{1}{4}$  in. long,  
 F. B. I. iv. 655. lilac or nearly white, in numerous small circles in several  
 The Plains to slender branching racemes, calyx  $\frac{1}{8}$  in., stalked, upper lip  
 5,000 ft. not toothed, corolla 2-lipped, upper lip short, nearly  
 Sutlej Valley, Suni straight ; stamens, style and nutlets like the last species  
 (Collett). but smaller. This plant is used as a demulcent.

**Salvia ægyptiaca**, small, perennial, hairy, stiff, much branched from  
*Tukm malanga.* the base ; leaves hardly 1 in. long, linear or lanceolate,  
 LABIATÆ. short-pointed, rigid, round-toothed ; flowers small,  $\frac{1}{5}$  in.,  
 F. B. I. iv. 656. in distant 2-3-flowered circles, calyx with hairy glands,  
 The Plains, upper lip round, minutely 3-toothed, lower lip 2 awl-shaped  
 1-2,000 ft. teeth ; corolla, stamens, style and nutlets as in the last  
 Chakwal, Jhelum species. This plant is used as a demulcent.  
 Dist. (Douie).  
 Baluchistan  
 (Hughes-Buller).

STAMENS FOUR.

**Sesamum indicum**, medium size, annual, velvety ; leaves 3-5 in., oblong  
**Gingelly**, or ovate, toothed, upper alternate, lower opposite, often  
*Til.* lobed ; flowers  $1\frac{1}{4}$  in., white or purplish, sometimes marked  
 PEDALIACEÆ. with yellow, axillary, solitary or a few clustered together  
 F. B. I. iv. 387. on short stalks, calyx  $\frac{1}{4}$  in., 5-fid, segments lanceolate, corolla  
 The Plains. 2-lipped, velvety, tube swollen out, almost pouched at  
 Baluchistan. the base, lobes 5, rounded, stamens 4, in unequal pairs,  
 enclosed in the corolla, anthers divided at the base, style  
 thread-like, stigma 2-lobed ; capsule 1 by  $\frac{1}{4}$  in., erect,  
 rough, 4-angled, oblong, pointed, seeds many, brown,  
 oblong. This plant is cultivated for the oil which is ex-  
 pressed from the seeds.

**Mimulus gracilis**, see Herbs, Erect, Opposite, Exstipulate, Simple,  
 Entire.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

**Lindenbergia  
macrostachya,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 261.  
The Plains to  
4,000 ft.  
Sutlej Valley,  
Sunî (Collett).

large, smooth or velvety, stem stiff, stout, or slender; leaves ovate, smooth, toothed; flowers  $\frac{1}{2}$  in. long, yellow, crowded in terminal or axillary, one-sided, rigid spikes, bracts shorter than the calyx, calyx 5-fid, bell-shaped, corolla 2-lipped, upper lip recurved, 2-lobed, lower lip much larger, 3-lobed with 2 permanent folds at the base, stamens 4, in unequal pairs, enclosed in the calyx, style slender, stigma 2-lobed; capsule lanceolate, 2-grooved, seeds many, minute.

**Lindenbergia  
polyantha,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 262.  
The Plains to  
6,000 ft.,  
on walls and banks.

medium size, coarsely velvety, stout or slender; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, ovate, blunt, round-toothed; stalk short; flowers  $\frac{1}{3}$  in. long, yellow, on one-sided axillary and terminal leafy spikes, 2-6 in. long, bracts ovate, longer than the calyx, calyx  $\frac{1}{6}$  in. long, 5-fid, lobes blunt, corolla, stamens and style as in the last species; capsule smooth above, hairy below, otherwise capsule and seeds as in the last species.

**Lindenbergia  
urticæfolia,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 262.  
The Plains to  
6,000 ft.  
Simla, Mashobra,  
common on walls  
(Collett).  
Choa Saidan Shah  
(Douie).  
Baluchistan  
(Boissier).

small, annual, slender, rough from glands or nearly smooth; leaves 1-1 $\frac{1}{2}$  in. long, ovate, blunt, round-toothed, thin, stalk  $\frac{1}{4}$ - $\frac{3}{4}$  in., flowers  $\frac{1}{3}$  in., yellow, shortly stalked, one-sided, all axillary and solitary, or in pairs, or in leafy slender spikes, bracts longer than the calyx, calyx  $\frac{1}{6}$  in., lobes turned back, corolla slightly hairy, capsule hairy above the middle; other characters like the last species.

**Herpestis  
Hamiltoniana,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Margins Entire.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

**Torenia cordifolia**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 276.  
The Plains to  
6,000 ft.  
Valleys below Simla  
(Collett).  
Koti.

small, annual, stems and branches 4-angled; leaves 1-1½ in., ovate, sharply toothed, stalked; flowers ¾ in. long, lilac or blue purple, solitary on axillary stalks, crowded at the end of branches, calyx ½ in., ovoid or oblong, winged, base rounded or heart-shaped, corolla 2-lipped, upper lip erect, concave, notched, lower larger; spreading, 3-lobed, tube cylindrical, dilated above, stamens 4, in unequal pairs, style linear curved, stigma flat, 2-lobed; capsule oblong, short-pointed, seeds many, wrinkled.

**Vandellia crustacea**,

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

**Vandellia erecta**,

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

**Vandellia nummularifolia**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 282.  
Himalaya,  
2-7,000 ft.  
Valleys below Simla  
(Collett).  
Kasauli.

small, smooth, annual, stem 4-angled; leaves ½-¾ in., nearly round, round-toothed, sessile or nearly so; flowers ¼ in. long, red-purple, edges white, on axillary stalks or few-flowered racemes, calyx 5-toothed, ⅛ in., corolla 2-lipped, upper lip erect, broad, concave, notched, lower spreading, 3-lobed, stamens 4, lower pair with a broad tooth, stigma 2-lobed; capsule ¼ in. long, much longer than the calyx, long-pointed, seeds wrinkled.

**Vandellia sessiliflora**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 282.  
Himalaya,  
2-7,000 ft.  
Kashmir.

like the last species, except that the flowers are sessile as the specific name implies.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

## COROLLA TWO-LIPPED.

## STAMENS FOUR.

**Euphrasia officinalis,**  
**Eyebright,**  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 305.  
 Himalaya,  
 7-13,000 ft.  
 Mahasu, Fagu,  
 Hattu (Collett).

small, velvety, glandular, branching, slender; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., ovate, sessile, sharply toothed; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in., white or lilac, purple-veined, throat tinged with yellow in terminal spikes, bracts leaf-like, calyx 4-lobed, tubular, corolla 2-lipped, tube cylindric, longer than the calyx, upper lip erect, 2-lobed, lower spreading, 3-lobed, lobes notched, stamens 4, in unequal pairs, anthers hairy, lower pair long-spurred, style long, stigma round; capsule oblong, flattened, seeds many, oblong, grooved.

**Bartsia**  
**Odontites,**  
**Bartsia, Red**  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 305.  
 Kashmir,  
 7-8,000 ft.  
 (Clarke).

medium size, annual, rough, wiry, 4-angled, branched, branches ending in leafy spikes; leaves  $\frac{1}{4}$ -2 in., lanceolate, somewhat toothed, sessile; flowers  $\frac{1}{2}$  in., pink, in nearly one-sided spikes, lower bracts leafy, calyx 4-fid, bell-shaped, lobes ovate, short-pointed, equal to the tube, corolla 2-lipped, velvety, tube slender, upper lip erect, long, entire, lower convex, 3-lobed, stamens 4, in unequal pairs, under the upper lip, anthers yellow, spurred, protruding; capsule  $\frac{1}{4}$  in., longer than the calyx, seeds many, narrowly oblong.

**Phryma**  
**leptostachya,**  
 VERBENACEÆ.  
 F. B. I. iv. 561.  
 Himalaya,  
 3-7,000 ft.  
 Valleys below Simla  
 (Collett).

medium size, thinly hairy; leaves 2-4 in., ovate or ovate-lanceolate, stalked, toothed; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, pink, in long slender terminal or axillary spikes, 6-15 in. long, bracts linear, small, bracteoles minute, calyx  $\frac{1}{4}$  in., tubular, teeth 3, linear, with purple hooks, corolla small, tubular, 2-lipped, upper lip erect, concave, notched, lower larger, spreading, 3-lobed, stamens 4, in unequal pairs, enclosed in the corolla, style 2-lobed; capsule dry, oblong, enclosed in the reflexed calyx, seeds solitary, loose.

**Oclmum basilicum,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

**Oclmum sanctum,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

## COROLLA TWO-LIPPED.

## STAMENS FOUR.

**Orthosiphon pallidus,**

LABIATÆ.

F. B. I. iv. 613.

The Plains to  
5,000 ft.

Kashmir.

small, perennial, smooth or slightly velvety, stout, stock woody, branches many; leaves  $\frac{1}{2}$ -2 in., ovate, blunt, coarsely sharp- or round-toothed, stalk  $\frac{1}{4}$ - $\frac{1}{2}$  in., the length of the leaf blade; flowers  $\frac{1}{3}$  in. long, white, in long or short, stout or slender racemes, bracts minute, calyx ovoid, fruiting calyx turned down, upper tooth broad, thin, lateral and lower awl-shaped, corolla-tube equal to the calyx, 2-lipped, upper lip 3-4-fid, lower undivided, concave, stamens 4, curved forward, enclosed in the corolla; nutlets nearly round, flattened, pale, nearly smooth.

**Orthosiphon  
rubicundus,**

LABIATÆ.

F. B. I. iv. 615.

Himalaya,  
2-5,000 ft.

medium size, perennial, felted, velvety or smooth, stems 4-angled, leaves 2-4 in. long, corolla white or pink, twice as long as the calyx, nutlets minutely pitted; otherwise like the last species.

**Plectranthus  
Gerardianus,**

LABIATÆ.

F. B. I. iv. 617.

Himalaya,  
3-9,000 ft.

Simla (Collett).

large, perennial, smooth; leaves 3-7 by 1-4 in., ovate; long-pointed, round-toothed, lower leaves stalked, floral leaves and bracts small; flowers  $\frac{1}{4}$  in. long, white with purple dots, in small clusters forming axillary or terminal branched racemes, calyx bell-shaped, elongated and curved in fruit, gland-dotted, corolla 2-lipped, upper lip short, broad, recurved, 3- or 4-lobed, lower longer, boat-shaped, undivided, stamens 4, in unequal pairs along the lower lip of the corolla, ununited, projecting, style nearly equally divided; nutlets oblong with rounded ends.

**Plectranthus striatus,**

LABIATÆ.

F. B. I. iv. 618.

Himalaya,  
4-8,000 ft.

Simla (Collett).

small and roughly velvety; otherwise like the last species.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

## COROLLA TWO-LIPPED.

## STAMENS FOUR.

**Plectranthus Coetsa,**

LABIATÆ.

F. B. I. iv. 619.

Himalaya,

3-8,000 ft.

Simla.

large, perennial, velvety, strong smelling, leaves 2-4 by 1-2 in., ovate or ovate-lanceolate, sharp- or round-toothed, corolla lavender-blue, tube abruptly bent, much longer than the calyx; otherwise like the last species.

**Plectranthus ternifolius,**

LABIATÆ.

F. B. I. iv. 621.

The Plains to

5,000 ft.

Valleys below Simla

(Collett).

large, densely white-felted, leaves sometimes in threes round the stem or branches, corolla white, nutlets 3-angled; otherwise like the last species.

**Plectranthus incanus,**

LABIATÆ.

F. B. I. iv. 621.

The Plains from

1-6,000 ft.

Valleys below Simla

(Collett).

medium size, velvety, leaves 2-4 in., broadly ovate, calyx 2-lipped, lower lip with 3 long-pointed teeth, corolla pale lavender-blue, tube nearly straight, lower lip very long, nutlets large, nearly round; otherwise like the last species.

**Coleus barbatus,**

LABIATÆ.

F. B. I. iv. 625.

Himalaya,

2-7,000 ft.

Valleys below Simla

(Collett).

medium size, stem stout, hairy, leaves 3-5 in., ovate, blunt, round-toothed, stalked, upper surface hairy, lower felted, flowers  $\frac{3}{4}$ -1 in. long, pale blue in circular clusters of 6-8, forming long, leafless, spike-like racemes, bracts ovate, soon falling off, calyx 5-toothed, upper calyx-lip rounded, ovate, short-pointed, stamens united below; other characters like those of the last species.

**Coleus aromaticus,***Pathor chur.*

LABIATÆ.

F. B. I. iv. 625.

The Plains,

Cultivated

medium size, very aromatic, leaves broadly ovate, corolla pale purplish, stamens shortly protruded; other characters like those of the last species. A good substitute for Borage, it is a good carminative and useful in diseases of the bladder, and other urinary organs.



HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

INNER PAIR OF STAMENS LONGEST.

***Nepeta eriostachya*,**

LABIATÆ.

F. B. I. iv. 657.

Himalaya, 11,500 ft.

Kashmir (Clarke).

small, sparsely hairy; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., ovate or ovate-heart-shaped, blunt, round-toothed, sessile, velvety beneath; flowers  $\frac{1}{2}$  in., bright blue in unbranched terminal cylindric-oblong, densely-flowered hairy spikes, 1-3 in. long, calyx  $\frac{1}{4}$  in., sessile, 5-toothed, teeth slender, feathery, tubular, corolla tube slender near the base, dilated towards the mouth, twice the length of the calyx, 2-lipped, upper lip erect, straight, concave, notched, lower spreading, 3-lobed, lateral lobes small, turned back, mid-lobe much larger, narrow at the base, concave, stamens 4, in unequal pairs, ascending under the upper lip, enclosed in the corolla, the upper, inner and posterior pair longer than the lower, outer and anterior pair, style with 2 awl-shaped lobes; nutlets smooth.

***Nepeta nervosa*,**

LABIATÆ.

F. B. I. iv. 658.

Kashmir,

6-10,000 ft.

(Falconer).

medium size, smooth, rootstock long, woody, leaves 2-4 by  $\frac{1}{3}$ - $\frac{3}{4}$  in., linear-lanceolate, long-pointed, sharply toothed, bracts ovate with an abrupt point; otherwise like the last species.

***Nepeta campestris*,**

LABIATÆ.

F. B. I. iv. 658.

Himalaya,

7-9,000 ft.

Simla (Collett).

very like the last species, but the spikes are much longer and more slender, calyx teeth less hairy and more divergent, corolla more slender.

***Nepeta elliptica*,**

LABIATÆ.

F. B. I. iv. 658.

Himalaya,

5-8,000 ft.

Simla, Mashobra  
(Collett).

very like *Nepeta nervosa*, but the leaves  $\frac{1}{2}$ -1 in., felted and stem woolly. The seeds are used in dysentery.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

INNER PAIR OF STAMENS LONGEST.

**Nepeta supina,**  
LABIATÆ.  
F. B. I. iv. 658.  
Himalaya,  
7-12,000 ft.  
Murree (Fleming).

small to medium size, finely velvety; leaves  $\frac{1}{2}$ -1 in., ovate, blunt, round-toothed, felted beneath; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, in dense-flowered circular clusters, lower axillary, upper in an ovoid spike, bracts lanceolate, calyx  $\frac{1}{3}$  in., curved, narrow, softly hairy, mouth very oblique, teeth of bristles shorter than the tube; nutlets  $\frac{1}{20}$  in., 3-angled, linear, corolla, stamens, and style as in other species of *Nepeta*.

**Nepeta spicata,**  
LABIATÆ.  
F. B. I. iv. 659.  
Himalaya,  
6-10,000 ft.  
Simla (Collett).  
Murree,  
Changlagali  
(Douie).

medium size, smooth or velvety, much branched; leaves  $1\frac{1}{2}$ -4 by  $\frac{1}{2}$ -3 in., ovate or triangular heart-shaped, short-pointed, coarsely round or sharp-toothed, leaf stalk 1-3 in., spikes terminal, oblong or cylindric to 4 in. long, bracts ovate or lanceolate with a bristle-like point, calyx sessile,  $\frac{1}{4}$  in., bristly, teeth hairy or bristly, slender; flowers are otherwise as in *Nepeta campestris*.

**Nepeta raphanorhiza,**  
LABIATÆ.  
F. B. I. iv. 659.  
Himalaya,  
5-12,000 ft.  
Kashmir to Chamba  
(Jacquemont).

small to medium size, rootstock round, black, 1 in. diam., edible, stems many, branched or not, slender, smooth or softly hairy, leaves  $\frac{1}{2}$ -1 in., broadly ovate or ovate heart-shaped, blunt, round or sharp-toothed, stalk half the length of the blade, flowers  $\frac{1}{3}$  in., purplish-blue in ovoid or cylindric spikes, bracts ovate to lanceolate, calyx  $\frac{1}{6}$  in., sessile, teeth lanceolate, shorter than the tube, corolla tube slender, twice as long as the calyx; other characters like those of other species of *Nepeta*.

**Nepeta discolor,**  
LABIATÆ.  
F. B. I. iv. 659.  
Himalaya,  
10-15,000 ft.

very like the last species in habit and foliage, but has a long, not a tuberous root, leaves often white-felted beneath, flowers white or pale blue.

HERBS, UPRIGHT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

INNER PAIR OF STAMENS LONGEST.

**Nepeta glutinosa**,  
LABIATÆ.  
F. B. I. iv. 660.  
Himalaya,  
11-13,000 ft.  
Kashmir.

medium size, velvety from glands, sticky, strongly scented, stem stout, stiff, leafy, leaves  $\frac{3}{4}$ -1 in., ovate-heart-shaped, short-pointed, sharply toothed like a comb, sometimes partly stem-clasping, flowers  $\frac{3}{4}$  in. long, white or blue, in axillary few-flowered circular clusters, bracts linear-oblong, bristle-pointed, calyx  $\frac{1}{2}$  in., stalked, teeth ovate with an abrupt point much shorter than the calyx-tube, corolla tube curved, slender, lips small; otherwise like the other species of *Nepeta*.

**Nepeta mollis**,  
LABIATÆ.  
F. B. I. iv. 660.  
Himalaya,  
8-9,000 ft.  
Murree (Fleming).  
Kashmir  
(Jacquemont).

small to medium size, softly felted, stem slender, slightly branched, leaves 1-2 by  $\frac{1}{2}$ -1 in., ovate-heart-shaped, blunt, round-toothed, shortly-stalked, flowers  $\frac{1}{2}$  in., pink, in few-flowered circular white softly hairy clusters at intervals on spikes 3-8 in. long, bracts ovate or lanceolate, bristle-tipped, calyx  $\frac{1}{4}$  in., mouth oblique, teeth lanceolate, softly hairy, shorter than the calyx tube, corolla tube protruding slightly beyond the calyx, lips small; otherwise like the other species of *Nepeta*.

**Nepeta distans**,  
LABIATÆ.  
F. B. I. iv. 660.  
Himalaya,  
6-9,000 ft.  
Simla (Collett).  
Dewal (Douie).

very like the last, but the bracts are linear and the calyx longer and more curved.

**Nepeta ciliaris**,  
*Zufa yabis*.  
LABIATÆ.  
F. B. I. iv. 661.  
Himalaya,  
6-8,000 ft.  
Simla, Mahasu  
(Collett).

medium size to large, stiff, softly felted; leaves  $\frac{3}{4}$ -1 $\frac{1}{2}$  in., ovate-heart-shaped, blunt, round-toothed, flowers  $\frac{1}{2}$  in., lilac, stalked, in one-sided dense-flowered circular clusters at intervals along softly hairy spikes, 4-8 in. long, bracts lanceolate, often tinged with purple, calyx  $\frac{1}{4}$  in., curved, softly hairy, teeth 5, slender, shorter than the tube, nutlets broadly oval with rounded ends; otherwise like the other species of *Nepeta*.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED,

PETALS UNITED,

COROLLA TWO-LIPPED,

STAMENS FOUR.

INNER PAIR OF STAMENS LONGEST.

**Nepeta ruderalis,**  
*Billi lotan, badranj,*  
*boya.*

LABIATÆ.

F. B. I. iv. 661.

The Plains to  
4,000 ft.

Valleys below Simla  
(Collett).

Choa Saidan Shah  
(Douie).

medium size, annual, velvety, stout or slender, slightly 4-angled, common on roadsides, leaves  $\frac{1}{2}$ - $2\frac{1}{2}$  in., green or grey, broadly ovate or circular heart-shaped, shortly stalked, blunt, round-toothed, flowers  $\frac{1}{4}$  in., blue or purple, minutely dotted, stalked in very densely-flowered circular one-sided stalked and branched clusters at intervals along softly hairy spikes, calyx  $\frac{1}{6}$  in., softly hairy, mouth of calyx tube nearly equal, 3 upper teeth triangular, bristle-tipped, 2 lower thread-like, corolla very small, tube shortly projecting beyond the calyx, nutlets broad, granulate; other characters like those of other species of *Nepeta*. This plant is used as a cardiac tonic, a febrifuge and a gargle.

**Nepeta Cataria,**  
**Catmint,**

LABIATÆ.

F. B. I. iv. 662.

Kashmir,  
1-5,000 ft.

(Falconer).

Baluchistan (Lace).

medium size, perennial, stem acutely 4-angled, branched, grey velvety, leaves 1-3 in., ovate or ovate-heart-shaped, short-pointed, coarsely round or sharp-toothed, flowers  $\frac{1}{2}$  in., dotted with purple in circular clusters on long narrow terminal shortly-stalked densely-flowered spikes 4-10 in. long, bracts awl-shaped equalling or not the calyx, lower bracts leafy, calyx  $\frac{1}{4}$  in., curved, velvety, mouth oblique, teeth nearly equal, awl-shaped, shorter than the calyx tube, nutlets broadly oblong, smooth other characters like those of the other species of *Nepeta*.

**Nepeta leucophylla,**

LABIATÆ.

F. B. I. iv. 662.

Himalaya,  
4-8,000 ft.

Simla (Collett).

medium size, slender, branched, grey-felted, stem slightly angled, leafy, leaves 1- $1\frac{1}{2}$  in., ovate-heart-shaped, blunt or short-pointed, round-toothed, wrinkled above, shortly stalked; otherwise like the last species.

**Nepeta graciliflora,**

LABIATÆ.

F. B. I. iv. 663.

The Plains to  
4,000 ft.

Valleys below Simla  
(Collett).

very like *Nepeta ruderalis*, but more slender with thin coarsely round-toothed leaves, longer leaf stalks, flowers pale pink and nutlets more granulate.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

INNER PAIR OF STAMENS LONGEST.

**Nepeta Govaniana,**  
LABIATÆ.  
F. B. I. iv. 663.  
Himalaya,  
8-10,000 ft.  
Narkanda (Collett).

large, stem 4-angled, branched, finely velvety; leaves 3-6 by  $1\frac{1}{2}$ -3 in., very variable, ovate or oblong, short-pointed, round-toothed, leaf stalk  $\frac{1}{2}$ -2 in., flowers 1 in., yellow, stalked, at intervals in few-flowered long-stalked axillary and terminal racemes, calyx  $\frac{1}{3}$  in., straight, cylindric, teeth triangular, much shorter than the calyx tube, corolla tube long, very small, curved, greatly dilated above the middle, nutlets broadly oblong, smooth; otherwise like the other species of *Nepeta*.

**Nepeta erecta,**  
LABIATÆ.  
F. B. I. iv. 663.  
Himalaya,  
6-10,000 ft.  
Mashobra.  
Narkanda (Collett).  
Changlagalli  
(Douie).

very like the last species, but the flowers are blue, and only the lowest clusters are stalked.

**Nepeta Clarkei,**  
LABIATÆ.  
F. B. I. iv. 663.  
Himalaya,  
7,500-11,000 ft.  
Kashmir.  
Tilail.  
Kunylwan  
(Clarke).

finely velvety, branched, stem straight, slightly angled, leaves 1-2 in., ovate-oblong or lanceolate, somewhat short-pointed, shortly stalked, sharp or round-toothed, flowers  $\frac{1}{2}$  in., blue, in dense-flowered clusters at intervals along terminal straight spikes 3-6 in. long and shortly stalked in the lower axils, bracts lanceolate, lower leafy, calyx  $\frac{1}{3}$  in., velvety, teeth nearly equal, triangular, short-pointed, much shorter than the tube, nearly straight, mouth oblique, corolla tube 3 times the length of the calyx, mouth dilated, lips small, not  $\frac{1}{4}$  in. across; otherwise like the last species.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

INNER PAIR OF STAMENS LONGEST.

***Nepeta salviæfolia*,**

LABIATÆ.

F. B. I. iv. 664.

Himalaya,  
6-10,000 ft.

Kashmir  
(Jacquemont).

medium size, slender branched, covered with densely white felt, stem cylindric, leaves 1-1½ in., oblong or ovate, blunt, round-toothed, shortly stalked, flowers ¾ in., pale blue or white, in shortly stalked circular clusters at intervals along a long straight narrow raceme or spike, sometimes 12 in. long, bracts minute, awl-shaped, calyx ¼ in., stalked, roughish, teeth triangular, nearly equal, much shorter than the tube, corolla tube very slender, throat shortly dilated, lobes ¼ in. across, nutlets oblong; otherwise like the last species.

***Origanum vulgare*,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

***Calamintha Clinopodium*,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

***Calamintha umbrosa*,**

LABIATÆ.

F. B. I. iv. 650.

Himalaya,  
4-12,000 ft.  
Simla, Mahasu  
(Collett).

small, annual, hairy, stems ascending, rooting at the base; leaves ¾-1½ in., ovate, sharply toothed, shortly stalked; flowers ¼ in. long, pink purple, in small loose circles, bracts few, short, calyx 2-lipped, tubular, 13-nerved, upper lip 3-toothed, lower 2-toothed, lower longer; narrow, mouth open after flowering, corolla 2-lipped, upper lip erect, nearly flat, notched, lower 3-lobed, spreading, stamens 4, in unequal pairs, style-tip divided; nutlets 4, minute, nearly round, smooth.

***Dracocephalum speciosum*,**

see Herbs, Unbranched, Opposite, Exstipulate, Simple.

***Dracocephalum nutans*,**

see Herbs, Unbranched, Opposite, Exstipulate, Simple.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

INNER PAIR OF STAMENS LONGEST.

**Dracocephalum  
moldavicum**,  
*Tukhm-ferunjnishk*.  
LABIATÆ.  
F. B. I. iv. 665.  
Himalaya,  
7-8,000 ft.  
Kashmir (Falconer).

medium size, annual, quite smooth, branched from the base; leaves 1-2 in., lanceolate, deeply bluntly toothed, sessile or narrowed into short stalks; flowers  $\frac{3}{4}$ -1 in., blue, shortly stalked, in circular clusters at short or long intervals along leafy spikes, 4-8 in. long, bracts lanceolate with bristle points, calyx  $\frac{1}{3}$  in., 2-lipped, leathery, smooth, upper lip broad, 3-toothed, teeth broadly ovate with abrupt points, corolla 2-lipped, upper lip erect, notched, lower spreading, 3-fid, mid-lobe largest, tube greatly dilated to the throat, stamens 4, in unequal pairs, ascending under the upper lip, nearly projecting beyond it, style-lobes awl-shaped; nutlets 4, smooth, narrowly oblong, abruptly cut off at both ends. The seeds are used as a demulcent and febrifuge.

**Dracocephalum  
stamineum**,

see Prostrate Herbs, Opposite, Exstipulate, Simple,

**Lallemantia  
Royleana**,  
LABIATÆ.  
F. B. I. iv. 667.  
The Plains to  
3,000 ft.  
Sargodha (Douie).  
Baluchistan  
(Boissier).  
Cultivated.

small, annual, branched or not, stem slightly angled, leaves  $\frac{1}{2}$ -1 in., ovate or oblong, blunt, coarsely round-toothed, flowers  $\frac{2}{3}$  in., pale lilac, shortly stalked, in many circular clusters at intervals along narrow long spikes, bracts small, soon falling off, oblong, or lanceolate, teeth with long bristle points, calyx  $\frac{1}{3}$  in., erect, stiff, 2-lipped, upper lip with 3 obtuse lobes of which the lateral are under the mid-lobe, corolla tube hardly projecting beyond the calyx, lobes small, stamens 4, in unequal pairs, ascending under the upper lip of the corolla, and enclosed within it; otherwise like *Dracocephalum*. The seeds, *Gharei kashmalu*, *tukhm-balangu*, are much used as being cooling and sedative.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

OUTER PAIR OF STAMENS LONGEST.

**Scutellaria grossa,**

LABIATÆ.

F. B. I. iv. 669.

Himalaya,

4-8,000 ft.

Simla, Mashobra

(Collett).

medium size, perennial, velvety, stem slender, growing along the ground, then ascending, branched, nearly round; leaves 1-3 by  $\frac{3}{4}$ -2 in., ovate, triangular or lanceolate, short-pointed, coarsely round-toothed, smooth, stalk  $\frac{1}{4}$ -1 in., slender; flowers  $\frac{3}{4}$  in., dark blue, solitary, axillary, forming terminal slender racemes, 3-6 in. long, bracts  $\frac{1}{4}$ - $\frac{1}{3}$  in., longer than the calyx, calyx 2-lipped, lips closed in fruit, upper lip soon falling off, tube bearing a small shield-shaped cup (scutellum), corolla-tube much longer than the calyx, sharply curved up near the base, dilated upwards, 2-lipped, upper lip erect, hood-like, notched, lower spreading, 3-lobed, stamens 4 in unequal pairs, ascending under the upper lip, anthers hairy; nutlets 4, slightly velvety.

**Scutellaria angulosa,**

LABIATÆ.

F. B. I. iv. 669.

Himalaya,

4-9,000 ft.

Simla (Collett).

Dharmpur.

medium size, perennial, velvety or thinly hairy, branches long, spreading, sharply 4-angled, leaves 1-3 in., ovate or lanceolate, bluntly or shortly pointed, round or sharp-toothed, shortly stalked, lower surface often purple, flowers 1 in., white or yellowish, tip tinged with purple, in leafy racemes, bracts leafy, upper small, entire, nutlets granulate; otherwise like the last species.

**Scutellaria**

**galericulata,**

**Common Skull cap,**

LABIATÆ.

F. B. I. iv. 670.

Himalaya,

5-8,000 ft.

Kashmir, Koti.

medium size to large, perennial, slightly velvety, stem procumbent at first, then erect, leaves  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., ovate-lanceolate, blunt, or nearly short-pointed round-toothed, shortly stalked, upper leaves are not toothed, flowers  $\frac{2}{3}$  in., yellow, shortly stalked in the axils of leaves and bracts, bracts much longer than the calyx; otherwise like the last species.

**Brunella vulgaris,**

see Herbs, Opposite, Exstipulate, Simple, Entire



HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

OUTER PAIR OF STAMENS LONGEST.

**Marrubium vulgare,**  
**White horehound,**

LABIATÆ.

F. B. I. iv. 671.

Himalaya,

5-8,000 ft.

Kashmir (Falconer).

Baluchistan

(Boissier).

large, leafy, stout, shortly woolly; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. diam., ovate or circular, toothed, wrinkled, stalk  $\frac{1}{4}$ - $\frac{1}{2}$  in.; flowers  $\frac{1}{2}$  in., white, in circular axillary clusters, many- and dense-flowered, woolly, calyx  $\frac{1}{8}$ - $\frac{1}{4}$  in., teeth 10, awl-shaped, spreading and hooked, throat woolly, corolla short, 2-lipped, upper lip erect, divided, lower spreading, mid-lobe largest, stamens 4, enclosed in the corolla, style-lobes short, blunt; nutlets 4, blunt, smooth. This plant is used in Europe by herbalists as a tonic.

**Craniotome**  
**versicolor,**

LABIATÆ.

F. B. I. iv. 671.

Himalaya,

5-7,000 ft.

Simla (Collett).

medium size, perennial, softly hairy all over, stem round, slender; leaves 2-4 by 1-3 in., broadly ovate-heart-shaped, long-pointed, sharp- or round-toothed, stalk 1-2 in., slender; flowers  $\frac{1}{5}$  in., white, pink or yellow, numerous, crowded in small stalked clusters forming narrow terminal branched leafy racemes, bracts awl-shaped, calyx  $\frac{1}{10}$  in., ovoid, equally 5-toothed, teeth triangular, corolla tube much longer than the calyx, 2-lipped, upper lip very short, erect, hood-like, lower longer, spreading, 3-lobed, mid-lobe largest, stamens 4, in unequal pairs, ascending under the upper lip, style nearly equally divided; nutlets 4, very minute, nearly round, shining.

**Anisomeles ovata,**

LABIATÆ.

F. B. I. iv. 672.

The Plains to

5,000 ft.

Valleys below Simla,

Sipi (Collett).

large, annual, aromatic, hairy, or felted and densely woolly; leaves 1-3 in., ovate, round-toothed, long-pointed, stalk  $\frac{1}{2}$ - $1\frac{1}{2}$  in.; flowers  $\frac{1}{2}$  in., white, mid-lobe of lower lip purple, crowded in axillary clusters at intervals along terminal spikes, bracts variable, calyx  $\frac{1}{4}$ - $\frac{1}{3}$  in., hairy, ovoid, teeth 5, lanceolate, long-pointed, corolla tube short, 2-lipped, upper lip short, erect, concave, entire, lower 3-lobed, spreading, mid-lobe much longer than the lateral, deeply notched, stamens 4 in unequal pairs, protruding, style nearly equally divided; nutlets 4, broadly oblong, polished. This plant is used in South India as a carminative, astringent and tonic.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

OUTER PAIR OF STAMENS LONGEST.

**Stachys floccosa,**  
**Woundwort,**

LABIATÆ.  
F. B. I. iv. 675.  
Himalaya,  
5-6,000 ft.  
Kashmir  
(Jacquemont).

large, stout, densely covered with white wool, stem 4-angled; leaves 3-4 by 1-2 in., ovate or ovate-lanceolate, heart-shaped, shortly pointed, round-toothed, thick, velvety above, stalk  $\frac{1}{2}$ -1 in., very thick; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in., pink, spotted with purple, sessile, crowded in axillary woolly clusters and in terminal spikes with interspaces, bracts as long as the calyx, calyx  $\frac{1}{4}$  in., bell-shaped, 10-nerved, teeth 5, points triangular, spinous, coloured pink, corolla 2-lipped, woolly, upper lip erect, lower spreading, 3-lobed, mid-lobe largest, tube shortly projecting out of the calyx, stamens 4, ascending, style-lobes nearly equal; nutlets 4, ovoid, smooth.

**Stachys sericea,**

LABIATÆ.  
F. B. I. iv. 675.  
Himalaya,  
6-9,000 ft.  
Simla, Mashobra  
(Collett).  
Murree (Douie).

very like the last species, only less woolly, and sometimes unbranched.

**Stachys melissæfolia,**

LABIATÆ.  
F. B. I. iv. 675.  
Himalaya,  
8-10,000 ft.

very like the last species, only more slender, less hairy, silky and leafy, calyx is shorter, as broad as long, teeth triangular with a thickened tip not ending in a spine.

**Stachys palustris,**  
**Marsh betony,**

LABIATÆ.  
F. B. I. iv. 676.  
Himalaya,  
5-6,000 ft.  
Kashmir (Thomson).

medium size, perennial, stem 4-angled, bristly with reversed hairs, leaves 3-4 by  $\frac{3}{4}$ -1 in., narrowly oblong or ovate-lanceolate, long-pointed, toothed, sessile, floral leaves longer than the calyx, flowers small, pink in 6-flowered circular clusters,  $\frac{1}{2}$ -1 in. diam., at intervals, never spicate, bracts minute, calyx  $\frac{1}{3}$  in., hairy, teeth lanceolate, tips spinescent, corolla tube not projecting beyond the calyx, nutlets broadly ovoid, broader towards the top, nearly smooth; otherwise like the last species.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

OUTER PAIR OF STAMENS LONGEST.

**Stachys sylvatica,**  
**Hedge Stachys,**

LABIATÆ.

F. B. I. iv. 676.

Kashmir  
(Falconer).

medium size to large, rough with long stiff hairs, rootstock growing along the ground, stem 4-angled, leaves 2-4 in., long-stalked, broadly ovate, heart-shaped, toothed, softly hairy, floral leaves sessile, longer than the calyx, flowers  $\frac{1}{2}$  in., pink, in glandular-hairy few-flowered circular clusters, bracts minute, calyx  $\frac{1}{3}$  in., teeth triangular, tips needle-like, corolla tube projecting from the calyx, nutlets nearly round; otherwise like the last species.

**Stachys parviflora,**  
**Kirimar, baggi buti.**

LABIATÆ.

F. B. I. iv. 677.

The Plains to  
5,000 ft.

Salt Range,  
Sakesar.

Rawalpindi (Douie).  
Baluchistan (Lace).

medium size, perennial, densely covered with flocculent white wool, stem and branches very stout, nearly round, branched from the base, leaves 1-3 in., very variable, smooth and shining or cottony above, oblong or ovate or lanceolate, thick, sessile, upper leaves woolly all over, flowers very small, pink or red-purple, in clusters, separated, 2-4-flowered, calyx  $\frac{1}{8}$ - $\frac{1}{6}$  in., immersed in wool, cupular, teeth short, incurved over the nutlets, corolla lips very small, upper short, rounded, nutlets 2,  $\frac{1}{8}$  in. long, grey, granulate, flat on one side, convex on the other; otherwise like the last species. The stems are crushed and applied to the site of guinea worm.

**Leonurus Cardiaca,**

see Herbs, Erect, Opposite, Exstipulate, Lobed.

**Lamium**  
**rhuboideum,**

LABIATÆ.

F. B. I. iv. 678.

Himalaya,  
12-15,000 ft.

In stony débris.

small, stem very stout, zigzag, densely felted; leaves lower small, upper 2-4 in. diam., crowded, almost square, wrinkled, toothed, base suddenly contracted into a very thick, short woolly stalk; flowers  $1\frac{1}{2}$  in. long, purple in axillary, many-flowered, clusters or in leafy heads, bracts awl-shaped, calyx  $\frac{3}{4}$  in., woolly, teeth 5, lanceolate, 5-nerved, corolla 2-lipped, upper lip arched, lower spreading, 3-lobed, mid-lobe broad, contracted at the base, tube straight, naked within, upper lip or hood broad, woolly, lateral lobes ovate, undivided, stamens 4, ascending under the upper lip, anthers hairy, style lobes awl-shaped; nutlets 4, sharply 3-cornered.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

OUTER PAIR OF STAMENS LONGEST.

**Lamium amplexicaule,** see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Lamium album,** see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Leucas urticæfolia,** small, annual, stem covered with white hairs; leaves  
 LABIATÆ. 2-3 in., ovate, stalked, coarsely toothed, smooth or covered  
 F. B. I. iv. 680. with white hairs; flowers  $\frac{1}{2}$  in., white, in axillary round  
 The Plains. clusters, 1 in. diam., many-flowered, at distant intervals,  
 Choa Saidan Shah bracts hairy, bracteoles as long as the calyx, calyx  $\frac{1}{3}$ - $\frac{1}{2}$   
 (Douie). in., cylindric, netted, velvety or hairy, 2-lipped, lower  
 Baluchistan lip abruptly cut off, teeth minute, corolla tube within  
 (Boissier). the calyx, not ringed within, 2-lipped, upper lip concave,  
 erect, crown woolly, lower lip spreading, 3-lobed, mid-  
 lobe very large, stamens 4, in unequal pairs, ascending  
 under the upper lip, style one-lobed; nutlets 4, ovoid,  
 sharply 3-angled, blunt.

**Leucas lanata,** medium size to large, rootstock stout, woody, stem  
 LABIATÆ. sometimes woody, branches stout, nearly 4-angled, every-  
 F. B. I. iv. 681. where densely woolly, hairs erect, leaves 1-3 in., thick,  
 Himalaya, ovate or oblong, blunt or short-pointed, round-toothed,  
 3-8,000 ft. bracts bristle-like; otherwise like the last species.  
 Simla (Collett).

**Leucas nutans,** small, annual, branches spreading, leaves 1-2 in.,  
 LABIATÆ. oblong or linear-oblong, blunt, slightly toothed, some-  
 F. B. I. iv. 688. times stalked, flowers small in terminal and axillary  
 The Plains. dense-flowered clusters, calyx  $\frac{1}{3}$  in., bent down, hairy,  
 deeply marked with lines, thin, teeth long, much longer  
 than the hairs of the mouth; otherwise like the last species.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

OUTER PAIR OF STAMENS LONGEST.

**Leucas Cephalotes**, large, annual, aromatic, stout, hairy, hairs spreading, leaves 2-4 in., ovate or ovate-lanceolate, short-pointed, *Dhurpi sag, phuman,* shortly stalked, round- and sharp-toothed, flowers in very *guldoda, chatra.* large terminal round clusters, 1-2 in. diam., surrounded by membranous overlapping linear lanceolate bracts, bristle-pointed, unlike those of any other species, calyx  $\frac{3}{4}$  in., tubular, slightly curved, velvety, teeth short, awl-shaped, not longer than the hairs of the mouth; otherwise like the last species. This plant is used locally as a stimulant and diaphoretic, milk is stirred up with it to improve the flavour, the flowers are sacred to Siva.

LABIATÆ.

F. B. I. iv. 689.

The Plains to 6,000 ft.

Valleys below Simla (Collett).

**Leucas aspera**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

**Leonotis nepetæfolia**, large, annual, stem 1 in. diam., 4-angled, grooved, minutely velvety; leaves 4-8 by 2-5 in., ovate, round-toothed, thin, stalk 1-3 in., winged above, slender, floral leaves lanceolate, sharply bent down; flowers 1 in. long, orange, in densely many-flowered globular clusters 2-3 in. diam. round the stem, like the head of a drum stick, at some distance apart, prickly from the spinescent bracts, bracteoles many, slender, calyx  $\frac{3}{4}$  in. long, ribbed, netted, velvety or woolly, tubular, turned in, mouth oblique, teeth 8-10, spines, upper  $\frac{1}{4}$  in. long, lower with 3 recurved spinescent teeth, corolla tube slender, projecting beyond the calyx, 2-lipped, upper lip long, concave, crown woolly, lower minute, spreading, concave, mid-lobe largest, stamens 4, in unequal pairs, ascending under the upper lip, style awl-shaped, 2-lobed, upper lobe very short; nutlets 4, sharply 3-angled, linear-oblong, widening upwards, **cut off short.**

LABIATÆ.

F. B. I. iv. 691.

The Plains.

Berara, Ambala

District.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

OUTER PAIR OF STAMENS LONGEST.

**Phlomis spectabilis,**

LABIATÆ.

F. B. I. iv. 692.

Himalaya,

3-8,000 ft.

Kashmir

(Jacquemont).

Abbottabad

(Barrett).

Baluchistan (Lace).

large, stem 1 in. diam., round, white with hairs, or downy with star-shaped hairs; leaves 6-10 by 4-8 in., ovate-heart-shaped, round-toothed or almost small-lobed, wrinkled, felted with star-shaped hairs beneath, tip rounded, stalk 6-12 in., floral leaves small; flowers rose-purple, in axillary many-flowered circular clusters, 1½-2 in. diam., with rigid thread-like bristly needle-pointed bracts, calyx ½-¾ in., velvety, mouth equal, 5-toothed, teeth spiny, ⅓ shorter than the calyx tube, corolla tube ringed within, 2-lipped, upper lip concave, crown woolly, fringed with silvery hairs, lower spreading, 3-fid, stamens 4, in unequal pairs, ascending, style 2-fid; nutlets 4, ¼ in., linear.

**Phlomis**

**cashmeriana,**

LABIATÆ.

F. B. I. iv. 692.

Himalaya,

5-6,500 ft.

Kashmir (Royle).

medium size, rootstock stout, stems several, stout, covered with white loose star-shaped woolly hairs, leaves 5-9 by 2-4 in., linear, oblong, blunt-pointed, round-toothed, wrinkled, base heart-shaped, leathery, finely velvety above, stalks 4-6 in., flowers pale purple, in many-flowered axillary circular clusters, 1-1½ in. diam., bracts ⅔ in., many, thread-like, felted, tip needle-like, calyx ½-¾ in., folded, felted, teeth spiny, half the length of the calyx tube, corolla upper lip very large, felted, not fringed, lower lip very broad, nutlets ⅓ in. long, broadly oblong; otherwise like the last species.

**Phlomis setigera,**

LABIATÆ.

F. B. I. iv. 693.

Kashmir (Clarke).

large, stem 1 in. diam., nearly smooth, 4-angled like the branches, leaves 4-8 in., ovate, long-pointed, round-toothed, base rounded or heart-shaped, stalks ½-1 in., flowers in many-flowered axillary circular clusters, bracts short, stiff, bristle-like, tips spiny, calyx ⅓-½ in., hairy, teeth erect, awl-shaped, ⅓ the length of the tube, nutlets ⅓ in., ovoid with broad tip as if cut off short; otherwise like the last species.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

OUTER PAIR OF STAMENS LONGEST.

**Phlomis bracteosa,**

LABIATÆ.

F. B. I. iv. 693.

Himalaya,

5-11,000 ft.

Simla, Mashobra

(Collett).

large, stout, velvety with white hairs, stem and branches 4-angled, hairs on the stem, when present, sharply turned down, leaves 2-4 in. (in Kashmir 6-8 in. long, ovate-lanceolate, long-pointed), ovate, blunt-pointed, round-toothed, base broadly heart-shaped, stalked, flowers 1 in., dull blue-purple, in many dense-flowered axillary circular clusters,  $\frac{3}{4}$ -1 in. diam., bracts erect equalling the calyx, outer thin, lanceolate or linear, tip not spinous, inner narrower, calyx  $\frac{1}{3}$ - $\frac{1}{2}$  in., tubular, hairy or smooth, 5-toothed, teeth slender with scattered hairs, corolla upper lip fringed with white hairs, nutlets  $\frac{1}{8}$ - $\frac{1}{6}$  in., ovoid with the tip broad and rounded; otherwise like the last species.

**Ajuga bracteosa,**

*Kauri buti, karku,*

*Khurbanri.*

LABIATÆ.

F. B. I. iv. 702.

The Plains to

7,000 ft.

Simla (Collett).

Abbottabad,

Rawalpindi, Kahuta

(Douie).

small, stems and branches from the rootstock many, velvety or smooth; leaves 1-4 in., lanceolate with a broad tip or spoon-shaped, blunt-pointed, toothed more or less, lower stalked, upper sessile; flowers  $\frac{1}{3}$  in., pale blue or lilac, crowded in axillary circular clusters at short intervals forming leafy spikes, much shorter than the ovate leafy bracts, calyx  $\frac{1}{6}$  in., 5-toothed, softly hairy, teeth half the length of the tube, ovate-lanceolate, short-pointed, corolla tube straight, nearly twice the calyx, 2-lipped, upper lip very short, erect, deeply notched, lower spreading, mid-lobe dilated, side-lobes oblong, stamens 4, in unequal pairs, protruding, style 2-lobed; nutlets  $\frac{1}{10}$  in., oblong with rounded ends, deeply wrinkled, pitted. This plant is used as a stimulant, diuretic, and aperient.

**Ajuga parviflora,**

LABIATÆ.

F. B. I. iv. 703.

Himalaya,

2-7,000 ft.

Simla (Collett).

Murree (Douie).

like the last species, but corolla is small, the base is not inflated, stamens included, flower clusters on bracteate spikes, not axillary.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS NONE.

**Euphorbia  
hypericifolia,**

see Herbs, Erect, Opposite, Stipulate, Simple, Entire.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

**Valeriana Stracheyi,**

see Herbs, Unbranched, Opposite, Exstipulate,  
Lobed.

FLOWERS SMALL, IN HEADS.

**Dipsacus inermis,**

**Teasel,**

DIPSACEÆ.

F. B. I. iii. 217.

Himalaya,

6-12,000 ft.

Simla, Mashobra

(Collett).

Changlagalli

(Douie).

large, stout, rough with stiff hairs, roughest under the flower heads; leaves 3-12 in., lower leaves deeply divided, end lobe largest, upper ovate or lanceolate or some divided into 3 lobes, shortly hairy on both surfaces, stalks dilated, united at the base; flowers small, white, many, in nearly round terminal long-stalked, solitary or several heads, 1 in. diam., surrounded by 6-8 spreading, leaf-like bracts, bracteoles or scales on the base of the head (receptacle) concave, abruptly narrowed in long, fringed, spine-like points, projecting above the flowers when in bud, calyx double owing to an epicalyx (involucl), calyx proper cup-shaped, hairy, 4-angled, 4-lobed on the achene, epicalyx 8-ribbed, surrounding the achene, corolla velvety, unequally 4-lobed, stamens 4, anthers protruding, stigma linear; achene with the 8-ribbed epicalyx, crowned with the calyx, which falls off later. This plant is allied to *D. pilosus* of Britain.

**Dipsacus strictus,**

DIPSACEÆ.

F. B. I. iii. 217.

Himalaya,

7,000 ft.

Chamba.

very like the last species, but larger, more of the leaves undivided, flowers cream coloured, and fewer heads.



HERBS, ERECT, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS SMALL, IN HEADS.

**Scabiosa Olivieri,**

DIPSACEÆ.

F. B. I. iii. 219.

The Low Hills of  
Peshawar (Vicary).

Rawalpindi.

Hazara (Stewart).

The Park,

Rawalpindi.

Baluchistan

(Stocks).

small, annual, branched, hairy, stem leafy; leaves 2 by  $\frac{1}{4}$  in., narrowly oblong, slightly toothed, or 4 by 2 in., deeply divided into pointed lobes; flowers small, purple, in few-flowered small terminal heads, bracts  $\frac{1}{4}$  in., oblong-lanceolate, surrounding the heads, calyx of 2 portions epicalyx (involucel)  $\frac{1}{4}$  in. diam., 16-20-ribbed, calyx proper with short teeth and bristles  $\frac{1}{3}$  in., barbed, brown, corolla tubular, 4-5-lobed, all equal, much shorter than the calyx bristles, hairy without, stamens 4, style filiform; achenes crowned by the epicalyx and calyx bristles, silky. This plant is closely akin to *Scabiosa arvensis* of Britain.

**Scabiosa speciosa,**

DIPSACEÆ.

F. B. I. iii. 219.

Himalaya,

7-9,000 ft.

Kashmir

Kagan (Douie).

medium size, branched, rootstock perennial, leaves 2 by  $\frac{1}{3}$  in., oblong, pinnatifid at the base with small lobes, flowers small, mauve, in many-flowered large, terminal, stalked, radiate heads, bracts  $\frac{1}{2}$ - $\frac{2}{3}$  in., narrowly oblong, involucel,  $\frac{1}{6}$  in., nearly bell-shaped, calyx bristles nearly black, corollas with rays  $\frac{1}{3}$  in., corollas without rays in the centre of the flower  $\frac{1}{2}$  in., achenes  $\frac{1}{4}$  in., silky below, upper 8-ribbed, deeply pitted within the ribs; otherwise like the last species.

**Bidens tripartita,**

**Three-cleft Bidens,**

COMPOSITÆ.

F. B. I. iii. 309.

Himalaya,

3-5,000 ft.

Dharmpur.

medium size, annual, smooth, velvety above; leaves 3-5 in., digitately 3-5-lobed, lobes lanceolate, toothed, terminal longest; flowers small, yellow, in discoid heads,  $\frac{3}{4}$  in. diam., on short, erect stalks, bracts longer than the flowers, in 2 or 3 series joined below, outer green, longer than the flowers, inner thin, receptacle with narrow flat scales nearly as long as the flowers, calyx (pappus) of 2 barbed bristles on the achene, corolla tubes narrow, dilated at the top, 5-toothed, style-arms hairy; achenes  $\frac{1}{4}$  in., smooth, wedge-shaped, barbed along the sides, bristles very short, 2.

**Bidens pilosa,**

COMPOSITÆ.

F. B. I. iii. 309.

Var. *pilosa* proper.

The Plains to

6,000 ft.

Valleys below Simla

(Collett).

Kasauli.

small, hairy or smooth, leaves 3-5 in., pinnatifid, lobes 3-5, ovate, toothed, flowers tubular in the centre, along the edge supplied with white ligules (rays), pappus of 3 barbed bristles, achenes linear, rough; otherwise like the last species.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS SMALL, IN HEADS.

**Bidens Wallichii,**

COMPOSITÆ.

F. B. I. iii. 309.

Var. bipinnata.

The Plains to

8,000 ft.

Simla (Collett).

Dewal (Douie).

Dharmpur.

very like the last species, but the leaves are twice pinnatifid, segments cut and lobed variously, ligules yellow.

**Glossogyne**

**pinnatifida,**

COMPOSITÆ.

F. B. I. iii. 310.

The Plains.

small, perennial, root spindle-shaped, woody, stem and branches slender, forked, sparingly leafy; leaves 1-2 in. with the stalk, triangular, divided into linear-pointed segments, few, often turned down, leathery, flowering branches 6-12 in., straight, stiff, grooved; flowers small, yellow, in few small heads,  $\frac{1}{4}$  in. diam., arranged in flat-topped clusters, heads with flowers, all tubular or central ones tubular and outer ligulate, receptacle small, flat, scales thin, bracts in 2-3 series,  $\frac{1}{6}$  in., blunt, narrow, joined below, pappus (calyx) of 2 bristles, rough from reversed hairs, corolla tubular, 5-toothed, anther-bases blunt, style-arms with long hairy tips; achenes  $\frac{1}{4}$ - $\frac{1}{3}$  in., deeply grooved, black.

FLOWERS NOT IN HEADS.

STAMENS FOUR.

**Scrophularia lucida,**

SCROPHULARIACEÆ.

F. B. I. iv. 256.

Himalaya,

8-10,000 ft.

Kashmir.

medium size, perennial, stout, stems somewhat 4-angled, smooth or glandular, velvety; leaves 1-2 in., singly or doubly pinnately divided, segments spreading, very unequal, oblong, ovate or lanceolate, margins deeply cut or toothed, horizontal; flowers small, dingy green-purple in opposite stalked loosely spreading clusters, forming terminal branching racemes, bracts linear, calyx 5-fid, lobes half as long as the corolla, rounded, margin thin, corolla tube  $\frac{1}{4}$ - $\frac{1}{3}$  in., broad, very short, lobes 5, 2 upper longer than the others, lowest spreading, stamens 4, in unequal pairs, turned downwards, hardly projecting out, staminode round or kidney-shaped; capsule round, few-seeded, seeds oblong, deeply pitted.

HERBS, ERECT, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

STAMENS FOUR.

- Scrophularia variegata**, very like the last species, but the leaves are less pinnatifid, being only pinnatifid at the base with blunt recurved lobes.  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 256.  
 Himalaya,  
 9-14,000 ft.
- Scrophularia scabiosæfolia**, one variety like a Scabiosa with a woody root stock and many radical pinnatifid leaves and a scape-like branching raceme, the other very like *Scrophularia lucida*, but with very minute flowers,  $\frac{1}{10}$  in.  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 256.  
 N.-W. Frontier  
 Hills near  
 Peshawar  
 (Vicary, Aitchison).  
 Chakwal (Douie).
- Veronica verna**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.
- Leptorhabdos Benthiana**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Pedicularis pectinata**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Pedicularis tenuirostris**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Pedicularis gracilis**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Pedicularis porrecta**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Eremostachys Vicaryi**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Eremostachys acanthocalyx**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

## STAMENS TWO.

**Martynia diandra,**  
**Tiger or Devil's**  
**Claw,**  
*Hathajori.*

PEDALIACEÆ.  
F. B. I. iv. 386.  
Himalaya,  
1-2,000 ft.  
Dunera, Gurdaspur  
District.

large, rough, stem succulent, an American weed; leaves 5-10 in. diam., round, or angled, thin, long-stalked, upper sometimes alternate; flowers  $1\frac{1}{2}$ -3 in., pale pink, showy in axillary and terminal clusters, calyx 4-5-lobed, corolla bell-shaped, and inflated on one side, somewhat 2-lipped, 5-lobed, stamens 2; capsule 1 in., woody, covered with a soft coat soon falling off, beaked by strong curved spines that catch on to any passing animal.

**Lycopus Europæus,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Petals United, Stamens 2.

## STAMENS FOUR.

**Sesamum indicum,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed, Corolla 2-lipped, Stamens 4.

**Verbena officinalis,**  
**Vervain,**

*Pamukh, karaita.*

VERBENACEÆ.  
F. B. I. iv. 565.  
The Plains to  
7,000 ft.  
Simla (Collett).  
Phalia in the Gujrat  
District.  
Kahuta, Murree  
(Dowie).  
Hazara (Barrett).

medium size, perennial, nearly smooth, stems 4-sided, branching; leaves 2-4 in., variously lobed, sometimes ovate, toothed, base narrow, lower leaves stalked, upper sessile, usually divided into three; flowers  $\frac{1}{4}$  in., blue or lilac, sessile in long slender bracteate spikes, branching, 3-10 in. long, calyx  $\frac{1}{16}$ - $\frac{1}{12}$  in.; tubular, glandular-hairy, teeth 5, minute, corolla hairy, tube nearly cylindrical, longer than the calyx, lobes 5, spreading, stamens 4, in unequal pairs, enclosed in the corolla, style short, stigma round; fruit of 4 nutlets enclosed in the calyx; nutlets  $\frac{1}{16}$  in., oblong, 3-ribbed, inner faces with minute white flaking cells. The leaves are used as a febrifuge and tonic, the root as a cure for scrofula and snake bite.

**Leonurus Cardiaca,**  
**Motherwort,**

LABIATÆ.  
F. B. I. iv. 678.  
Himalaya,  
6-10,000 ft.  
Narkanda (Collett).

large, rootstock and stem stout; leaves velvety to felted beneath, lower 5 by 3 in., ovate-lanceolate or round, toothed or deeply and irregularly cut into several coarsely toothed lobes, long-stalked, upper 1-3 in., narrow, lobed or nearly undivided; flowers  $\frac{1}{2}$  in. long, pink, in many dense axillary clusters forming long terminal spikes. bracts large, lower stalked, bracteoles spinous, calyx  $\frac{1}{6}$  in., top-shaped, 5-nerved, 5-toothed, teeth triangular, spines long, corolla tube ringed within, 2-lipped, upper lip erect, hooded, silky, lower spreading, 3-lobed, mid-lobe longest, stamens 4, ascending under the upper lip; nutlets 4, sharply 3-angled, smooth.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS NONE.

**Caltha palustris**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

## HERBS, ERECT, WITH OPPOSITE EXSTIPULATE COMPOUND LEAVES.

**Biophytum sensitivum**, see Herbs, Unbranched, Opposite, Exstipulate, Compound.

**Bryophyllum calycinum**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

## HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

**Reseda pruinosa**, small, perennial, curved with minute projections; leaves 1-2 in., lower leaves lanceolate, upper cut into linear segments, stipules glandular, minute; flowers very small, nearly sessile in terminal dense racemes, bracts awl-shaped, soon falling off, minute, calyx persistent, sepals 4-7, petals 4-7, stalked, unequal, much divided, that on the posterior side with a membrane above its stalk, stamens 10-40, stigmas sessile; capsule oblong or ovoid, short, widely open, many-sided, seeds many, kidney-shaped.  
 RESEDACEÆ.  
 F. B. I. i. 181.  
 Hills of the Western Punjab (Vicary).

**Oligomeris glaucescens**, small, annual, with a bluish waxy gloss, much branched; leaves 1-2 in., narrowly linear, in tufts, stipules minute, awl-shaped; flowers minute, greenish-white, in bracteate dense-flowered, terminal spikes, calyx of 4 sepals, petals 2, alternate with the posterior sepal, stigmas sessile; capsule very small, 4-lobed, membranous seeds many, minute, shining.  
*Bvi.*  
 RESEDACEÆ.  
 F. B. I. i. 181.  
 The Plains  
 Shahpur (Douie).  
 Baluchistan  
 (Boissier).

**Portulaca oleracea**, see Prostrate Herbs, Alternate, Stipulate, Simple.

**Crotalaria humifusa**, see Prostrate Herbs, Alternate, Stipulate, Simple.

**Crotalaria prostrata**, see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Crotalaria hirsta**, see Prostrate Herbs, Alternate, Stipulate, Simple.

**Crotalaria alata**, see Shrubs, Alternate, Stipulate, Simple.

## HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

**Crotalaria  
mysorensis,**

LEGUMINOSÆ.

F. B. I. ii. 70.

The Plains to  
4,000 ft.

Hazara (Douie).

medium size, annual, much branched, covered with long silky hairs; leaves 1-3 in. long, linear-oblong, rounded at both ends, thinly silky, stipules small, linear, persistent; flowers  $\frac{1}{2}$ - $\frac{2}{3}$  in. long, yellow, in terminal and lateral stalked racemes, 6-9 in. long, bracts lanceolate, leafy, calyx  $\frac{1}{2}$ - $\frac{5}{8}$  in. long, silky, teeth 5, all long, upper lanceolate, lower linear, corolla not projecting beyond the calyx, petals 5, upper (standard) broad, round, stalked, lateral oblong, shorter, lower two united to form the keel, equal to the lateral, much curved in and beaked, stamens 10, united behind, style long, abruptly incurved at the end, bearded above; pod nearly sessile, twice the length of the calyx, oblong, smooth, 20-30 seeded.

**Crotalaria sessiliflora,**

LEGUMINOSÆ.

F. B. I. ii. 73.

The Plains to  
6,000 ft.Simla, Chadwick  
Falls, Waterworks  
Road (Collett).Jakku above the  
Ladies' Mile.

Hazara (Douie).

medium size, annual, stem unbranched or branched, silky, leaves 2-6 in., linear or lanceolate, narrowed to both ends, thick, smooth above, thinly silky below, stipules bristle-like, very small, flowers  $\frac{1}{3}$  in., blue, rarely yellow, not projecting beyond the calyx, sharply bent down, lower flowers often axillary, upper crowded in racemes, 2-20 flowered, racemes 6-9 in. long, bracts and bracteoles bristle-like, persistent, calyx  $\frac{3}{8}$ - $\frac{1}{2}$  in. long, brown silky, teeth all short-pointed, upper  $\frac{1}{8}$  in. broad, corolla smooth, pod sessile, smooth,  $\frac{1}{2}$  in., seeds 10-15; otherwise like the last species.

**Indigofera linifolia,**

see Prostrate Herbs, Alternate, Stipulate, Simple.

**Indigofera cordifolia,**

LEGUMINOSÆ.

F. B. I. ii. 93.

The Plains to  
4,000 ft. in the  
Chenab Valley.

Kahuta (Douie).

Baluchistan (Baker).

small, annual, much branched, spreading, covered with flat-lying white hairs; leaves  $\frac{1}{4}$ - $\frac{3}{4}$  in., ovate, heart-shaped, apex a nearly straight edge, with a large stiff point, densely hairy beneath, stipules minute, bristle-like; flowers  $\frac{1}{8}$  in., red, 4 to 8 crowded together in a sessile cluster, calyx 5-toothed, tube short, teeth long, bristle-like, very hairy, corolla not projecting beyond the calyx, petals 5, upper one (standard) rounded, 2 lower ones united (keel) straight, not beaked, spurred on each side at the base, stamens 10, upper one free, the others united, anthers tipped with a minute point, style short, curved inwards; pod  $\frac{1}{4}$  in. long or less, oblong, cylindrical, beaked, 2-seeded, seeds ovate, yellow.

## HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES,

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

- Tephrosia tenuis**, see Herbs, Unbranched, Alternate, Stipulate, Simple.
- Uraria picta**, see Herbs, Erect, Alternate, Stipulate, Compound, Leaflets many.
- Uraria lagopus**, see Shrubs, Erect, Alternate, Stipulate, Compound, Leaflets 3.
- Uraria neglecta**, see Shrubs, Erect, Alternate, Stipulate, Compound, Leaflets 3.
- Alysicarpus monilifer**, see Prostrate Herbs, Alternate, Stipulate, Simple.
- Alysicarpus hamosus**, see Prostrate Herbs, Alternate, Stipulate, Simple.
- Alysicarpus rugosus**, see Prostrate Herbs, Alternate, Stipulate, Simple.
- Drosera peltata**, see Herbs; Erect, Alternate, Stipulate, Simple.

## PETALS UNITED.

- Sida grewloides**, medium size, grey-felted, with star-shaped hairs; leaves  $\frac{1}{2}$  in long, oblong-ovate, blunt-pointed, round-toothed, downy on both surfaces, leaf stalk shorter than the blade, stipules linear, awl-shaped, nearly equal to the leaf stalk; flowers small,  $\frac{1}{3}$  in. diam., yellow or white, solitary or in pairs on a common stalk, shorter than the leaf stalks, calyx of 5 angular sepals, angular-tubular below, petals 5, united together below and with the staminal-tube, staminal-tube dividing above into numerous filaments, styles 7-8; fruit of 7-8 carpels, carpels wrinkled, bristle-topped and beaked, beaks converging, seed one in each carpel. The flowers open at noon.

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Abutilon graveolens,**  
*Barkanghi.*

MALVACEÆ.

F. B. I. i. 327.

The Plains.

Gurgaon.

Baluchistan

(Masters).

large, perennial, fresh leaves smell unpleasantly, branches covered with velvety glands and hairs; leaves 2-3½ in., round-heart-shaped, sometimes lobed, abruptly long-pointed, velvety on both surfaces, leaf stalk almost as long as the blade, stipules linear, sickle-shaped, turned back, soon falling off; flowers large, orange with dark centre, pink and turned back when old, on axillary and terminal stalks, as long as the leaf stalks, and jointed above the middle, calyx of 5 sepals, ovate, long-pointed, tubular below, densely velvety, petals 5, broadly heart-shaped, united together below and with the staminal-tube, staminal-tube dividing above into many filaments, styles 20 or more; fruit of 20 or more carpels rounded, hairy, about equal in length to the calyx, which is enlarged in fruit, not bristle-pointed, separating from the central column, each carpel 2 or more seeded, seeds kidney-shaped. The flowers open in the evening; a fibre is obtained from the stem; the roots, leaves and seeds are used as a demulcent.

**Abutilon Avicennæ,**  
**American Jute,**

MALVACEÆ.

F. B. I. i. 327.

The Plains to

5,000 ft.

Kashmir.

medium size, annual, leafy, softly felted, leaves 3-4 in., round-heart-shaped with a long point, leaf stalk 3 in. long, flowers yellow, scarcely longer than the sepals on solitary, axillary stalks 1 in. long, sepals nearly divided to the base, ovate, short-pointed, staminal tube very short, carpels 15-20, much longer than the sepals, oblong, hairy or velvety with 2 long spreading bristles, seeds soft with scattered hairs; otherwise like the last species. This plant supplies an excellent fibre.

**Plumbago zeylanica,**  
*Chitrak.*

PLUMBAGINACEÆ.

F. B. I. i. 480.

The Plains to

5,000 ft.

Giri and Sutlej

Valleys (Collett).

Koti.

Choa Saidan Shah.

Mator near Kahuta

(Douie).

Baluchistan

(Boissier).

large, perennial, stems several, rambling; leaves 2-3 in., ovate, short-pointed, smooth, abruptly narrowed into the stalk, leaf stalk ¾ in., stem-clasping, stipules round, flat, soon falling off; flowers ¾ in. long, bluish-white in bracteate, often branched, glandular spikes, 4-12 in. long, bracts ½ in., ovate, short-pointed, calyx ½-¾ by ¼ in., tubular, covered with stalked glands, 5-ribbed and toothed, teeth very short, corolla flat-topped, circular, tube ¾ in. long, lobes 5, ⅓ in., nearly equal, round, spreading, stamens 5, free from the corolla, opposite the lobes, dilated at the base, anthers protruded, style one, slender, with 5 branches above; capsule thin, enclosed in the persistent calyx, opening transversely near the base, seed one. This plant is used as a vesicant, also as a sudorific, and as a poison.



## HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS NONE.

**Polygonum orientale,** large, annual, velvety or silky-hairy, stems grooved, branches hollow-stemmed; leaves 6-9 by 2-5 in., ovate, POLYGONACEÆ.  
F. B. I. v. 30.  
The Plains to 5,000 ft., in swamps.  
large, annual, velvety or silky-hairy, stems grooved, branches hollow-stemmed; leaves 6-9 by 2-5 in., ovate, or ovate-heart-shaped, long-pointed, grey with hairs, leaf stalk 1-4 in., sometimes winged, stipules tubular, short, hairy, ending abruptly, mouth thin, papery, or dilated, green, curved back; flowers small, red, white or green, in crowded erect or drooping cylindric racemes 2-4 in. long, forming large terminal branched clusters, bracts hairy, ovate, flat, 3-6 flowers in the axil of each bract, calyx (perianth) of 4-5 segments, petals none, stamens 7 or 8, alternating with small honey secreting glands, enclosed in the calyx, styles 2, united half way up; nut round,  $\frac{1}{8}$  in. diam., flattened with concave faces, coat very thick, black, shiny.

**Polygonum virginianum,** large, perennial, roughly hairy, branches hollow-stemmed; leaves 4-10 in., broad and tapering equally to either end, thin, leaf stalk  $\frac{1}{2}$ -1 in., stipules  $\frac{1}{4}$ - $\frac{1}{2}$  in., tubular, roughly POLYGONACEÆ.  
F. B. I. v. 31.  
Himalaya.  
Kashmir.  
Jhelum River,  
2-4,000 ft.  
Pir Panjal Range,  
7-10,500 ft.  
(Stewart).  
large, perennial, roughly hairy, branches hollow-stemmed; leaves 4-10 in., broad and tapering equally to either end, thin, leaf stalk  $\frac{1}{2}$ -1 in., stipules  $\frac{1}{4}$ - $\frac{1}{2}$  in., tubular, roughly hairy, mouth abrupt, bristly; flowers in very long slender long-stalked racemes, 6-16 in., bracts tubular-bristly,  $\frac{1}{4}$ -1 in. apart, 2-flowered, bracteoles narrow, transparent, calyx 4-fid, thin, stamens 5, alternating with glands, styles 2, long, stiff, hooked, persistent, stigmas undivided; nut oblong, with rounded ends, flattened, pale brown, as long as the persistent styles.

**Polygonum glabrum,** large, stem thick, often red, branched; leaves 4-8 in., lanceolate or linear-lanceolate with a fine long point, minutely glandular or not, stalked, stipules  $\frac{3}{4}$  in., tubular, POLYGONACEÆ.  
F. B. I. v. 34.  
The Plains to 6,000 ft.  
Simla, in ditches  
(Collett).  
large, stem thick, often red, branched; leaves 4-8 in., lanceolate or linear-lanceolate with a fine long point, minutely glandular or not, stalked, stipules  $\frac{3}{4}$  in., tubular, smooth, thin, not fringed; flowers pink or white, in slender erect racemes, 2-4 in. long, forming terminal branched clusters, bracts smooth, tubular, tip oblong or rounded, calyx 5-fid, varying in size, stamens 6-8, styles 2 usually, sometimes 3, united below the middle; nut rounded, biconvex, 3-angled with 3-styled flowers, black, shining.

**Polygonum lanigerum,** see Prostrate Herbs, Alternate, Stipulate, Simple.

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

**Polygonum  
lapathifolium**, or  
**simlense**,  
**Pale Polygonum**,  
POLYGONACEÆ.  
F. B. I. v. 35.  
The Plains to  
7,000 ft.  
Matiana, Theog  
(Collett).  
Shahpur District  
(Douie).

medium size, annual, branched, smooth below, rough with glands above; leaves 3-6 in., lanceolate, finely pointed, narrowed to the base, glandular, leaf stalk short, narrowly winged, upper leaves sessile, margins, mid-rib and nerves somewhat hairy, stipules tubular, not fringed; flowers  $\frac{1}{8}$ - $\frac{1}{2}$  in., red, in dense-flowered, erect or nodding racemes,  $1\frac{1}{4}$ -2 in. long, axillary, or forming terminal branching racemes, bracts tubular, short, not bristly, calyx 4-fid, glandular, stamens 6, styles 2, joined together close to the base; nut round, flattened, minutely dotted.

**Polygonum  
persicaria**,  
**Persicaria**,  
POLYGONACEÆ.  
F. B. I. v. 35.  
Kashmir (Falconer).  
Baluchistan (Lace).

very like the last species, but the leaves are without glands, stipules hairy, fringed, bracts bristly, flower stalk smooth, and calyx without glands.

**Polygonum minus**,

see Prostrate Herbs, Alternate, Stipulate, Simple.

**Polygonum  
stagninum**,  
POLYGONACEÆ.  
F. B. I. v. 37.  
The Plains.

small, branched or not, smooth below and hairy above; leaves 3-5 in., lanceolate or linear-lanceolate, long-pointed, velvety with flat-lying hairs on both surfaces, glandular or not beneath, stipules tubular, with flat-lying hairs, bristles shorter than the tube; flowers white, in straight, erect, stout, or slender, long and strong-stalked racemes, bracts enclose many flowers, rough with long bristles, calyx of 4-5 segments, without glands, stamens 5-8, styles 3; nut 3-angled, intensely black.

**Polygonum  
barbatum**,  
POLYGONACEÆ.  
F. B. I. v. 37.  
The Plains.

very like the last species, but smoother, stipules more bearded, racemes long, weak and slender, bristles of the bracts shorter and weaker.

HERBS, ERRECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

**Polygonum  
Hydropiper,  
Water-pepper,**  
POLYGONACEÆ.  
F. B. I. v. 39.  
The Plains to  
7,000 ft.  
Simla, Naldera  
(Collett).  
Hazara (Barrett).

medium size; annual, stout, smooth, stems sometimes prostrate and rooting at the joints, often glandular, joints often swollen, branched; leaves 2-3 in., lanceolate or oblong-lanceolate, narrowed to the base, dotted with glands, mid-rib with minute hairs, stipules  $\frac{1}{3}$  in., tubular, smooth or minutely hairy with flattened hairs, swollen out near the middle, fringed with short bristles; flowers pink or red, in very slender drooping zigzag racemes, 2-3 in. long, with gaps along the racemes and leafy at the base, bracts smooth, with or without glands, tubular, mouth naked or minutely bristly, calyx of 5 segments, with glands, stamens 6, styles 2 or 3, ununited nearly to the base; nuts minutely dotted, in the 2-styled flowers circular and flattened, in the 3-styled 3-angled. The juice is used as a diuretic and carminative.

**Polygonum  
flaccidum,**  
POLYGONACEÆ.  
F. B. I. v. 39.  
The Plains to  
4,000 ft.,  
in wet places.

very like the last species, but larger with longer, broader, and more pointed leaves.

**Polygonum glaciale,**  
POLYGONACEÆ.  
F. B. I. v. 41.  
Himalaya,  
8-12,000 ft.  
Kashmir.

very small, annual, weak, smooth, nearly succulent, branches spreading from the root; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., broadly ovate, apex blunt, long-stalked, winged above only, stipules short, smooth, cup-shaped, 2-lobed or not; flowers minute, white or pale purple in sessile or stalked heads  $\frac{1}{6}$ - $\frac{1}{4}$  in. diam., stalk minutely glandular at the tip, bracts broadly ovate, blunt, smooth, flat, calyx 4-5-lobed, transparent, lobes nearly equal, blunt, stamens 5, no glands, styles 3 united; nut minute, closely included in the calyx tube, black, striated.

**Polygonum alatum,  
Sai-balon.**  
POLYGONACEÆ.  
F. B. I. v. 41.  
The Plains from  
2-10,000 ft.  
Simla (Collett).

small to medium size, annual, very variable, the smaller forms like the last species, but with short broad-winged leaf stalk; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in. in the small form, 1-3 in. in the large, broadly ovate, smooth, rarely hairy, blunt or short-pointed, abruptly or gradually narrowed into a broadly winged and sometimes eared leaf stalk, stipules tubular, hairy or glandular below, not fringed with bristles; flowers minute, white, purplish or red in heads,  $\frac{1}{5}$ - $\frac{1}{2}$  in. diam., heads in the axils of leaves on stalks,

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

glandular-hairy at the top, bracts flat, smooth, calyx 4-5-fid, stamens 6-8, style long with one or two arms, stigmas rounded; nut enclosed in the calyx, 3-angled, or flattened circular, minutely dotted. The leaves in Kangra are used as an application to swellings.

**Polygonum strigosum,** see Prostrate Herbs, Alternate, Stipulate, Simple.

**Polygonum sagittatum,** see Prostrate Herbs, Alternate, Stipulate, Lobed.

**Polygonum alpinum,** large, rootstock perennial, stem annual, grooved, pale, smooth or young parts softly velvety; leaves 3-5 in., lanceolate or linear-lanceolate, long-pointed, smooth, short-stalked, stipules long, tubular, loose, upper part soon falling off, not bristly; flowers  $\frac{1}{12}$ - $\frac{1}{6}$  in. diam., white or pale pink, numerous in terminal crowded broad pyramidal branching racemes, 12 in. long or more, bracts short, blunt, flower stalks much longer than the bracts, jointed close to or further from the flower, calyx 5-segmented, segments nearly divided to the base, inner segments broad tipped, stamens 8, rarely less, alternating with glands when present, styles 3; nut  $\frac{1}{8}$  in. long, shining, pale, sharply 3-angled, longer than the calyx. Aitchison states that it is eaten raw or cooked, and tastes like rhubarb.

**Polygonum polystachyum,** see Shrubs, Erect, Alternate, Stipulate, Simple.

**Polygonum tortuosum,** see Shrubs, Erect, Alternate, Stipulate, Simple.

**Polygonum sibiricum,** very small, perennially rooted, stem stout, branches many, spreading or erect; leaves 1-3 by  $\frac{1}{10}$ - $\frac{1}{4}$  in., narrowly linear, blunt-pointed, 2 processes sticking out at the base, leaf stalk thick, stipules tubular, short, thin and papery; flowers  $\frac{1}{10}$  in. long, pink, in heads  $\frac{1}{6}$ - $\frac{1}{2}$  in. diam., forming terminal branched racemes, shorter than the leaves, bracts minute, flower stalks short or long, calyx in 5 segments, segments broadly oblong, stamens 5-8, short, with or without alternating glands, styles 2-3; nut 3-angled, not tightly enclosed in the calyx, oblong-ovate, black, shining, equal in length to the calyx. This plant is eaten by the Tibetans.

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

**Fagopyrum  
esculentum,**  
**Buckwheat,**  
*Phaphra, kultu,*  
*kathu.*

POLYGONACEÆ.  
F. B. I. v. 55.  
Himalaya,  
5-12,000 ft.

medium size, annual, smooth, branched or not, cultivated and found as an escape; leaves 1-4 in. diam., triangular, heart-shaped at the base, short-pointed, stipules tubular; flowers small, white or pink, in axillary or terminal heads forming stalked many-flowered clusters,  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., calyx of 5 segments, segments nearly equal, stamens 8, alternating with yellow sessile glands, styles 3; nut  $\frac{1}{4}$ - $\frac{1}{2}$  in., ovate with 3 sharp angles, much longer than the calyx. The grain is not very nutritious.

**Fagopyrum  
cymosum,**  
POLYGONACEÆ.

F. B. I. v. 55.  
Himalaya,  
5-11,000 ft.  
Simla in woods.  
(Collett).

medium size, root perennial, branched slightly velvety, leaves 2-4 in. diam., broadly triangular, sharp-pointed, long-stalked, upper leaves narrower and stem-clasping, flowers white, in racemes, 2-5 in. long, forming long-stalked branching racemes, flower stalks jointed in the middle; otherwise like the last species.

**Fagopyrum  
tataricum,**  
*Ugal, kaspat.*  
POLYGONACEÆ.

F. B. I. v. 55.  
Himalaya,  
3-12,000 ft.

very like *Fagopyrum esculentum* above and also cultivated, but taller, and the faces of the nut deeply grooved with rounded angles. The grain is considered inferior to that of *F. esculentum*.

**Rumex nepalensis,**  
**Dock,**

POLYGONACEÆ.  
F. B. I. v. 60.  
Himalaya,  
4-9,000 ft.  
12,000 ft. on the  
Chenab (Stewart).  
Simla (Collett).  
Murree (Douie).

large, perennial, sometimes, stout, branched; radical leaves 6-14 by 3-5 in., oblong, ovate-oblong or triangular-ovate, short-pointed or blunt, base broadly or narrowly heart-shaped and stalked, upper leaves not stalked and smaller, uppermost sessile and lanceolate, stipules tubular, not fringed, soon disappearing; flowers small, green, often turning red, 2-sexual, in circular clusters at intervals along nearly leafless racemes, calyx of circular sepals, 3 outer not enlarging, 3 inner enlarging in fruit, with a tubercle in the centre and fringed with hooked teeth, stamens 6, styles 3, stigmas fringed, terminal; nut brown, sharply 3-angled, enclosed in the 3 enlarged hook-fringed and net-veined sepals. The roots are said to be used as a substitute for rhubarb.

**Rumex hastatus,**

see Herbs, Erect, Alternate, Stipulate, Lobed.

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

**Rumex acetosa,** see Herbs, Erect, Alternate, Stipulate, Lobed.

**Rumex vesicarius,**  
**Bladder Dock,**  
**Sorrel,**  
*Katta mitha, saluni,*  
*choka.*

POLYGONACEÆ.

F. B. I. v. 61.

The Salt Range.

Trans-Indus Hills.

Baluchistan

(Hughes-Buller).

small, annual, pale green, smooth, branches in pairs; leaves 1-3 in., ovate or oblong, base wedge-shaped, rarely heart-shaped or terminating in 2 sharp angles, stipules tubular, not fringed, soon disappearing; flowers small, pink or white, male and female separate, in terminal short leaf-opposed leafless racemes, 1-1 $\frac{2}{3}$  in. long, flowers on jointed or unjointed stalks, calyx of 6 circular sepals, inner 3 much enlarged in fruit, thin, 2-lobed at each end, not fringed, stamens 6, styles 3, fringed, arising from the angles of the fruit, bent down; nut  $\frac{1}{2}$  in. diam., 3-angled. The juice is cooling, aperient, and diuretic.

**Houttuynia cordata,**

PIPERACEÆ.

F. B. I. v. 78.

Himalaya

1-5,000 ft.

Sultej Valley below

Narkanda

(Collett).

perennial, velvety, rootstock creeping, stem 12-36 in., green, leafy, angular; leaves 1 $\frac{1}{2}$ -2 $\frac{1}{2}$  in., broadly ovate, stalked, heart-shaped, long-pointed, stalk 1-2 in., base sheathing, stipules long, linear, oblong, blunt; flowers minute in terminal leaf-opposed stalked spikes  $\frac{1}{2}$  in. long with 4-6 large white petal-like bracts  $\frac{1}{3}$ - $\frac{1}{2}$  in. at the base, calyx none, petals none, stamens 3, carpels 3-4, united, styles 3, free; fruit almost round.

**Phyllanthus urinaria,**

*Hazar-mani.*

EUPHORBIACEÆ.

F. B. I. v. 293.

The Plains.

medium size to large, annual, rarely perennial, smooth, stem and branches angled, angles of branches, margins of leaves and sepals often minutely hairy; leaves  $\frac{1}{6}$ - $\frac{2}{3}$  in., in 2 lines, overlapping, oblong or linear-oblong, tip rounded or short-pointed, sessile, stipules target-shaped; flowers minute, green, axillary, nearly sessile, males and females on the same plant, solitary or clustered, male flowers, calyx of 6 circular sepals, stamens 3, rarely 5, more or less united at the base, female flowers, calyx of 6 oblong sepals, styles 3, with 2 hooked arms; capsule  $\frac{1}{10}$  in., prickly, hard, brittle with three 2-valved lobes, seeds transversely furrowed. This plant is said to be used as a diuretic and as a cure for jaundice.

**Phyllanthus simplex,**

see Shrubs, Alternate, Stipulate, Simple.

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

**Phyllanthus Niruri,**  
*Sada hazur-mani,*  
*jaramla.*

EUPHORBIACEÆ.

F. B. I. v. 298.

The Plains to  
3,000 ft.

small to medium size, annual, quite smooth, branched from the base, stem naked below, branches angular, slender, leafy, leaves  $\frac{1}{4}$ - $\frac{3}{4}$  in., oblong or linear, tip rounded, blunt or sharp-pointed, thin, nearly sessile, pale green, often in 2 rows, overlapping, bluish waxy gloss beneath, stipules minute, awl-shaped, flowers green, very many, minute, shortly stalked, male flowers solitary, anthers 3, sessile, on a short column, styles ununited, capsule round, hardly lobed, smooth, seeds with ribs and faint cross lines; otherwise like *Phyllanthus urinaria* (described above) and with the same medicinal properties.

**Elatostemma**  
**pusillum,**

see Herbs, Unbranched, Alternate, Stipulate, Simple.

**Elatostemma**  
**sureulosum,**

see Herbs, Unbranched, Opposite, Stipulate, Simple.

LEAF MARGINS TOOTHED.

PETALS UNUNITED.

**Triumfetta pilosa,**

see Herbs, Erect, Alternate, Stipulate, Lobed.

**Triumfetta**  
**rhomboidea,**  
*Chikti.*

TILIACEÆ.

F. B. I. i. 395.

The Plains to  
5,000 ft.

Simla (Collett).  
Koti.

medium size to large, perennial, smooth or velvety; leaves 2-3 $\frac{1}{2}$  by 1 $\frac{1}{2}$ -3 in., broadly ovate, or 4-angled with the lateral angles blunt or heart-shaped, 3-7-nerved, apex short-pointed or 3-lobed, toothed, stipules ununited; flowers  $\frac{1}{4}$  in., yellow, in dense clusters, flower stalks short, buds oblong, club-shaped, pointed, sepals 5, oblong, concave, pointed, petals 5, oblong, bristly at the base, stamens 8-15, style thread-like, stigma 5-toothed; capsule  $\frac{1}{4}$  in. diam., round or ovoid, white-felted, prickly, spines  $\frac{1}{10}$  in., hooked, smooth, not dilated at the base, seeds one or two in each cell. This plant is used as a demulcent.

**Triumfetta**  
**rotundifolia,**

see Shrubs, Alternate, Stipulate, Simple.

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNUNITED.

**Triumfetta annua,**  
*Chikti.*

TILIACEÆ.

F. B. I. i. 396.

The Plains to  
5,000 ft.

Simla (Collett).  
Koti.

medium size, annual, smooth except for a line of hairs on one side, which alters at every joint, leaves 4-5 by 2-3 in., ovate, long-pointed, toothed, smooth except for a few scattered hairs, long-stalked, stipules awl-shaped, flowers  $\frac{1}{4}$  in., orange, on 3-flowered stalks,  $\frac{1}{2}$  in. long, opposite to the leaves, sepals shortly and sharply pointed, petals nearly equal to the sepals, stamens 10, fruit  $\frac{1}{4}$  in., bluish-green waxy gloss, 4-celled, spines long, smooth, hooked; otherwise like *Triumfetta rhomboidea*.

**Corechorus capsularis,**  
**Jute,**

*Harrana.*

TILIACEÆ.

F. B. I. i. 397.

The Plains to  
4,000 ft.

(Cultivated or  
escaped).

Thanesar

(Edgeworth).

medium size to large, annual, smooth, leaves 2-4 in., ovate-lanceolate, long-pointed, toothed, rounded at the base, the two teeth furthest back prolonged into tails, stalk  $1\frac{1}{2}$  in., stipules thread-like, as long as the stalk; flowers small,  $\frac{1}{2}$  in. diam. or less, yellow, one or two together on axillary or leaf-opposed stalks, sepals 4-5, petals 4-5, without glands, stamens few or twice the number of petals, ununited, style short, stigma cup-shaped; capsule  $\frac{1}{2}$  in. diam., nearly round, depressed at the apex, ridged, rough with hard tubercles, 5-celled, valves woody, without cross partitions, seeds few in each cell, brown, smooth, wedge-shaped. The fibre of the inner bark forms the jute of commerce.

**Corechorus olitorius,**  
**Jute, or Jew's**  
**mallow,**

*Banphal, koshta.*

TILIACEÆ.

F. B. I. i. 397.

The Plains to  
4,000 ft.

very like the last species, but sepals short-pointed, petals longer than the sepals, capsule 2 in., cylindric, beaked, 10-ribbed, 3-6-valved, valves with cross partitions between the seeds, beak long, erect, undivided. This plant is cultivated as a pot herb and also for its fibre.

**Corechorus**  
**trilocularis,**

*Kaunti.*

TILIACEÆ.

F. B. I. i. 397.

The Plains.

Phalia,

Gujrat District

(Douie).

Baluchistan

(Lace).

very like the last species, but sometimes perennial and indigenous, capsule 2-3 in., 3-4-valved, straight or curved, valves 3-4-angled, with partitions, rough, beak short, erect and undivided.



## HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNUNITED.

- Corchorus fascicularis**,  
TILIACEÆ.  
F. B. I. i. 398.  
The Plains.  
very like the last species, but leaves usually smaller, flowers 2-5 on one stalk, capsule  $\frac{1}{2}$ - $\frac{3}{4}$  in., 3 or 4 together, short, nearly cylindric, valves downy, almost without partitions, seeds 3-angled, black.
- Corchorus tridens**,  
TILIACEÆ.  
F. B. I. i. 398.  
The Plains.  
Baluchistan  
(Boissier).  
very like the last species, but the leaves are usually more linear, capsule 1-2 in., crowned by 3 spreading points with tufts of glandular hairs, valves without partitions, seeds with the ends abruptly cut off.
- Corchorus acutangulus**,  
TILIACEÆ.  
F. B. I. i. 398.  
The Plains to  
5,000 ft.  
Sim'a below  
5,000 ft.  
(Collett).  
very like the last species, but with broader leaves, capsules 6-angled with 3 angles winged, crowned by 3 more horizontal, spreading points, valves with or without partitions.
- Reinwardtia trigyna**,  
see Shrubs, Alternate, Stipulate, Simple.
- Impatiens amplexicaulis**,  
see Herbs, Erect, Opposite, Stipulate, Simple,  
Toothed.
- Impatiens scabrida**,  
GERANIACEÆ.  
F. B. I. i. 472.  
H. malaya,  
7-10,000 ft.  
Simla, rare.  
Mahasu, common  
(Collett).  
Murree (Douie).  
large, annual, smooth or velvety, stems succulent, often much branched; leaves 2-6 in., ovate or lanceolate, long-pointed, toothed, teeth gland-tipped, sessile or narrowed into a short stalk, stipules of 2 large glands; flowers  $1\frac{1}{4}$  in. long without the spur, yellow, spotted with brown, single on axillary, usually paired stalks, or on a common 2-6-flowered stalk, 1-2 in. long, stalk of each flower 1-2 in., bracts bristle-like, sepals 3, 2 lateral minute, greenish, one lower (lip) petal-like, coloured yellow, broadly funnel-shaped, abruptly contracted into a slender, cylindric, incurved hollow spur  $\frac{1}{2}$  in. long, petals 3, one upper (standard) very large, circular with a small green horn-like process on the back, 2 lower (wings) with lateral lobes short, rounded, terminal, much smaller, oblong, stamens 5, anthers cohering above the 5-toothed stigma with filaments clasping the ovary; capsule 1-2 in. long, linear, cylindrical, tapering, straight, ribbed, smooth or

## HERBS, UPRIGHT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNUNITED.

nearly so, 5-valved, the ripe valves if shaken curl up elastically and jerk out the many, scarcely tubercled, oblong seeds.

**Impatiens  
amphorata,**  
GERANIACEÆ.  
F. B. I. i. 475.  
Himalaya,  
5-8,000 ft.  
Simla (Collett).

medium size, annual, smooth, slender or robust, leaves 3-6 in., lanceolate, round-toothed, a bristle-like gland at the point of each rounded tooth, long-pointed, stalked, stipules of 2 sessile or stalked glands, flowers 1-1½ in. long less the spur, purple, in racemes branched or not, or in umbel-like clusters, lip large, deep broad, spur ½ in., standard tip crested, wings white on the lower half, capsule 1-1½ in. ; otherwise like the last species.

**Impatiens  
Edgeworthii,**  
GERANIACEÆ.  
F. B. I. i. 476.  
Kulu (Edgeworth).

very like the last species, but with yellow and red streaked flowers, bracts broader, lip funnel-shaped, main stalks of flowers clustered, nearly terminal.

**Impatiens racemosa,**  
GERANIACEÆ.  
F. B. I. i. 479.  
Himalaya,  
5-8,000 ft.  
Simla, Fagu,  
Narkanda (Collett).

large, annual, smooth, slender, branched, leaves 3-9 in., lanceolate or oblong-lanceolate, long-pointed, round-toothed, teeth or gap between gland-tipped, leaf stalk ½-2 in., slender, stipules of 2 sessile or stalked glands or none, flowers small, ½ in., yellow, in racemes or umbel-like clusters, flower stalks slender, ½ in. long, bracts persistent, ovate, gland-pointed, 2 upper sepals ovate or oblong, gland-pointed, lower (lip) boat-shaped, narrowed into a slender tapering, nearly straight spur, ½ in. long, upper petal (standard) not spurred nor winged, lateral petals (wings) darker spotted, with a long linear process descending into the spur, capsule ½-¾ in. ; for other characters see the last species.

**Impatiens laxiflora,**  
GERANIACEÆ.  
F. B. I. i. 479.  
Himalaya,  
5-10,000 ft.  
Simla, Hattu  
(Collett).

like the last species, but the leaves are usually smaller, leaf stalk longer, stipules always present, flowers slightly larger, lateral petals (wings) without the tail-like process, spur longer, not straight, with clubbed tip.

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNUNITED.

**Impatiens  
micranthemum,**

GERANIACEÆ.

F. B. I. i. 481.

Himalaya,

6-10,000 ft.

Simla (Edgeworth).

Hattu (Collett).

Changlagalli (Douie).

like the last species, but winged leaf stalks prolonged down the stem, flowers white with red and yellow spots, much smaller,  $\frac{1}{4}$  in. long, spur also  $\frac{1}{4}$  in., straight.

**Impatiens  
brachycentra,**

GERANIACEÆ.

F. B. I. i. 481.

Himalaya,

8-12,000 ft.

Murree (Fleming).

medium size, stem not winged, slender, smooth, branched, leaves 2-5 in., ovate-lanceolate, round-toothed, teeth tipped with a glandular bristle, long-stalked, long-pointed, stipular glands often present, flowers  $\frac{1}{4}$  in. long, white, in racemes or umbel-like clusters in the axils of upper leaves, lip boat-shaped, spur minute or none, capsule narrow, oblong,  $\frac{1}{2}$  in., nearly cylindrical, tapering to a point; otherwise like the rest of this genus.

**Psoralea corylifolia,***Babchi.*

LEGUMINOSÆ.

F. B. I. ii. 103.

The Plains.

medium size, branches annual, dotted with glands; leaves 1-3 in., roundish, with a widely round-toothed margin, firm, covered with black dots above and below; flowers  $\frac{1}{5}$  in., yellow or white, tipped with purple, 10-30 crowded in long-stalked head-like clusters, calyx  $\frac{1}{8}$  in., nearly sessile, bell-shaped, teeth 5, lanceolate, the lowest longest, corolla projecting a little beyond the calyx, lower petal keel-shaped, blunt, tip slightly incurved, stamens 10, upper stamens united or not with the others in a tube, style long, thread-like, incurved; pod nearly round, small smooth, black. This plant is used as a tonic, and as an internal and external medicine in leprosy.

PETALS UNITED.

**Althæa officinalis,  
Marsh Mallow,***Gul-khairo, kaira-  
ka-jhor.*

F. B. I. i. 319.

Kashmir.

large, perennial, downy, stem 24-36 in.; leaves ovoid simple or slightly lobed, toothed, stipules linear-awl shaped; flowers 1-2 in. diam., pink, in axillary clusters on a main stalk, bracteoles 6-9, joined at the base, linear-lanceolate, half the length of the sepals, sepals 5, petals 5, stamens many, united into a tube, united to the petals, styles thread-like; carpels many, seed one in each carpel. The leaves are used as a healing application and the seeds in gravel.

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

**Malvastrum  
tricuspidatum,**

MALVACEÆ.  
F. B. I. i. 321.  
The Plains.  
Lahore, Delhi,  
Rawalpindi  
(introduced).

medium size, branched, covered with simple hairs; leaves 2 in., ovate-lanceolate, irregularly toothed, leaf stalk  $1\frac{1}{4}$  in., stipules ununited; flowers yellow, on axillary or terminal stalks,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, bracteoles 3, narrow, calyx bell-shaped, 5-lobed, triangular, short-pointed, petals 5, twisted, over lapping, longer than the sepals, stamens many, united below and to the petals, forming a tube, styles 8-12, stigmas round; fruit of 8-12 dry carpels, one-seeded, separating from the central column, curved with 3 projecting points.

**Sida humilis,**

see Prostrate Herbs, Alternate, Stipulate, Simple.

**Sida spinosa,**  
*Gulsakari,*  
*jangli-methi.*

MALVACEÆ.  
F. B. I. i. 323  
The Plains.

medium size, perennial, shrubby, stems rough with star-shaped hairs, branches usually armed with curved spiny tubercles at the nodes below the leaf stalks; leaves  $\frac{1}{2}$ -2 in., very variable, ovate with or without a broad apex, apex blunt or notched, base heart- or wedge-shaped, grey below with star-shaped hairs, leaf stalks  $\frac{1}{2}$  in., stipules awl-shaped; flowers  $\frac{1}{2}$  in. diam., white, on solitary or clustered stalks, jointed near the flower, equal to or longer than the leaf stalks, calyx tubular below, sepals 5, triangular, short-pointed, hairy, petals 5, united below and to the staminal tube, stamens many, united below into a tube; carpels 5, separating from the central column, crowned each by 2 long erect rough beaks, equal to the calyx, seeds one in each carpel. The root and leaves are used in Indian medicine, the former as a tonic and diaphoretic, the latter as a demulcent.

**Sida carpinifolia,**

*Bariara, kareta,*  
MALVACEÆ.  
F. B. I. i. 323.  
The Plains.

like the last species, but without spiny tubercles, leaves narrower, stipules broader, veined, bristly, flower stalks jointed near the middle, calyx tube nearly round, petals twice as long as the calyx, yellow, carpels 5-10, wrinkled beak of 2 bristles. Good fibre is obtained from the stems, and other parts are used medicinally, as in the last species.

HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

**Sida rhombifolia,***Svet-berela,*  
*sahadebi.*

MALVACEÆ.

F. B. I. i. 323.

The Plains.

Baluchistan (Lace).

like the last species, but larger, leaves squarer with rounded angles, and tapering at the base, flower stalks longer than the leaf stalks, stipules longer than the leaf stalks, carpels 10, beaked with bristles or not, as long as the calyx. This plant supplies an excellent fibre.

**Sida cordifolia,***Kowar, simak.*

MALVACEÆ.

F. B. I. i. 324.

The Plains.

medium size, annual or perennial, downy with long hairs, leaves 1-2 in., oblong, heart-shaped, blunt-pointed, round-toothed, stalk equal in length to the blade, stipules linear, shorter than the leaf stalk, soon falling off, flower stalks solitary, upper very short and crowded, flowers small, yellow, carpels beaked with 10 bristles, netted on the sides, bristles longer than the sepals, covered with stiff reflexed hairs; in other respects like the last species. The flowers in this genus only expand at noon.

**Abutilon indicum,***Kanghi, jhampi.*

MALVACEÆ.

F. B. I. i. 326.

The Plains.

Delhi.

Rawalpindi (Douie).

medium size, annual, or perennial, more or less downy; leaves 1-2 in. long, broadly heart-shaped, short or long-pointed, coarsely toothed, or nearly entire, pale and minutely velvety on both surfaces, stalk longer than the blade, stipules sharply bent down; flowers 1 in. diam., yellow, on axillary solitary stalks, longer than the leaf stalks and jointed at the top, calyx tubular, 5-lobed, ovate with or without a hard sharp point, petals 5, spreading, stamens as in the genus *Sida* above; carpels 15-20, longer than the calyx, with short spreading bristle-pointed beaks, felted at first, afterwards nearly smooth, seeds one or more in each carpel, kidney-shaped, dark brown, covered with minute star-shaped hairs. The stems contain a good fibre, the seeds are demulcent.

**Abutilon bidentatum,**

MALVACEÆ.

F. B. I. i. 326.

The Plains.

Baluchistan (Lace).

like the last species, but perennial, leaves 2½-3 by 2 in., heart-shaped ovate, long-pointed, round-toothed, downy above and below, stalks of lower leaves 4-5 in., stipules short, awl-shaped, flower stalks 1½-2 in., calyx tube cup-shaped, lobes ovate, short-pointed, fruit ½ in. diam., carpels 20, smooth, oblong, twice as long as the calyx.

**Urena repanda,**

see Herbs, Erect, Alternate, Stipulate, Lobed.

**Hibiscus Trionum,**

see Herbs, Erect, Alternate, Stipulate, Lobed.

## HERBS, ERECT, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

- Hibiscus Solandra,** see Herbs, Erect, Alternate, Stipulate, Lobed.  
**Hibiscus Sabdariffa,** see Herbs, Erect, Alternate, Stipulate, Lobed.  
**Hibiscus**  
**Abelmoschus,** see Herbs, Erect, Alternate, Stipulate, Lobed.  
**Hibiscus cancellatus,** see Herbs, Erect, Alternate, Stipulate, Lobed.  
**Pentapetes phoenicea** see Herbs, Erect, Alternate, Stipulate, Lobed.

## PETALS NONE.

- Ranunculus**  
**hirtellus,** see Herbs, Erect, Alternate, Exstipulate, Lobed.  
**Ranunculus**  
**sceleratus,** see Herbs, Erect, Alternate, Exstipulate, Lobed.  
**Ranunculus lætus,** see Herbs, Erect, Alternate, Exstipulate, Lobed.  
**Ranunculus arvensis,** see Herbs, Erect, Alternate, Exstipulate, Lobed.  
**Girardinia**  
**heterophylla,** see Herbs, Erect, Alternate, Stipulate, Lobed.

## HERBS, ERECT, WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Reseda pruinosa,** see Herbs, Erect, Alternate, Stipulate, Simple, Entire.
- Triumfetta pilosa,** medium size, perennial, branches covered with soft  
 TILIACEÆ. star-shaped hairs; leaves 3-5 by 1-2 in., ovate, lower leaves  
 F. B. I. i. 394. 3-lobed, toothed, covered with star-shaped hairs on both  
 The Plains to sides, stalk  $\frac{3}{4}$  in., hairy, stipules awl-shaped, bristly, shorter  
 5,000 ft. than the leaf stalk; flowers  $\frac{3}{4}$  in., yellow, in axillary  
 Simla (Collett). and leaf opposed clusters, main flower stalks hairy, shorter  
 than the leaf stalks, minor flower stalks very short, very  
 hairy, bracts awl-shaped, hairy, sepals 5, linear, bristle  
 pointed, petals 5, ovate-oblong, hairy at the base, stamens  
 10 or so, ununited, style thread-like, 2-5-toothed; fruit  $\frac{1}{2}$  in.  
 diam., including the hairy hooked spines  $\frac{1}{4}$  in. long, nearly  
 round, 4-celled, seeds 8, round, dark brown, flattened  
 on one side.

## HERBS, ERECT, WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Triumfetta rhomboidea**, see Herbs, Erect, Alternate, Stipulate, Simple, Toothed.
- Corchorus acutangulus**, see Herbs, Erect, Alternate, Stipulate, Simple, Toothed.
- Geranium pratense**, see Herbs, Erect, Opposite, Stipulate, Lobed.
- Geranium collinum**, see Herbs, Erect, Opposite, Stipulate, Lobed.
- Geranium palustre** or **grandiflorum**, see Herbs, Erect, Opposite, Stipulate, Lobed.
- Geranium Tuberaria**, see Herbs, Erect, Opposite, Stipulate, Lobed.
- Peganum Harmala**, medium size, root perennial, stem and branches annual, bushy, smooth, pale green; leaves 2-3 in., much divided, lobes or segments linear, short-pointed, stipules bristle-like; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., white, solitary, sessile or stalked in the axils of branches, sepals 4-5, linear, short-pointed, persistent, usually longer than the petals, petals 4-5, oblong, nearly equal, soon falling off, stamens 12-15, broad below, some without anthers, styles twisted, 2-3, keeled above; capsule  $\frac{1}{5}$ - $\frac{1}{3}$  in. diam., depressed above, lobed, splitting into 3 valves, seeds many, angled. A red dye is obtained from the seeds and different parts of the plant are used in Indian medicine. The alkaloids Harmaline and Harmine are obtained from the seeds.
- Harmal.*  
ZYGOPHYLLACEÆ.  
F. B. I. i. 486.  
The Plains to 5,000 ft.  
Kashmir.  
Baluchistan  
(Boissier).
- Lourea vespertilionis**, small, annual, slender, stems finely downy; leaves  $\frac{3}{4}$ -1 in. long, 2-3 in. broad, divided into two equal linear lobes, apex of each broadly notched and bristle-tipped, rarely one leaflet on each side making a compound leaf, side leaflets smaller, obliquely triangular with the point inwards; flowers  $\frac{1}{4}$ - $\frac{3}{4}$  in. in simple or rarely branched racemes, 3-6 in., calyx  $\frac{1}{4}$  in., bell-shaped, teeth lanceolate, equal to the calyx tube, petals 5, standard broad, keel blunt, stamens 10, not all united, style thread-like, incurved; pod smooth, veined, joints 4-5, and each one-seeded, all included in the enlarged calyx.
- LEGUMINOSÆ.  
F. B. I. ii. 154.  
The Plains.

## HERBS, ERECT, WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Spiræa vestita**,  
ROSACEÆ.  
F. B. I. ii. 323.  
Himalaya,  
7-12,000 ft.  
Kashmir.  
Hattu (Collett).

medium size, shrubby, root perennial, stems velvety, very like Meadow Sweet, *Spiræa Ulmaria*; leaves 2-12 in., irregularly divided into lobes, lateral lobes few or many, sharply toothed, small, or one or two pairs  $1\frac{1}{2}$  in. long, terminal lobe 2-6 in. diam., deeply cut into 3 to 5 sharply-toothed, long-pointed segments, upper surface smooth, lower white-felted, stipules half circular, large, sharply toothed, persistent; flowers  $\frac{1}{4}$  in. diam., white, in large oblong much-branched terminal clusters, calyx 4-5-lobed, very small, lobes blunt, persistent, petals 4-5, oblong-rounded, stamens many, styles many, nearly terminal, carpels many, ununited, woolly, 2-seeded.

**Geum urbanum**,

see Herbs, Unbranched, Alternate, Stipulate, Lobed.

**Geum elatum**,

see Herbs, Unbranched, Alternate, Stipulate, Lobed.

## PETALS UNITED.

**Lavatera  
kashmiriana**,  
MALVACEÆ.  
F. B. I. i. 319.  
Kashmir.  
Hazara,  
7-8,000 ft.

stems covered with down, branching; leaves lower 5-lobed, circular, heart-shaped at the base, round-toothed, smooth above, downy beneath, stalk as long as the blade, upper 3-5-lobed, lobes short-pointed, central longest, stipules linear-lanceolate; flowers 3 in. diam., pink, on axillary stalks, bracteoles 3, united below, broadly ovate, shortly pointed, sepals 5, lanceolate, longer than the bracteoles, petals 5, united below, wedge-shaped, deeply bifid, stamens united into a column, woolly, styles many; carpels many, separating from the axis, kidney-shaped, smooth, shorter than the axis, seeds one in each carpel.

**Malva verticillata**,  
MALVACEÆ.  
F. B. I. i. 320.  
The Plains to  
12,000 ft.  
Simla, Matiana  
(Collett).

large, annual or perennial, branched, downy; leaves 2-6 in. diam., nearly round, lobes 5-6, shallow, downy, stalks 6-7 in., stipules lanceolate, hairy; flowers small, pale pink, crowded in nearly sessile axillary clusters, bracteoles 3, ununited, linear, sepals 5, united below, triangular-lanceolate, petals 5, united below, twice the length of the sepals, margin notched, stamens united into a tube, styles 10-12; carpels 10-12, enclosed in the enlarged calyx, netted on the sides, ribbed at the back, each carpel one-seeded. This plant is sometimes used as a pot herb.



## HERBS, ERECT, WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNITED.

**Malva sylvestris,**  
**Large Mallow,**  
*Vilayati-kangai,*  
*kanji.*

MALVACEÆ.

F. B. I. i. 320.

The Plains to  
8,000 ft.

Theog (Collett).

Kashmir.

Hazara.

medium size, annual, smooth or with a few hairs, leaves 1-3 in. diam., 5-7, blunt, shallow lobes, rounded, base heart-shaped, stalks 1-3 in., stipules oval, short-pointed, flowers  $1\frac{1}{2}$  in. diam., pink streaked with purple, on axillary stalks, 1 in. long, bracteoles ovate, shorter than the bell-shaped calyx, petals with bearded stalked bases, carpels downy or not, netted; otherwise like the last species. This plant is much used as a demulcent.

**Abutilon graveolens,**

see Herbs, Erect, Alternate, Stipulate, Simple.

**Urena repanda,**

MALVACEÆ.

F. B. I. i. 330.

The Plains to  
1,000 ft.,

east of the Sutlej.

medium size, perennial, much branched, covered with star-shaped hairs; leaves lower 2-2 $\frac{1}{2}$  in. long, roundish, somewhat lobed, base heart-shaped, slightly toothed with rounded notches, upper leaves lanceolate, stipules linear; flowers  $\frac{2}{3}$  in., pink, in racemes, ultimately in leafless clusters, bracteoles 5,  $\frac{1}{4}$ - $\frac{1}{3}$  in., awl-shaped, united below into a strongly ribbed cup, nearly leathery, larger than the calyx, sepals 5, united half way up, stamens united into a tube, styles 10; carpels 5, smooth, separating from the axis when ripe, each carpel one-seeded, seeds smooth.

**Hibiscus Trionum,**

MALVACEÆ.

F. B. I. i. 334.

The Plains to  
6,000 ft.

Kashmir.

Hazara.

Sutlej Valley

(Collett).

Baluchistan (Lace).

medium size, annual, more or less covered with star-shaped hairs; leaves 1-1 $\frac{1}{2}$  in., divided to the base (lower leaves sometimes circular, undivided), lobes usually 3, lobed and toothed, stalks 1-1 $\frac{1}{2}$  in. long, stipules awl-shaped, covered with long stiff hairs; flowers 1 $\frac{1}{2}$  in. diam., pale yellow with a dark purple centre, calyx 5-lobed to the middle, bell-shaped, inflated, lobes broad, short-pointed, nerves hairy, winding, afterwards purple, petals 5, united below and with the staminal tube, stamens united into a tube, styles 5, united half way up; capsule oblong, blunt, 5-celled, velvety, splitting from above into 5 valves, seeds many, kidney-shaped, velvety with star-shaped hairs.

**Hibiscus surattensis,**

see Prostrate Herbs, Alternate, Stipulate, Lobed.

## HERBS, UPRIGHT, WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNITED.

**Hibiscus Solandra,**

MALVACEÆ.

F. B. I. i. 336.

The Plains to  
5,000 ft.

Simla.

Sutlej Valley

(Collett).

medium size, annual, velvety or hairy, slightly branched, leaves 1-2½ in. across, heart-shaped at the base, short-pointed, coarsely toothed, hairy on both sides, lower leaves long-stalked, ovate or circular, more or less 3-lobed, upper deeply 3-lobed, lobes narrowly oblong, stipules bristly, flowers ½-¾ in. diam., yellow, white or pink on solitary, jointed axillary stalks, 1½ in. long, in a loose leafless terminal raceme, sepals united below, triangular, short-pointed, petals broad at the tip, notched, capsule ovoid, pointed, hairy at the top, not longer than the calyx, seeds blackish; otherwise like *Hibiscus Trionum*.

**Hibiscus vitifolius,***Ban kapas.*

MALVACEÆ.

F. B. I. i. 338.

The Plains to  
2,000 ft.

large, annual or biennial, hairy, slightly prickly, branches many, leaves 1-4 in. diam., 3-7-lobed, lobes short- or long-pointed, smooth or felted on both surfaces, toothed, stalks 2½ in., stipules very small, bristly, flowers 2½ in. diam., yellow with a purple centre, drooping, on axillary, solitary or clustered at the end of branches, stalks jointed, bracteoles 5-8, bristly, linear, not united and shorter than the calyx, sepals united half way up, lanceolate, velvety, petals two or three times as long as the sepals, capsule hairy, beaked, 5-winged, shorter than the sepals, seeds brown, tubercled; otherwise like the last species. The bark yields a strong silvery fibre.

**Hibiscus Gibsoni,**

MALVACEÆ.

F. B. I. i. 339.

The Plains.

medium size, perennial, branches bristly or prickly, leaves 1-3 in., deeply divided into lobes, lobes oblong-lanceolate, toothed, smooth or hairy, stalk as long as the blade, flowers twice the length of the bracteoles, yellow with a purple centre or all purple, on solitary axillary stalks, bracteoles ununited, linear, prickly, curving over the calyx, sepals united below, lanceolate, staminal tube half covered with anthers, capsule ovoid, pointed, valves bristly, seeds soft with scattered hairs; in other points like the last species.

**Hibiscus Sabdariffa,  
Rozelle or Red  
sorrel,***Patwa.*

MALVACEÆ.

F. B. I. i. 340.

The Plains,  
cultivated.

large, annual, smooth, stem purplish, leaves 2-3 in., wedge-shaped at the base, usually 3-5-lobed, lower leaves sometimes not lobed, lobes lanceolate or oblong, glandular beneath, toothed, stalk 2 in., reddish, stipules ½ in. long, linear, short-pointed, flowers 2½ in. diam., yellow or purple on solitary axillary short stalks, thickened at the top, bracteoles 8-12, united to the base of the calyx, calyx enlarging in fruit, sepals united below the middle into a fleshy bristly purple cap, capsule ovoid, pointed, hairy, shorter than the calyx, seeds nearly glabrous, kidney-shaped;

## HERBS, ERECT, WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNITED.

otherwise like the last species. This plant is cultivated for the sake of the edible calyx, from which an acid jelly is prepared ; it is used as a preventive of scurvy. The stems supply a strong silky fibre.

**Hibiscus ficulneus,**  
*Dula, kapasiya.*  
MALVACEÆ.  
F. B. I. i. 340.  
The Plains.

very large, annual, branches usually covered with broad-based sharp prickles, leaves  $2\frac{1}{2}$ -4 in., 5-7-lobed, with wide sinuses between the lobes, lobes broad at the tip, narrow at the base, unequally toothed, stalks  $2\frac{1}{2}$ -4 in., stipules  $\frac{1}{4}$  in. long, linear, hairy, soon falling off, flowers 1-2 in. diam., white with a pink centre, on stalks, half the length of the leaf stalks, the upper in a leafless raceme, bracteoles 4-6, broad, leafy, sepals united nearly entirely, tips thread-like, capsule  $1\frac{1}{2}$  in. long, ovoid, felted, with a curved beak, 5-angled, sticky when young, seeds round, softly hairy ; otherwise like the last species. This plant is often cultivated and supplies an excellent white fibre, the seeds are put into sweetmeats.

**Hibiscus pungens,**  
MALVACEÆ.  
F. B. I. i. 341.  
Himalaya,  
2-5,000 ft.  
(Duthie).

medium size, annual or perennial, branches bristly and dotted, leaves 5-8 in., heart-shaped, 7-lobed, lobes linear-lanceolate, long-pointed, deeply toothed, upper 3-lobed, stalk longer than the blade, stipules broadly lanceolate, upper ones linear, flowers 5 in. diam., yellow with a purple centre drooping on racemose stalks 1-2 in. long, bracteoles 1 in., enlarging in fruit, calyx 5-toothed, staminal column with anthers all the way up, capsule  $\frac{3}{4}$  in. long, slender, hairy ; otherwise like the last species.

**Hibiscus**  
**Abelmoschus,**  
**Musk mallow,**  
*Mushk dana, kasturi*  
*bhendi.*  
MALVACEÆ.  
F. B. I. i. 342.  
The Plains.

large, annual, hairy, branched ; leaves heart-shaped, ovate or usually 3-7-lobed, lobes oblong-lanceolate, short- or long-pointed, coarsely toothed, hairy above or below, stalk longer than the blade, stipule : small, awl-shaped, flowers 3-4 in. diam., yellow with a crimson centre, solitary often apparently terminal on stout curved stalks, bracteoles 6-12, linear, ununited, hairy, much shorter than the calyx, sepals united except the 5 tips, split down on one side, capsule  $2\frac{1}{2}$ -3 in., ovate, short-pointed, hairy, seeds kidney-shaped, with a musky scent ; otherwise like the last species. Musk is obtained from this plant and it also yields a strong fibre, it is, therefore, widely cultivated.

## HERBS, ERECT, WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNITED.

- Hibiscus cancelatus**, large, annual, bristly, root spindle-shaped, leaves 4-6 in., bluntly 5-angled, or rounded, round-toothed, hairy, upper leaves with angular lobes at the base, stalks 4 in., stipules linear, flowers 4-5 in. diam., drooping, yellow with a purple centre on stalks much shorter than the leaf-stalks, racemed at the ends of branches, bracts 2 at the base of each stalk, awl-shaped, bracteoles 10-18, 1½ in. long, linear, bristly, incurved, capsule ovoid, furrowed, very hairy, equal in length to the bracteoles, seeds many, kidney-shaped, black, not musky; otherwise like the last species.
- Hibiscus esculentus**, large, annual, roughly hairy, leaves 8-12 in. long, 3-5-lobed, heart-shaped at the base, lobes lanceolate-oblong, coarsely toothed, rough, stalk as long as the blade, reddish, stipules linear, flowers large, yellow with a crimson centre on stout short stalks, shorter than the leaf-stalks, bracteoles 8-10, linear, equal in length to the calyx, soon falling off capsule 6-10 in. long, oblong, tapering 6-8-ribbed, smooth or hairy, seeds many, round, with lines, smooth or hairy; otherwise like the last species. This plant is commonly cultivated, the unripe capsule and seeds are eaten as a vegetable. It yields a silky fibre which is used in paper-making.
- Pentapetes phœnicea**, large, annual, smooth or bearing a few scattered star-shaped hairs, branched; leaves 3-5 in., triangular or lanceolate with 2 lobes at the base, round-toothed, smooth above, star-shaped hairs on the veins beneath, stalk 1 in., stipules linear, equal in length to the stalk; flowers 1-1½ in., scarlet, open at noon, drop next morning, one or two together on jointed axillary stalks, bracteoles 3-5, thread-like, half the length of the calyx, soon falling off, sepals 5, lanceolate, united below, rough, petals 5, ovate with a broad tip, stamens 20, 15 fertile in 5 groups of 3 alternating with 5 unfertile (staminodes), style dividing above and twisted, stigmas 5, minute; capsule ½ in. diam., nearly round, bristly with star-shaped hairs, shorter than the persistent sepals, seeds 8-12, in 2 rows in each of the 5 cells, angular, rough. The capsule is used as a demulcent.
- Hibiscus esculentus**,  
**Okra**,  
*Bhindi, ramturai.*  
 MALVACEÆ.  
 F. B. I. i. 343.  
 The Plains to  
 4,000 ft.,  
 cultivated.
- Pentapetes  
 phœnicea**,  
*Dopahariya,*  
*gul dupaharia.*  
 STERCULIACEÆ.  
 F. B. I. i. 371.  
 The Plains, in wet  
 places.

HERBS, ERECT, WITH ALTERNATE STIPULATE LOBED LEAVES.

PETALS UNITED

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

- Artemisia Dracunculus**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia parviflora**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia scoparia**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia annua**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia maritima**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia vulgaris**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia Roxburghiana**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia vestita**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia laciniata**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia Moorcroftiana**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia Absinthium**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Artemisia Sieversiana**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

PETALS NONE.

- Rumex hastatus**, medium size, root perennial, stems and branches  
*Katambal, amlora.* grooved, smooth; leaves 1-2½ by ¾-2 in., stalked, 3-lobed,  
POLYGONACEÆ. 2 lobes projecting backwards, narrow, or not lobed,  
F. B. I. v. 60. broad'y triangular, long-pointed, stipules tubular, thin,  
Himalaya, not fringed, soon torn and disappearing; flowers very  
1-8,000 ft. small, green, often turning red, in circular distant clusters  
Kashmir. forming axillary racemes and terminal branching racemes,  
Simla (Collett). often crowded in fruit, calyx 6-lobed, in fruit circular,  
Hazara (Barrett). pink, not fringed, notched at both ends, petals none

HERBS, ERECT, WITH ALTERNATE STIPULATE LOBED LEAVES.

PETALS NONE.

stamens 6, styles 3. stigmas fringed; nuts sharply 3-angled, brown, enclosed in the 3 inner segments of the calyx. This plant is used as a pot herb.

**Rumex acetosa,**

POLYGONACEÆ.

F. B. I. v. 60.

Himalaya,  
8-12,000 ft.

Kashmir.

like the last species, but male and female flowers on separate plants, branches few, racemes leafless, outer sepals reflexed.

**Cannabis sativa,**

**Indian Hemp,**

*Bhang.*

URTICACEÆ.

F. B. I. v. 487.

The Plains to  
9,000 ft.

Hazara (Barrett).

Simla (Collett).

Baluchistan

(Hughes-Buller).

large, annual, stems grooved, felted, branches few, erect, slender, a common weed also cultivated; leaves 4-8 in. diam., opposite, stalked, much divided, upper leaves 1-5-lobed, lower 5-11-lobed, linear-lanceolate, middle lobe longest, coarsely and sharply toothed, long-pointed, wedge-shaped at the base, dark green above, downy below, stipules lateral, awl-shaped, bristly; flowers greenish-yellow, small, male and female on separate plants, males clustered in short, axillary, drooping branched racemes, calyx of 5 segments, segments boat-shaped, petals none, stamens 5, filaments long, thread-like, females crowded, sessile in the axils of leafy bracts, style-arms 2, thread-like; achenes  $\frac{1}{12}$  in., flattened, hard, enclosed in the persistent bracts. The intoxicating drugs, *ganja* and *charas*, consist of the resin obtained from the stem, young leaves and flowers, *bhang* is merely the dried leaves and achenes. Hemp is obtained from the fibrous stems.

**Girardinia**

**heterophylla,**

*Keri, kal, bhabar.*

URTICACEÆ.

F. B. I. v. 550.

Himalaya,  
5-8,000 ft.

Hazara (Barrett).

Simla (Collett).

large, annual, root perennial, stem and branches furrowed, covered with very long stinging hairs like a nettle; leaves 4-12 in. long and broad, long-stalked, 3-nerved from the base, broadly ovate, upper leaves 3-5-lobed, heart-shaped at the base, sharply toothed, stipules large, united, leaf-like, divided at the tip; flowers small, green, sessile, closely crowded, male and female on the same or separate plants, when male and female are together the male are in nearly cylindrical clusters on the lower part of the spike, and the female in clustered heads in the upper part, when separate, male in long slender often branched spikes, and female in short oblong spikes, in fruit becoming thick and densely bristly; male flowers, calyx of 4 sepals, petals none, stamens 4, female flowers calyx tubular with a small 3-toothed mouth, splitting in fruit, style long,

HERBS, ERECT, WITH ALTERNATE STIPULATE LOBED LEAVES.

PETALS NONE.

thread-like, persistent, stigma minute; capsule (achene) broad, flattened, ovate, black. This plant supplies an excellent fibre used in making fishing nets.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES

PETALS UNUNITED.

LEAFLETS TWO-THREE.

**Thermopsis barbata,**

LEGUMINOSÆ.

F. B. I. ii. 62.

Himalaya,

8-12,000 ft.

Kashmir.

Patarnala (Collett).

small to medium size, perennial, rootstock woody, stems tufted, branches many, densely shaggy; leaves of 3 sessile leaflets with leaf-like stipules at the base, each node appearing to have a tuft of simple leaves, leaflets smooth or hairy, lanceolate, 1-2 in., entire; flowers 1 in. long, dark purple, clustered in short axillary racemes forming a terminal branched raceme, bracts shaggy, united at the base or free, calyx top-shaped, 5-toothed, teeth lanceolate, 2 upper more or less united, 3 lower twice the tube, petals 5, all long-stalked, posterior (standard) largest circular, sides turned back, 2 wing petals ovate, outer part broader, 2 keel petals faintly joined, oblong-ovate, stamens 10, ununited, style thread-like, incurved; pod 1-2 by  $\frac{1}{2}$ - $\frac{5}{8}$  in., linear-oblong, short-pointed, seeds 2-6.

**Argyrobium roseum,**

LEGUMINOSÆ.

F. B. I. ii. 64.

The Plains to 6,000 ft.

Rawalpindi.

Kahuta (Douie).

Baluchistan

(Boissier).

small, perennial, thinly silky, branches slender, spreading or prostrate; leaves digitately compound, leaflets 3,  $\frac{1}{3}$  in., ovate with a broad rounded tip, base wedge-shaped, sessile, leaf stalk equal to or shorter than the leaves, stipules minute, linear, persistent, ununited; flowers  $\frac{3}{8}$  in., pink or yellow tinged with pink in 1-4-flowered leaf-opposed stalked racemes, longer than the leaves, calyx  $\frac{1}{4}$  in., 2-lipped, slit nearly to the base, 5 distinct teeth, 2 to the upper, 3 to the lower lip, smooth, lanceolate, petals 5, hardly longer than the calyx, standard oblong-circular, notched longer than the upper lip of the calyx, wings oblong, keel broadly oblong, blunt, shorter than the standard, stamens 10, all united, 5 longer with large anthers attached at the end, 5 shorter with smaller anthers attached in the middle, style long, thread-like, incurved; pod  $\frac{3}{4}$  in. long, erect, straight, narrow, flattened, seeds 10-15.

## HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## LEAFLETS TWO-THREE.

- Lotononis** small, annual, finely silky, branches many, spreading; leaves digitately compound, leaflets 3,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, lanceolate, rather fleshy, tip blunt, broad, with a minutely fine point, leaf stalks as long as the leaves, stipules minute, lanceolate, soon falling off; flowers  $\frac{1}{4}$  in., pale yellow or red, nearly sessile, 1-5, in the axils of most of the leaves, calyx  $\frac{1}{6}$ - $\frac{1}{5}$  in., silky, teeth 5, lowest tooth deepest, petals 5, a little longer than the calyx, standard narrow, wings shorter, narrower, keel petals firmly united, longer, tip sharply incurved, stamens 10, united in a tube, slit along the top, anthers as in the last species; pod linear-oblong, scarcely longer than the calyx, seeds 4-8.
- Leobordea**,  
LEGUMINOSÆ.  
F. B. I. ii. 64.  
Peshawar (Stewart).  
Baluchistan  
(Hughes-Buller).
- Crotalaria** see Prostrate Herbs, Alternate, Stipulate, Com-  
**medicaginea**, pound.
- Ononis hircina**, see Shrubs, Erect, Alternate, Stipulate, Compound.
- Trifolium pratense**, see Prostrate Herbs, Alternate, Stipulate, Compound.
- Trigonella** medium size, annual, cultivated, strongly scented,  
**Fœnum-græcum**, robust, nearly smooth; leaves pinnately compound, leaflets  
**Fenugreek**,  $\frac{3}{4}$ -1 in. long, lanceolate-oblong, tip broad, toothed, lateral  
*Methi*. nearly sessile, terminal stalked, nerves prominent, running  
LEGUMINOSÆ. into the teeth, stipules lanceolate, entire, long-pointed,  
F. B. I. ii. 87. united to the leaf stalk; flowers small, pale yellow, in short  
The Plains to racemes at the end of axillary stalk, often bristle-tipped,  
5,000 ft. calyx  $\frac{1}{4}$ - $\frac{1}{3}$  in., bell-shaped, teeth 5, distinct, linear, petals  
Kashmir. 5, narrow, standard and wings nearly equal, keel shorter,  
Hazara. blunt, a little longer than the calyx, stamens 10, upper  
Baluchistan (Lace). nearly or quite free, others united; pod 2-3 in. long, often  
curved, long-beaked, seeds 10-20. This plant is cultivated  
as a fodder crop and a pot herb, the seeds are used as a  
spice and as a carminative.
- Trigonella** see Prostrate Herbs, Alternate, Stipulate, Com-  
**polycerata**, pound.



## HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## LEAFLETS TWO-THREE.

- Trigonella Emodi**,  
LEGUMINOSÆ.  
F. B. I. ii. 88.  
Himalaya,  
4-11,000 ft.  
Kashmir.  
Marali.  
Baluchistan  
(Hughes-Buller).  
medium size, often robust, smooth, much branched, leaflets 3,  $\frac{1}{3}$ - $\frac{3}{4}$  in. long, ovate with a broad tip, deeply toothed, stipules linear, bristly, deeply toothed, flowers 4-6, rarely 12, racemes on stalks 1-2 in. long, terminating in a distinct point, calyx  $\frac{1}{8}$ - $\frac{1}{6}$  in., smooth, teeth linear, as long as the tube, corolla twice or thrice as long as the calyx, pod  $\frac{1}{2}$ - $\frac{3}{4}$  by  $\frac{1}{6}$ - $\frac{1}{5}$  in., linear-oblong, smooth, straight, seeds 4-6; otherwise like the last described species.
- Trigonella corniculata**,  
LEGUMINOSÆ.  
F. B. I. ii. 88.  
The Plains to  
12,000 ft.  
Kashmir.  
Simla (Collett).  
very like the last species, but the calyx teeth are shorter, the pod is recurved instead of straight.
- Melilotus parviflora**,  
or **indica**,  
**Melilot**,  
*Sinji, metha*.  
LEGUMINOSÆ.  
F. B. I. ii. 89.  
The Plains to  
3,000 ft.  
Jangi.  
Mianwali District.  
medium size, annual, slender, leaves pinnately compound, leaflets  $\frac{1}{4}$ - $\frac{1}{2}$  in., ovate or oblong, only upper parts toothed, base entire, lateral leaflets nearly sessile, terminal one stalked, nerves prolonged to the teeth, stipules linear, long-pointed, united to the leaf stalk, apex notched; flowers  $\frac{1}{2}$  in., yellow, in long axillary racemes, 1 in. long, in fruit lengthened to 2 in., calyx  $\frac{1}{4}$  in., teeth 5, triangular, petals 5,  $\frac{1}{2}$  in., soon falling off; pod  $\frac{1}{2}$ - $\frac{1}{8}$  in., tipped by the style, one-seeded. This plant is a common weed in cornfields, and is sometimes cultivated as a fodder crop.
- Melilotus alba**,  
**White Melilot**,  
LEGUMINOSÆ.  
F. B. I. ii. 89.  
The Plains to  
13,000 ft.  
Simla (Collett).  
Mianwali District.  
very like the last species, but more robust and taller, racemes, flowers and pod are larger, and the latter is often 2-seeded. This plant is also used for fodder, and is fragrant when drying.

## HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## LEAFLETS TWO-THREE.

**Medicago falcata,**  
**Medick, non-such,**  
 LEGUMINOSÆ.  
 F. B. I. ii. 90.  
 Himalaya,  
 5-10,000 ft.  
 Mashobra (Collett).  
 Kashmir.

medium size, perennial, nearly smooth, branches many; leaves pinnately compound, leaflets 3,  $\frac{1}{2}$ -1 in. long, narrowly oblong, upper part toothed, base entire, lateral leaflets sessile, terminal one stalked, nerves prolonged to the teeth, stipules narrowly lanceolate, long-pointed, united to the leaf stalk; flowers  $\frac{1}{3}$  in., yellow, in axillary stalked racemes, calyx  $\frac{1}{8}$  in., bell-shaped, teeth 5, bristle-like, nearly equal, as long as the tube, petals 5, standard petal not stalked, keel shorter than the wing petals, blunt, corolla twice as long as the calyx, stamens 10, upper one free, others united, style smooth, incurved; pod  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, sickle-shaped, smooth, seeds 5-10.

**Medicago sativa,**  
**Lucerne,**  
*Alfalfa.*  
 LEGUMINOSÆ.  
 F. B. I. ii. 90.  
 The Plains to  
 5,000 ft.  
 Baluchistan  
 (Boissier).

very like the last species, of which it may be the cultivated variety, but is more erect, less branched, flowers purple or blue, and pods rough, twisted into a double spiral. This plant is widely cultivated as a fodder crop.

**Cyamopsis**  
**psoraloides,**  
*Kulthi, guar.*  
 LEGUMINOSÆ.  
 F. B. I. ii. 92.  
 The Plains.  
 Rawalpindi  
 (Aitchison).  
 Baluchistan  
 (Hughes-Buller).

medium size, annual, robust, covered with laterally attached grey hairs, stems 4-sided; leaves stalked, leaflets 3, 2-3 in. long, ovate, short-pointed, deeply toothed, stipules linear-bristle-like; flowers  $\frac{1}{4}$  in., purplish, in shortly stalked 6-30 crowded axillary racemes, bracts bristle-like, projecting beyond the buds, calyx  $\frac{1}{6}$ - $\frac{1}{5}$  in., tube oblique, teeth 5, unequal, lowest long, bristle-like, petals 5, just protruding from the calyx, soon falling off, standard and wing petals narrow, keel blunt, slightly incurved, stamens 10, united, style short, much incurved; pod  $1\frac{1}{2}$ -2 in. long, straight, thick, fleshy, erect, 3-keeled on back, seeds 8-12. This plant is cultivated as a vegetable and for fodder.

**Indigofera trifoliata,**

see Prostrate Herbs, Alternate, Stipulate, Compound.

**Indigofera trita,**

see Shrubs, Erect, Alternate, Stipulate, Compound.

**Taverniera**  
**nummularia,**

see Shrubs, Erect, Alternate, Stipulate, Compound.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS TWO-THREE.

- Ebenus stellata**, see Shrubs, Erect, Alternate, Stipulate, Compound.
- Lespedeza juncea**, see Shrubs, Erect, Alternate, Stipulate, Compound.
- Lespedeza Gerardiana**, see Shrubs, Erect, Alternate, Stipulate, Compound.
- Lespedeza elegans**, see Shrubs, Erect, Alternate, Stipulate, Compound.
- Lourea vespertilionis**, see Herbs, Erect, Alternate, Stipulate, Lobed.
- Uraria picta**, see Herbs, Erect, Alternate, Stipulate, Compound, Leaflets many.
- Uraria lagopus**, see Shrubs, Erect, Alternate, Stipulate, Compound, Leaflets 3.
- Uraria neglecta**, see Shrubs, Erect, Alternate, Stipulate, Compound, Leaflets 3.
- Zornia diphylla**,  
 LEGUMINOSÆ.  
 F. B. I. ii. 147.  
 The Plains to  
 5,000 ft.  
 Valleys below Simla  
 (Collett).  
 small, annual, stems several, slender, branches wiry, zigzag, hairy or velvety, tufted; leaves stalked, leaflets 2,  $\frac{1}{2}$ -1 in., lanceolate, leathery, dotted with black glands, stipules leaflike, lanceolate, produced down in a spur; flowers  $\frac{1}{4}$  in. long, yellow, sessile in erect axillary racemes, 1-3 in., each flower almost hidden in a pair of leaf-like fringed bracts, calyx minute, membranous, teeth 5, 2 upper united, 2 lateral very short, lowest equal to the upper, petals 5, standard round, keel sharply incurved, blunt, twice as long as the calyx, stamens 10, united into a tube, 5 longer with round anthers, alternating with 5 shorter, with oblong anthers, style smooth, incurved; pod flattened, minutely prickly, protruding from the bracts, upper margin nearly straight, lower deeply indented, joints 2-5, seeds 2-5.
- Rubus saxatilis**, see Prostrate Herbs, Alternate, Stipulate, Compound.
- Rubus Clarkei**, see Prostrate Herbs, Alternate, Stipulate, Compound.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS TWO-THREE.

**Potentilla  
argyrophylla,**  
ROSACEÆ.  
F. B. I. ii. 356.  
Himalaya,  
8-13,000 ft.  
Kashmir.  
Matiana, Narkanda  
(Collett).

large, perennial, rootstock very stout, stem velvety, robust; leaves digitately compound, leaflets 3, 2-3 in., sessile or stalked, ovate, coarsely toothed, green, and finely hairy above, white-felted beneath, main leaf stalk 2-3 in., stipules united to the leaf stalk-base, ovate-oblong, short-pointed; flowers  $\frac{3}{4}$ - $1\frac{1}{4}$  in. diam., yellow or dark purple, in terminal branched racemes, bracteoles 5, oblong, blunt, short- or long-pointed, calyx silky, persistent, lobes 5, alternating with the bracteoles, long-pointed, petals 5, heart-shaped with the notch outwards, stamens many, styles lateral short, persistent, carpels very many, small, crowded on a small dry receptacle; fruit is a head of many hard smooth achenes, covered by the overlapping calyx lobes; achenes one-seeded.

LEAFLETS MANY.

**Indigofera hirsuta,**  
LEGUMINOSÆ.  
F. B. I. ii. 98.  
The Plains to  
4,000 ft.

large, annual or biennial, densely hairy, with laterally attached hairs; leaves pinnate, 2-5 in., shortly stalked, leaflets 5-11, 1-2 in. long, opposite, ovate with a broad tip, membranous, grey-green, stipules bristle-like, feathered; flowers  $\frac{1}{5}$  in., red, in dense slender hairy axillary racemes, 2-6 in. long, bracts minute, calyx  $\frac{1}{3}$  in., densely velvety, teeth 5, bristle-like, long feathered, petals 5, not much longer than the calyx, soon falling off, standard ovate with a broad tip, keel petals united, straight, not beaked, spurred on each side near the base, stamens 10, upper free, the rest united, anthers tipped with a minute point, style smooth, incurved; pod  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, cylindrical, densely velvety, 6-8-seeded.

**Indigofera  
anabaptista,**  
LEGUMINOSÆ.  
F. B. I. ii. 102.  
The Plains.

small, annual, branches spreading, covered thinly with hairs like those of the last species, but always white, leaves pinnate, shortly stalked, leaflets 3-7, opposite,  $\frac{1}{2}$ -1 in. long, lanceolate with a broad tip, stipules bristle-like, persistent, flowers  $\frac{1}{6}$  in., scarcely longer than the calyx, in short, dense, 12-20-flowered racemes, calyx  $\frac{1}{8}$  in., silvery haired, teeth bristly, pod linear, reflexed; in other respects like the last species.

## HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## LEAFLETS MANY.

- Tephrosia purpurea**, medium size, perennial, much branched, stems slender, cylindrical; leaves 3-6 in., pinnate, shortly stalked, stipules linear-awl-shaped, leaflets 13-21, narrow, lanceolate with a broad tip, blunt, green, smooth above, silky beneath; flowers  $\frac{1}{4}$ - $\frac{3}{8}$  in., red, thinly silky, in leaf opposed loose-flowered racemes, 3-6 in. long, bracteoles minute, calyx  $\frac{1}{8}$ - $\frac{1}{6}$  in., silky, teeth 5, 2 upper teeth longer than the 3 lower, petals 5,  $\frac{1}{4}$ - $\frac{3}{8}$  in., standard circular, silky without, keel petals blunt, stamens 10, upper free, others united, style curved, smooth, tuft of hairs at the tip; pod  $1\frac{1}{2}$ -2 by  $\frac{1}{5}$  in., sessile, velvety, flat, seeds 6-10. This plant is used as a diuretic, tonic, and laxative.
- Sarpank, bansa-bansu.*  
LEGUMINOSÆ.  
F. B. I. ii. 112.  
The Plains to 6,000 ft.  
Simla (Collett).  
Baluchistan (Hughes-Buller).
- Tephrosia villosa**, small, perennial, stems zigzag, woody, finely downy with white flat-lying hairs; leaves 2-3 in. long, nearly sessile, stipules linear, ascending or reflexed, leaflets 13-19, grey green, nearly smooth above, silky below, narrowly lanceolate with the tip broad and often notched; flowers  $\frac{2}{3}$  in., red in racemes 6 or more inches long, lower flowers in distant separate clusters of stalks, bracts bristle-like, feathered, calyx  $\frac{1}{5}$ - $\frac{1}{4}$  in., very silky, teeth 5, bristle-like, lower longer than the calyx tube, petals 5, not much longer than the calyx, stamens and style as in the last species; pod 1-1 $\frac{1}{4}$  in. long,  $\frac{1}{6}$ - $\frac{1}{5}$  in. broad, densely velvety, curved, sharply bent down.
- Jayanti, jaintar.*  
LEGUMINOSÆ.  
F. B. I. ii. 113.  
The Plains.
- Tephrosia pauciflora**, very like the last species, but leaflets 5-9, flowers stalked in pairs in the axils of leaves.
- Jayanti, jaintar.*  
LEGUMINOSÆ.  
F. B. I. ii. 114.  
The Plains.  
Baluchistan (Lace).
- Sesbania aculeata**, large, annual, shrub-like, branches and under-surface of leaf mid-ribs armed with small hooked prickles; leaves 6-12 in., leaflets more numerous and smaller than those of *Sesbania ægyptiaca*, see Shrubs, leaflets 41-81, smooth; flowers  $\frac{3}{8}$ - $\frac{1}{2}$  in., pale yellow dotted with red, in stalked loosely 3-6-flowered racemes, calyx 5-toothed,  $\frac{1}{8}$  in., smooth, teeth short, triangular, petals 5, stalked, standard petal broad, keel blunt, stamens 10, upper free, others united, style thread-like, smooth, incurved; pod 6-9 in., linear, slightly curved, beaked, smooth, seeds many. This plant is often cultivated for its excellent fibre.
- Jayanti, jaintar.*  
LEGUMINOSÆ.  
F. B. I. ii. 115.  
The Plains.  
Baluchistan (Lace).

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

**Astragalus  
Falconeri**,  
LEGUMINOSÆ.  
F. B. I. ii. 120.  
Hazara  
(Winterbottom).

large, perennial, stems almost woody, zigzag, velvety, white when young; leaves 1-1½ in., mid-rib ending in a point or leaflet, stipules broad, leaflike, leaflets 13-17, ¼-½ in. long, lanceolate-oblong, with broad tips, blunt; flowers ½ in., lilac, in long-stalked few-flowered racemes, calyx ⅙ in., pouched, nearly smooth, teeth 5, very short, petals 5, wing petals short-pointed, equal to the keel petals, stamens 10, upper one free, others united, style incurved, smooth; pod ½-⅝ in., narrowed to both ends, stalk twice as long as the calyx, 4-6-seeded.

**Astragalus  
trichocarpus**,  
LEGUMINOSÆ.  
F. B. I. ii. 121.  
Eastern Punjab.  
Himalaya,  
5-8,000 ft.  
Simla (Collett).  
Dharmpur.

large, perennial, nearly smooth, branches straight, twiggy, much furrowed; leaves 2-4 in., nearly sessile, mid-rib ending in a point or leaflet, stipules minute, leaflets 31-41, ⅓-⅝ in., nearly blunt, pale green, covered with minute silvery hairs; flowers ⅓ in., lilac, crowded in stalked racemes, 3-4 in. long, bracts linear, minute, calyx ⅓ in., bell-shaped, oblique, smooth, teeth 5, triangular, petals 5, standard petal round, wings lanceolate, shorter than the keel petals, stamens 10, upper free, others united; pod ¾-1, stalked, oblong, velvety, seeds 4-6.

**Astragalus  
ciliolatus**  
LEGUMINOSÆ.  
F. B. I. ii. 129.  
Himalaya,  
6-9,000 ft.  
Kashmir.

medium size, perennial, stems hollow, smooth; leaves 6-9 in., mid-rib ending in a point or leaflet, leaflets 17-19, ½-1½ in., oblong, blunt, green, smooth, stipules ¼-½ in., lanceolate or triangular, free, persistent; flowers ¾ in., yellow tinged with lilac, crowded nearly all on one side of long-stalked racemes, bracts linear, shorter than the buds, calyx ⅔ in., tubular, oblique, teeth 5, bristle-like, feathered, petals 5, keel shorter than the standard and wing petals, broad, abruptly upcurved, stamens and style like those of the last species; pod 1 in., oblong, expanded, narrowed into a beak, covered with fine short spreading black hairs, stalk ¾ in., seeds 8-20.

**Astragalus  
frigidus**,  
LEGUMINOSÆ.  
F. B. I. ii. 130.  
Lahul.

medium size, perennial, stout, smooth; leaves 4-6 in. long, stipules ½-¾ in. long, ovate or lanceolate, sharp-pointed or blunt, free, persistent, leaflets 9-15, oblong, one or more inches long, opposite, thin, smooth above, with a bluish waxy gloss and a few hairs below; flowers ¾ in., bright yellow, arranged nearly all on one side of long-stalked racemes, calyx ⅔ in., tubular, with a few flat-lying hairs, teeth 5, minute, petals 5, standard longer than the wings

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

and keel, petals, stamens and style as those of the last species; pod 1 in., expanded, smooth, oblong, stalked, narrowed to both ends, 6-8-seeded.

FLOWERS, IN HEADS, IN THE NEXT SEVEN SPECIES OF ASTRAGALUS,  
AND TWO OF OXYTROPIS.

**Astragalus  
prolixus,**

LEGUMINOSÆ.  
F. B. I. ii. 121.  
The Plains.  
Lahore.

small, annual weed, clothed densely with flat-lying white hairs, very slender; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., distinctly stalked, stipules free, minute, lanceolate, leaflets 11-17, oblong, blunt,  $\frac{1}{8}$ - $\frac{1}{4}$  in., covered with the white hairs; flowers  $\frac{1}{10}$  in., yellow, 6-12 together in heads on stalks a little shorter than the leaves, calyx less than  $\frac{1}{12}$  in., densely matted, teeth 5, linear-bristle-like, nearly equal to the calyx tube, petals, stamens and style as above; pod  $\frac{1}{4}$ - $\frac{3}{8}$  in., sessile, expanded, densely velvety, straight, linear-oblong, 6-8-seeded.

**Astragalus  
Aitchisoni,**

LEGUMINOSÆ.  
F. B. I. ii. 121.  
Salt Range  
(Aitchison).  
Pindigheb.  
Rawalpindi District  
(Douie).

small, annual weed, slender, thinly covered with white hairs; leaves  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., distinctly stalked, stipules triangular, minute, leaflets 17-25,  $\frac{1}{2}$  in., alternate, wide apart, grey green, a few short horizontal white hairs; flowers  $\frac{1}{3}$  in., white with a purple tip, in a loose head of 4-6 flowers on a short stalk, bracts minute, calyx  $\frac{1}{6}$  in., bell-shaped, thinly white silky, teeth 5, linear or lanceolate, petals 5, standard longer than the wings and keel, stamens and style as those in the last species; pod  $1\frac{1}{2}$  in., slender, straight or slightly curved, slightly clothed with white hairs, 15-20-seeded, seeds very small.

**Astragalus  
contortuplicatus,**

LEGUMINOSÆ.  
F. B. I. ii. 122.  
The Plains.  
Baluchistan  
(Boissier).

small, annual weed, covered with short, soft, spreading white hairs; leaves 3-4 in., distinctly stalked, stipules small, free, lanceolate, leaflets 13-17, oblong-lanceolate with a broad and notched tip,  $\frac{1}{4}$ - $\frac{1}{2}$  in., wide apart, greenish, soft scattered hairs on both sides; flowers  $\frac{1}{3}$  in., yellow, in dense many-flowered heads on stalks, with few scattered soft hairs, much shorter than the leaves, calyx  $\frac{1}{6}$  in., with a few scattered soft hairs, teeth 5, bristle-like, feathered, petals 5, projecting a little from the calyx, wings lanceolate, short-pointed, shorter than the standard and keel, stamens and style like those in the last species; pod  $\frac{1}{2}$  in., cylindrical, much recurved, sausage-shaped, folded lengthwise, wrinkled, 20-30-seeded.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

**Astragalus  
melanostachys,**  
LEGUMINOSÆ.  
F. B. I. ii. 125.  
Himalaya,  
10-15,000 ft.  
Kashmir.  
Lahul.

medium size, perennial, fairly stout, smooth; leaves 1-3 in., distinctly stalked, stipules  $\frac{1}{4}$ - $\frac{3}{8}$  in., leafy, free, triangular with a sharp hard point, leaflets 13-15, oblong, green with a bluish waxy gloss, blunt or notched; flowers  $\frac{1}{5}$ - $\frac{1}{4}$  in., lilac or purple, in crowded heads, 1-3 in. long, stalks 2-6 in., covered with short spreading black and also white hairs, dense just below the head, calyx  $\frac{1}{6}$ - $\frac{1}{5}$  in., covered with black silky hairs, teeth 5, equal to the tube, nearly sessile, petals 5, contracted, keel and wings shorter than the standard, stamens and style like those of the last species; pod  $\frac{1}{8}$  in., oblong, sessile, black, silky, 2-seeded.

**Astragalus  
cashmirensis,**  
LEGUMINOSÆ.  
F. B. I. ii. 127.  
Kashmir,  
9-10,000 ft.  
(Falconer).

small, perennial, stems stout, shaggy with long hairs; leaves 3-4 in., distinctly stalked, stipules  $\frac{1}{2}$  in., lanceolate, thin, free, marked with lines, leaflets 29-33, oblong, blunt or short-pointed,  $\frac{3}{8}$ - $\frac{1}{2}$  in., crowded, dull, densely clothed at first with fine long hairs; flowers  $\frac{3}{4}$  in., yellow, in dense round heads on stalks 1-3 in., bracts  $\frac{1}{4}$ - $\frac{3}{8}$  in., linear, feathered, persistent, calyx  $\frac{3}{8}$ - $\frac{1}{2}$  in., thinly covered with long hairs, teeth 5, linear, petals 5, standard longer than the wings and keel, stamens and style like those of the last species; pod  $\frac{1}{2}$  in. linear-oblong, straight, sessile, finely velvety, hollowed down the keel, narrowed into a long beak, 6-8-seeded.

**Astragalus  
leucocephalus,**  
LEGUMINOSÆ.  
F. B. I. ii. 128.  
Himalaya,  
1-7,000 ft.  
Simla, Naldera  
(Collett).  
Muree (Douie).  
Sakesar, Salt Range.

small, perennial, densely covered with silvery white hairs, stems slender, short; leaves 1-3 in., stipules small, leaflike, united below the middle, leaflets  $\frac{1}{8}$ - $\frac{1}{4}$  in., oblong, 21-31, thick, blunt or nearly short-pointed, close to each other, covered with silvery white hairs; flowers  $\frac{1}{4}$  in., pale yellow, in small, very dense, oblong heads on densely white-felted stalks, 2-6 in., bracts lanceolate, longer than the buds, calyx  $\frac{1}{6}$  in., shaggy with white hairs, nearly sessile, teeth 5, bristle-like, equal to the calyx tube, petals 5, keel shorter than the standard and wings, stamens and style like those of the last species; pod  $\frac{1}{6}$  in., oblong, sessile, finely downy, 3-4-seeded.

**Astragalus Munroi,**  
LEGUMINOSÆ.  
F. B. I. ii. 128.  
Spiti, Lahul.

small, perennial, rootstock stout, long, woody, spindle-shaped, stems of a tuft of shoots from the base, stout, shaggy with dense spreading white hairs; leaves  $1\frac{1}{2}$ -2 in., stipules  $\frac{1}{2}$  in., linear or lanceolate, free, leaflets 19-21,  $\frac{3}{4}$ -1 in., lanceolate with a broad blunt tip, thinly covered with loose



## HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## LEAFLETS MANY.

white hairs ; flowers  $\frac{3}{4}$ - $\frac{7}{8}$  in., yellow, in few-flowered sessile axillary heads, calyx  $\frac{1}{2}$ - $\frac{5}{8}$  in., thinly velvety, teeth 5, linear, bristle-like, petals 5, nearly equal, stamens and style like those of the last species ; pods oblong, sessile, 1 in. long, inflated, 10-12-seeded.

**Oxytropis laponica,**

see Herbs, Unbranched, Alternate, Stipulate, Compound.

**Oxytropis cachemirica,**

LEGUMINOSÆ.  
F. B. I. ii. 139.  
Kashmir,  
8-10,000 ft.

small, perennial, rootstock woody, stem short, finely velvety ; leaves 1-2 in., stipules lanceolate or triangular, united below, leaflets 13-21, oblong-lanceolate,  $\frac{3}{8}$ - $\frac{1}{2}$  in., densely white silky ; flowers  $\frac{1}{2}$  in., yellow, rarely purple, in dense heads, 12-30-flowered, on long stalks, bracts distinct, lanceolate, calyx  $\frac{3}{8}$  in., densely white silky, teeth 5, linear, nearly equal, petals 5, standard longest, keel shortest with a distinct point, stamens 10, one free, others united, style abruptly incurved, beardless ; pod  $\frac{3}{8}$ - $\frac{5}{8}$  in., sessile, much inflated, shaggy with loose dense white silky hairs, round-oblong, 5-6-seeded.

**Oxytropis Meinshausenii,**

LEGUMINOSÆ.  
F. B. I. ii. 139.  
Himalaya,  
9-11,000 ft.  
Valley of  
Kishungunga.

small, perennial, stem distinct, at first thinly covered with soft scattered hairs ; leaves 3-4 in., stipules  $\frac{1}{4}$ - $\frac{1}{2}$  in., free, lanceolate or oblong, leaflets 17-31,  $\frac{1}{2}$ - $\frac{3}{4}$  in., oblong, blunt, green, slightly covered with long whitish hairs on both surfaces ; flowers  $\frac{3}{4}$  in., yellow, rarely purple, in a dense 12-20-flowered heads on erect stalks, 4-6 in., bracts  $\frac{1}{8}$ - $\frac{1}{4}$  in., linear, covered with scattered black hairs, calyx  $\frac{3}{8}$  in., tubular, thinly covered with horizontal black hairs, teeth 5, linear, feathered in black, petals, stamens and style like those in the last species ; pod  $\frac{1}{4}$ - $\frac{3}{8}$  in., oblong, expanded, straight, short-stalked, with a few silky black hairs, 6-8-seeded.

**Onobrychis Stewartii,**

LEGUMINOSÆ.  
F. B. I. ii. 141.  
The Plains.  
Hazara (Stewart).  
Rawalpindi  
(Aitchison).  
Kot Futteh Khan,  
Rawalpindi District  
Douie).

medium size, annual, stem slender, becoming smooth ; leaves 3-4 in., including stalk, stipules linear, minute, leaflets 9-11,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, lanceolate with broad lip, nearly short-pointed, wide apart, somewhat hairy ; flowers  $\frac{1}{2}$  in., red, in long-stalked axillary racemes, 6-9 in., bracts linear, minute, calyx  $\frac{1}{12}$  in., bell-shaped, silky, teeth 5, lanceolate, petals 5, standard broad, smooth, veined, wings short, keel blunt, stamens 10, all united, style thread-like, incurved ; pod  $\frac{1}{6}$ - $\frac{1}{5}$  in., kidney-shaped, expanded, faces woody, deeply honey-combed, edge armed with close minute spines, one-seeded. Douie found the stipules larger than minute, and the stamens not all united.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

**Hedysarum****astragaloides,**

LEGUMINOSÆ.

F. B. I. ii. 146.

Himalaya,

11-12,000 ft.

Kishtwar (Thomson).

Lahul (Jaeschke).

medium size, stems robust, becoming grey velvety at first; leaves, including the stalk, 4-8 in. long, leaflets 21-29,  $\frac{3}{4}$ -1 in., linear-oblong, blunt with a minute point, smoothish above, persistently grey velvety beneath; flowers  $\frac{3}{4}$  in., red, in very dense racemes 2-3 in. long, bracts linear thin projecting beyond the buds, calyx  $\frac{1}{4}$  in., bell-shaped, finely silky, teeth 5, petals 5, standard shorter than the keel, keel blunt, stamens 10, upper free, lower ones united, style thread-like, very long, abruptly bent; pod stalked, distinctly one or two-jointed, joints oblong, thin, with a crisped wing below, a less marked one above.

**Hedysarum****cachemirianum,**

LEGUMINOSÆ.

F. B. I. ii. 146.

Kashmir,

9-10,000 ft.

medium size, stem robust, smooth, grooved; leaves, including the stalk 6-12 in. long, leaflets 21-27,  $\frac{3}{4}$ -1 $\frac{1}{4}$  in. long, linear-oblong, thin, blunt, both sides green, becoming smooth; flowers  $\frac{3}{4}$ -1 in., red, in very dense racemes, 2-3 in., bracts linear, bristle-like, longer than the buds, calyx  $\frac{3}{8}$  in., downy, teeth 5, petals 5, stamens and style as in the last species; pod of 1 to 3 joints,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, oblong, smooth, both sutures with a distinct uncrisped wing.

**Hedysarum****laxiaorum,**

LEGUMINOSÆ.

F. B. I. ii. 146.

Himalaya,

9-12,000 ft.

Valley of

Kishengunga

(Winterbottom).

medium size, stems slender, firm, smooth, leaves, including stalk, 3-5 in., leaflets 21-31, linear-oblong, close, firm, nearly leathery, smooth above, grey, barely covered with grey velvet beneath, flowers  $\frac{5}{8}$ - $\frac{3}{4}$  in., red in loose racemes, 2-3 in., bracts minute, bristle-like, calyx  $\frac{1}{6}$  in., teeth 5, upper triangular, lower lanceolate, pod 3-4-jointed, oblong, firm, smooth, rather expanded, not more than  $\frac{1}{6}$  in. long; otherwise like the last species.

**Hedysarum****strobiliferum,**

LEGUMINOSÆ.

F. B. I. ii. 146.

Kashmir,

9,000 ft.

(Falconer).

small, stem robust, thickly covered with short horizontal whitish hairs; leaves, including the stalk, 6-8 in., leaflets 19-25, oblong-lanceolate, 1-1 $\frac{1}{2}$  in., blunt, smoothish above, somewhat white-silky beneath; flowers less than  $\frac{1}{2}$  in., yellowish, in dense racemes, 2-3 in., bracts overlapping, thin, dry, stiff, bristly, quite hiding the buds, calyx  $\frac{1}{6}$ - $\frac{1}{4}$  in., tubular, teeth 5, short, triangular with sharp hard points, petals 5, equal, stamens and style as in the last species.

## HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## LEAFLETS MANY.

**Hedysarum****microcalyx,**

LEGUMINOSÆ.

F. B. I. ii. 147.

Himalaya,

9,000 ft.

Kashmir.

Lahul.

medium size, stems stout, smooth, furrowed; leaves, including the stalk, 6-9 in., leaflets 11-13, oblong-lanceolate, 1-1½ in., wide apart, blunt, both sides green, smooth; flowers  $\frac{2}{3}$ - $\frac{3}{4}$ , bright red, in loose racemes, 2-4 in., calyx  $\frac{1}{2}$  in., bell-shaped, smooth, thin, teeth 5, minute, triangular with a hard sharp point, petals 5, keel longer than standard, stamens and style as in the last species; pods 2-3, jointed,  $\frac{1}{2}$ - $\frac{5}{8}$  in., oblong, thin, smooth, both sutures distinctly margined.

**Smithia sensitiva,****Oda-brini.**

LEGUMINOSÆ.

F. B. I. ii. 148.

The Plains.

medium size, annual, stems very slender, not bristly, much branched; leaves including stalk  $\frac{1}{2}$ -1 in., mid-rib bristly, stipules thin, dry, with processes at the base, leaflets 4-20,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, sensitive, oblong, blunt, bristly on the mid-rib beneath and along the almost straight margin; flowers  $\frac{3}{5}$  in., yellow, 1-6 in short-stalked axillary racemes, calyx  $\frac{1}{4}$ - $\frac{1}{3}$  in., 2-lipped, lips entire, short-pointed, with a few scattered pale yellow bristles, petals 5, standard circular, keel incurved, blunt, stamens 10, in 2 bundles of 5, style thread-like, incurved; pod of 4-6 joints, joints covered with minute nipple-like projections, folded together inside the calyx. This plant is eaten as a pot herb, and forms a useful fodder.

**Smithia geminiflora,**

LEGUMINOSÆ.

F. B. I. ii. 149.

Himalaya,

1-3,000 ft.

very like the last species, but with fewer leaflets, more bristles on the mid-ribs and margins of leaflets, and the flowers in pairs in the axils of leaves.

**Smithia ciliata,**

LEGUMINOSÆ.

F. B. I. ii. 150.

Himalaya,

3-6,000 ft.

Simla, Naldera

Coll ett).

like the last species, but flowers in dense shortly stalked one-sided axillary racemes, bracteoles leafy, oblong, with scattered bristles, calyx upper lip sharply cut off, lower lanceolate.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

***Æschynomene******indica*,**

LEGUMINOSÆ.

F. B. I. ii. 151.

The Plains to  
5,000 ft.

Kashmir.

Valleys below Simla  
(Collett).

Phalia, Gujrat

District (Douie).

large, annual, pale green, stem smooth, branches many, cylindrical, often slightly rough with tubercles; leaves 2-3 in., stalk sticky with glands, stipules linear-lanceolate, long-pointed, with processes at the base, soon falling off, leaflets 41-61, sensitive, very small, upper ones smallest, overlapping, alternate, narrowly oblong, rounded with a small point; flowers  $\frac{1}{3}$  in., yellow, often with purple streaks, in many, sticky, axillary racemes, bracts small, lanceolate, fringed with hairs, calyx  $\frac{1}{8}$  in., smooth, deeply 2-lipped, lips faintly toothed, petals 5, standard circular, erect, keel nearly straight, blunt, stamens 10 in 2 bundles of 5, style incurved, smooth; pod 1-1 $\frac{1}{2}$  in. long, linear, stalked, flattened, smooth, straight or rather curved, upper suture straight, lower indented, joints 6-10, smooth or finally rough with nipple-like processes, one seed in each joint. The allied species, *Æ. aspera*, yields the pith (scla) from which sun hats are made.

***Uraria picta*,***Dabra, deter.*

LEGUMINOSÆ.

F. B. I. ii. 155.

The Plains to  
6,000 ft.

large, perennial, stem finely downy, robust, branches few; leaves 10-12 in. long, lowest simple or of 3 leaflets, rounded or oblong, upper of 5-9 leaflets, mid-stalk downy, stipules  $\frac{1}{2}$  in., lanceolate, long-pointed, leaflets 4-8 in., linear-lanceolate, leathery, smooth, clouded with white above, net-veined, minutely velvety beneath; flowers  $\frac{1}{4}$  in., purple, in dense cylindrical racemes, 6-12 by  $\frac{5}{8}$ - $\frac{3}{4}$  in., bracts brown, thin, soon falling off, minor flower stalks bristly, abruptly incurved at the tip after flowering, calyx  $\frac{1}{5}$  in., tube very short, teeth 5, 2 upper short, lower long, bristle-like, petals 5, standard broad, wings united to the keel, stamens 10, upper one free, lower ones united, style thread-like, sharply bent; pod of 3-6 joints, joints small, swollen, one-seeded, polished, often placed face to face. The seeds are used to cure ulcers in the mouth.

***Cicer arietinum*,****Gram or Chick-pea,***Chana.*

LEGUMINOSÆ.

F. B. I. ii. 176.

The Plains to  
2,000 ft.Commonly  
cultivated.

small, annual, sticky, much branched; leaves 1-2 in., stipules small, obliquely ovate, with a few long teeth, strongly veined, leaflets 13 or so,  $\frac{1}{4}$  in. long, ovate or oblong, deeply cut, strongly veined; flowers  $\frac{3}{8}$  in., pink, blue or white, solitary, axillary on stalks  $\frac{1}{2}$ - $\frac{3}{4}$  in., calyx  $\frac{1}{4}$ - $\frac{1}{3}$  in., teeth 5, linear, nearly equal, petals 5, standard broad, longer than the wings and keel, stamens 10, upper free, lower united, style incurved, beardless; pod  $\frac{3}{4}$ -1 in., swollen, velvety, sessile, narrowed into the persistent style, seeds 2,

## HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## LEAFLETS MANY.

nearly round, reddish-brown, black or white, indented, beaked. This plant is eaten as a vegetable, a food-grain and as a food for horses. The dew on the leaves contains oxalic, acetic and malic acids and is collected and used as vinegar and as a remedy for vomiting and dyspepsia.

**Vicia tetrasperma,**

LEGUMINOSÆ.  
F. B. I. ii. 177.  
Himalaya,  
6-8,000 ft.

medium size, annual, stem smooth, very slender, much branched; leaves  $\frac{1}{2}$ -1 in., ending in twisted tendrils, stipules large, pointed, often toothed, base ending in a pointed lobe, leaflets 6-12, narrowly oblong,  $\frac{1}{3}$ - $\frac{3}{4}$  in., blunt or short-pointed; flowers  $\frac{1}{4}$  in., pale blue, in pairs or rarely solitary, on axillary stalks equal in length to the leaves, calyx  $\frac{1}{12}$  in., bell-shaped, teeth 5, 3 lower the longest, petals 5, longer than the calyx, standard broad, erect, keel nearly straight, blunt, shorter than the wing petals, stamens 10, upper one nearly or quite free, others united, style short, incurved, velvety all round; pod  $\frac{1}{2}$  in., smooth, oblong, seeds 3 or 4.

**Vicia Griffithii,**

LEGUMINOSÆ.  
F. B. I. ii. 178.  
The Plains.  
Rawalpindi.  
Fatehjang  
(Aitchison).  
Baluchistan  
(Duthie).

medium size, perennial, stems slender, finely silky, thin, smooth, straggling, leaves 2 in., ending in twisted tendrils, stipules triangular, deeply cut, leaflets 12-16,  $\frac{1}{3}$ - $\frac{1}{4}$  in., wide apart, linear-oblong, thin, blunt, flowers  $\frac{5}{8}$  in., lilac, in 2-4 flowered, axillary racemes, as long as the leaves, calyx  $\frac{1}{6}$  in., rather silky, teeth 5, upper triangular, lower lanceolate, pod  $1\frac{1}{4}$  in., oblong, flat, smooth, veined, seeds 5-6; otherwise like the last species.

**Vicia sativa,**  
**Vetch. or Tare,**  
*Akra, ankra.*

LEGUMINOSÆ.  
F. B. I. ii. 178.  
The Plains to  
7,000 ft.

small to medium size, annual, stems slender, spreading or erect, rather downy, leaves pinnate ending in twisted tendrils, stipules small, obliquely lanceolate, deeply toothed; leaflets 8-12, those of upper leaves  $\frac{1}{2}$ -1 in., strap-shaped, of lower shorter, broader, sometimes deeply notched at the apex, flowers  $\frac{2}{3}$  in. or less, red-blue, usually solitary, rarely in pairs, axillary, sessile, calyx  $\frac{2}{3}$  in., teeth 5, lanceolate-awl-shaped, petals 5, twice the length of the calyx, style bearded below the stigma, pod 1-2 in., smooth, seeds 8-10; otherwise like the last species. A weed of cultivation, stated to be sometimes cultivated as a fodder plant.

**Vicia peregrina,**

LEGUMINOSÆ.  
F. B. I. ii. 178.  
The Plains.

small, annual, slender, smooth, spreading, leaflets 10-12, alternate or opposite,  $\frac{1}{2}$ -1 in. long; stipules minute, bifid with linear divisions, flowers  $\frac{1}{2}$  in., red-purple, solitary, on short axillary stalks, calyx  $\frac{1}{4}$  in., teeth lanceolate,

## HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## LEAFLETS MANY.

upper shorter, curved upwards, pods 1-1 $\frac{1}{4}$  in., linear-oblong, abruptly turned down, smooth, rather curved, seeds 5-6; otherwise like the last species.

**Vicia sepium,**  
LEGUMINOSÆ.  
F. B. I. ii. 179.  
Kashmir.

medium size, perennial, finely downy, leaflets oblong, abruptly ended, stipules small, deeply toothed, flowers  $\frac{2}{3}$  in., reddish, in 2-6-flowered, nearly sessile, one-sided, racemes only in the axils of upper leaves, calyx  $\frac{1}{3}$  in., smooth or downy, teeth triangular with a sharp hard point, pod 1 in., oblique, smooth, beaked, seeds 6-10; otherwise like the last species.

**Vicia narbonensis,**  
LEGUMINOSÆ.  
F. B. I. ii. 179.  
Peshawar (Vicary).  
The Park at  
Rawalpindi.

medium size, annual, stout, smooth or finely downy, leaflets 2 on the lowest leaves, 4-6 on the upper, 1-2 in. long, entire, obovate, stipules large, deeply cut, flowers  $\frac{7}{8}$  in., purple and white, in nearly sessile 2-6-flowered racemes, calyx  $\frac{3}{8}$  in., upper teeth triangular, lower lanceolate, pod 1 $\frac{1}{2}$ -2 in., downy, 6-seeded; otherwise like the last species.

**Vicia Faba,**  
**Broad bean,**  
*Bakla, chastang.*  
LEGUMINOSÆ.  
F. B. I. iii. 179.  
The Plains to  
8,000 ft.

very like the last species, but larger. It is cultivated widely as a vegetable and possibly may have once originated from *Vicia narbonensis*.

**Lens esculenta,**  
**Lentil,**  
*Masur dal.*  
LEGUMINOSÆ.  
F. B. I. ii. 179.  
The Plains to  
5,000 ft.  
Baluchistan  
(Hughes-Buller).  
Cultivated.

small, annual, softly velvety, branching from the base; leaves terminating in a bristle, stipules almost lobed at the base, leaflets 8-12, entire, lanceolate, often tipped with a small sharp point, sessile; flowers pale purple in 2-4-flowered racemes on stalks equal to the leaves, the end of the stalk extending beyond the flowers, calyx teeth linear, silky, petals 5, standard broad, wings joined to the keel, shorter than the wings, stamens 10, united into a tube with an oblique mouth, style abruptly bent, bearded on its inner face; pod  $\frac{1}{2}$  in. long, oblong, flattened, smooth, seeds 2, grey, with minute spots, flattened. The seed is much eaten, the young pod also as a vegetable, the dry leaves and stalks are used as fodder.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

**Lathyrus altaicus,**

LEGUMINOSÆ.

F. B. I. ii. 180.

Himalaya,

6-8,000 ft.

Chenab Valley

(Royle).

small, perennial, smooth; leaves 2-3 in., terminated by a long tendril, stipules lanceolate with a tail-like point, slightly toothed, leaflets 6-8,  $\frac{1}{2}$ - $\frac{3}{4}$  in., broad, oblong, thin with a bluish waxy gloss; flowers  $\frac{3}{4}$  in., reddish, in 3-6-flowered loose one-sided racemes on stalks, 2-4 in. long, calyx  $\frac{3}{8}$  in., 5-toothed, upper teeth triangular, lower linear, petals 5, standard broad, keel shorter than the wings, stamens 10, upper free, others united, style flattened, bearded on the inner side; pod cylindrical or flattish.

**Lathyrus luteus,**

LEGUMINOSÆ.

F. B. I. ii. 180.

Himalaya,

8-10,000 ft.

Mashobra,

Mahasu, Matiana.

Hattu (Collett).

Salt Range.

medium size, perennial, smooth, leaves 3-5 in., ending in a bristle, stipules large, leafy, base 2-lobed, leaflets 6-8, 2-4 in. long, thin, short-pointed, pale green, flowers 1 in., yellow, in 6-12-flowered stalked racemes, equal to or longer than the leaves, calyx  $\frac{3}{8}$ - $\frac{1}{2}$  in., teeth 5, upper triangular, lower lanceolate, pod 2-3 in., linear, beaked, seeds many; otherwise like the last species.

**Phaseolus Mungo,**

see Prostrate Herbs, Alternate, Stipulate, Compound.

**Phaseolus calcaratus,**

see Prostrate Herbs, Alternate, Stipulate, Compound.

**Cassia occidentalis,**

see Shrubs, Erect, Alternate, Stipulate, Compound.

**Cassia Sophera,**

see Shrubs, Erect, Alternate, Stipulate, Compound.

**Cassia Tora or****obtusifolia,****Fetid Cassia,***Panwar, chakunda.*

LEGUMINOSÆ.

F. B. I. ii. 263.

The Plains to

5,000 ft.

Naldera.

Sutlej Valley

(Collett).

Kangra Valley.

large, annual, shrub-like, fœtid; leaves 2-4 in., stalked, stipules  $\frac{3}{4}$  in., linear, soon falling off, main leaf stalk grooved, conical gland between the lowest pair of leaflets, leaflets 6, 1-2 in. long, oblong-ovate with a broad triangular tip, obliquely rounded at the base, thin, green, smooth or rather velvety on both surfaces; flowers  $\frac{1}{2}$  in. long, bright yellow, in nearly sessile axillary pairs, calyx divided into 5 nearly to the base, lobes green, petals 5, nearly equal, stamens 10, 7 perfect, 3 minute, abortive, style incurved; pod 8-10 in., nearly cylindrical, divided by oblique partitions, sutures broad, seeds 30-35, flattened, brown, shining. The leaves, seeds and roots are used, the first as an aperient, the second as a substitute for coffee, and the third as a cure for dhobie's itch. It is a very common weed which flowers during the rains.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

**Cassia obovata**  
or **obtusata**,  
**Indian Senna**,  
LEGUMINOSÆ.  
F. B. I. ii. 264.  
The Plains.  
Delhi, Salt Range,  
Derajat.  
Baluchistan  
(Boissier).

medium size, annual or perennial, nearly smooth, branches angular, leaves 2-3 in., stalked, no gland between the leaflets, stipules lanceolate, persistent, leaflets 8-12,  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, oblong-ovate with a broad tip, rounded with a minute point, thin, a waxy bluish gloss beneath, flowers  $\frac{3}{4}$  in., pale yellow, in narrow few-flowered stalked racemes, 2-3 in., calyx segments blunt, smooth, stamens very unequal, pods  $1-1\frac{1}{2}$  in. long, shortly stalked, much curved, rounded at the ends, flexible, smooth, seeds 6-12, separated by very thin partitions; otherwise like the last species, and with the same properties.

**Cassia Absus**,  
*Chaksu, banar.*  
LEGUMINOSÆ.  
F. B. I. ii. 265.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).  
Dharmpur.

medium size, annual or biennial, covered with grey sticky hairs; leaves  $1\frac{1}{2}$ -3 in., long-stalked, a small gland on the main stalk between every pair of leaflets, stipules small, linear, persistent, short-pointed, leaflets 4, 1-2 in. long, oblong, blunt or nearly short-pointed, unequal at the base, hairy beneath as well as above; flowers  $\frac{1}{4}$  in. diam., red-yellow in few-flowered erect narrow short racemes, calyx of 5 narrow segments,  $\frac{1}{8}$ - $\frac{1}{6}$  in. long, lanceolate, bristly, petals 5, nearly equal with long stalks, veined, stamens 5, equal, perfect; pod  $1-1\frac{1}{2}$  in., strap-shaped, oblique, seeds 5, flattened, dark brown, shining. The seeds are purgative and used in ophthalmia.

**Cassia mimosoides**,  
var. **dimidiata**,

see Prostrate Herbs, Alternate, Stipulate, Compound.

**Spiræa Aruncus**,  
**Meadow sweet**,  
ROSACEÆ.  
F. B. I. ii. 323.  
Himalaya,  
8-10 000 ft.  
Hattu (Collett).

large, rootstock perennial, shrub-like, smoothish; leaves 6-12 in., 2- to 3-pinnate, primary and secondary leaf stalks long, leaflet-stalks short, stipules rudimentary, leaflets usually in threes, 1-3 in. long, ovate, sharply and irregularly toothed, narrowed into a tail-like tip; flowers  $\frac{1}{8}$ - $\frac{1}{4}$  in., many, white, one-sexual, male and female on different plants, in long slender velvety branching racemes, calyx persistent, lobes 5, oblong, ovate, petals 5, orbicular, stamens 20 or more, sometimes united below, styles 5 or more, nearly terminal; follicles 6 or more, swollen, smooth, shining, seeds few. This plant is often mistaken for *Astilbe rivularis*, but the latter has no petals.



HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

**Potentilla albifolia,**

ROSACEÆ.

F. B. I. ii. 347.

Himalaya,  
8-10,000 ft.

Hattu, Bhagi  
(Collett).

small, perennial, rootstock stout, stems several, slender, zigzag, velvety, branched; leaves 2-4 in., pinnate, stalk very slender, stipules  $\frac{1}{2}$ - $\frac{3}{4}$  in., sheathing, loose, brown, short-pointed, united for half their length to the stalk, leaflets 5-9,  $\frac{1}{4}$ -1 in., ovate, deeply and sharply toothed, lateral leaflets diminishing from the uppermost pair downwards, green, velvety above, white-felted beneath; flowers  $\frac{1}{4}$  in. diam., yellow, solitary on slender axillary stalks 1-2 in., calyx persistent, tube shallow with 5 lobes, alternating with 5 bracteoles, white-felted, lobes triangular, bracteoles linear-oblong, petals 5, oblong, shorter than the calyx lobes, stamens 5, styles many; achenes many, forming a head, hairy, covered by the calyx lobes, large, deeply furrowed, receptacle felted.

**Potentilla fulgens,**

ROSACEÆ.

F. B. I. ii. 349.

Himalaya,  
6-9,000 ft.

Simla.  
Mashobra (Collett).

small, perennial, rootstock stout, stem leafy, softly silky, leaves 2-8 in., pinnate, stalk stout, lower stipules dry, thin, upper leafy, toothed or lobed, leaflets many, in large and small pairs, alternately decreasing in size from above downwards, ovate, sharply toothed, terminal leaflets 1-1 $\frac{1}{2}$  in., green, hairy above, silvery felted beneath, flowers  $\frac{1}{2}$  in. diam., yellow, crowded in terminal clusters or branched racemes, bracteoles quite entire or 2-3-fid, calyx silvery, hairy, lobes ovate, short-pointed, petals orbicular, ovate with a broad tip, stamens many, styles short, slender, ventral, achenes small, smooth; otherwise like the last species.

**Potentilla Clarkei,**

ROSACEÆ.

F. B. I. ii. 351.

Himalaya,  
7,000 ft.

Srinagar.  
Kashmir (Clarke).

small, perennial, rootstock woody, stem stout, ascending, leafy, rough with long spreading hairs, leaves 1-2 in., covered with spreading hairs, stipules on the stem, leafy large, half ovate, entire or toothed, leaflets  $\frac{1}{2}$ -1 in., 5-7, ovate with a broad tip, very coarsely round-toothed  $\frac{1}{3}$  way down, sessile, close together, flowers  $\frac{1}{2}$  in. diam., yellow, stalked, very stiff in clusters with very spreading leafy branches and bracts, calyx lobes short-pointed, petals ovate with a broad tip, stamens many, styles slender, terminal, achenes many, large, minutely wrinkled on a raised hairy receptacle; otherwise like the last species.

**Potentilla sericea,**

ROSACEÆ.

F. B. I. ii. 354.

Himalaya,  
9-17,000 ft.

Kashmir.

small to medium size according to elevation, rootstock erect, very stout, stems many, white, densely silky-felted, leaves 1-6 in., crowded, about 1 in. broad, leaflets 5-11, oblong, silky on both surfaces, all cut nearly to the mid-rib, terminal leaflets radiating, lateral, opposite and alternate, flowers  $\frac{1}{4}$ - $\frac{3}{4}$  in. diam., yellow, on flowering stems, dense-

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

felted, in many- or few-flowered clusters or solitary, calyx lobes triangular-ovate or lanceolate, bracteoles narrowly oblong, blunt, petals orbicular, ovate with a broad tip, styles terminal, achenes many, smooth; otherwise like the last species.

**Potentilla nepalensis**,  
*Rattan jot.*  
ROSACEÆ.  
F. B. I. ii. 355.  
Himalaya,  
5-9,000 ft.  
Simla (Collett).  
Murree.

medium size, perennial, stout or slender, softly hairy to nearly smooth, stem branched, leafy, leaves digitately compound, radical, 12 by 3 in., long-stalked, leaflets 5, 1-3 by  $\frac{1}{4}$ - $1\frac{1}{4}$  in., sessile, stem stipules  $\frac{3}{4}$ -1 in., ovate or oblong, lower entire, upper lobed, leaflets ovate with a broad tip or rounded, coarsely toothed, green, flowers  $\frac{2}{3}$ -1 in. diam., purple, stalked in forked branching racemes, calyx lobes short-pointed, bracteoles blunt, petals reversed, heart-shaped, longer than the calyx lobes, achenes very many, minute, wrinkled on a round hairy receptacle; otherwise like the last species. A red dye is obtained from the root.

**Potentilla kashmirica**,  
ROSACEÆ.  
F. B. I. 355.  
Kashmir,  
7,500 ft.  
Nowgunge (Clarke).

very like the last species, but with shorter leaf stalks, shorter more deeply toothed leaflets, yellow flowers, more deeply wrinkled achenes, and broadly clustered flowers.

**Potentilla argentea**,

see Herbs, Unbranched, Alternate, Stipulate, Compound.

**Agrimonia Eupatorium**,

see Herbs, Unbranched, Alternate, Stipulate, Compound.

**Agrimonia pilosa**,

see Herbs, Unbranched, Alternate, Stipulate, Compound.

FLOWERS, MINUTE, IN UMBELS.

**Vicatia coniiifolia**,

see Herbs, Erect, Alternate; Exstipulate, Compound.

**Vicatia millefolia**,

see Herbs, Erect, Alternate, Exstipulate, Compound.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

LEAFLETS MANY.

FLOWERS, MINUTE, IN UMBELS.

- Elæosticta meifolia,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Apium graveolens,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Cicuta virosa,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Carum Carui,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Carum  
Bulbocastanum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Carum  
Roxburghianum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Carum  
copticum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Sium latijugum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Pimpinella saxifraga,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Pimpinella  
acuminata,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Pimpinella  
diversifolia,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Osmorrhiza Claytoni,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Chærophyllum  
villosum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Chærophyllum  
reflexum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Chærophyllum  
capnoides,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Chærophyllum  
cachemiricum,** see Herbs, Erect, Alternate, Exstipulate, Compound.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED,

LEAFLETS MANY,

FLOWERS, MINUTE, IN UMBELS,

<b>Scandix Pecten-</b> <b>Veneris,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Anthriscus</b> <b>nemerosa,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Seseli sibiricum,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Pyenocyela</b> <b>glauca,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Fœniculum vulgare,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Prangos</b> <b>pabbularia,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Ligusticum</b> <b>marginatum,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Selinum</b> <b>tenuifolium,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Selinum papyraceum,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Selinum Candolii,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Selinum vaginatum,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Pleurospermum</b> <b>Govanianum,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Pleurospermum</b> <b>Candolii,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Pleurospermum</b> <b>angelicoides,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Pleurospermum</b> <b>stylosum,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.
<b>Pleurospermum</b> <b>densiflorum,</b>	see Herbs, Erect, Alternate, Exstipulate, Compound.

HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED,

LEAFLETS MANY,

FLOWERS, MINUTE, IN UMBELS,

- Pleurospermum  
Brunonis,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Angelica glauca,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Archangelica  
officinalis,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Ferula Thomsoni,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Ferula Jäschkeana,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Peucedanum  
graveolens,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Peucedanum  
Thomsoni,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Heracleum  
Thomsoni,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Heracleum  
pinnatum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Heracleum  
cachemicum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Heracleum  
canescens** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Heracleum  
candicans,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Zosimia  
absinthifolia,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Coriandrum sativum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Cuminum Cyminum,** see Herbs, Erect, Alternate, Exstipulate, Compound.

## HERBS, ERECT, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## LEAFLETS MANY.

## FLOWERS, MINUTE, IN UMBELS.

- Daucus Carota,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Caucalis Anthriscus,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Caucalis leptophylla,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Caucalis latifolia,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Psfmmogeton biternatum,** see Herbs, Erect, Alternate, Exstipulate, Compound.

## PETALS NONE.

## LEAFLETS MANY.

- Thalictrum cultratum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Thalictrum reniforme,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Thalictrum javanicum,** see Herbs, Erect, Alternate, Exstipulate, Compound.
- Thalictrum, foliolosum,** see Herbs, Erect, Alternate, Exstipulate, Compound.

**Astilbe rivularis,**  
SAXIFRAGACEÆ.  
F. B. I. ii. 389.  
Himalaya,  
4-9,000 ft.  
Simla, Mashobra  
(Collett).  
Kashmir.  
Dalhousie.

large, rootstock perennial, hairy; leaves 6-18 in., irregularly 2-pinnate, stipules large, thin, united to the leaf stalk, sheathing, base of leaf stalk enlarged, hairy, leaflets 1-4 in., ovate, sometimes lobed, heart-shaped at the base, sharply toothed, long-pointed, smooth above, minutely bristly beneath along the mid-rib and nerves; flowers very small, greenish-yellow, sometimes one sexual in spicate racemes, forming a large terminal branching raceme, 12-24 in. long, stalk of raceme softly hairy, calyx bell-shaped, united to the base of the ovary, lobes 5, deeply divided, persistent, petals none, stamens 5, opposite the sepals, styles 2; capsule small, 2-beaked, seeds minute, many, narrow, tailed at both ends. This plant is sometimes mistaken for *Spiræa Aruncus*, whose fruit has 3-4 beaks.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

- Arabis glabra**, see Herbs, Erect, Unbranched, Exstipulate, Simple.
- Arabis nuda**, see Herbs, Erect, Unbranched, Exstipulate, Simple.
- Notoceras Canariense**,  
CRUCIFERÆ.  
F. B. I. i. 140.  
The Plains.  
Baluchistan  
(Stocks). small, covered with flat-lying grey hairs, stiff; leaves small, linear-oblong; flowers white, in short, many-flowered, leaf-opposed racemes, sepals 4, equal below, covered with flat-laid hairs, petals 4, small, linear-oblong, stamens 6, 4 inner longer in opposite pairs, style short, stigma round; capsule  $\frac{1}{4}$  in. long, nearly sessile, erect, linear-oblong, valves with a keel ending at the tip in a horn, seeds 4-8.
- Alyssum minimum**,  
CRUCIFERÆ.  
F. B. I. i. 141.  
Kashmir,  
4-6,000 ft.  
Baluchistan  
(Boissier). small, grey with star-shaped hairs or scales except on the petals and pods, stems and branches many; leaves linear-oblong or ovate with a broad tip, entire; flowers small, yellowish or white, in many-flowered bractless racemes, sepals 4, short, equal at the base, petals 4, linear, minute, with short stalks, stamens 6, 4 inner longer in opposite pairs, all winged, style very short, pointed; pod short, smooth, orbicular, slightly notched, seeds 2-10, flattened.
- Sisymbrium mollissimum**,  
CRUCIFERÆ.  
F. B. I. i. 147.  
Himalaya,  
8-10,000 ft.  
Kashmir. small to medium size, biennial or perennial, branched or not, smooth or hairy; leaves 1-2 in., lanceolate-ovate with a broad tip, shortly stalked, entire or toothed, stem leaves oblong, stem-clasping, base forked; flowers small, purple or white, in long racemes, minor flower stalks  $\frac{1}{4}$ - $\frac{1}{2}$  in., erect, slender, sepals 4, short or long, equal at the base, or 2-pouches, petals 4, long-stalked, stamens like the last species, style short, stigma 2-lobed; pod  $\frac{1}{2}$ - $1\frac{1}{2}$  in., erect, slender, straight, smooth, valves convex, veins indistinct, stalk slender, seeds many, 1-seriate, not margined,
- Sisymbrium Thalianum**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Sisymbrium rupestre**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Erysimum repandum**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

- Erysimum odoratum**, see Herbs, Erect, Unbranched, Alternate, Exstipulate, Simple.
- Diplotaxis Griffithii**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Moricandia tortuosa**, medium size, perennial, smooth, with a bluish-green  
 CRUCIFERÆ. waxy gloss, stem below thick, woody, sometimes twisted ;  
 F. B. I. i. 158. leaves lower 3-5 in., with a broad stalk, oblong with rounded  
 Salt Range. ends, thick, entire or toothed, stem-leaves sessile ; flowers  
 The Plains of large, pink, few, erect in a long raceme, sepals 4, erect,  
 N. W. F. Province lateral pouched below, petals 4, nearly twice as long as  
 (Fleming). the sepals, stalked, stamens as in the last species, style  
 short, pointed, conical ; pod linear, erect or turning up-  
 wards, beak  $\frac{1}{8}$  in., cylindric, one-seeded, valves convex,  
 with minute lines, margins prominent, seeds many, nearly  
 round, in one series.
- Thlaspi alpestre**, see Herbs, Erect, Unbranched, Alternate, Exsti-  
 pulate, Simple.
- Neslia paniculata**, medium size, annual, slender, branched above ;  
 CRUCIFERÆ. leaves  $\frac{1}{2}$ -2 in., lanceolate-oblong, stem leaves with forked  
 F. B. I. i. 164. bases ; flowers small, yellow, many, on long slender  
 Himalaya, spreading smooth stalks in branched racemes without  
 5-6,000 ft. bracts, sepals 4, spreading, equal at the base, petals 4,  
 West of the Beas entire, stamens as in the last-described species, style slender,  
 River. sharp ; pod nearly round, a little broader than long, slight-  
 Hazara (Stewart). ly flattened, smooth, seed solitary.  
 Kashmir.  
 Baluchistan  
 (Boissier).
- Euclidium syriacum**, small, annual, velvety with forked hairs, branched,  
 CRUCIFERÆ. branches stout, stiff when old ; leaves 1-4 in., oblong-  
 F. B. I. i. 164. lanceolate, stalked ; flowers small, white, in terminal or  
 The Plains, west of lateral bractless racemes, sepals 4, petals and stamens  
 the Jhelum, to as in the last species ; pod  $\frac{1}{8}$  in., nearly round, erect, nearly  
 6,000 ft. sessile, hairy, pitted, crowned by an awl-shaped oblique  
 Peshawar, beak, septum thick, seeds 2, oblong.  
 Rawalpindi,  
 Kashmir,  
 Baluchistan  
 (Boissier).



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

**Physorhyncus  
brahvicus,**

see Shrubs, Alternate, Exstipulate, Simple.

**Chorispora tenella,**  
CRUCIFERÆ.  
F. B. I. i. 166.  
The Salt Range,  
Kashmir, 5-6,000 ft.small, annual, hairy or rough glandular, rarely smooth, much branched; leaves oblong-lanceolate or broad, narrowed to the base, shortly stalked, lower leaves sometimes lobed; flowers small, purple, on short stalks in long bractless racemes, sepals 4, erect, lateral pouched below, petals 4, stamens as in the last species; pod  $1\frac{1}{2}$  in., hardly constricted, ascending, curved, slender, cylindrical, seeds many, 2-series.**Cleome papillosa,**  
CAPPARIDACEÆ.  
F. B. I. i. 168.  
The Plains, west of  
the Ravi.  
Karana Hills  
(Douie).  
Baluchistan  
(Boissier).small to medium size, strongly scented, hairy, often glandular; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., ovate-heart-shaped, penninerved, blunt, with nipple-shaped projections and flattened stiff hairs, lower long-stalked, upper nearly sessile; flowers very small, pinkish to dirty yellow in racemes lengthening in fruit, with oblong small bracts, sepals 4, spreading, petals 4, stamens 6, sessile, style short; capsule  $1-1\frac{1}{2}$  in., nearly sessile, very slender, 2-valved, seeds many, kidney-shaped, granular.**Cleome  
quinquenervis,**  
CAPPARIDACEÆ.  
F. B. I. i. 168.  
The Plains, west of  
the Ravi.small to medium size, woody, stiff, sticky, strongly scented; leaves 1 in. diam., nearly circular, blunt or short-pointed, base heart-shaped or rounded, stalks and edges glandular, softly velvety, palmately 5-nerved; flowers small in racemes, lengthened in fruit, bracts leafy, nearly sessile, sepals and petals as in the last species, stamens 4 or 6; capsules  $1-1\frac{1}{2}$  by  $\frac{1}{8}$  in., sharp at both ends, narrowly oblong, sessile, hairs short, stiff, with broad bases with soft black glandular hairs, seeds minute, smooth.**Linum  
usitatissimum,  
Flax, linseed,  
Alsi.**  
LINACEÆ.  
F. B. I. i. 410.  
The Plains to  
6,000 ft.  
Baluchistan  
(Hughes-Buller).medium size, annual, stem cylindrical; leaves narrow, nearly 3-nerved; flowers 1 in. diam., blue, in broad terminal clusters, sepals 5, ovate, long-pointed, 3-nerved, margins white, without glands, petals 5, twisted, soon falling off, stamens 5, alternating with 5 small staminodes, united below, styles 5; capsule 5-celled, scarcely longer than the sepals, seeds 10, brown, flattened, polished. This plant is widely cultivated for its seeds, from which linseed oil (*alsi ka tel*) is extracted. In India it is not grown for the fibre, flax, from which in Europe linen is woven.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

**Linum perenne,**  
LINACEÆ.  
F. B. I. i. 411.  
Himalaya,  
9-13,000 ft.  
Lahul (Jaeschke).  
Baluchistan  
(Boissier).

medium size, perennial, stems many, leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., all lanceolate, or lower oblong blunt and upper linear short-pointed, flowers 1 in. diam., blue, in few-flowered racemes, sepals ovate with glandular margins, capsule much larger than the white margined sepals; otherwise like the last species.

**Linum strictum,**  
LINACEÆ.  
F. B. I. i. 411.  
The Plains,  
1-6,000 ft.  
Peshawar,  
Rawalpindi,  
Baluchistan  
(Lace).

small, annual or biennial, slender, smooth or slightly velvety, leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., linear, linear-oblong, or lanceolate, long-pointed, 1-nerved, flowers  $\frac{1}{4}$ - $\frac{3}{4}$  in. diam., yellow, shortly stalked in flat-topped terminal clusters, sepals with long green rigid points, margins glandular, capsule  $\frac{1}{4}$  in., round, much shorter than the sepals; in other characters like the last species.

**Linum mysorense,**  
LINACEÆ.  
F. B. I. i. 411.  
Himalaya,  
3-5,000 ft.  
Dharmpur.

small, annual, smooth, slender, leaves  $\frac{1}{3}$ - $\frac{2}{3}$  in., oblong with rounded ends, or short-pointed, 3-nerved, flowers  $\frac{1}{4}$  in. diam., yellow, in large branching flat-topped clusters made up of one-sided racemes, sepals short, petals longer than the sepals, stamens and styles united below, stigmas round, capsule round, equal to the sepals; otherwise like the last species.

**Crotalaria albida,**

see Shrubs, Erect, Alternate, Exstipulate, Simple.

**Sedum Rhodiola,**  
CRASSULACEÆ.  
F. B. I. ii. 417.  
Himalaya,  
12-17,000 ft.  
Kashmir.

small to medium size, rootstock perennial, thick, smelling of roses, crowned with scales, stems thick; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, ovate with broad tip or broadly oblong, often toothed towards the tip, green with a waxy gloss; flowers small, male or female, yellow, in close terminal often branched clusters, calyx 5, often 4-fid, lobes narrow, oblong, petals 5, often 4, long in males, short in females, stamens twice as many as the petals, long, projecting, styles 5-4, short, recurved in fruit; carpels 5-4,  $\frac{1}{6}$  in. long, not narrowed at the base, seeds many, oblong, with rounded ends, flattened.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

- Sedum tibeticum**, small, smooth, leaves  $\frac{1}{3}$ - $\frac{1}{2}$  in., loosely overlapping, upper oblong, lower often ovate, flowers often in fives as petals and sepals, pink or purple, sepals on fruit, triangular, long-pointed; other characters like the last species.  
 CRASSULACEÆ.  
 F. B. I. ii. 418.  
 Himalaya,  
 12-14,000 ft  
 Lahul  
 (Jaeschke).
- Sedum quadrifidum**, very like the last species, but stems many, leaves nearly cylindrical, flowers red, often with 4 petals and sepals, the latter oblong, styles short, sometimes straight.  
 CRASSULACEÆ.  
 F. B. I. ii. 418.  
 Himalaya,  
 11-18,000 ft.  
 Kashmir.
- Sedum elongatum**, like the last species, but larger, leaves  $\frac{3}{4}$ -2 in. oblong, narrowed at the base or oblong with rounded ends, sessile, clusters large, sepals lanceolate-linear, petals black-purple, lanceolate, carpels hardly  $\frac{1}{4}$  in. each.  
 CRASSULACEÆ.  
 F. B. I. ii. 419.  
 Himalaya,  
 10-12,000 ft.  
 Kashmir.
- Sedum linearifolium**, small, smooth or nearly so, rootstock thick, stems tufted, leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., sessile, narrowly oblong, rarely a few teeth, blunt, radical leaves few, stem leaves many, flowers  $\frac{1}{3}$  in., white, in 2-8-flowered clusters, sepals oblong-lanceolate, petals  $\frac{1}{2}$  in. long, broadly lanceolate; otherwise like the last species.  
 CRASSULACEÆ.  
 F. B. I. ii. 420.  
 Himalaya,  
 7-10,000 ft.  
 Matiana.  
 The Chor  
 (Collett).  
 Jaku, Simla.
- Sedum Jaeschkei**, small, annual, branches crowded, leaves, lower crowded, upper scattered or crowded at the end of branches, oblong, prolonged into the stalk, short-pointed, flowers nearly  $\frac{1}{2}$  in. long, golden yellow, solitary at the end of branches or in small plants, clustered, sepals  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, green, fleshy, petals twice the sepals, lanceolate, blunt, stamens half as long as the petals, follicles erect in fruit, 5; otherwise like the last species.  
 CRASSULACEÆ.  
 F. B. I. ii. 421.  
 Lahul,  
 Kangra Dist.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

***Sedum multicaule*,**

CRASSULACEÆ.

F. B. I. ii. 422.

Himalaya,

4-7,000 ft.

Simla (Collett).

Kashmir.

small, smooth, much divided from the base; leaves  $\frac{1}{2}$ -1 in. long, linear-oblong, short-pointed, flowers yellow, nearly sessile in clusters, follicles spreading in fruit, not rough, seeds rough, ovate with a broad top; otherwise like the last species.

***Drosera peltata*,**

var. *lunata*,

*Chitra*.

DROSERACEÆ.

F. B. I. ii. 424.

Himalaya,

4-8,000 ft.

Simla (Collett).

small to medium size, perennial, sometimes unbranched, slender, glandular; leaves  $\frac{1}{4}$  in. across, semi-lunar, covered above and on margins with sticky glandular hairs, radical leaves smaller, soon falling-off; flowers  $\frac{1}{4}$  in. diam., white, in terminal branching racemes, calyx 5-toothed, glandular, petals 5, stamens 5, styles 3, stigmas minutely fringed; capsule 3-valved, enclosed in the calyx and petals, seeds many, minute; united to the valves. This plant is allied to the English sundew and is an insectivorous plant; the remains of insects are found sticking to the leaves.

***Ammannia baccifera*,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

***Epilobium latifolium*,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

***Epilobium  
organifolium*,**

ONAGRACEÆ.

F. B. I. ii. 586.

Himalaya,

9-14,000 ft.

Kashmir.

small to large, stem cylindrical with 2 lines of hairs, sometimes velvety all over, leaves vary much, mid-stem leaves opposite, sessile or shortly stalked, ovate or ovate-oblong, 1 in. long, sometimes 3 in., flowers usually few, at the end of branches, petals less than  $\frac{1}{4}$  in., stigmas club-shaped, capsule  $1\frac{1}{2}$ -3 in., seeds narrow, long, somewhat narrowed at the top, seeds minutely dotted; otherwise like *E. latifolium*.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNUNITED.

- Bupleurum lanceolatum,** medium size to large, perennial, smooth; leaves, lower lanceolate, long-stalked, middle stem ones 3-5 by  $\frac{1}{4}$ -3 in., ovate, long-pointed, bracts none or only one,  $\frac{1}{4}$  in., linear, bracteoles 2-6, narrowly lanceolate, much shorter than the umbels, soon falling off; flowers very small, yellow, on short stalks 5-6 combined on 5-8 unequal rays forming a compound umbel, calyx teeth none, petals 5, ovate with a broad tip, the latter inflexed, the outer petals of an umbel enlarged, stamens 5, styles 2; fruit  $\frac{1}{5}$  in. of 2 one-seeded carpels hanging on to a central undivided stalk (carpophore), each carpel, which is convex externally, has 5 longitudinal obscure ridges with 3 oil canals (vittæ) in each furrow; seeds round on section or concave on the inner side.
- Buplever or Hare's ear,**  
UMBELLIFERÆ.  
F. B. I. ii. 674.  
Himalaya,  
4-9,000 ft.  
Fagu (Collett).  
The Galis (Douie).  
Kashmir.
- Bupleurum Candollii,** leaves, lower stem 2-5 by  $\frac{1}{8}$ - $\frac{1}{2}$  in., linear-oblong, UMBELLIFERÆ.  
F. B. I. ii. 674.  
Himalaya,  
8-12,000 ft.  
Simla, Mahasu  
Matiana (Collett).
- Bupleurum jucundum,** medium size, leaves, lower stem 1-1 $\frac{1}{2}$  in., circular, very shortly stalked, upper stem ones ovate, deeply heart-shaped, stem-clasping, bract one or none,  $\frac{1}{4}$ - $\frac{3}{4}$  in., ovate, leafy, often stem-clasping, or heart-shaped, bracteoles 4-5,  $\frac{1}{6}$  in., often none, oblong, short-pointed, usually shorter than the umbellule, fruit  $\frac{1}{6}$  in.; otherwise like the last species.  
UMBELLIFERÆ.  
F. B. I. ii. 675.  
Kashmir,  
7-10,000 ft.  
Budrawur  
(C. B. Clarke).  
Lahul  
(Jaeschke).
- Bupleurum Thomsoni,** large, leaves, stem linear, upper stem 2-4 in., lanceolate, long-pointed or ovate, stem-clasping, heart-shaped, bracts none or 1-2, lanceolate, bracteoles 5-9, lanceolate, long-pointed or linear, as long as the flowering umbellules, rays of the umbels 6-10, 1-2 $\frac{1}{2}$  in., rays of the umbellule often 20, fruit  $\frac{1}{5}$  in., oblong, carpels cylindrical, with a bluish-green waxy gloss, 5-winged, furrows containing 3-4 oil canals, carpel stalk divided, very thin; otherwise like the last species.  
UMBELLIFERÆ.  
F. B. I. ii. 675.  
Himalaya,  
7-9,000 ft.  
Sonamerg  
(C. B. Clarke).

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

**Bupleurum diversifolium,**  
UMBELLIFERÆ.  
F. B. I. ii. 675.  
Himalaya,  
7-9,000 ft.  
Kashmir,  
9-12,000 ft.

medium size to large, leaves, upper stem lanceolate, long-pointed, base ovate, nearly stem-clasping, hardly heart-shaped, middle stem quite stem-clasping, lower stem linear, bracts none or one, small, lanceolate, bracteoles 5-8, narrow, lanceolate, long-pointed, shorter than the fruiting umbellules, rays of the umbel 8-14, fruit  $\frac{1}{8}$  in., ridges distinct, furrows with 3 oil canals; otherwise like the last species.

**Bupleurum falcatum,**  
*Kali zewar, sipil.*  
UMBELLIFERÆ.  
F. B. I. ii. 676.  
Himalaya,  
3-12,000 ft.  
Kashmir,  
Simla,  
Mashobra  
(Collett).  
Baluchistan  
(Lace).

leaves radical linear, broader upwards, stem leaves usually curved, half stem-clasping or sessile, long-pointed, middle stem leaves linear, short-pointed, narrowed at the base, more or less stem-clasping, bracts usually none or 1-5, lanceolate, hardly  $\frac{1}{4}$  in., lanceolate, branches 4-5, narrowly lanceolate, distinctly shorter than the fruiting and not longer than the flowering umbellules, rays 5-8,  $1\frac{1}{2}$  in., fruit  $\frac{1}{6}$ - $\frac{1}{5}$  in., brown; otherwise like the last species.

**Bupleurum longicaule,**  
UMBELLIFERÆ.  
F. B. I. ii. 677.  
Himalaya,  
8-13,000 ft.  
Kashmir.

small to medium size, leaves very variable, lower stem leaves linear or lanceolate, short-pointed, upper often wider at the base, ovate, bracts 1-3, bracteoles 5-8, oblong, long-pointed, leaflike, longer than the flowering or fruiting umbellule, rays 3-8,  $1-2\frac{1}{2}$  in., stoutish, streaked, petals usually black; otherwise like the last species.

**Bupleurum tenue,**  
UMBELLIFERÆ.  
F. B. I. ii. 677.  
The Plains to  
9,000 ft.  
Simla, Mashobra  
(Collett).  
Murree.

leaves, lower linear, sessile, 1-3 by  $\frac{1}{4}$  in., upper linear-oblong, round-tipped, bristle-pointed, base narrowed, bracts 1-4,  $\frac{1}{4}$  in., lanceolate, short-pointed, bracteoles 4-5, lanceolate-ovate with a broad tip, longer than the umbellules, rays 3-8, less than an inch, never stout, fruit  $\frac{1}{10}$ - $\frac{1}{8}$  in., broadly oblong, yellowish-brown, ridges distinct, furrows with one or no oil canal; otherwise like the last species.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

**Bupleurum Maddeni**, medium size, stems several, leaves small, linear, long-pointed, bracteoles few, not prominent, furrows of fruit with 2-3 oil canals; otherwise like the last species.

UMBELLIFERÆ.

F. B. I. ii. 678.

Himalaya,

6-8,000 ft.

Simla (Collett).

**Bupleurum setaceum**,

annual, slender, leaves 1-2½ in., uppermost ¼ in., bristle-like, umbels simple, few-flowered, bracts 1-4, ⅛-½ in., narrowly linear-lanceolate, usually longer than the fruiting umbel, fruit ⅓ in., rough between the ridges, one large oil canal in each furrow; otherwise like the last species.

UMBELLIFERÆ.

F. B. I. ii. 678.

Kashmir,

4,500 ft.

Kishtwar

(C. B. Clarke).

**Commelina cœlestis**,  
Spider wort,

medium size, annual, robust, succulent, velvety or felted; leaves 2-5 in. long, lanceolate long or short-pointed, nerves parallel, bases sheathing; flowers ⅔ in., sky-blue in a small cluster, flowering in succession, enclosed in a leaf-like, folded bract (spathe), spathe broadly ovate, ½-¾ in. long, heart-shaped, pointed, sepals 3, green, thin, free or united at the base, persistent, petals 3, bright blue, free, longer than the sepals, one larger blade circular, spreading, stamens 6, not hairy, anthers bright yellow, style spirally twisted, stigma small; capsule 3-valved, seeds few, usually angular wrinkled. A native of Mexico, cultivated in flower gardens and found as an escape.

COMMELINACEÆ.

F. B. I. vi. 369.

Himalaya,

6-7,000 ft.

Simla (Collett).

**Commelina Hasskarlii**,

small, much branched, rough or smooth, leaves 1-3 by ½-⅔ in., narrowly lanceolate, nearly short-pointed or blunt, spathes ½-1 in., axillary, stalked, folded, clusters velvety, upper branch 2-4, lower 1-2 flowered, seeds cylindrical, smooth, abrupt at one end, almost pointed at the other; for other characters see the last species.

COMMELINACEÆ.

F. B. I. vi. 370.

The Plains, east of the Sutlej, Delhi.

**Commelina obliqua**,  
*Kanjura, kana.*

medium size to large, stem stout, branched; leaves 4-7 by 1-2 in., lanceolate, sessile or stalked, short or very long-pointed, smooth or woolly beneath, sheaths ¾ in., margins often bearded, spathes ¾-1½ in., sessile or stalked, solitary or crowded, funnel-shaped, capsule 3-angled, seeds lead-coloured; for other characters see *Commelina cœlestis*. The root is edible, and is used in fevers and bilious attacks.

COMMELINACEÆ.

F. B. I. vi. 372.

Himalaya,

1-6,000 ft.

Simla (Collett).

Kasauli.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNUNITED.

- Aneilema nudiflorum**, see Prostrate Herbs, Alternate, Exstipulate, Simple.
- Aneilema Hamiltonianum**, see Prostrate Herbs, Alternate, Exstipulate, Simple.
- Cyanotis cristata**, see Prostrate Herbs, Alternate, Exstipulate, Simple.
- Cyanotis barbata**, see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Juncus bufonius**,  
**Toad rush**,

JUNCACEÆ.

F. B. I. vi. 392.

The Plains to  
13,000 ft.,  
in wet places.

small, annual, pale green, smooth, stems tufted, slender, branched from the base upwards; leaves bristle-like, few, channelled above, base sheathing, pale; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in. long, pale green in axillary or terminal clusters, sepals 3, with a thickened midrib, long-pointed with a broad thin margin, persistent, petals 3, like the sepals but without the midrib, stamens 6 or 3, half as long as the sepals, 6 in the open lateral flowers, 3 in the closed terminal flowers; capsule ovoid with a broad top, blunt, pale, shorter than, and enclosed in the persistent sepals and petals, seeds very minute, finely net-veined, tips almost rounded.

## PETALS UNITED.

**Polygala triphylla**,  
**Milkwort**,

POLYGALACEÆ.

F. B. I. i. 201.

Himalaya,  
4-8,000 ft.Simla, Syrec  
(Collett).  
Dharmpur.

small, annual, slender, smooth; leaves  $\frac{1}{2}$ - $2\frac{1}{2}$  in., circular or oblong, contracted into the stalk, stalk often winged, membranous, smooth, blunt; flowers  $\frac{1}{2}$  in., pink, in slender many-flowered terminal racemes  $1\frac{1}{2}$ -2 in., bracts 3, soon falling off, sepals 5, unequal 2 inner, petal-like, in colour equal to the petals, 3 outer smaller, green, falling off after flowering, petals 3, unequal, united at the base, 2 upper small, the lowest (keel) longest, concave, 2-lobed at the tip, not crested at the tip with a fringed brush, stamens 8, united in two sets of 4 each, joined to the petals, style long, incurved; capsule  $\frac{1}{10}$ - $\frac{1}{8}$  in., 2-celled, round, narrowly winged, membranous, seeds black, hairy, one in each cell, prolonged at the base by 2 minute appendages.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Polygala  
crotalarioides,**  
POLYGALACEÆ.  
F. B. I. i. 201.  
Himalaya,  
4-7,000 ft.,  
east of the Ravi.  
Simla (Collett).

perennial, densely hairy, rootstock woody, often tuberous, stems short, thick, sometimes reclining, leaves  $\frac{1}{2}$ -2 in., ovate or oblong-ovate, tip rounded with or without an abrupt point, with few scattered hairs, flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, purple, very shortly stalked in very short, dense-flowered, rarely terminal racemes, bracts minute, awl-shaped, sepals persistent, inner wing sepals ovate with a broad tip, twice as long as the capsule, keel petal crested, capsule heart-shaped, broader than long, fringed with bristles, seeds with 2 small appendages; otherwise like the last species.

**Polygala abyssinica,**  
POLYGALACEÆ.  
F. B. I. i. 202.  
Himalaya,  
3-8,000 ft.  
Simla (Collett).  
Matiana, Multan  
(Edgeworth).

small to medium size, smooth, branches many, leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., narrow linear, long-pointed, almost sessile, flowers  $\frac{1}{4}$  in. long, pink on one side of long terminal slender loose-flowered racemes 2-6 in. long, bracts ovate, soon falling off, wing sepals yellowish-green, capsule narrowly winged near the top, seeds densely hairy, not appendaged; otherwise like the last species.

**Polygala leptalea,**  
POLYGALACEÆ.  
F. B. I. i. 202.  
Himalaya,  
2-5,000 ft.  
Kashmir.

very much like the last species, but the stem deeply furrowed, the lower leaves often oblong-lanceolate, racemes 1-2 in., dense-flowered, flowers smaller, seeds silky.

**Polygala  
Hohenhackeriana,**  
POLYGALACEÆ.  
F. B. I. i. 202.  
The Plains west of  
the Jhelum to  
3,500 ft. in  
Waziristan  
(Stewart).  
Attock (Vicary).  
Baluchistan  
(Stocks).

very small, with grey hairs or velvety, stems and branches many from a perennial stock, leaves  $\frac{1}{3}$ - $\frac{2}{3}$  in., grey hairy, thin, smooth, oblong-lanceolate or lanceolate-ovate with a broad tip, blunt or nearly short-pointed, flowers  $\frac{1}{4}$  in., drooping on short stalks in nearly sessile dense-flowered terminal racemes  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, bracts small, sepals with broad thin margins, upper outer one much the largest, linear-ovate with a broad tip, 2 lateral very small, oblong, blunt, wings white, capsule  $\frac{1}{6}$  in., circular, smooth with a broad membranous wing, seeds densely silky with 2 appendages; otherwise like the last species.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Polygala persicariæfolia,**  
POLYGALACEÆ.  
F. B. I. i. 202.  
Himalaya, east of  
the Sutlej,  
5-9,000 ft.  
Valleys below  
Simla (Collett).  
Dharmpur.

small, annual, slender, much branched, slightly velvety, leaves 1-2 in., linear or lanceolate-oblong with rounded ends, nearly sessile, flaccid, bracts awl-shaped, stalks curved, racemes 1-2 in., slender, loose flowered, terminal and extra axillary, flowers pink, wing sepals yellowish-grey, capsule notched, ovate, minutely fringed, narrowly winged near the tip, seeds woolly with the 2 appendages; otherwise like the last species.

**Polygala erioptera,**  
POLYGALACEÆ.  
F. B. I. i. 203.  
The Plains.

like the last species, but the leaves  $\frac{1}{3}$ -1 in., racemes axillary or extra-axillary, wing sepals oblong with a strong green midrib.

**Polygala chinensis,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Polygala sibirica,**  
POLYGALACEÆ.  
F. B. I. i. 205.  
Himalaya,  
1-6,000 ft.

small to medium size, velvety, stems many, slender from a perennial stock, leaves  $\frac{1}{2}$ -2 in., circular or lanceolate-oblong with rounded ends or linear, shining, and netted above, margins turned down, wing sepals oblong or ovate with a broad tip, capsule broadly winged, smooth, seeds hairy with 3 appendages; otherwise like the last species described above.

**Cotyledon Oreades,**  
CRASSULACEÆ.  
F. B. I. ii. 416.  
Kashmir.  
Pir Panjal  
(Jacquemont).  
Marbul Pass  
(C. B. Clarke).

very small, annual, fleshy, smooth, stems many, curved, branches leafy; leaves  $\frac{1}{4}$  in., radical, arranged in a rosette, narrow, lanceolate, bristle-pointed; flowers small, white, nodding in small clusters at the top of branches, sepals  $\frac{1}{4}$  in., oblong, short-pointed, petals 5, united at the base, a little longer than the sepals, stamens 5, styles 5; carpels 5, tapering into the thread-like styles, seeds many, oblong, with rounded ends, covered with minute tubercles.

FLOWERS MINUTE IN HEADS, ALL TUBULAR.

**Vernonia cinerea,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Conyza viscidula,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Conyza stricta**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed, Inner tubular, Outer ligulate.

**Filago germanica**, small, annual, woolly, widely branched from the base, sometimes prostrate; leaves  $\frac{1}{2}$  in., oblong-ovate with a broad tip, stalked or sessile, flowers minute, yellow, tubular in clusters of heads,  $\frac{1}{4}$ - $\frac{1}{2}$  in., sessile in the forks of branches, surrounded by leaf-like bracts, heads 6-20,  $\frac{1}{8}$  in. long, glistening, discoid, calyx of hairs (pappus), corollas, inner 2-3-toothed, outer 4-5-toothed, little concave scales at the base passing into bracts round the heads of 2-many series, long-pointed, thin, anther bases forked, style-arms oblong or linear blunt; seeds (achenes) minute, crowned by the pappus, rough.

**Cudweed**,  
COMPOSITÆ.  
F. B. I. iii. 277.  
The Plains to  
8,000 ft.  
Valleys below Simla,  
Suni (Collett).  
Kashmir.  
N.-W. F. Province.  
Baluchistan (Lace).

very like the last species, but leaves linear-lanceolate, bracts round the clusters of heads are leaflike, shorter, bracts of the heads not long-pointed.

**Filago arvensis**,  
COMPOSITÆ.  
F. B. I. iii. 277.  
Kashmir,  
7-9-000 ft.  
Quetta  
(Hughes- Buller).

small, annual, branched from the base, woolly or smooth, densely leafy; leaves narrowly linear, short-pointed, spreading, margins rolled in; flowers all tubular in reddish heads,  $\frac{1}{6}$  in. long, glistening, smooth, sessile in the axils of the leaves, forming leafy spikes, bracts of the heads reddish, few, bristle-pointed, thin, pappus red, corollas, inner 5-toothed, outer barely toothed, anther-bases forked; achenes (seeds) oblong, smooth.

**Ifloga Fontanesii**,  
COMPOSITÆ.  
F. B. I. iii. 277.  
The Plains.  
Baluchistan  
(Boissier).

large, perennial, much branched, velvety and glandular, or white felted, leafy, the leaf-bases running down the stem as wings; leaves, radical leaves lanceolate with broad tips, stem leaves  $1\frac{1}{2}$ -2 by  $\frac{1}{8}$ - $\frac{1}{4}$  in., linear, short-pointed, margins turned down; flowers minute, white, in nearly globose heads  $\frac{1}{8}$ - $\frac{1}{4}$  in. diam. in nearly round or broad, much branched flat-topped clusters, bracts of the heads  $\frac{1}{12}$ - $\frac{1}{10}$  in., blunt, white, erect in flower, spreading in seed, pappus white, corollas of inner flowers 5-toothed, of outer 2-4 toothed, anther bases forked; achenes (seeds) minute, oblong, smooth.

**Anaphalis araneosa**,  
COMPOSITÆ.  
F. B. I. iii. 283.  
Himalaya,  
5-8,000 ft.  
Simla (Collett).  
Murree.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS MINUTE IN HEADS, ALL TUBULAR.

**Anaphalis contorta,**

COMPOSITÆ.

F. B. I. iii. 284.

Himalaya,

7-10,000 ft.

Simla (Collett).

Kashmir.

small to medium size, branches often prostrate, leaves  $\frac{1}{2}$ -1 by  $\frac{1}{8}$  in., linear, heads  $\frac{1}{6}$  in. diam. in dense terminal flat-topped clusters, outer bracts of the heads often purple; for other characters see the last species.

**Phagnalon niveum,**

COMPOSITÆ.

F. B. I. iii. 288.

Himalaya,

6-8,000 ft.

Kashmir.

small, annual, snow-white with dense cottony wool, branches short and leafy or slender and less leafy; leaves 1-1 $\frac{1}{2}$  in., ovate with a broad tip to oblong with rounded ends or linear-oblong, sometimes toothed; flowers minute, yellow and tubular in axillary solitary or clustered heads,  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., on slender stalks, 1-3 in., bracts of the heads awl-shaped, straight, ending in a needle-like point, purplish, outer smaller, grey cottony, pappus hairs slender, rigid, corollas, inner 5-fid, outer 2-3-toothed, anther-bases forked or entire; achenes small, not ribbed.

**Gnaphalium**

**luteo-album,**

**Jersey cudweed,**

*Bal raksha.*

COMPOSITÆ.

F. B. I. iii. 288.

The Plains to

10,000 ft.

Simla (Collett).

Kashmir.

Baluchistan (Lace).

small, annual, very variable, woolly, much branched; leaves 1-2 by  $\frac{1}{3}$  in., oblong with blunt tips, base often half stem-clasping, both surfaces woolly, upper leaves lanceolate, short-pointed; flowers minute, whitish, yellowish or brownish in heads,  $\frac{1}{8}$  in. diam., in leafless dense glistening flat-topped clusters, bracts of the heads oblong, blunt, transparent, yellowish, glistening, pappus hairs scanty, short, outer corollas 3-4-toothed, inner larger, 5-toothed, anther-bases forked, cells with slender tails; achenes oblong, slender, rough with tubercles or minute curved bristles.

**Gnaphalium**

**hypoleucum,**

COMPOSITÆ.

F. B. I. iii. 288.

Himalaya,

3-7,000 ft.

Simla (Collett).

Kashmir.

very like the last species, but taller and stouter leaves longer, long-pointed, only woolly beneath and often with widely projecting bases.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS MINUTE IN HEADS, ALL TUBULAR.

**Gnaphalium  
indicum,**

COMPOSITÆ.

F. B. I. iii. 289.

The Plains to  
1,000 ft.

annual, slender, more or less covered with white wool, stems many, leafy branches slender, leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., linear-ovate with broad tips or oblong, narrowed to the base with rounded tips and an abrupt point, woolly on both surfaces, lower leaves shortly stalked, heads  $\frac{1}{8}$  in. diam., in simple or branched leafy spikes or in ovoid clusters, bracts of the heads linear-oblong, short-pointed, pale, reddish-brown or yellow, inner nearly smooth, achenes minutely rough; for other characters see the last species.

**Pulicaria foliolosa,**  
*Arambu.*

COMPOSITÆ.

F. B. I. iii. 298.

The Plains.  
Baluchistan  
(Lace).

medium size, annual, velvety or felted, much branched; leaves 1-6 in., linear-oblong, or lanceolate with a broad tip, tips recurved, short-pointed, base broad or contracted,  $\frac{1}{2}$  stem-clasping; flowers minute, yellow, all tubular in solitary woolly glandular heads,  $\frac{1}{4}$  in. diam., on very slender stalks, bracts of the heads narrow, almost bristle-like, double pappus inner of hairs, very few, white, equal to the achenes, outer consists of short-jagged teeth, outer corollas 2-3 toothed, inner 5-toothed; achenes hairy, minute.

**Pulicaria  
glaucescens,**

COMPOSITÆ.

F. B. I. iii. 300.

The Plains, west of  
the Jhelum.  
The Salt Range.  
Waziristan.  
Baluchistan  
(Boissier).

medium size, woody, saline, succulent, leaves 1- $2\frac{1}{2}$  in., linear, fleshy, margins flat or rolled in, tips recurved, flowers in heads  $\frac{1}{3}$  in. diam., shortly stalked, shining from the pale yellow pappus, bracts of the heads lanceolate, smooth, short-pointed, stiff, pappus long, achenes short, oblong, silky; for other characters see the last species.

**Carpesium  
trachelifolium,**

see Herbs, Erect, Alternate, Exstipulate, Simple-Toothed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS MINUTE IN HEADS, ALL TUBULAR.

**Carpesium  
abrotanoides,**

*Hukmandaz,  
wotianguil*

COMPOSITÆ.

F. B. I. iii. 301.

Himalaya,

4-6,000 ft.

Kashmir, Valleys  
below Simla  
(Collett).

large, velvety or smooth, branches leafy, long, slender; leaves 3-5 by  $\frac{1}{2}$ -1 in., lanceolate, long-pointed, nearly sessile; flowers yellow, in many heads,  $\frac{1}{4}$  in. diam., along the branches or in short axillary racemes, strongly scented, bracts of the heads many, inner broad, blunt, outer green, leafy, margins white, corollas inner 5-toothed, outer 3-toothed, pappus hairs none, anther-bases forked; achenes smooth, long, ribbed, beaked. The flowers are used in Kashmir to dye silk.

**Artemisia**

**Dracunculus,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Aretium Lappa,  
Burdock,**

COMPOSITÆ.

F. B. I. iii. 359.

Himalaya,

6-9,000 ft.

large, rough; leaves 3-12 in. across, broadly ovate-heart-shaped, margin wavy or wavy-toothed, smooth or grey or white-cottony beneath; flowers purple in cottony or smooth terminal globose clustered heads,  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. diam., bracts of the heads stiff, angled, spreading, hooked, receptacle flat, very bristly, corollas 5-toothed, anther-bases forked, style-arms white, united, pappus hairs many, short, minutely barbed; achenes large, smooth, finely ribbed, angled.

**Saussurea candicans,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Saussurea albescens,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Saussurea Jacea,**

COMPOSITÆ.

F. B. I. iii. 375.

Kashmir,

9-15,000 ft.

(Falconer).

large, stiff, stem cylindrical, not grooved, branches very leafy; leaves 3-4 by  $1\frac{1}{2}$ -2 $\frac{1}{2}$  in., ovate or oblong, blunt or short-pointed, sessile, half stem-clasping, rough on both surfaces or pinnately divided, terminal lobe largest; flowers  $\frac{2}{3}$  in., purplish, in heads  $\frac{1}{2}$ - $\frac{2}{3}$  in. diam. solitary, terminal on straight rather slender stalks or in flat-topped clusters, bracts of the heads few, stiff, broad, margins purple, outer bracts ovate, blunt or short-pointed inner lanceolate, receptacle flat with long flattened bristles, curved, stiff, corollas 5-toothed, pappus hairs  $\frac{1}{2}$  in., brown, anthers forked; achenes  $\frac{1}{4}$  in., smooth, shining, ribs slender, tops abruptly cut off.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

## FLOWERS MINUTE, IN HEADS, ALL TUBULAR.

- Jurinea modesta**,  
COMPOSITÆ.  
F. B. I. iii. 378.  
N.-W. F. Province.  
Peshawar (Vicary).  
small, annual, cottony, branched from the base, branches short, ending in very long leafless slender one-headed stalks; leaves 2-3 in., lanceolate, short-pointed, sessile, running down the stem, sometimes widely toothed; flowers  $\frac{1}{2}$  in., purple, in solitary heads, 1 in. diam., bracts of the heads in many series, overlapping, inner narrow, erect, sometimes red, outer shorter, ovate, long-pointed, green with thin margins, bristles of the receptacle half as long as the flowers, corollas slender, 5-toothed, anther-bases forked, pappus hairs  $\frac{1}{3}$  in., white, shining, inner hairs stiff, 2 much longer than the others, flattened; achenes  $\frac{1}{5}$  in., flattened, angles thickened, pale, smooth, shining.
- Volutareila**  
**divaricata**,  
see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Centaurea Cyanus**,  
see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Centaurea depressa**,  
see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Centaurea**  
**polycephala**,  
see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Carthamus**  
**tinctorius**,  
see Herbs, Erect, Alternate, Exstipulate, Simple,  
Toothed.
- Dicoma**,  
**tomentosa**,  
COMPOSITÆ.  
F. B. I. iii. 387.  
The Plains.  
small to medium size, annual, much branched, covered with white cottony wool; leaves 1-3 in., linear, blunt or short-pointed; flowers  $\frac{1}{4}$  in., white or pale yellow, in many solitary, nearly axillary and terminal heads,  $\frac{2}{3}$ -1 in. diam., bracts of the heads  $\frac{1}{2}$ - $\frac{2}{3}$  in., linear-lanceolate, spinous, shining, tips yellow, stiff, corollas 5-toothed, anther-bases forked, bearded, pappus hairs  $\frac{1}{4}$  in., pale brown, outer slender, inner lanceolate-awl-shaped, ribbed, margins wavy; achenes  $\frac{1}{3}$  in., short, broad, top-shaped, densely silky.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

**Solidago**

**Virga-aurea,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Rhynchospermum**

**verticillatum,**

*Hukmandaz.*

COMPOSITÆ.

F. B. I. iii. 248.

Himalaya,

5-6,000 ft.

Valleys below Simla

(Collett).

Kashmir.

medium size to large, velvety, branches slender, spreading; leaves 1-3 in., lanceolate, long-pointed, thin, narrowed into a very slender stalk, sometimes toothed; flowers all white or inner pale yellow, very minute, in small heads,  $\frac{1}{3}$  in. diam., on short stalks or one in every axil of the branches, bracts of the heads few, lanceolate, edges thin, dry receptacle flat, bare, corollas outer in 2-3 series, white, shortly ligulate, male, inner short, tubular, bell-shaped, 4-5-toothed, anther-bases blunt or 2-lobed, pappus hairs 3-5 or none, soon falling off; achenes flattened, beaked.

**Aster Pseudamellus,**

COMPOSITÆ.

F. B. I. iii. 249.

Himalaya,

8-9,000 ft.

Lahul (Jaeschke).

small to medium size, rootstock perennial, stems many, undivided below, branched above, slender, leafy, rough; leaves 1-2½ by  $\frac{1}{3}$ -¾ in., green, oblong, short-pointed or blunt, sometimes toothed, sessile; flowers outer 12-16,  $\frac{1}{2}$ -¾ in., purplish, inner yellow, in heads 1¾ in. diam., forming flat-topped clusters, bracts of the heads few, outer large, blunt, green, anther-bases blunt, entire, pappus hairs longer than the achenes, white, slender, few; achenes  $\frac{1}{10}$  in., flattened, velvety, one- to three-ribbed.

**Aster Amellus,**

**Michaelmas Daisy,**

COMPOSITÆ.

F. B. I. iii. 249.

The Plains to

8,000 ft.

Cultivated.

very like the last, but with smaller outer bracts. This plant may be found as an escape near gardens.

**Aster molliuseulus,**

COMPOSITÆ.

F. B. I. iii. 251.

Himalaya,

5-8,000 ft.

Simla (Collett).

Kashmir.

medium size, velvety or hairy, rootstock perennial, woody, stems many, leafy, slender, stiff, leaves  $\frac{1}{2}$ -1 in., linear or lanceolate, sometimes toothed, shortly stalked, flowers as in the last species, the heads smaller,  $\frac{1}{2}$ -¾ in., solitary, long-stalked, bracts of the heads long-pointed, ligules very many, pappus reddish; otherwise like the last species.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

- Aster altaicus**, very like the last, but much larger, stem grooved,  
COMPOSITÆ. much branched, leaves sessile.  
F. B. I. iii. 251.  
Himalaya,  
9-13,000 ft.  
Kashmir, Lahul,  
Baluchistan.
- Brachyactis umbrosa**, small, annual, glandular and softly hairy, branch-  
COMPOSITÆ. ed from the base, leafy; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., ovate with a broad  
F. B. I. iii. 253. tip, or with small lobes or wedge-shaped; flowers pale  
Himalaya, blue or pink in many sessile or long-stalked heads,  $\frac{1}{2}$  in.  
8-12,000 ft. diam., one in nearly every leaf-axil, bracts of the heads  
Kashmir, Lahul half as long as the flowers, in 2-3 series, narrow, outer  
Baluchistan (Lace). often leafy, corollas inner tubular, 5-toothed, outer ligulate  
minute, in one to many series, anther-bases blunt, entire,  
style-arms narrow, flattened, tips lanceolate, pappus hairs  
 $\frac{1}{8}$  in., reddish, scanty; achenes  $\frac{1}{12}$  in., quite flat.
- Brachyactis robusta**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
Toothed.
- Erigeron linifolius**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
Toothed.
- Erigeron canadensis**, small to large, annual, slender, much branched,  
COMPOSITÆ. velvety, hairy or nearly smooth, leafy; leaves 1-3 in.,  
F. B. I. iii. 254. narrowly linear, or linear-lanceolate, long-pointed, some-  
The Plains to times remotely toothed, smooth or hairy; flowers, inner  
3,000 ft. yellow, outer pink or purplish in stalked heads,  $\frac{1}{6}$ - $\frac{1}{4}$  in.  
diam., in long-branched racemes, bracts of the heads nar-  
row, long-pointed, smooth or hairy, margins thin, corollas  
inner tubular, 5-toothed, outer ligulate, in several series,  
hardly longer than the pappus; anther-bases blunt, pappus  
hairs white, becoming reddish; achenes  $\frac{1}{16}$  in., narrow,  
flat, smooth.
- Erigeron asteroides**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
Toothed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

**Erigeron alpinus,**

var. *multicaulis*,

COMPOSITÆ.

F. B. I. iii. 255.

Himalaya,

3-10,000 ft.

Simla (Collett).

small to medium size, biennial or perennial, hairy or velvety, stems many, often tufted, much branched from the base, branches slender, leaves radical oblong, stalked, spreading, stem leaves sessile, lanceolate, 1-2½ by  $\frac{1}{5}$ - $\frac{1}{3}$  in., or ovate with a broad tip 2 by  $\frac{3}{4}$  in., sometimes toothed, short-pointed or blunt, heads long-stalked, solitary or in flat-topped clusters,  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., bracts of the heads velvety or woolly; otherwise like the last species.

**Erigeron**

**multiradiatus,**

COMPOSITÆ.

F. B. I. iii. 256.

Himalaya,

7-9,000 ft.

Hattu (Collett).

Kashmir.

very like the last species, but the heads are much larger, 2-3 in. diam., ligules purple, very many, much longer than the pappus.

**Conyza viscidula,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Conyza stricta,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Inula graveolens,**

COMPOSITÆ.

F. B. I. iii. 292.

N.-W. F. Province.

Peshawar

(Stewart).

medium size, annual, slender, much branched, velvety and sticky; leaves 1-1½ by  $\frac{1}{10}$ - $\frac{1}{8}$  in., linear, short-pointed, one-nerved, sessile, spreading; flowers yellow, inner tubular, outer ligulate in top-shaped heads,  $\frac{1}{3}$  in. diam., terminating many slender branches, bracts of the heads few, linear, short- or long-pointed, erect, outer green, velvety, and glandular, corollas inner tubular, 5-toothed, outer ligulate, 3-toothed, anther-bases forked, long-tailed, pappus hairs 1-2 series, coarse, on the edge of the cup-shaped top of the achenes; achenes  $\frac{1}{4}$  in., hairy, sticky, usually ribbed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES,

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

***Vicoa auriculata*,**

COMPOSITÆ.

F. B. I. iii. 297.

The Plains to  
6,000 ft.

Simla (Collett).

Dharmpur.

Thanesar, Lahore.

medium size, annual, stiff, stems often red, much branched, velvety and sticky, or almost smooth, leafy; leaves 2-7 by  $\frac{1}{5}$ - $1\frac{1}{4}$  in., narrowly, lanceolate, sessile, sometimes toothed, long-pointed, base stem-clasping, prolonged into 2 processes; flowers yellow, in long-stalked terminal or leaf-opposed heads,  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., bracts of the heads many, narrow, edges thin, corollas inner tubular, 5-toothed, outer ligulate, 1- or 2-toothed, short, broad, recurved, anther-bases forked, tails slender, pappus hairs scanty; achenes small, cylindrical, silky.

***Pulicaria vulgaris*,**

COMPOSITÆ.

F. B. I. iii. 298.

N.-W. F. Province.

Peshawar

(Stewart).

Kashmir.

5-6,000 ft.

(Falconer).

medium size, annual, velvety or softly felted, much branched towards the top; leaves  $\frac{1}{2}$ -1 in., oblong-lanceolate, sessile, base half-stem clasping, lower leaves stalked; flowers yellow, inner tubular, outer ligulate, in short stoutly stalked heads,  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., bracts of the heads woolly, narrow, awl-shaped, erect, or nearly turned back, corollas inner 5-toothed, outer erect, narrow, very short, anther-bases forked, tails very slender, pappus hairs dirty white,  $\frac{1}{10}$  in., outer of jagged scales; achenes very minute.

***Pulicaria  
dysenterica*,**

Flea bane,

COMPOSITÆ.

F. B. I. iii. 298.

Kashmir,

5-6,000 ft.

(Falconer).

like the last species, but perennial, more robust, woolly, leaves oblong-heart-shaped, ligules much longer, pappus more copious and much longer.

***Pulicaria  
angustifolia*,**

COMPOSITÆ.

F. B. I. iii. 299.

The Plains.

Delhi.

Baluchistan.

like *Pulicaria vulgaris*, but leaves linear-oblong, tips blunt or abruptly pointed and recurved, bracts of the heads green, lanceolate, long-pointed, achenes nearly smooth.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

**Calendula officinalis,** medium size, annual, velvety; leaves 1-3 in., lower  
**Marigold,** oblong, narrowed to the stalk, upper lanceolate, base  
*Zergul, saldbargh.* heart-shaped, stem-clasping, toothed or nearly entire,  
 COMPOSITE. short-pointed, hairy on both surfaces; flowers bright  
 F. B. I. iii. 357. orange yellow, inner tubular, outer ligulate in heads 1-2  
 The Plains. in. diam., terminal stalked, bracts of the heads  $\frac{1}{4}$  in., in-  
 Peshawar curved and pressed against the ripe achenes, linear, long-  
 (Aitchison). pointed, corollas, inner tubular, 5-toothed, outer ligulate,  
 many, 3-toothed, anther-bases forked, pappus hairs none;  
 achenes long, not hairy, curved, boat-shaped, rough, not  
 beaked. This plant is hardly indigenous. An oil is  
 extracted from the seeds.

**Calendula arvensis,** very like the last species, but the flowers are sul-  
 COMPOSITE. phur-yellow, and the achenes are beaked, the outer ones  
 F. B. I. iii. 258. prickly.  
 Kashmir  
 (Stoliezka).

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Kœlpinia linearis,** see Herbs, Unbranched, Alternate, Exstipulate,  
 Simple.

**Crepis acaulis,** see Herbs, Unbranched, Alternate, Exstipulate,  
 Simple.

**Hieracium crocatum,** see Herbs, Erect, Unbranched, Alternate, Exsti-  
 pulate, Simple.

**Hieracium** see Herbs, Erect, Alternate, Exstipulate, Simple,  
**preanthoides,** Toothed.

**Lactuca dissecta,** see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca longifolia,** see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca** see Herbs, Erect, Alternate, Exstipulate, Lobed.  
**rapunculoides,**

**Lactuca decipiens,** see Herbs, Erect, Alternate, Exstipulate, Lobed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

- Lactuca macrorhiza**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Lactuca Lessertiana**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Lactuca sagittariodes**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Lactuca polycephala**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Prenanthes Brunoniana**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Prenanthes violæfolia**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Sonchus asper**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Sonchus oleraceus**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Sonchus maritimus**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Tragopogon pratense**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Tragopogon porrifolium**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Scorzonera divaricata**,  
COMPOSITÆ.  
F. B. I. iii. 418.  
Himalaya,  
9-15,000 ft.  
Kashmir.  
small to medium size, perennial, smooth, root woody, stem slender, rarely unbranched, grooved, branches very divergent; leaves 2-6 by  $\frac{1}{10}$ - $\frac{1}{8}$  in., linear, slender, curved, margins incurved; flowers yellow, in large long-stalked cylindric heads 1-1½ in. diam., 5-8 flowered, bracts of receptacles 4-8 in several rows, outer short, broad, inner long, linear, smooth or velvety; achenes  $\frac{2}{3}$  in., very slender, pale, smooth, not winged, longer than the pappus, pappus hairs feathery below.
- Scorzonera purpurea**,  
COMPOSITÆ.  
F. B. I. iii. 418.  
Kashmir,  
Banahal, 8,000 ft.  
like the last species, but sometimes woolly, flowers purple, achenes angled, shorter than the pappus.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

## FLOWERS NOT IN HEADS.

- Cephalostigma hirsutum**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Wahlenbergia gracilis**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Codonopsis ovata**, small, perennial, root woody, spindle-shaped; leaves  $\frac{1}{4}$ - $\frac{3}{4}$  by  $\frac{1}{6}$ - $\frac{1}{2}$  in., ovate, blunt or short-pointed, hairy on both surfaces, stalk  $\frac{1}{8}$ - $\frac{1}{4}$  in.; flowers 1-1 $\frac{1}{4}$  by  $\frac{1}{3}$ - $\frac{2}{3}$  in., sky-blue, *Ladut*.  
 CAMPANULACEÆ.  
 F. B. I. iii. 433.  
 Himalaya,  
 8-12,000 ft.  
 Kashmir.
- Sphenoclea zeylanica**, medium size to large, annual, smooth, branched or unbranched, stout; leaves 2-3 in., lanceolate, narrowed at both ends, sessile or shortly stalked, smooth, flowers small, greenish-yellow, in dense bracteate and bracteolate spikes  $\frac{3}{4}$ -2 in. long on stalks 1-2 in. long, calyx lobes 5,  $\frac{1}{16}$  in., in fruit  $\frac{1}{10}$  in., triangular, closely-bent in, corolla bell-shaped, 5-lobed, stamens 5, on the corolla and alternate with its lobes, style short, hardly 2-lobed; capsule  $\frac{1}{6}$  in. diam., wedge-shaped and angled below, crowned with the calyx lobes, seeds minute, rough with very minute papillæ or scales.  
 CAMPANULACEÆ.  
 F. B. I. iii. 438.  
 The Plains in swamps.
- Phyteuma Thomsoni**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Lysimachia lobelioides**, medium size, annual, smooth, stem angular, branched from the base; leaves 1-1 $\frac{1}{2}$  in., ovate-lanceolate, tapering into a short stalk, short-pointed, margin gland-dotted; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, pale purple or white, sweet-scented, solitary, or pairs in the axils of leaves or bracts forming terminal racemes 3-6 in., calyx 5-lobed, nearly as long as the corolla, margins thin, bracts awl-shaped, corolla  $\frac{1}{4}$  in. diam., funnel-shaped, segments 5, ovate with a broad tip, longer than the calyx, stamens 5  
 PRIMULACEÆ.  
 F. B. I. iii. 502.  
 Himalaya,  
 4-8,000 ft.  
 Simla (Collett).  
 Kashmir.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

FLOWERS NOT IN HEADS.

united, without glands, anthers oblong, protruding, style thread-like; capsule  $\frac{1}{6}$  in. diam., round, splitting by 5 valves, seeds many, minute.

**Lysimachia  
pyramidalis,**  
PRIMULACEÆ.  
F. B. I. iii. 503.  
Himalaya,  
5-8,000 ft.,  
east of the Sutlej,  
Simla (Collett).

medium size, annual, smooth, much branched, leaves 1-2 $\frac{1}{2}$  in., linear-lanceolate, minutely gland-dotted and margined, sessile or nearly so, flowers  $\frac{1}{4}$  in. long, white or pale purple, in long terminal racemes, 6-10 in., bracts linear, lower 1 in., sepals narrowly lanceolate with slender thin margins, corolla lobes toothed, stamens shorter than the corolla, capsule opens irregularly; for other characters see the last species.

**Lysimachia  
chenopodioides,**  
PRIMULACEÆ.  
F. B. I. iii. 503.  
Himalaya,  
5-9,000 ft.  
Valleys below Simla  
(Collett).

medium size, sometimes prostrate, leaves  $\frac{1}{2}$ -1 in., ovate-lanceolate, short- or long-pointed, tapering into a rather long stalk, flowers  $\frac{1}{4}$  in., pale purple, sessile or nearly so, solitary, axillary, calyx equal to the corolla, long glands in series down the sepals, stamens short; for other characters see the last species.

**Centunculus tenellus,**  
PRIMULACEÆ.  
F. B. I. iii. 506.  
Himalaya,  
1-6,000 ft.  
Dalhousie.

small, annual, sometimes unbranched; leaves  $\frac{1}{4}$  in., sometimes nearly opposite, ovate, short-pointed, sessile; flowers minute, white or pink, solitary, axillary, stalks shorter than the leaves, lengthening in fruit, calyx 4-5-lobed, corolla pitcher-shaped, lobes 4-5, wheel-shaped, ovate-lanceolate, stamens 4-5, on the corolla throat, anthers protruding, style thread-like; capsule globular, opening by a circular fissure round the middle, seeds many, target-shaped.

**Samolus Valerandi,**  
**Brookweed,**  
PRIMULACEÆ.  
F. B. I. iii. 506.  
Himalaya,  
3-4,000 ft.  
Sutlej Valley, Suni,  
on marshes (Collett).  
Baluchistan  
(Boissier).

small to medium size, perennial, rootstock short, stem smooth, sometimes prostrate, rooting at the base; leaves 1-4 in., ovate with a broad tip or narrowed to the base, lower crowded, spreading, stalked, upper smaller, nearly sessile; flowers  $\frac{1}{8}$  in. diam., white, in terminal racemes or flat-topped clusters, afterwards lengthening, stalks bracteate about the middle, calyx tube half spherical, lobes 5, triangular, corolla tube bell-shaped, deeply 5-lobed, lobes spreading, stamens 5, on the base of corolla, short alternating with 5 minute scales, style short; capsule  $\frac{1}{4}$  in. diam., ovoid, crowned with calyx teeth, splitting from the top in 5 valves, seeds many, minute, wrinkled.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Swertia alternifolia,**

GENTIANACEÆ.

F. B. I. iv. 128.

Himalaya,

11-12,000 ft.

The Chor (Collett).

medium size to large, rootstock only perennial, stems angled, hollow,  $\frac{1}{5}$  in. thick; leaves 5 by 2 in., radical, long-stalked, stem leaves oblong-lanceolate, stem-clasping; flowers  $1\frac{1}{2}$  in. diam., bright grey, sometimes said to be yellow, in branching racemes, sepals 5,  $\frac{1}{3}$  by  $\frac{1}{6}$  in., ovate, short-pointed, toothed, corolla lobes 5,  $\frac{3}{4}$  by  $\frac{1}{6}$  in., oblong, narrowed to the base, short-pointed, 2 glandular depressions at the base of each lobe, long-fringed, stamens 5, style short, stigma 2-lobed; capsule  $\frac{2}{3}$ - $\frac{3}{4}$  by  $\frac{1}{2}$  in., sessile, oblong, seed  $\frac{1}{8}$  in. diam., smooth.

**Heliotropium zeylanicum,**

BORAGINACEÆ.

F. B. I. iv. 148.

The Plains.

medium size to large, annual, roughly hairy; leaves  $1\frac{1}{2}$  by  $\frac{1}{4}$  in., narrowly-lanceolate, sessile, nearly entire; flowers  $\frac{1}{8}$  in. diam., white, sessile in long bractless one-sided spikes 2-6 in., often branching in twos, curled up as it lengthens; flowers 1-2-ranked, calyx 5-lobed, lobes  $\frac{1}{16}$  in., ovate, short-pointed, corolla tube  $\frac{1}{8}$  in., wider above, minutely bristly without lobes 5,  $\frac{1}{16}$  in., spreading, long-pointed, stamens 5 on the corolla tube, short, style longer than the stigma, stigma short, oblong, very hairy, not protruding; fruit  $\frac{1}{12}$  in., of 2 wrinkled pitted 2-seeded nutlets.

**Heliotropium dasycarpum,**

BORAGINACEÆ.

F. B. I. iv. 148.

N.-W. F. Province.

Peshawar

(Stewart).

Baluchistan

(Boissier).

small to medium size, perennial, woody, stiff, roughly hairy, leaves  $\frac{3}{4}$  by  $\frac{1}{3}$  in., wedge-shaped at both ends, nearly entire, sessile, flowers  $\frac{1}{5}$  in., whitish in short few-flowered spikes, calyx lobes  $\frac{1}{16}$  in., oblong-lanceolate, corolla  $\frac{1}{6}$  in., cylindric, stamens longer than those of the last species, style short, stigma rough, fruit small, sometimes silky; for other characters see the last species.

**Heliotropium**

**Eichwaldi,**

*Nilkattei, bithua.*

BORAGINACEÆ.

F. B. I. iv. 149.

The Plains.

Kashmir, Srinagar,

Baluchistan

(Lace).

small, perennial, woody, branching from the base, softly hairy, leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., ovate with a broad tip or oblong with rounded ends, silky, nearly entire, stalks  $\frac{1}{2}$ -1 in., flowers  $\frac{1}{8}$  in., in 2 ranks on dense bractless spikes, 2 in. long, calyx lobes  $\frac{1}{12}$  in., ovate-lanceolate, hairy, narrow, not covering the fruit, corolla lobes slightly toothed, small, round, style short, nutlets  $\frac{1}{12}$  in., not spreading, forming an ovoid 4-pointed mitre-like fruit with a small hole at the top; for other characters see the last species. The leaves are applied to the bites and stings of rabid animals, snakes and scorpions, to ulcers, and used for their emetic action.



## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

**Heliotropium  
rariflorum,**  
BORAGINACEÆ.  
F. B. I. iv. 152.  
The Plains.  
Jhelum  
(Aitchison).  
Baluchistan  
(Boissier).

small, annual, leaves 1 by  $\frac{1}{8}$  in., linear, nearly entire, rough, hairy, flowers sessile in spikes 1-3 in., bracts scattered, leaflike, stigma a very depressed cone, fruit 4-lobed, bristly; for other characters see the last species.

**Heliotropium  
indicum,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Cynoglossum  
furcatum,**  
BORAGINACEÆ.  
F. B. I. iv. 155.  
The Plains to  
9,000 ft.  
Simla, Mashobra  
(Collett).

medium size, biennial or perennial, hairy with hairs flat to the stem, hairs often bulbous based; leaves radical long-stalked, large, present when flowering, stem-leaves 4 by 1 in., narrowly lanceolate, or oblong, sessile, smooth or very minutely rough above; flowers  $\frac{1}{5}$  in. diam., pale blue or white in long-forked one-sided racemes without bracts, calyx deeply 5-lobed, persistent, enlarged in fruit, corolla tube short with 5 scales at the mouth, lobes 5, blunt, spreading, stamens 5, within the corolla tube, style short; nutlets 4, small, 1-seeded, covered with minute hooked bristles.

**Cynoglossum  
micranthum,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Cynoglossum  
lanceolatum,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Cynoglossum  
denticulatum,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Cynoglossum  
Wallichii,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Cynoglossum  
microglochii,**  
BORAGINACEÆ.  
F. B. I. iv. 158.  
Himalaya,  
7-11,000 ft.  
Kashmir,  
Dalhousie.

medium size, softly velvety, leaves 4 by 2 in., ovate, short-pointed, upper surface with long white bulbous based hairs, lower with soft white, velvet, flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., dark blue in dense racemes, calyx lobes  $\frac{1}{6}$  by  $\frac{1}{10}$  in., blunt, hairy, corolla tube shorter than the calyx lobes, lobes  $\frac{1}{5}$  in., nutlets bristly on the margin; for other characters see *Cynoglossum furcatum*.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Cynoglossum  
nervosum,**

BORAGINACEÆ.

F. B. I. iv. 158.

Himalaya,

10-12,000 ft.

Jalouri Pass, Kulu.

The Chor.

Pangi.

very like the last species, but leaves more narrowly lanceolate, racemes looser, flowers larger, nutlets more densely bristly on the margins.

**Lindelofia spectabilis,**

BORAGINACEÆ.

F. B. I. iv. 159.

Himalaya,

10-12,000 ft.

Kashmir, Pir

Panjal.

medium size, perennial, hairy; leaves radical 2-4 in., long-stalked, lanceolate, lower stem leaves stalked, 3 in., nearly heart-shaped, upper stem leaves oblong, sessile, stem-clasping, hairy on both surfaces; flowers  $\frac{1}{4}$  in., deep blue, in dense long bractless racemes, calyx lobes 5,  $\frac{1}{5}$  in., blunt or nearly short-pointed, slightly hairy or woolly, corolla tube  $\frac{1}{4}$  in., one to three times as long as the calyx, lobes 5,  $\frac{1}{5}$  in., crowned with scales in the mouth, forming a cone, lobes blunt, round, spreading, stamens 5, scarcely protruding above the mouth scales, style long, stigma small; nutlets 4, depressed, rounded at the base, margins bristly.

**Lindelofia Benthami,**

BORAGINACEÆ.

F. B. I. iv. 159.

Kashmir,

11-15,000 ft.

very like the last species, but the leaves narrower, flowers on branching racemes, corolla lobes nearly erect.

**Solenanthus  
circinnatus,**

*Lendi, lenwa.*

BORAGINACEÆ.

F. B. I. iv. 160.

Himalaya, 12,000 ft.

Pangi (Watt).

medium size, perennial, hairy; leaves radical 6 by  $2\frac{3}{4}$  in., heart-shaped, thin, stalk 8 in., stem-leaves 3 by  $1\frac{1}{4}$  in., oblong-lanceolate, almost stem-clasping; flowers  $\frac{1}{4}$  in., blue, in branching terminal racemes, calyx lobes 5,  $\frac{1}{5}$  by  $\frac{1}{12}$  in., oblong, corolla tube  $\frac{1}{4}$  in., scales in the mouth lobes 5,  $\frac{1}{16}$  in., nearly erect, stamens 5 long, protruding far, style long, thread-like, stigma small; nutlets 4, forming a pyramid  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., densely bristly, especially at the margins. The root, *mulin*, is exported to the plains.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES,

LEAF MARGINS ENTIRE,

PETALS UNITED,

**Paracaryum  
heliocarpum,**  
BORAGINACEÆ.  
F. B. I. iv. 161.  
Himalaya,  
7-9,000 ft.  
Kashmir, Lahul,  
Spiti (Thomson).

medium size, biennial or perennial, softly hairy; leaves radical long-stalked, 6 by 1 in., lanceolate, prolonged down the stalk, stem-leaves  $2\frac{1}{2}$  by  $\frac{1}{2}$  in., oblong or lanceolate, softly hairy on both surfaces; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., blue, in long loose bractless racemes, 4-10 in., calyx lobes 5,  $\frac{1}{8}$  in., narrowly oblong, silky, little enlarged in fruit, corolla tube closed by scales  $\frac{1}{4}$ - $\frac{1}{2}$  in., lobes 5,  $\frac{1}{6}$  in., almost erect, blunt, stamens 5, under the mouth scales, style  $\frac{1}{2}$  in. in fruit; nutlets 4,  $\frac{1}{4}$ - $\frac{1}{3}$  in., forming a pyramid with stiff persistent style, bristly, strongly margined.

**Paracaryum  
glochidiatum,**  
BORAGINACEÆ.  
F. B. I. iv. 161.  
Himalaya,  
9-12,000 ft.  
Matiana Hill.  
Hattu (Collett).  
Kashmir.

like the last species, but radical leaves ovate, heart-shaped, not prolonged down the stalk, stem-leaves ovate or orbicular, only hairy on the nerves beneath, corolla tube much shorter, style only  $\frac{1}{8}$  in., nutlets forming a larger pyramid, hooked bristles much longer, linear.

**Paracaryum  
microcarpum,**  
BORAGINACEÆ.  
F. B. I. iv. 162.  
Himalaya,  
8,000 ft.  
Pangi.  
Kashmir.

like the last species, but much smaller, spreading, flowers much smaller, leaves oblong, much smaller, nutlets very small, forming a pyramid, with only minute hooked bristles on the disc, not on the margins of the nutlets.

**Echinosperrum  
minimum,**  
BORAGINACEÆ.  
F. B. I. iv. 162.  
N.-W. F. Province.  
Peshawar.  
(Vicary).  
Kashmir Valley.

small, stiff, bristly; leaves  $1\frac{1}{2}$  by  $\frac{1}{4}$  in., linear-oblong, lower leaves with the blade prolonged into the stalk; flowers  $\frac{1}{4}$  in., blue, on stalks  $\frac{1}{4}$  in., in racemes 2-3 in. with bracts  $\frac{1}{2}$ - $\frac{3}{4}$  in., leaflike, often reaching to the end of the racemes, calyx lobes 5,  $\frac{1}{5}$ - $\frac{1}{4}$  in., linear, corolla tube short, mouth closed by 5 scales, lobes 5, blunt, spreading, a little longer than the calyx lobes, stamens 5 within the corolla tube; nutlets 4, erect,  $\frac{1}{5}$ - $\frac{1}{4}$  in., forming a pyramid, margin thickened with one row of hooked bristles; nutlets firmly united.

## HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

**Echinosperrnum  
barbatum,**

BORAGINACEÆ.  
F. B. I. iv. 163.  
Himalaya,  
7-12,000 ft.

like the last species, but leaves oblong,  $\frac{1}{2}$ -2 in., racemes longer, bracts smaller, usually none at the top of the racemes, calyx lobes  $\frac{1}{10}$  in., oblong, nutlets  $\frac{1}{10}$ - $\frac{1}{8}$  in., forming a pyramid of which the nutlets can be separated, 2 rows of hooked bristles on the margins.

**Eritrichium strictum,**

BORAGINACEÆ.  
F. B. I. iv. 164.  
Himalaya, west of  
Sutlej, 7-13,000 ft.  
Kashmir.

small, perennial, rootstock woody, stems many, white silky, stiff; leaves  $1\frac{1}{2}$  by  $\frac{1}{8}$  in., linear, lower stem leaves larger, hardly stalked, radical leaves stalked, withered when flowering; flowers  $\frac{1}{4}$  in. diam., blue, on stalks  $\frac{1}{8}$ - $\frac{1}{3}$  in., in branched racemes, 1-3 in., bracts minute in the upper part of the racemes, calyx lobes 5, oblong, corolla tube short, throat with 5 scales, lobes 5, blunt, spreading, stamens 5 in corolla tube; nutlets 4, erect,  $\frac{1}{2}$ - $\frac{1}{10}$  in., pyramidal, margins thin with the minute hooked bristles which are united at their bases, apices of most nutlets divided, hooked.

**Eritrichium  
basifixum,**

BORAGINACEÆ.  
F. B. I. iv. 165.  
Himalaya,  
13-15,000 ft.  
Kashmir.

annual, stems one or two, leaves  $\frac{2}{3}$  by  $\frac{1}{4}$  in., broadly lanceolate, with long weak hairs, sessile, lower tufted, upper apart, flowers purplish blue, racemes  $1\frac{1}{2}$  in., with many bracts,  $\frac{1}{8}$  in. long, nutlets  $\frac{1}{2}$  in., thin, smooth; otherwise like the last species.

**Rochelia stylaris,**

BORAGINACEÆ.  
F. B. I. iv. 166.  
The Plains above  
1,000 ft.  
Kashmir Valley.

small, annual, with long weak hairs pressed to the plant surface; leaves 1 by  $\frac{1}{6}$  in., narrowly oblong, prolonged into the very short stalk; flowers  $\frac{1}{8}$  by  $\frac{1}{16}$  in., blue or white, on stalks bent down in fruit, in racemes 2 to 12 in. long when fruiting, bracts leaflike, smaller upwards, calyx lobes 5, linear,  $\frac{1}{12}$  in., in fruit  $\frac{1}{4}$  in., corolla tube with or without scales, lobes 5, small, spreading, stamens 5 within the corolla tube, style much longer than the nutlets; nutlets 2, white, rough with minute processes.

**Bothriospermum  
tenellum,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

**Gastrocotyle****hispida,**

BORAGINACEÆ.

F. B. I. iv. 168.

The Plains at  
1,000 ft.

Baluchistan.

(C. B. Clarke).

small, spreading with bristly hairs; leaves 1-2 in. oblong, lowest prolonged into the stalk; flowers small, solitary and shortly stalked or in small axillary racemes, calyx lobes 5,  $\frac{1}{8}$ - $\frac{1}{3}$  in., coarsely bristly, corolla 1-5 in. diam., tube short, closed with scales, lobes 5, blunt, spreading, stamens 5 within the corolla tube; nutlets 4,  $\frac{1}{8}$ - $\frac{1}{6}$  in., ovoid, incurved, rough, apex with 4 ridges.

**Lycopsis arvensis,**

BORAGINACEÆ.

F. B. I. iv. 168.

Himalaya,

3-8,000 ft.

Near Peshawar.

Kashmir.

medium size, annual, bristly; leaves 2 by  $\frac{1}{3}$  in., oblong, short-pointed, upper stem-clasping, lower stalked; flowers  $\frac{1}{4}$  in., white, less commonly blue, on stalks 1-5 in., in terminal racemes, bracts  $\frac{1}{2}$  in., lanceolate or lower leaf-like, calyx lobes 5, linear, bristly,  $\frac{1}{6}$  in., in fruit  $\frac{1}{4}$  in., corolla tube  $\frac{1}{4}$  in., curved, lobes 5, nearly equal,  $\frac{1}{8}$  in., blunt, spreading, stamens 5, nearly at the bottom of the corolla tube; nutlets 4,  $\frac{1}{8}$ - $\frac{1}{6}$  in., ovoid, wrinkled.

**Nonnea pulla,**

BORAGINACEÆ.

F. B. I. iv. 169.

The Plains.

medium size, much branched, hairy and bristly; leaves 2 by  $\frac{1}{3}$  in., oblong, short-pointed, upper nearly stem-clasping, lower stalked; flowers  $\frac{1}{4}$  in., blackish-purple, on stalks  $\frac{1}{8}$ - $\frac{1}{4}$  in., in racemes, dense-flowered, 2-5 in., bracts 1 in., leaflike, calyx  $\frac{1}{4}$  in., in fruit  $\frac{1}{2}$  in., nearly globular, enclosing the nutlets, lobes 5, long-pointed, corolla tube  $\frac{1}{4}$  in., straight without scales at the mouth, lobes 5,  $\frac{1}{6}$  in., blunt, half-spreading, stamens 5, enclosed in the corolla tube; nutlets 4,  $\frac{1}{6}$  in., curved inwards, ovoid, wrinkled in a network.

**Mertensia elongata,**

BORAGINACEÆ.

F. B. I. iv. 170.

Kashmir,

5-8,000 ft.

small, perennial, rootstock stout, stems annual, hairy with the hairs laid against the stem and with broad bases; leaves oblong, radical, 2 by  $\frac{1}{2}$  in., long-stalked with the blade prolonged into the stalk, stem leaves 2 by  $\frac{1}{2}$  in., sessile; flowers  $\frac{1}{4}$  in., purplish blue on stiff nearly erect stalks  $\frac{1}{5}$  in. in racemes, many-flowered, long-stalked, lengthened in fruit to  $3\frac{1}{2}$  in., calyx lobes 5,  $\frac{1}{8}$  in., linear, in fruit  $\frac{1}{6}$  in., corolla  $\frac{1}{3}$  in. diam., tube  $\frac{1}{6}$  in. long, lobes spreading, a little longer than the calyx, scales in the throat very small, stamens 5, included in the corolla tube, style thread-like, very long; nutlets 4,  $\frac{1}{10}$  in., ovoid, oblong, smooth, slightly angular, white or pale, shining.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Mertensia  
moltkoides,**

BORAGINACEÆ.

F. I. B. iv. 170.

Himalaya,

8,000 ft.

Pangi (Dr. Watt).

Kashmir.

like the last species, but with hairs not lying flat, corolla tube twice as long as the calyx, nutlets  $\frac{1}{8}$  in., brown-black.

**Mertensia echioides,**

BORAGINACEÆ.

F. B. I. iv. 170.

Kashmir,

5-12,000 ft.

small to medium size, perennial, softly hairy, leaves  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., nearly blunt, racemes 1-3 in., on long stalks, corolla tube  $\frac{1}{8}$  in. longer than the calyx lobes, corolla lobes erect, no scales in the throat, stamens protruding beyond the throat of the corolla tube; otherwise like the last species.

**Mertensia**

**racemosa,**

BORAGINACEÆ.

F. B. J. iv. 171.

Himalaya,

7-10,000 ft.

Simla.

Mashobra (Collett).

nearly smooth, or minutely hairy, stems small, weak, leaves ovate, radical, long-stalked, stem leaves often stalked, lanceolate, racemes nearly sessile, bracteate, few-flowered, corolla  $\frac{1}{2}$ - $\frac{2}{3}$  in. diam., tube half as long again as the calyx, scales in the throat, stamens not protruding; otherwise like the last species.

**Moltkia parviflora,**

BORAGINACEÆ.

F. B. I. iv. 171.

Kashmir,

6-8,000 ft.

very like *Mertensia echioides*, but leaves linear-oblong, 2 by  $\frac{1}{8}$  in., minutely hairy, racemes without bracts, flowers all on one side, corolla hardly projecting beyond the calyx, no scales in the throat.

**Myosotis cæspitosa,**

**Forget-me-not.**

BORAGINACEÆ.

F. B. I. iv. 173.

Himalaya,

9-13,000 ft.

Kashmir.

small to medium size, hairy, or nearly smooth, hairs pressed against the stem; leaves  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., oblong, lowest with blade prolonged into the stalk; flowers  $\frac{1}{8}$  in. diam., bright blue with a yellow centre, on stalks longer than the calyces in racemes 2-8 in., flowers all on one side, calyx lobes triangular-lanceolate, as long as the tube, hairy, corolla tube short, mouth closed with scales-lobes 5, blunt, spreading, stamens 5, enclosed in the corolla tube, style shorter than the calyx lobes; nutlets 4, ovoid-oblong, smooth.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

- Myosotis sylvatica**, small to medium size, hairy, hairs spreading, leaves  
**Wood forget-me-not.**  $1\frac{1}{2}$  by  $\frac{1}{4}$  in., oblong but narrower, lowest broader  
 BORAGINACEÆ. and stalked, racemes often divided, corolla  $\frac{1}{3}$  in. diam.,  
 F. B. I. iv. 173. lobe flat, calyx smaller, teeth lanceolate, longer than the  
 Himalaya. tube, hairs erect and spreading; for other characters see  
 7-12,000 ft. the last species.  
 Simla, Fagu  
 (Collett).  
 Kashmir.
- Myosotis arvensis**, very like the last species, but corolla smaller,  $\frac{1}{6}$ - $\frac{1}{4}$  in.  
 BORAGINACEÆ. diam., lobes concave, calyx teeth curving over the  
 F. B. I. v. 173. nutlets.  
 Kashmir Valley.
- Myosotis stricta**, very like the last species, but smaller, leaves nar-  
 BORAGINACEÆ. rowed at both ends, lower nearly sessile, flowers often  
 F. B. I. iv. 174. crowded on racemes, which look like crowded spikes.  
 Kashmir,  
 5-6,000 ft.  
 (Falconer).  
 Pangi (Dr. Watt).  
 Baluchistan  
 (Boissier).
- Lithospermum** medium size, annual, bristly; leaves lanceolate,  
**arvense**, stem leaves 1 by  $\frac{1}{4}$  in., lower stalked, oblong-ovate with  
 BORAGINACEÆ. a broad tip; flowers  $\frac{1}{4}$  in. long, white, rarely blue, on stalks  
 F. B. I. v. 174.  $\frac{1}{10}$  in., in racemes 4-10 in., bracts leaflike, smaller upwards,  
 Kashmir. calyx lobes 5 linear, corolla hairy upwards, tube not longer  
 N.-W. F. Province. than the calyx, lobes 5, blunt, spreading, stamens 5, en-  
 Peshawar. closed in the corolla tube, stigma usually 2-fid; nutlets  
 Baluchistan 4,  $\frac{1}{8}$  in., stony, rough, narrowed upwards.  
 (Lace).
- Lithospermum** very like the last species, but smaller, lower leaves  
**tenuiflorum**, scarcely stalked, flowers usually blue, nutlets more pointed.  
 BORAGINACEÆ.  
 F. B. I. iv. 175.  
 Kashmir,  
 5-7,000 ft.  
 Rawalpindi  
 (Aitchison).  
 Baluchistan  
 (Lace).

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Lithospermum  
officinale.**

BORAGINACEÆ.

F. B. I. v. 175.

Kashmir,  
5-8,000 t.

medium size to large, perennial, roughly hairy, leaves 2 by  $\frac{1}{2}$  in., oblong-lanceolate, roughly hairy, nerves somewhat prominent, flowers  $\frac{1}{4}$  in., white turning yellowish, on stalks  $\frac{1}{8}$  in., in racemes 1-4 in., bracts leaflike, smaller upwards, nutlets shining white, smooth; otherwise like the last species. The seeds, *lubis firmun*, are used as a cure for stone.

**Arnebia  
hispidissima,**

BORAGINACEÆ.

F. B. I. iv. 176.

The Plains, Lahore.  
Baluchistan  
(Boissier).

small, annual or biennial, very roughly hairy as the specific name implies; leaves 2 by  $\frac{1}{5}$  in., lanceolate, hairs white from prominent bases; flowers  $\frac{1}{5}$  in., yellow, nearly sessile, on one-sided spikes, 2-4 in. long, bracts  $\frac{1}{4}$ - $\frac{1}{3}$  in., linear, calyx lobes 5, linear,  $\frac{1}{5}$  in., stamens 5, in some plants short, included in the corolla tube, in others long, just protruding, style long or short, the inverse to the length of the stamens; nutlets 4,  $\frac{1}{20}$ - $\frac{1}{16}$  in., conical, sharply pointed, prominences on all sides.

**Arnebia Griffithii,  
The Prophet's  
flower,**

*Panjakka,*  
*paghambr-i-phul.*

BORAGINACEÆ.

F. B. I. iv. 176.

The Plains,  
west of the Jhelum.  
Pindigheb.  
Fatehganj  
(Douie).  
Campbellpur.  
Peshawar.  
Baluchistan  
(C. B. Clarke).

very like the last species, but a little larger, hairs softer, calyx lobes  $\frac{1}{3}$ - $\frac{1}{2}$  in., corolla tube  $\frac{3}{4}$ -1 by  $\frac{1}{3}$ - $\frac{1}{2}$  in., lobes yellow with a brown spot at the base of each, fading during the day, nutlets much larger, more triangular and blunter, prominences on all sides.

**Arnebia Thomsoni,**

BORAGINACEÆ.

F. B. I. iv. 176.

Spiti Valley,  
Ladakh.

very like *Arnebia hispidissima* above, but often perennial, softer, leaves narrowly oblong, bracts oblong, blunt, longer than the calyx, nutlets larger and smoother.

**Arnebia tibetana,**

BORAGINACEÆ.

F. B. I. iv. 176.

Northern Kashmir,  
7-12,000 ft.

very like the last species but hairs more bristly, spikes longer, nutlets rougher.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES,

LEAF MARGINS ENTIRE.

PETALS UNITED.

- Onosma echioides**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Onosma Thomsoni**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Onosma bracteatum**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Convolvulus Aitchisoni**, small to medium size, perennial, white, woolly, rootstock woody, annual stems 1-4 in. ; leaves clustered, linear, radical  $1\frac{1}{2}$  in., linear or oblong, densely hairy on both sides ; flowers 1 in., pinkish white, in clusters, bracts  $\frac{2}{3}$  in., narrowly lanceolate, calyx deeply 5-lobed, lobes linear, hairy,  $\frac{1}{2}$  in., corolla wide-mouthed, 5 plaits, hairy without, stamens 5, within the corolla, stigmas 2, thread-like, nearly equal to the style ; capsule round, 4-seeded.
- CONVOLVULACEÆ.  
F. B. I. iv. 218.  
Jhelum, Salt Range (Aitchison).  
Sakesar.
- Convolvulus microphyllus**, like the last species, but larger, flowers pinkish yellow, smaller and axillary.
- CONVOLVULACEÆ.  
F. B. I. iv. 218.  
Bhera, Sargodha.  
Baluchistan (C. B. Clarke).
- Convolvulus pluricaulis**, very like the last species, but corolla larger,  $\frac{2}{3}$ - $\frac{3}{4}$  in. It is eaten by cattle, it is used as a vegetable and considered to be cooling.
- var. **macra**,  
*Porprang, dodak.*
- CONVOLVULACEÆ.  
F. B. I. iv. 218.  
The Plains to 3,000 ft.  
Rawalpindi.  
Delhi.
- Convolvulus glomeratus**, medium size to large, rootstock biennial or perennial, spreading, leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., oblong, nearly sessile, sparingly hairy, flowers  $\frac{1}{2}$  in., in heads on stalks  $\frac{1}{2}$ - $\frac{3}{4}$  in., with leaflike bracts  $\frac{1}{2}$ -1 in., or heads sessile on short axillary branches, calyx lobes 5,  $\frac{1}{3}$  in. long, lanceolate, hairy, short-pointed, corolla tubular, mouth narrow, funnel-shaped ; for other characters see *Convolvulus Aitchisoni* above.
- CONVOLVULACEÆ.  
F. B. I. iv. 219.  
The Plains of the Western Punjab and N.-W. F. Province.  
Baluchistan (C. B. Clarke).

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

- Evolvulus alsinoides**, *Sankhpushpi*.  
 CONVULVULACEÆ.  
 F. B. I. iv. 220.  
 The Plains to 6,000 ft.  
 Valleys below Simla.  
 Syri (Collett).  
 Kalka.  
 Baluchistan (Boissier).  
 small, perennial, spreading, usually prostrate, silky hairy, more or less, white, yellow or rusty, annual, branches many; leaves  $\frac{1}{4}$ -1 in., rarely  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., linear or oblong, sessile or nearly so; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., blue or white, 1-3 together, sessile or on minor stalks  $\frac{1}{2}$  in. long, clustered on a main stalk,  $\frac{1}{8}$ - $1\frac{1}{2}$  in., bracts linear, hairy, calyx lobes 5,  $\frac{1}{8}$ - $\frac{1}{6}$  in., lanceolate, hairy, corolla funnel-shaped, tube very short, barely 5-lobed, folding at the angles, stamens 5, attached near the bottom of the corolla tube, styles 2, branching into 2 linear stigmas; capsule  $\frac{1}{8}$ - $\frac{1}{6}$  in., round, 4-valved, seeds 4, smooth. This plant is used to strengthen the brain and memory, also as a tonic and febrifuge.
- Breweria latifolia**, see Shrubs, Erect, Alternate, Exstipulate, Simple, Petals United.
- Solanum coagulans**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Solanum xanthocarpum**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Solanum gracilipes**, *Kandiari*.  
 SOLANACEÆ.  
 F. B. I. iv. 237.  
 The Plains.  
 Baluchistan (Boissier).  
 medium size, perennial, velvety with minute star-shaped hairs, stem prickly, prickles short, conical, partly curved back; leaves  $1\frac{1}{2}$  in. diam., ovate or circular with a wavy edge, often nearly heart-shaped, not prickly; flowers  $\frac{2}{3}$  in., sessile, on short axillary one-to three-flowered main stalks or on nearly terminal minor stalks, one to three together on very short lateral branches, calyx lobes 5,  $\frac{1}{5}$  in., linear, in fruit  $\frac{1}{3}$  in., corolla tube short, deeply lobed, lobes 5, folded in bud, wheel-shaped, stamens 5, in corolla throat, tops meeting in a cone; berry  $\frac{1}{4}$  in., round, smooth, larger than the calyx lobes, seeds  $\frac{1}{8}$  in. diam., many, discoid, smooth. The fruit is used to cure discharge from the ear.
- Physalis minima**, *Tulati-pati, kaknaj*.  
 SOLANACEÆ.  
 F. B. I. iv. 238.  
 The Plains to 7,000 ft.  
 Simla (Collett).  
 medium size, annual, velvety, often spreading; leaves 2 by  $1\frac{1}{2}$  in., ovate, angular, short-pointed, stalk 1 in.; flowers  $\frac{1}{4}$  in. diam., yellow or blue, single on axillary stalks, calyx 5-lobed,  $\frac{1}{8}$ - $\frac{1}{6}$  in., lobes lanceolate in fruit, calyx  $\frac{1}{2}$ -1 in., ovoid or round, 5-10 ribbed, loosely enclosing the fruit, corolla broadly bell-shaped, almost 5-lobed, folding at the angles, stamens 5; berry  $\frac{1}{2}$  in. diam., round, green, seeds  $\frac{1}{12}$  in. diam., very many, discoid, surface netted. The fruit is diuretic, purgative, and tonic.

HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

- Physalis peruviana,** like the last species, but more hairy, stouter, fruit-  
**Cape gooseberry,** calyx larger, corolla yellow with 5 large purple spots  
*Tipari.* at the base within, fruit yellow when ripe. This plant is  
 SOLANACEÆ. indigenous and cultivated in Tropical America ; cultivated  
 F. B. I. iv. 238. widely in India for its sweet acidulated berries.  
 The Plains to  
 5,000 ft.
- Capsicum frutescens,** medium size, annual, smooth or nearly so, stem  
**Chilli,** woody, much branched, bushy ; leaves 2-4 by  $\frac{1}{2}$ -1 in.,  
*Lal marich.* lanceolate, margin entire or slightly wavy, prolonged into  
 SOLANACEÆ. the stalk, stalk  $\frac{1}{4}$ - $\frac{1}{2}$  in.; flowers  $\frac{1}{2}$  in. across, white, on solitary  
 F. B. I. iv. 239. axillary stalks or 2-3 together, calyx bell-shaped, minutely  
 The Plains to 5-toothed, ridges running into teeth, corolla wheel-shaped,  
 5,000 ft. 5-angled, stamens 5, anthers fringed with black, style  
 Kashmir. short, stigma round ; berry 2-3 in., yellowish-red, tapering,  
 Baluchistan long, skin loose, seeds many, discoid. This plant is not  
 (Hughes-Buller). indigenous, it is probably indigenous in America ; it is  
 widely cultivated for its pungent fruit, which is used as  
 a condiment.
- Capsicum minimum,** like the last, but smaller, flower stalks mostly 2-3  
**Bird's-eye-Chilli,** together, berry red,  $1\frac{1}{2}$  by  $\frac{1}{2}$  in., or smaller, nearly erect.  
*Gach marich.* This plant is only found cultivated and is used as a con-  
 SOLANACEÆ. diment.  
 F. B. I. iv. 239.  
 The Plains.
- Capsicum grossum,** like the last, but the flower stalks are solitary, nod-  
*Kafri marich.* ding in fruit, berry 3 by 2 in. or smaller, red. This plant  
 SOLANACEÆ. is only found cultivated and is used as a condiment, but is  
 F. B. I. iv. 239. not so pungent as the other species.  
 The Plains.
- Withania somnifera,** medium size to large, greyish-green, branches round ;  
*Asgand, aksan.* leaves 2-4 in., ovate, thinly woolly, almost pointed, stalks  
 SOLANACEÆ.  $\frac{1}{4}$ - $\frac{1}{2}$  in. ; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in., greenish yellow, axillary, sessile or  
 F. B. I. iv. 239. shortly stalked, solitary or clustered, calyx  $\frac{1}{8}$  in. in flower,  
 The Plains.  $\frac{3}{4}$  in. in fruit, bell-shaped, 5-6-toothed, in fruit papery,  
 Lahore. swollen, enclosing the berry, corolla bell-shaped, lobes  
 Salt Range. 3-6 short, stamens 5-6, on the base of the corolla, stigma  
 Baluchistan shortly 2-fid ; berry  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., round, seeds many,  
 (Stocks). discoid. The seeds are like the root diuretic and hypnotic.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

- Withania coagulans**, see Shrubs, Alternate, Exstipulate, Simple.  
**Datura stramonium**, see Herbs, Erect, Alternate, Exstipulate, Lobed.  
**Datura fastuosa**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Physoclaina  
præalta**,

SOLANACEÆ.

F. B. I. iv. 244.

North Kashmir,  
12-15,500 ft.

large, nearly smooth, branches clustered towards the top; leaves 4-6 by 3 in., ovate-oblong, wavy margins, stalk 1-4 in.; flowers  $\frac{3}{4}$ - $1\frac{1}{4}$  in., stalked in a terminal flat-topped sticky velvety cluster 2-8 in. diam., calyx  $\frac{1}{3}$  in., bell-shaped, lobes 5,  $\frac{1}{8}$  in., lanceolate, short, in fruit  $1\frac{3}{4}$  by  $\frac{1}{3}$  in., streaked, corolla  $1\frac{1}{4}$  by  $\frac{1}{5}$  in., tubular, funnel-shaped, lobes 5, short, overlapping in bud, stamens 5, attached at the middle of the tube, protruding, style thread-like, stigma barely 2-lobed, protruding; capsule  $\frac{1}{2}$  in. diam., 2-celled, seeds  $\frac{1}{12}$  in., very many, net-veined, flattened. This plant like Belladonna dilates the pupil of the eye; it is poisonous to man, not to cattle; the leaves are used to reduce swellings.

**Hyoscyamus niger**,  
**Henbane**,  
*Dandura, damtura,*  
*bazrbang.*

SOLANACEÆ.

F. B. I. iv. 244.

Himalaya,  
8-11,000 ft.  
Narkanda (Collett).  
Quetta.

medium size to large, sticky, hairy with an unpleasant heavy odour, stem thick; leaves, radical leaves 6-8 in., entire or coarsely sinuate-toothed or lobed, spreading, oblong-ovate, stem-leaves smaller, sessile, ovate, lobed, changing into bracts above; flowers 1- $1\frac{1}{4}$  in. diam., dark yellowish-green, veined with purple, sessile on one-sided spikes, rolled back at first, then straight, calyx  $\frac{3}{4}$  in., tube ovoid, lobes funnel-shaped, 5-toothed, corolla funnel-shaped, lobes 5, spreading, unequal, broad, short, stamens 5, protruding, style thread-like, longer than the stamens, stigma nearly round; capsule  $\frac{1}{2}$  in. diam., enclosed in the swollen tube of the enlarged calyx, lower part papery, upper hard, opening along the line between the two parts, seeds  $\frac{1}{24}$  in., very many. This plant is sedative, anodyne and antispasmodic; it is much used in European medicine.

**Hyoscyamus  
pusillus**,

SOLANACEÆ.

F. B. I. iv. 245.

Kashmir.  
Ladak, 10,000 ft.  
Baluchistan  
(Stocks).

very like the last, but lower leaves smaller, often lobed, stem leaves stalked, often lobed, calyx streaked, smoothish, teeth lanceolate, corolla  $\frac{1}{2}$ - $\frac{3}{4}$  in., yellow, not net-veined.

HERBS, ERECT; WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS UNITED.

**Hyoscyamus muticus,**

SOLANACEÆ.

F. B. I. iv. 245.

N.-W. F. Province.

Baluchistan

(Stocks).

like *Hyoscyamus niger*, but leaves larger, somewhat woolly, stem leaves stalked, entire or toothed, calyx streaked, velvety, teeth triangular, not sharp-pointed in fruit, corolla 1-1½ in., dark yellow or nearly white.

**Nicotiana Tabacum, Tobacco,***Tumaku.*

SOLANACEÆ.

F. B. I. iv. 245.

The Plains to

2,000 ft.

medium size to large, annual, velvety, sticky; leaves 4-10 by 2-5 in., oblong, base wedge-shaped; flowers 1½ in. long, pink, in terminal or nearly terminal loose branching racemes, calyx ovoid, teeth 5, triangular lanceolate, corolla linear-funnel-shaped, lobes 5, stamens 5, in the lower part of corolla tube, thread-like, style thread-like, stigma 2-fid; capsule ¾ in., seeds numerous, small, hardly flattened. This plant is a native of America, widely cultivated, sometimes found as an escape near villages in Northern India.

**Nicotiana rustica,***Chilassi-kandahari* or *kakkar-tumaku.*

SOLANACEÆ.

F. B. I. iv. 245.

The Western Plains.

N.-W. F. Province.

Baluchistan

(Lace).

very like the last species, but the leaves are ovate with a blunt or heart-shaped base, stalked, rather leathery and crumpled; flowers yellowish in a close flowered branching raceme, calyx teeth triangular with a blunt point, corolla bell-shaped, cylindric; berry ½ in. This plant is a native of Mexico, and only found as a cultivated plant in Northern India.

**Verbascum Thapsus,**

see Herbs, Erect, Unbranched, Alternate, Exstipulate, Simple.

**Cyanotis cristata,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Cyanotis barbata,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Cyanotis axillaris,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS UNITED.

## STAMENS TWO.

**Anticharis linearis**, small, annual, slender, velvety, sticky; leaves 1-1½  
 SCROPHULARIACEÆ. by  $\frac{1}{16}$ - $\frac{1}{10}$  in., linear, short-pointed; flowers  $\frac{1}{2}$  in. long,  
 F. B. I. iv. 250. pink, axillary, solitary, on thread-like stalks, much longer  
 The Plains. than the calyx, calyx 5-lobed, lobes narrow, half as long  
 Baluchistan as the capsule, corolla  $\frac{1}{2}$  in. long, tube dilating into the  
 (Boissier). throat, lobes 5, flat, nearly equal, velvety, stamens 2, perfect,  
 anthers curved, placed cross-ways, style thread-like, stigma blunt or notched; capsule  $\frac{1}{4}$ - $\frac{1}{3}$  in., oblong-  
 ovoid, long-pointed, seeds many, minute, streaked.

**Veronica Anagallis**, see Herbs, Erect, Opposite, Exstipulate, Simple.

**Veronica verna**, see Herbs, Erect, Opposite, Exstipulate, Simple.

**Veronica serpyllifolia**, see Herbs, Erect, Opposite, Exstipulate, Simple.

## COROLLA TWO-LIPPED, STAMENS FOUR.

**Linaria minor**, small to medium size, annual, glandular, velvety,  
 Toad flax, branches ascending; leaves  $\frac{1}{2}$ -1 in., oblong or ovate  
 SCROPHULARIACEÆ. with a broad tip, narrowed into the stalk; flowers small,  
 F. B. I. iv. 252. pale purple with yellow on the lower lip, on slender stalks  
 The Plains. arranged on stouter main stalks, as long as the leaves,  
 bractless, sepals 5, linear, enlarging after flowering, nearly  
 equal to the corolla, corolla 2-lipped, tube spurred in  
 front, upper lip erect, 2-lobed, lower spreading, 3-lobed,  
 throat nearly closed by the yellow palate, stamens 4, in  
 unequal pairs, within the corolla tube, style thread-like,  
 stigma minute; capsule pouched, 2-celled, seeds many,  
 oblong, ribbed.

**Antirrhinum Orontium**, see Herbs, Erect, Opposite, Exstipulate, Simple.

**Striga lutea**, see Herbs, Erect, Opposite, Exstipulate, Simple.

**Striga euphrasioides**, see Herbs, Erect, Opposite, Exstipulate, Simple.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

FLOWERS IN TERMINAL CHAFFY SPIKES.

**Celosia argentea,**  
*Sarwali, sil,*  
*sarpankha.*

AMARANTACEÆ.

F. B. I. iv. 714.

The Plains to  
4,000 ft.

Valleys below Simla  
(Collett).

Dharpur.

medium size to large, annual, smooth, stem stout or slender; leaves 1-6 in., linear or lanceolate, stalked or sessile; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in., white or pinkish, glistening in long-stalked, simple or branched, cylindric, oblong or ovoid spikes, 1-8 by  $\frac{3}{4}$ -1 in., looking like the flowering top of a grass, sepals 5, thin, shining, lanceolate, short-pointed, longer than the bracts, petals none, stamens 5, united below into a tube, style long, tip 2-lobed; fruit dry, ovoid, enclosed in the sepals, short-pointed, seeds few. This plant is found in fields or near cultivation. The seeds are an excellent remedy for diarrhœa.

**Celosia cristata,**  
**Cock's comb,**  
*Lal-murgha, mawal,*  
*dhura-dru.*

AMARANTACEÆ.

F. B. I. iv. 715.

The Plains.

like the last species, but leaves broader and longer, flowers much smaller,  $\frac{1}{6}$ - $\frac{1}{4}$  in., pink, red or yellow, spikes often branched with flattened united stalks. This plant is cultivated or found as an escape. The flowers are astringent and used in diarrhœa and menorrhagia. The seeds are demulcent.

**Digera arvensis,**

see Herbs, Prostrate, Alternate, Exstipulate, Simple.

**Amarantus spinosus,**  
**Prickly Amaranth,**  
*Kanta-nutia.*

AMARANTACEÆ.

F. B. I. iv. 718.

The Plains  
to 6,000 ft.

Choa Saidan Shah  
(Douie).

Sainj.

Valleys below Simla  
(Collett.)

medium size to large, annual, green, sometimes red, stem hard, spines  $\frac{2}{3}$  in. and less, straight; leaves  $1\frac{1}{2}$ -4 by  $\frac{3}{4}$ -2 in., ovate or oblong, blunt, long-stalked, base wedge-shaped, 5 spines in each leaf axil; flowers  $\frac{1}{4}$  in. long, male and female separate in axillary clusters and in long dense or loose-flowered spikes, bract one, bristle-like, bracteoles 2 at the base of each flower, longer than the sepals, sepals of males long-pointed, of females blunt with a short point, stamens 5, stigmas 2; fruit wrinkled, nearly as long as the sepals, dividing by a circular fissure below the top, top thickened, and divided into 2 or 3, seeds  $\frac{1}{30}$  in. diam., black, shining, border blunt, not thickened. A weed of cultivation. The root is given as a demulcent. The plant is used as a pot herb.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

FLOWERS IN TERMINAL CHAFFY SPIKES.

**Amarantus  
paniculatus,**

*Bathu, chua.*

AMARANTACEÆ.

F. B. I. iv. 718.

The Plains to  
9,000 ft.

Valleys below and  
Hills above Simla  
(Collett).

large, annual, stout, stem streaked, smooth or very slightly downy; leaves 2-6 by 1-3 in., oblong with the ends rounded or ovate-lanceolate, short-pointed or finely long-pointed; flowers like the last species, but red or yellow in ovate branched racemes, roughly scurfy with spreading recurved bracts, bracts needle-like, very much longer than the long-pointed sepals, seeds  $\frac{1}{20}$  in. diam., yellowish-white or densely black with a narrow thin border. This plant is widely cultivated as a rainy season crop.

**Amarantus caudatus,**  
**Love-Lies bleeding,**

*Bathu, kedari chua.*

AMARANTACEÆ.

F. B. I. iv. 719.

The Plains to  
9,000 ft.

Baluchistan  
(Boissier).

very like the last species, but the spikes are long, tail-like and drooping, bracts shorter and sepals ovate-oblong. This plant is less commonly cultivated. It has been introduced into India since Roxburgh's time.

**Amarantus  
gangeticus,**

*Lal-sag.*

AMARANTACEÆ.

F. B. I. iv. 719.

The Plains to  
9,000 ft.

like *Amarantus paniculatus*, but the leaves are often pink or red, bracts and sepals with long bristle-like points, sepals 3, stamens 3, seeds larger, very black with a sharp border. This plant is cultivated and only found on cultivated ground; it is only eaten as a vegetable.

**Amarantus viridis,**

AMARANTACEÆ.

F. B. I. iv. 720.

The Plains.

Baluchistan  
(Boissier).

like the last species, but green, bracts shorter than the 2 or 3 sepals, stamens 2 or 3, seeds smaller with a sharp border. This plant is only found in waste places; the tops are sometimes eaten as a vegetable.

**Amarantus  
polygamus,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Amarantus Blitum,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Amarantus  
tenuifolius,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS ENTIRE.

PETALS NONE.

FLOWERS IN TERMINAL CHAFFY SPIKES.

- Ærua javanica**, see Shrubs, Erect, Alternate, Exstipulate, Simple.
- Ærua lanata**, small to medium size, stock woody, much branched, woolly, sometimes prostrate; leaves  $\frac{1}{2}$ -1 in., ovate or orbicular, stalked, woolly or smooth; flowers minute, scented, woolly, not glistening in spikes,  $\frac{1}{4}$ - $\frac{1}{2}$  in., crowded, forming nearly round clusters, all axillary, sessile, sepals 4-5, short, blunt, all or inner only woolly, stamens 4-5, united below with interposed linear staminodes into a cup. The flowers and roots are used to cure headache.  
*Bui-kalan*.  
AMARANTACEÆ.  
F. B. I. iv. 728.  
The Plains to 2,000 ft.  
Kahuta, Rawalpindi (Douie).  
Baluchistan (Stocks).
- Chenopodium album**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Atriplex crassifolia**, medium size, annual, stem and branches whitish; leaves 1-1 $\frac{1}{2}$  in., oblong or ovate, tip-pointed or blunt, base wedge-shaped or forked, stalked, not thick; flowers, one sexual, male and female on the same plant, male without bracts, sepals 3-5, oblong, blunt, stamens 3-5, in clusters on slender leafless, long, terminal interrupted spikes, female with 2 bracts, sepals none, stigmas 2; fruit enclosed by the much enlarged leaflike bracts, each with a convex, smooth, thick, white, disk at its base, female in small axillary clusters on the lower part of the branches.  
CHENOPODIACEÆ.  
F. B. I. v. 6.  
The Plains to 8,000 ft.  
Lahore.  
Baluchistan (Hughes-Buller).
- Axyris amarantoides**, small, annual, with star-shaped hairs or smooth, stem stout or slender, branched from the base; leaves  $\frac{1}{2}$ -1 $\frac{1}{2}$  in., ovate or oblong, blunt or short-pointed, stalk short or slender, when dry, pale yellowish or reddish-brown; flowers minute without bracts, male and female on the same plant, male in terminal clusters with 3-5 thin transparent sepals, and 2-5 slender stamens, female axillary, solitary or mixed with the males, with 3-4 unequal thin sepals; fruit membranous, held by the sepals, flattened or spherical, tip shortly winged or crested, stigmas hair-like, very long.  
CHENOPODIACEÆ.  
F. B. I. v. 8.  
Himalaya, 8-13,000 ft.  
Lahul.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS NONE.

**Kochia indica,***Kaura ro.*

CHENOPODIACEÆ.

F. B. I. v. 11.

The Plains.

small, annual, softly hairy, branched from the base, branchlets long, widely separating; leaves small, oblong with rounded ends or linear-oblong, short-pointed, sessile; flowers minute, male and female sometimes separate, bractless, sepals 5 in., curved, in fruit closing over, leathery with 5 free or united horizontal, ovate, blunt, thick wings, forming a broad triangular calyx, stamens 5, anthers large, protruding, style slender, stigmas 2-3, thread-like, seed orbicular.

**Halocharis sulphurea,**

CHENOPODIACEÆ.

F. B. I. v. 19.

The Plains of

N.-W. F. Province.

Baluchistan

(Aitchison).

small, annual, hairy with long bristles; leaves  $\frac{1}{2}$ -1 in. long, linear, blunt-tipped, almost angled; sessile, in clusters at the end of branches, floral leaves equal to the hairy lanceolate bracteoles; flowers  $\frac{1}{2}$  in. diam., in headlike clusters, forming long spikes at the end of short branches, sepals 5, lanceolate, thin, transparent, outer softly hairy, stamens 5, on a fleshy disc, anthers linear, connected by a long sessile yellow appendage, much longer and broader than the anther; capsule enclosed by the sepals, ovoid, flattened, stigmas 2, slender, seed flattened.

**Phytolacca acinosa,***Lubar, rinsag, sarunga.*

PHYTOLACCACEÆ.

F. B. I. v. 21.

Himalaya,

4-9,000 ft.

Hazara.

Kashmir.

large, stout, fleshy, nearly smooth; leaves 6-10 by  $2\frac{1}{2}$ -4 in., broadly lanceolate, long-pointed, narrowed into a short stalk; flowers  $\frac{1}{3}$  in. diam., green, on stalks  $\frac{1}{4}$  in. long in leaf opposed cylindrical racemes, 2-6 in. long, bracts linear-lanceolate, thin, sepals 4, broadly oblong, blunt, stamens 8-10, united below, anthers soon falling off, fruit of 8-10 carpels, dark purple, fleshy, crowded in an erect stout raceme 4-8 in. long, one seed in each carpel, black, kidney-shaped, shining. This plant was introduced from China, is cultivated and found as an escape; the leaves are cooked and eaten, but uncooked is poisonous, causing delirium.

**Thymelæa arvensis,**

THYMELÆACEÆ.

F. B. I. v. 194.

The Plains below

Jammu.

Kashmir.

Ramu, 6,000 ft.

small to medium size, annual, very slender, smooth, straight, branches few, leafy, erect; leaves  $\frac{1}{3}$ - $\frac{1}{2}$  in., linear-lanceolate, long-pointed, nearly erect, sessile; flowers  $\frac{1}{10}$  in., sessile in all the leaf-axils, forming long, leafy, very slender spikes, bracts small, calyx urn-shaped or tubular, 4-lobed, lobes erect, blunt, ovate, very short, stamens 8 in 2 series, anthers nearly sessile; fruit  $\frac{1}{10}$ - $\frac{1}{8}$  in. long, ovoid, dry, narrowed upwards. -

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES,

LEAF MARGINS ENTIRE.

PETALS NONE.

**Wikstræmia  
canescens,**

see Shrubs, Alternate, Exstipulate, Simple.

**Diarthron  
vesiculosum,**  
THYMELÆACEÆ.  
F. B. I. v. 196.  
N.-W. F. Province.  
Peshawar (Vicary).  
Baluchistan  
(Boissier).

small, annual, slender, much branched, leafy; leaves  $\frac{1}{2}$ - $\frac{2}{3}$  in., linear, nerveless, somewhat waxy, bluish-green, sessile, blunt or almost pointed; flowers minute, on very short stalks in slender racemes,  $\frac{1}{4}$  in. long, lengthening to 1 in. in fruit, calyx  $\frac{1}{8}$  in. long, urn-shaped or tube very slender, closing over the fruit, bladder-like when the fruit does not ripen, lobes 4, spreading, stamens 8, in two series, anthers almost sessile, lower smaller than the upper; fruit  $\frac{1}{12}$ - $\frac{1}{10}$  in. long, dry, narrowly ovoid.

**Thesium himalense,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Euphorbia Wallichii,**  
EUPHORBIACEÆ.  
F. B. I. v. 258.  
Himalaya,  
6-12,000 ft.  
Kashmir.  
Chamba.  
Jammu.

medium size to large, stock perennial, stems annual, velvety above, branched or not, juice milky; leaves 3-5 in., linear or oblong, with rounded ends or ovate with a broad-pointed tip, sessile, thin, nerves many, spreading, floral leaves  $1\frac{1}{2}$  in. diam., clustered at the end of stem or branches, 3-4, large, rounded or oblong, ovate, short-pointed; flowers  $\frac{1}{8}$  in. diam., in compound umbels, rays and flower stalks few, short, male and female organs in one cup-shaped 4-5-lobed calyx, lobes almost concealed by 5 horizontal kidney-shaped glands placed in their angles, glands smooth, rounded, fleshy, margins woolly, stamens many, anthers globular, surrounding a stalked orbicular 3-lobed capsule hanging down on one side, styles 3, united to the middle, dividing into 2; capsule  $\frac{1}{2}$  in. diam., consisting of 3 woody one-seeded cells; seeds  $\frac{1}{8}$  in., smooth, grey-blue.

**Euphorbia pilosa,**  
**Hairy Spurge,**  
EUPHORBIACEÆ.  
F. B. I. v. 260.  
Himalaya,  
4-8,000 ft.  
Simla (Collett).  
Murree.

very like the last species but smaller, bracts yellow-green, flowers smaller, glands yellow, styles long; capsule  $\frac{1}{4}$  in. diam., covered more or less with small, often minutely hairy tubercles, seeds smooth.

## HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS NONE.

**Euphorbia dracunculoides,**  
*Kangi.*

EUPHORBIACEÆ.

F. B. I. v. 262.

The Plains to  
3,000 ft.Baluchistan  
(Hughes-Buller).

medium size, annual, smooth, stems many, leafy, much branched, branches spreading, leaves 1-1½ in., linear-lanceolate, nearly short-pointed, base generally pointed, rarely rounded or almost heart-shaped, floral leaves 2, broader at the base, shorter, flowers solitary, top-shaped, hairy within, lobes ovate, bristly, glands curved, styles short, free, capsules ⅓-⅓ in. diam., smooth, seeds patchy; in other respects like the last species. Oil expressed from the seeds has been found superior to linseed oil.

**Euphorbia Maddeni,**

EUPHORBIACEÆ.

F. B. I. v. 263.

Himalaya,

5-9,000 ft.

Mashobra.

Mahasu (Collett).

Murree.

small to medium size, stem leaves 2 by ½ in., ovate, with a broad tip narrowed into the stalk, floral opposite, flowers solitary in the axils of branches or of the leaves of the branches or sometimes in umbels, lobes 4 or 5, glands yellow, curved, with long horns, styles nearly free, seeds smooth; in other respects like the last species.

**Euphorbia falcata,**

EUPHORBIACEÆ.

F. B. I. v. 263.

Rawalpindi

(Aitchison).

Gilgit (Giles).

Baluchistan

(Boissier).

small, stems and branches stiff, pale, leaves 1 in. or less, sessile, oblong with a broad tip, very long-pointed, flowers minute, top-shaped, lobes fringed, glands very minute, capsule 1-10 in., thin, ovoid, cells keeled, seeds transversely furrowed; for other characters see the last species.

**Euphorbia prolifera,**

EUPHORBIACEÆ.

F. B. I. v. 264.

The Plains to

6,000 ft.

Valleys below

Simla (Collett).

Kashmir.

small, perennial, rootstock thick, woolly, leaves ⅓ by ⅓-⅓ in., very narrow, linear or linear-oblong, blunt- or short-pointed, base rounded or short-pointed, nerves 3, flowers ⅓ in. diam., shortly bell-shaped, lobes triangular, fringed, glands stalked, kidney-shaped or horned, or oblong, entire or toothed, bracteoles many, styles stout, rolled round, deeply divided, capsule ⅓-⅓ in. diam., broad, smooth, long-stalked, rather depressed, seeds mottled or not; for other characters see the last species.

**Asparagus filicinus,**

see Leafless Plants, Herbs.

**Asparagus gracilis,**

see Leafless Plants, Herbs.

**Asparagus capitatus,**

see Leafless Plants, Herbs.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS ENTIRE.

## PETALS NONE.

**Asparagus  
adscendens,** see Leafless Plants, Herbs.

**Juncus bufonius,** see Herbs, Unbranched, Alternate, Exstipulate,  
Simple.

## LEAF MARGINS TOOTHED.

## PETALS UNUNITED.

**Arabis glabra,** see Herbs, Erect, Unbranched, Alternate, Exstipulate,  
Simple.

**Arabis auriculata,** see Herbs, Erect, Unbranched, Alternate, Exstipulate,  
Simple.

**Arabis alpina,** see Herbs, Erect, Unbranched, Alternate, Exstipulate,  
Simple.

**Arabis  
amplexicaulis,** see Herbs, Erect, Unbranched, Alternate, Exstipulate,  
Simple.

**Arabis tibetica,** see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Arabis nuda,** see Herbs, Erect, Unbranched, Alternate, Exstipulate,  
Simple.

**Draba muralis,** see Herbs, Erect, Unbranched, Alternate, Exstipulate,  
Simple.

**Malcolmia africana,** small to medium size, annual, stout, leafy, rough <sup>S</sup>  
*Patthar, chinaka.*  
CRUCIFERÆ.  
F. B. I. i. 146.  
The Plains to  
13,000 ft.  
Kashmir.  
Rawalpindi.  
Mianwali District.  
Baluchistan  
(Griffith).  
with stiff forked and simple hairs, branches many, long,  
somewhat spreading; leaves 1-6 in., oblong or lanceolate,  
toothed, stalked; flowers many, small, purple in loose ra-  
cemes near the end of branches, sepals 4, free, erect, equal  
at the base, persistent, petals 4, placed crosswise, oblong-  
ovate with broad tip, twice the length of the sepals, sta-  
mens 6, the 4 inner longer and sometimes united in pairs,  
stigma conical, short, tapering into a sharp point; capsule  
2-3 in. long, narrow, straight, rough. This plant supplies  
good fodder, and in the spring forms bright patches of  
purple.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNUNITED.

- Malcolmia toruosa**, like the last species, but less stout, leaves 1-3 in.,  
 CRUCIFERÆ. sometimes pinnatifid, flowers white, capsule  $\frac{3}{4}$ -1 in., usually  
 F. B. I. i. 146. curved or twisted with contractions.  
 N.-W. F. Province.  
 Peshawar  
 (Stewart).  
 Baluchistan  
 (Boissier).
- Malcolmia strigosa**, see Prostrate Herbs, Alternate, Exstipulate, Simple.
- Sisymbrium  
 mollissimum**, see Herbs, Erect, Alternate, Exstipulate, Simple.
- Sisymbrium  
 himalaicum**, small, biennial or perennial, stiff, much branched,  
 CRUCIFERÆ. hairs simple or star-shaped; leaves 1-2 in., lanceolate-  
 F. B. I. i. 147. ovate with a broad tip, waved and toothed, radical leaves  
 Himalaya, stalked, stem leaves clasping the stem with a forked base;  
 10-12,000 ft. flowers small, purple or white on slender erect stalks in  
 bracteate racemes, sepals 4, short, equal at the base,  
 petals 4, crosswise, stalks long, blade broad, stamens 6,  
 all free, style short, slender; capsule 1-1 $\frac{1}{2}$  in. long, cylin-  
 drical, straight, spreading, smooth or velvety, stalk short,  
 with a leaflike bract at the base, seeds many in one series  
 not margined.
- Sisymbrium  
 foliosum**, like the last species, but less hairy, radical leaves  
 CRUCIFERÆ. broadly toothed, shortly stalked, narrowed into the stalk,  
 F. B. I. i. 148. stem leaves larger, flowers without bracts, pods slender,  
 Kashmir, curved, smooth, much flattened.  
 5-7,000 ft.  
 (Thomson).
- Sisymbrium  
 Thalianum,  
 Thale cress**, small, annual, branched, hairs simple and forked,  
 CRUCIFERÆ. leaves 1-3 in., toothed or entire, radical ovate with broad  
 F. B. I. i. 148. tip, stalked, stem leaves few, sessile, flowers small, white,  
 The Plains to stalked in slender long racemes, capsule  $\frac{1}{2}$ -1 in. long, linear,  
 10,000 ft. smooth, flattened, style short, seeds very small, flattened;  
 Simla (Collett). for other characters see the last species.  
 Kashmir.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNUNITED.

- Sisymbrium rupestre**, small to medium size, annual, branched, greyish hairs, simple or forked, leaves  $\frac{1}{2}$ -1 in., radical linear-oblong, CRUCIFERÆ. waved and toothed, shortly stalked, stem leaves sometimes heart-shaped at the base, sessile, toothed or entire, flowers F. B. I. i. 148. small, white or purple, shortly stalked in few-flowered Himalaya, 8-14,000 ft. bracteate racemes, sepals velvety, capsules  $1\frac{1}{2}$ - $1\frac{2}{3}$  in., erect Kashmir. or spreading, slender, flattened; for other characters see the last species.
- Sisymbrium Alliaria**, medium size, annual or biennial, branches few, smooth or slightly hairy below, leaves 2-3 in., long-stalked, radical, **Hedge Garlic**, kidney-shaped, coarsely toothed, stem leaves heart-shaped, CRUCIFERÆ. toothed, flowers  $\frac{1}{4}$  in. diam., white, in loose racemes, pods F. B. I. i. 151.  $1\frac{1}{2}$ -2 in., stout, smooth, nearly cylindrical, erect, seeds Himalaya, 6-10,000 ft. oblong, streaked and dotted; for other characters see the Simla. last species. Matiana (Collett). Kashmir.
- Erysimum repandum**, small to medium size, annual, widely branched, grey hairs with close pressed forked hairs; leaves lanceolate, CRUCIFERÆ. toothed with somewhat rounded notches, or entire; flowers F. B. I. i. 153.  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., yellow, rarely purple, bractless, racemed, Kashmir, 5-7,000 ft. sepals 4, erect, petals 4, placed crosswise, long-stalked, Baluchistan (Lace). stamens 6, 4 inner longer; capsule  $1\frac{1}{2}$ -2 in. long, linear, nearly square, horizontal, nearly sessile, stalk stout, seeds in one row.
- Erysimum hieracifolium**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Erysimum odoratum**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Brassica juncea**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Diploxys Griffithii**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Morleandia tortuosa**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Lepidium Draba**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNUNITED.

**Thlaspi arvense,  
Pennycress,  
Mithridate Mustard,**

CRUCIFERÆ.  
F. B. I. i. 162.  
Himalaya,  
1-10,000 ft.  
Simla (Collett).

small to medium size, annual, smooth, branched or not; leaves 1-4 in., oblong-ovate with broad tip, radical stalked, soon withering, stem leaves oblong-lanceolate, stem-clasping, forked at the base; flowers small, white or pale pink, racemed, sepals 4, erect, base equal, petals 4, equal, long-stalked, stamens 6, 4 inner longer; capsule  $\frac{1}{3}$ - $\frac{3}{4}$  in. diam., circular, flattened, winged, seeds 5-6 in each cell, grooved.

**Thlaspi  
cardiuncupum,**

CRUCIFERÆ.  
F. B. I. i. 162.  
Kashmir,  
5-9,000 ft.

like the last species, but less robust, leaves broadly oblong, somewhat toothed, pod broadly notched at the tip, seeds 4-5 in each cell, smooth.

**Thlaspi alpestre,  
Alpine Pennycress,**

CRUCIFERÆ.  
F. B. I. i. 162.  
Himalaya,  
7-12,000 ft.  
Simla.  
Mahasu.  
Narkanda (Collett).  
Matiana.  
Kashmir.

like the last species, but perennial, tufted, radical leaves nearly circular, stem leaves oblong, stem-clasping, bases small, rounded, flowers rather large, always white, capsules triangular, heart-shaped, not deeply, but broadly notched, seeds 4-8 in each cell.

**Neslia paniculata,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Physorhynchus  
brahvicus,**

see Shrubs, Alternate, Exstipulate, Simple.

**Goldbachia lævigata,**

CRUCIFERÆ.  
F. B. I. i. 166.  
The Plains.  
Kashmir, 5,000 ft.  
Baluchistan  
(Boissier).

small to medium size, annual, branched, smooth with a bluish waxy gloss; leaves 4-5 in., radical, many, ovate-oblong, toothed, with rounded notches, stem leaves lanceolate, base shortly forked, stem-clasping; flowers small, pale pink, in long bractless racemes, sepals 4, erect, equal at the base, petals 4, stamens 6, 4 inner longer; capsule  $\frac{3}{4}$  in. long, hanging down, curved, 4-angled, 2-3-celled, like a string of beads, tapering above into a broad flattened beak, one oblong seed in each cell.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNUNITED.

**Chorispora tenella**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Impatiens Balsamina**, small to medium size, annual, succulent, velvety; stems usually hollow, joints more or less swollen; leaves  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., narrowly lanceolate, stalked, narrowed to the base, deeply toothed, stalk glandular; flowers  $\frac{1}{2}$  in. long without the spur, pink or nearly white, solitary on axillary, usually clustered stalks, sepals 3, 2 upper small, flat, usually green, the lower forming the lip, much larger, petal-like, more or less tubular, produced at the base in a hollow spur,  $\frac{1}{2}$  in. long, curved, slender, cylindric, petals 3, upper broad, somewhat concave, tipped with a small green point, 2 lower smaller, forming wings, deeply 2-lobed, stamens 5 clasping the ovary, anthers round the 5-toothed sessile stigma; capsule  $\frac{1}{3}$ - $\frac{1}{2}$  in. oblong narrowed at both rounded ends, densely felted or woolly, bursting open when ripe, touched or not, by 5 valves which curl up and jerk away the many small rounded seeds. This plant is much cultivated for its beauty. It is emetic and purgative in its action.

**Balsam** or **Touch-me-not**, *Gulmendi, tiphar.*  
GERANIACEÆ.  
F. B. I. i. 453.  
The Plains to 5,000 ft.  
Valleys below Simla (Collett).

**Impatiens racemosa**, see Herbs, Erect, Alternate, Stipulate, Simple, Toothed.

**Impatiens brachycentra**, see Herbs, Erect, Alternate, Stipulate, Simple, Toothed.

**Sedum Rhodiola**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Sedum heterodontum**, small to medium size, rootstock perennial with a crown of scales, stems annual, leafy; leaves  $1$ - $1\frac{1}{2}$  in. long, base ovate, deeply toothed, overlapping, base broad, sessile, heart-shaped or forked, margin white; flowers small, pink, in terminal compound clusters, calyx 4-5-lobed, lobes narrow, oblong, petals 4-5, much longer than the calyx lobes, stamens 10-8, long protruding, styles short, 4-5; follicles 4-5, seeds many, oblong with rounded ends.

CRASSULACEÆ.  
F. B. I. i. ii. 417.  
Himalaya,  
8-14,000 ft.  
Kashmir.

**Sedum tibeticum**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNUNITED.

**Sedum asiaticum,**

CRASSULACEÆ.

F. B. I. ii. 419.

Himalaya,

11-16,000 ft.

Maral Kund, the

Chor (Collett),

like *Sedum heterodontum*, but smaller, leaves smaller, narrow, toothed, flowers yellow.

**Sedum linearifolium,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire,

**Cenothera rosea,**

ONAGRACEÆ.

F. B. I. ii. 582.

Himalaya,

2-7,000 ft.

Simla.

Dharampur.

The Salt Range.

small, annual, stem reddish-velvety; leaves 1-2 in., ovate, narrowed at both ends, prominently veined, sometimes lobed; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., pink, solitary, in the axils of leafy racemes, calyx tube 4-angled, club-shaped, produced above the ovary, lobes 4, soon falling off, petals 4, pink, with darker veins, circular, stamens 8, equal or alternate, one shorter, style thread-like; capsule  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, club-shaped, 4-angled, 4-celled, splitting from the top into 4 valves; seeds many, small, tipped with a tuft of long white hairs. A weed of cultivation from Peru, lately established.

**Epilobium  
angustifolium,**

see Herbs, Erect, Opposite, Exstipulate, Entire,

**Epilobium hirsutum,  
Great Willow herb,  
Codlins and cream,**

ONAGRACEÆ.

F. B. I. ii. 583.

Himalaya,

5-7,000 ft.

Kotgarh.

Sutlej and Giri

valleys in wet  
places (Collett),

large, annual, densely covered with white hairs; leaves 1-3 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., lanceolate, stem-leaves usually opposite, sessile, stem-clasping, teeth small, sharp; flowers  $\frac{1}{2}$  in. long, pink-purple, axillary in long or short leafy racemes at the end of stem and branches, calyx-tube linear, 4-angled, lobes 4, short-pointed, soon falling off, petals 4, erect or spreading, notched, stamens 8, alternate ones longer, stigmas 4, distinct, erect at first, recurved afterwards; capsule  $1\frac{1}{2}$ - $3\frac{1}{2}$  in.; and seeds like those of the *Cenothera*.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNUNITED.

**Epilobium  
parviflorum,  
Hoary Epilobe,**

ONAGRACEÆ.

F. B. I. ii. 584.

Himalaya,

5-7,000 ft.

Simla, Sutlej

Valley (Collett).

like the last species, but smaller, flowers a little smaller, leaves not stem-clasping, stigmas ultimately spreading, not recurved.

**Epilobium  
roseum,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Vernonia cinerea,  
Sahadevi.**

COMPOSITÆ.

F. B. I. iii. 233.

The Plains to

8,000 ft.

Simla (Collett).

Dharampur.

Baluchistan

(Hughes-Buller).

small to medium size, annual, grey velvety, grooved; leaves  $\frac{1}{2}$ -3 in., ovate or lanceolate, hairy, blunt or short-pointed, thin, nearly sessile, teeth few, coarse; flowers minute, pinkish-purple in many heads,  $\frac{1}{4}$  in. diam., forming rounded or open and flat-topped clusters, main stalks slender, bracteate, bracts round heads linear-lanceolate, silky outside, inner longer than outer, calyx hairs (pappus) long, white; corolla tubes slender, equal, 5-lobed, anther-bases blunt, style-arms long, hairy; achenes  $\frac{1}{6}$  in., smooth, tipped with the white or dirty white pappus hairs,  $\frac{1}{6}$  in. long.

**Vernonia  
anthelmintica,  
Bakchi, kaliziri.**

COMPOSITÆ.

F. B. I. iii. 236.

The Plains to

5,000 ft.

Valleys below

Simla (Collett).

Dharampur.

Synj.

large, annual, stout, glandular, velvety near the top, leafy and much branched, leaves 3-5 in., ovate-lanceolate, coarse-toothed, long-pointed, narrowed into a short stalk, rough, heads  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., barely clustered, stalks long, dilated above, bracts of heads with broad purplish tips, hairy, inner shorter than outer, pappus hairs tawny, corollas unequal, achenes  $\frac{1}{5}$  in., ribbed; for other characters see the last species. This plant is found near villages, planted or as an escape; the seeds are used in skin diseases, and to drive away fleas and as a vermifuge.

**Vernonia  
cinerascens,**

see Shrubs, Alternate, Exstipulate, Simple.

**Solidago virga-aurea,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

***Conyza japonica*,**

COMPOSITÆ.

F. B. I. iii. 258.

The Plains to  
7,000 ft.

Simla (Collett).

small, annual, silky or woolly, stem often unbranched; leaves 1-3 in. (radical often longer), ovate with a broad tip prolonged into the short stalk, or lanceolate, coarsely sharp-toothed or round-toothed, upper leaves half stem-clasping, oblong, or ovate-oblong, often entire; flowers all tubular, yellow, in globose heads  $\frac{1}{3}$  in. diam., arranged in terminal flat-topped clusters, bracts of heads narrowly lanceolate, short-pointed with transparent edges, pappus  $\frac{1}{8}$  in., 2 reddish, corollas 5-toothed, anther-bases blunt, entire, style-arms flattened; achenes  $\frac{1}{24}$  in., nearly smooth, margined.

***Conyza viscidula*,**

COMPOSITÆ.

F. B. I. iii. 258.

Himalaya,  
1-7,000 ft.

Mashobra (Collett).

medium size to large, sticky with glands, much branched above, leaves 2-4 in., lanceolate, narrowed at both ends, nearly sessile, sticky on both sides, sharply toothed, sometimes entire, heads in loose clusters, bracts of heads long-pointed, pappus  $\frac{1}{6}$ - $\frac{1}{4}$  in.; for other characters see the last species.

***Blumea amplexens*,**

COMPOSITÆ.

F. B. I. iii. 260.

The Plains.

Rawalpindi (Douie).

Rohtak.

Gurgaon.

small, annual, bushy, softly hairy; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, oblong or ovate with a broad tip, blunt or short-pointed, half stem-clasping; flowers minute, yellow, in solitary long-stalked heads,  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., bracts of heads very slender, inner hair pointed, base of head (receptacle) flat, naked, calyx hair (pappus) scanty, reddish, corollas tubular, filiform, 2-3-toothed, inner slender, 5-toothed, anther-bases forked, tails small, slender, style-arms short; achenes oblong. A common weed.

***Blumea Wightiana*,**

COMPOSITÆ.

F. B. I. iii. 261.

The Plains to  
4,000 ft.

Valleys below

Simla (Collett).

small to medium size, silky or woolly, often sticky with glandular hairs, leaves  $1\frac{1}{2}$ -2 by  $\frac{3}{4}$ -1 in., lower ovate, stalked or nearly sessile, upper smaller, linear or lanceolate, sessile, flowers minute, purple or a few yellow, in numerous heads,  $\frac{1}{4}$  in. diam., forming stalked terminal or axillary clusters, bracts of heads, outer few, short, inner many, narrow, long-pointed, slightly longer than the flowers, achenes minute, angled, slightly hairy; for other characters see the last species.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Blumea lacera**,  
*Kakronda, jangli*  
*muli.*

COMPOSITÆ.

F. B. I. iii. 263.

The Plains to  
2,000 ft.

very like the last species, but smelling of turpentine, flowers yellow, achenes smooth, not hairy. The root is used as a febrifuge and an astringent in Indian medicine.

**Blumea hieracifolia**,

COMPOSITÆ.

F. B. I. iii. 263.

The Plains to  
2,000 ft.

like the last species, but often unbranched or with a stout stem, heads  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., in tuft-like or spike-like long branching racemes.

**Laggera flava**,

COMPOSITÆ.

F. B. I. iii. 270.

The Plains to  
3,000 ft.

small to medium size, annual, slender or slightly velvety, stem cylindrical, branched at the top or not, grooved; leaves 1-3 in. long, lower stalked, upper ovate-lanceolate or with a broad tip, half stem-clasping, not prolonged down the stem, sharply toothed; flowers minute, bright yellow, all tubular, on few heads,  $\frac{1}{4}$  in. diam., on slender branches of loose clusters, bracts of heads, outer ovate, short-pointed, inner lanceolate, long-pointed, all smooth or with scattered bristles on the margins, corollas, inner tubular, 5-toothed, outer thread-like, minutely toothed, anther-bases 2-lobed or forked, style-arms as in *Blumea* above, pappus white; achenes very minute, smooth.

**Laggera alata**,

COMPOSITÆ.

F. B. I. iii. 271.

Himalaya,  
1-6,000 ft.

Simla.

Sulej and Giri  
Valleys (Collett).

medium size to large, perennial, much branched, velvety or felted, sometimes glandular, stem with broad entire wings; leaves 1-4 in. long, narrowly oblong, short-pointed, rough above, woolly beneath, sessile, prolonged down the stem; flowers minute, purplish, in main heads  $\frac{1}{2}$  in. diam., in axillary racemes, on winged branches often forming a large terminal leafy cluster, drooping in fruit, bracts of the heads many, narrow, stiff, short-pointed, outer shorter, green, often recurved, inner as long as the flowers, pappus white, corollas as in the last species; achenes small, hairy.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

- Lagera pterodonta**, like the last species, but more slender, smooth wings  
 COMPOSITÆ. of stem toothed or lobed, leaves often lobed, heads  $\frac{2}{3}$  in.  
 F. B. I. iii. 271. diam., on slender stalks at the end of the branches, bracts  
 Himalaya, smooth, stiff.  
 east of Sulej,  
 4,000 ft.
- Lagera aurita**, like the last species, but hairy, sticky, glandular,  
 COMPOSITÆ. stem not winged, leaves very little prolonged down the  
 F. B. I. iii. 271. stem, often lobed, heads  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., in small, lateral or  
 The Plains. terminal clusters, flowers pink, bracts soft, slender, silky.  
 This plant smells of turpentine.
- Sphæranthus** medium size, annual, glandular, softly hairy, aromatic,  
**indicus**, branches with toothed wings; leaves 1-2 in. long, oblong-  
*Mundi, gurukmundi.* ovate with a broad tip, narrowed to the toothed base,  
 COMPOSITÆ. prolonged down the branches, blunt or short-pointed,  
 F. B. I. iii. 275. toothed, teeth often bristle-pointed, glandular-hairy on  
 The Plains to both surfaces; flowers pink or purple in globose, terminal,  
 5,000 ft., in dry rice solitary, compound, bracteate heads  $\frac{1}{3}$  in. diam., consisting  
 fields. of very small crowded heads, each with 12 flowers, bracts  
 of small heads linear, hairy at the tip, as long as the flowers,  
 pappus none, outer corollas 10-12, 4-5-toothed, inner  
 2-3, slender, straight, 2-3-toothed, style-arms thread-like  
 or united; achenes oblong, stalked, smooth. This plant  
 is used to make a bitter tonic and a vermifuge in Indian  
 medicine.
- Phagnalon niveum**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Entire.
- Cæsulia axillaris**, see Prostrate Herbs, Alternate, Exstipulate, Simple.
- Pulicaria crispa**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed, flowers in heads, inner tubular, outer ligulate.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Carpesium cernuum**, medium size to large, annual, velvety to shortly hairy ;  
 COMPOSITÆ. leaves 2-5 by  $\frac{3}{4}$ -1 $\frac{1}{2}$  in., lanceolate to ovate, nearly sessile  
 F. B. I. iii. 300. to long-winged stalks, sharply pointed, toothed ; flowers  
 Himalaya, minute, yellow, in terminal solitary nodding heads  $\frac{1}{2}$ -1 in.  
 6-800 ft. diam., with large leafy bracts at the base or on long naked  
 Simla, Mahasu stiff stalks, bracts of heads many, outer green, more or  
 (Collett). less leaf-like, inner shorter, dry, broad, oblong, blunt,  
 margin white, pappus none, corolla of outer flowers 3-  
 toothed, of inner slightly larger, 5-toothed, anther bases  
 forked, tails slender, style-arms linear, blunt, converging  
 at first ; achenes long-ribbed, not hairy, tip beaked, glandular.

**Carpesium trachelifolium**, like the last species, but more slender, more hairy.  
 COMPOSITÆ. leaves smaller, long stalked, sometimes lobulate-toothed  
 F. B. I. iii. 301. with rounded notches, heads never larger than  $\frac{1}{4}$  in.  
 Himalaya, diam., solitary or in clusters at the end of long axillary  
 4-6,000 ft. stalks.  
 Valleys below Simla  
 (Collett).  
 The Glen, Simla.

**Carpesium abrotanoides**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Entire.

**Adenocaulon bicolor**, medium size to large, perennial, stem and branches  
 COMPOSITÆ. covered with grey cottony hairs ; leaves 2-4 in. diam., cir-  
 F. B. I. iii. 302. cular, toothed and angled with rounded margins, smooth  
 Himalaya, above, white-felted beneath, upper smaller, sessile, lower  
 6-9,000 ft. long-stalked, more or less winged, wing often toothed ;  
 Narkanda (Collett). flowers small, white or pale yellow in heads  $\frac{1}{4}$  in. diam.,  
 in loose branching racemes, branches slender, sticky from  
 glands towards the ends, bracts of heads 5, green, spread-  
 ing, bent back in fruit, flowers about 10, 4-5-lobed, outer  
 only fertile, pappus none, anther-bases entire or minutely  
 2-toothed, style-arms short, broad ; achenes long, club-  
 shaped, covered with stalked glands.

**Artemisia Dracunculus**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Gynura angulosa,**

COMPOSITÆ.

F. B. I. iii. 334.

Himalaya,

4-7,000 ft.

Valleys below Simla  
(Collett).Above Bhajjal,  
below Chor.

large, annual, smooth, thick, succulent, stem deeply grooved and angled, as thick as the thumb below, much branched; leaves 6-12 in. long, basal leaves sometimes 24 in., lanceolate or oblong, irregularly toothed, long-pointed, sessile, base contracted, simple or forked, upper oblong, sessile with broad-forked bases; flowers orange-yellow in large heads,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, in terminal bracteate flat-topped clusters, bracts of heads in one series, 10-12, equal, margins thin, floor of head flat, naked, pappus hairs white, slender, corollas 5-toothed, anther-bases entire or nearly forked, style-arms slender, long; achenes narrow, many-ribbed.

**Senecio Levingii,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Senecio  
chenopodifolius,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Cousinia auriculata,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Artemisia  
amygdalina,**

COMPOSITÆ.

F. B. I. iii. 325.

Kashmir,

Pir Panjal

(Jacquemont,  
Stewart).

medium size, perennial, stem stout, smooth, deeply grooved and many ribbed; leaves 4-6 by  $\frac{1}{2}$ - $1\frac{1}{4}$  in., lanceolate, long-pointed with sharp incurved gland-tipped teeth, grey hairy beneath, stalk very short with minute bristle-like appendages; flowers in few-flowered ovoid heads,  $\frac{1}{10}$  in., nearly all on one side of dense, short, axillary racemes, bracts of heads oblong, blunt, thin, smooth, outer with a green disk, floor of head naked, pappus none, inner corollas 5-toothed, outer 2-3-toothed, anther-bases blunt, entire; achenes very minute, faintly striped, oblong or ovoid with a broad top.

**Saussurea candicans,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Saussurea albescens,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Saussurea Jacea,**see Herbs, Erect, Alternate, Exstipulate, Simple,  
Entire.**Saussurea Lappa,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

- Jurinea ceratocarpa**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Jurinea modesta**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Serratula paliida**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Tricholepis furcata** large, perennial, smooth, or nearly so, branched from the base, branches long, ending in a long-stalked head; leaves 2-6 by  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., oblong with rounded ends or lanceolate, short- or long-pointed, shortly toothed, surface covered with raised points, shortly stalked; flowers  $\frac{3}{4}$ -1 in. long, yellow, in nodding heads,  $1\frac{1}{2}$  in. diam., bracts of heads needle or thread-like from lanceolate base, turned back, hairy, tips black, pappus hairs scaly, 1 in. long, united, bristles on floor of head shorter than the achenes, corollas 5-lobed, anther bases nearly entire, hardly forked, style arms slender; achenes  $\frac{1}{5}$  in., narrowly oblong, ribbed, smooth, flattened.
- COMPOSITÆ.  
F. B. I. iii. 380.  
Himalaya,  
5-10,000 ft.  
Kashmir.
- Tricholepis elongata**, like the last species, but sparingly branched, leaves smaller, often lobed, heads nearly erect, corollas  $\frac{1}{2}$ - $\frac{2}{3}$  in., bristles of the floor of the head longer than the achenes, pappus hairs  $\frac{1}{4}$  in., pale brown, shining, achenes acutely 5-angled, pale.
- COMPOSITÆ.  
F. B. I. iii. 380.  
Himalaya,  
4-8,000 ft.  
Simla (Collett).
- Tricholepis Stewartii**, like the last species, but leaves smaller, lanceolate, long-pointed, quite smooth, heads 1 in. diam., shortly stalked, pappus  $\frac{1}{3}$  in., stiff.
- COMPOSITÆ.  
F. B. I. iii. 380.  
Jhelum Valley  
(Stewart).
- Tricholepis tibetica**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Volutarella divaricata**, see Herbs Erect Alternate, Exstipulate, Lobed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Carthamus tinctorius,**  
**Safflower,**  
*Kasumbha, kusum.*  
COMPOSITÆ.  
F. B. I. iii. 386.  
The Plains to  
2,000 ft.

medium size, annual, smooth or velvety, thistle-like ; leaves  $1\frac{3}{4}$ -3 by  $\frac{1}{2}$ - $1\frac{1}{4}$  in., lanceolate, stiff, toothed and spinous or entire, sessile ; flowers small, orange-red, in terminal heads  $\frac{1}{2}$ -1 in. diam., bracts of heads many, spinous, erect, outer leaf-like, spinous or not, inner ovate-oblong, short-pointed, floor of head flat, densely bristly, pappus none, corollas all tubular, deeply 5-toothed, slender, anther-bases forked, tails short fringed ; achenes ovoid with top broad, 4-angled, smooth, with 4 bosses at the top. This plant is found as an escape, widely cultivated as a winter crop ; the flowers provide rouge, a beautiful pink dye and oil is obtained from the seeds.

**Carthamus oxyacantha,**  
*Kantiari, poli.*  
COMPOSITÆ.  
F. B. I. iii. 386.  
The Plains,  
west of the Ravi.  
Gujar Khan (Douie).  
Rawalpindi.  
Baluchistan (Lace).

medium size, annual, stem and branches white, leaves oblong or oblong-lanceolate, lower shortly spinous-toothed, upper half stem-clasping, very spinous, flowers orange-yellow, outer bracts of head longer than the flowers, white below the contracted portion, green above it, with yellow spines ; for other characters see the last species. This plant may be the wild form of the last species. An illuminating oil is expressed from the seeds.

**Carthamus lanatus,** see Herbs, Erect, Alternate, Exstipulate, Lobed.

INNER FLOWERS TUBULAR, OUTER LIGULATE.

**Myriactis nepalensis,**  
COMPOSITÆ.  
F. B. I. iii. 247.  
Himalaya,  
4-10,000 ft.  
Simla (Collett).  
Kashmir.

medium size to large, annual, velvety or roughly hairy, much branched ; leaves 1-3 in., lanceolate, shortly stalked, stalks winged ; flowers minute, outer white, inner yellow, in heads  $\frac{1}{8}$ - $\frac{1}{2}$  in. diam., in clusters on diverging stalks, bracts of heads in 3-4 series, short-pointed, narrow, margins thin, afterwards reflexed, floor of heads convex, broad, naked, pappus none, corollas, inner 4-5-toothed, outer entire, short, anther-bases entire, style-arms narrow, flattened, lanceolate ; achenes flat, smooth, margined.

HERBS, ERECT WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

- Myriactis Wallichii**, very like the last species, but more slender, less hairy, heads smaller on slender stalks.  
 COMPOSITÆ.  
 F. B. I. iii. 247.  
 Himalaya,  
 4-10,000 ft.  
 Simla (Collett).
- Rhynchospermum verticillatum**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Aster Amellus**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Aster Pseudameilus**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Aster molliuseculus**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Aster Thomsoni**, medium size to large, annual, hairy, branches bending at the joints; leaves 2-4 by 1-2½ in., broadly ovate, long-pointed, nearly sessile, base narrowed, half stem-clasping, coarsely sharply toothed; flowers, inner yellow, outer lilac or purple, in long-stalked solitary heads, 1½-2½ in. diam., bracts of heads green, linear-lanceolate, long-pointed, pappus hairs single, much shorter than the corollas and achenes, reddish, corollas, inner 5-toothed, outer 20-30, ½-¾ in. long, entire or minutely toothed, anther-bases blunt, entire, style-arms flattened; achenes ⅓-⅙ in., flattened, hairy.  
 COMPOSITÆ.  
 F. B. I. iii. 252.  
 Himalaya,  
 7-10,000 ft.  
 Simla (Collett).  
 Kashmir.
- Aster asperulus**, very like the last species, but the stem is nearly smooth, leaf stalks winged, pappus as along as the corollas.  
 COMPOSITÆ.  
 F. B. I. iii. 252.  
 Himalaya,  
 east of the Ravi,  
 4-9,000 ft.  
 Simla (Collett).

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES,

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

**Brachyactis  
menthadora,**

COMPOSITÆ.

F. B. I. iii. 253.

Sind Valley.

Kashmir, 12,000 ft.  
(Clarke).

medium size, root perennial, stem annual, glandular, velvety, odour of mint, stiff, branches short, erect; leaves 1-2 in., oblong-lanceolate, ovate, sharply toothed, lower long-stalked, upper sessile, half stem-clasping, prolonged down the stem; flowers, outer bluish, inner yellow, in heads  $\frac{1}{2}$ - $\frac{2}{3}$  in. towards the top of the stem, or the ends of the branches, bracts of the heads green, few, in 2-3 series, linear, velvety, half as long as the flowers, 1-2, outer often much larger and leafy, floor of head not pitted, corollas, inner 5-toothed, outer minutely ligulate, pappus  $\frac{1}{5}$  in., reddish, anther-bases blunt, not divided, style-arms narrow, flattened, tips narrowly lanceolate; achenes  $\frac{1}{10}$  in., quite flat, nearly smooth, margins thickened.

**Erigeron linifolius,  
Flea bane,**

COMPOSITÆ.

F. B. I. iii. 254.

The Plains to  
7,000 ft.

Simla (Collett).

medium size to large, annual, more or less hairy, much branched; leaves  $1\frac{1}{2}$ -4 in., linear, often entire, sessile, crowded; flowers minute, inner yellow, outer pale purple or white in heads  $\frac{1}{4}$  in. diam., on many slender stalks forming a leafy flat-topped branching raceme, bracts of heads in few series, floor of head naked, flat or slightly convex, pappus often double, the outer of a few hairs or bristles, corollas, inner tubular, 5-toothed, outer in several rows, ligulate, ligules short or long, entire or minutely toothed, anther-bases blunt, entire, style-arms flattened, tips lanceolate, long or short; achenes flattened, beaked. A garden escape.

**Erigeron canadensis,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Erigeron asteroides,**

COMPOSITÆ.

F. B. I. iii. 254.

The Plains to  
4,000 ft.

medium size, annual, velvety or hairy, with sticky glands, leaves 1-2 in., oblong or ovate with a broad tip, stalked, often lobulate, stem leaves  $\frac{1}{2}$ -1 in., half stem-clasping, flowers in heads  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., stalked, solitary or nearly clustered, ligules very narrow, blue, rather longer than the reddish or dirty-white pappus, bracts of the heads very narrow with hair points, much shorter than the pappus; achenes  $\frac{1}{40}$  in., nearly smooth; for other characters see the last described species.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

- Erigeron bellidioides**,  
COMPOSITÆ.  
F. B. I. iii. 256.  
Himalaya,  
5-10,000 ft.  
Kashmir.  
like the last species, but perennial, slender, sparingly branched, smooth, radical leaves lanceolate, stem leaves sessile but not half stem-clasping, heads  $\frac{1}{3}$  in. diam., long-stalked, few, ligules 3 times as long as the red pappus hairs ; achenes slightly silky.
- Erigeron multiradiatus**,  
see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Conyza japonica**,  
see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Conyza stricta**,  
COMPOSITÆ.  
F. B. I. iii. 258.  
Himalaya,  
1-6,000 ft.  
Simla (Collett).  
Hazara.  
Kashmir.  
medium size, grey velvety or rough, leafy, much branched ; leaves  $\frac{1}{2}$ -2 in., narrowly linear to ovate with a broad tip prolonged into a short stalk, often entire or rarely pinnately lobed ; flowers in heads  $\frac{1}{6}$  in. diam., long-stalked, in flat-topped clusters, bracts of heads narrowly lanceolate, pappus  $\frac{1}{16}$  in., reddish, corollas yellow, outer minutely ligulate, inner 5-toothed, anther-bases blunt, entire, style-arms flattened ; achenes  $\frac{1}{40}$  in., flattened.
- Inula racemosa**,  
COMPOSITÆ.  
F. B. I. iii. 292.  
Himalaya,  
5-10,000 ft.  
Kashmir.  
Spiti.  
medium size to large, rough, stem stout, grooved ; leaves radical, 8-18 by 5-8 in., oblong-lanceolate, narrowed into a stalk as long as the blade, upper oblong, half stem-clasping, felted beneath, round-toothed ; flowers all yellow, in many large heads,  $1\frac{1}{2}$ -2 in. diam., in racemes, bracts of heads, inner linear, short-pointed, outer broad, green, with triangular turned-back points, outermost usually leafy, pappus hairs  $\frac{1}{3}$  in., reddish, corollas, inner long, 5-toothed, outer with ligules  $\frac{1}{2}$  in., slender, 3-toothed, anther-bases forked, tails simple or branched, style-arms linear, broader above, blunt ; achenes  $\frac{1}{6}$  in., smooth, slender. This plant is closely allied to *Inula Helenium Linn.* Elecampane, once much used in Europe.
- Inula Royleana**,  
COMPOSITÆ.  
F. B. I. iii. 292.  
Himalaya,  
7-11,000 ft.  
Kashmir.  
like the last species, but smaller, stem velvety or hairy and glandular, leaves 6-10 by 4-6 in., minutely toothed, radical ovate or oblong with a long winged stalk, stem leaves lobed, base forked, heads 3-4 in. diam., solitary, on a stout erect woolly stalk, inner bracts of head slender, long-pointed, pappus hairs paler.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

- Inula acuminata**, see Herbs, Erect, Unbranched, Alternate, Exstipulate, Simple.
- Vicoa auriculata**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Vicoa vestita**, small to medium size, annual, softly hairy or woolly ;  
 COMPOSITÆ. leaves 1-2 in., linear-oblong or oblong, base broadly bluntly  
 F. B. I. iii. 297. forked, half stem-clasping ; flowers bright yellow, in heads  
 The Plains to  $\frac{3}{4}$ -1 in. diam., long-stalked, bracts of heads rough with  
 4,000 ft. projecting processes, tips thread-like, recurved, corollas,  
 Sutlej Valley inner 5-toothed, outer with long narrow-spreading 2-3-  
 (Collett). toothed ligules, pappus hairs few, anther-bases forked,  
 Dharampur. tails slender, style-arms flattened, broader upwards ;  
 Kangra Valley. achenes small, hardly ribbed, tip rounded.  
 Lahore.
- Pulicaria vulgaris**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Pulicaria dysenterica**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Pulicaria angustifolia**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Pulicaria crispa**, medium size, perennial, shrubby below, very leafy,  
*Burhna, bui, gidi.* branches and leaves beneath densely cottony ; leaves  $\frac{1}{2}$ -1 $\frac{1}{2}$   
 COMPOSITÆ. in., linear-oblong, margins turned in and toothed, sessile,  
 F. B. I. iii. 299. lower half stem-clasping ; flowers yellow, in heads  $\frac{1}{4}$ - $\frac{1}{3}$  in.,  
 The Plains. solitary, bracts of heads slender, bristle-like, pappus in  
 2 rows, outer of short jagged teeth, inner of white bearded  
 hairs, 3 times as long as the achenes, corollas, inner tubular,  
 5-toothed, outer minute or none, anther-bases forked, tails  
 hair-like, style-arms linear, blunt ; achenes smoothish.
- Guizotia abyssinica**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

**Doronicum Roylei,**

*Darunaj-akrabi.*

COMPOSITÆ.

F. B. I. iii. 332.

Himalaya,

10,000 ft.

Kashmir.

medium size to large, perennial, somewhat hairy or woolly; leaves 4-5 in. long, broadly ovate, toothed with rounded notches, radical, long-stalked, upper half stem-clasping, leaf-stalks 4-6 in.; flowers yellow, in long slender stalked heads 1-2 in. diam., with a top-shaped swelling on the stalk just below the head, floor or head naked, bracts of head in 2 series, green,  $\frac{1}{2}$ - $\frac{2}{3}$  in. long, with fine long points, pappus of inner flowers short, reddish, pappus of outer flowers none, corollas, outer in one series, ligules long, entire, or 2-3-toothed, inner tubular, 5-toothed, anther-bases entire or nearly forked, style-arms linear; achenes top-shaped and oblong, deeply grooved, all smooth or outer slightly hairy. This plant is used in Indian medicine as an aromatic tonic.

**Senecio**

**amplexicaulis,**

COMPOSITÆ.

F. B. I. iii. 348.

Himalaya,

9-13,000 ft.

The Chor (Collett).

large, perennial, stem hollow, thick as the thumb below, nearly smooth; leaves 12 in. diam. or less, circular-kidney-shaped, base forked or not, lower leaf stalks simple or partly winged, upper with a broad stem-sheathing wing; flowers yellow, in many-flowered heads, 1-2 in. diam., nodding in large flat-topped clusters, becoming racemose in fruit, branches of clusters velvety, bracts of heads  $\frac{1}{4}$ - $\frac{1}{3}$  in., about 8, united below, smooth, oblong, short-pointed, floor of head flat, naked, pappus hairs many, reddish, corollas, inner 5-toothed, slender, outer 5-6, very long, anther-bases blunt, style-arms recurved; achenes 1-5 in., 5-10 ribbed, smooth.

**Senecio Thomsoni,**

COMPOSITÆ.

F. B. I. iii. 348.

Kashmir,

7-10,000 ft.

like the last species, but more slender, smooth below, smooth or cottony above, leaves not more than 10 in. diam., leaf stalk of floral leaves slender, not winged, axils of clusters with long linear bracts, heads 5-6-flowered, bracteoles linear or thread-like, ligules 1-2, very long, achenes  $\frac{1}{4}$  in. long.

**Senecio Ligularia,**

COMPOSITÆ.

F. B. I. iii. 349.

Himalaya,

9-12,000 ft.

Kashmir.

very like *Senecio amplexicaulis* above, but the flower-heads form an unbranched drooping terminal raceme, bracteoles none, bracts at the base of the main stalks small, large and leafy; bracts of heads ununited, ligules 8-10,  $\frac{1}{2}$ - $\frac{3}{4}$  in., achenes  $\frac{1}{3}$  in., narrow, longer than the reddish pappus.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

**Senecio**

**Jacquemontianus,**

*Poshkar.*

COMPOSITÆ.

F. B. I. iii. 350.

Himalaya,

10-13,000 ft.

Kashmir (Falconer).

like the last species but larger, leaves broadly ovate, heart-shaped or nearly forked at the base, stalk of lower leaves stout winged, of upper leaves sheathing, bracteoles under the heads few, thread-like, stalks of clusters with oblong leafy bracts at the base, bracts of the heads oblong, short-pointed, bases almost united, ligules many, long and broad, achenes deeply grooved, pappus very short, unequal, united at the base.

**Senecio alatus,**

see Herbs, Erect, Unbranched, Alternate, Exstipulate, Simple, Toothed.

**Senecio Kunthianus,**

COMPOSITÆ.

F. B. I. iii. 354.

Himalaya,

10-14,000 ft.

The Chor (Collett).

Kashmir.

medium size, stem stout, leafy, often glandular red when dry, often unbranched, leaves  $1\frac{1}{2}$ -3 by  $\frac{1}{2}$ -1 in., ovate-lanceolate, smooth above, white-felted beneath, coarsely toothed, shortly stalked, heads  $\frac{1}{3}$  in. long, many-flowered, bracteate, in broad terminal flat-topped clusters, bracts of heads 5-8, narrow, short-pointed, ligules 5-7, short, pappus hairs white, many, as long as the tubular flowers; achenes  $\frac{1}{8}$  in., velvety; for other characters see the last described species.

**Senecio rufinervis,**

COMPOSITÆ.

F. B. I. iii. 355.

Himalaya,

east of the Sutlej,

6-8,000 ft.

Simla, Mahasu, in

forest (Collett).

large, shrub-like, branches, leaves beneath and clusters covered with flat-lying white cottony wool, leaves 5-9 by  $1-3\frac{1}{2}$  in., oblong-ovate, short-or long-pointed, sharply toothed, stalked, base rounded, narrow or heart-shaped, nerves after flowering covered beneath with reddish-felt, heads  $\frac{1}{3}$  in., 8-10-flowered, many, bracteolate in loose branched racemes forming flat-topped clusters, bracts of heads 5-8, oblong, short-pointed, very much shorter than the flowers, ligules 4-5, short, achenes  $\frac{1}{4}$  in., smooth; for other characters see the last species.

**Calendula officinalis,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Calendula arvensis,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

FLOWERS ALL LIGULATE.

**Rhagadiolus**

**Hedynois,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

- Picris hieracioides,** medium size to large, juice milky, branches clustered  
**Hawkweed Picris,** at the top, coarse, hairy, hairs straight or hooked; leaves  
 COMPOSITÆ. 2-5 in., narrowly lanceolate, radical toothed with rounded  
 F. B. I. iii. 393. notches, stalked, stem leaves smaller, half stem-clasping,  
 Himalaya, usually entire; flowers yellow, in many terminal long-  
 6-8000 ft. stalked clustered heads  $\frac{1}{2}$ - $\frac{3}{4}$  in. long on bracteate stalks,  
 Murree. bracts of heads narrow, black, hairy, inner equal, in one  
 series, outer many, short, spreading, floor of head flat,  
 naked, pappus  $\frac{1}{2}$  in. long, plentiful, white, feathery, in one  
 series with a few short hairs at the base, corollas long,  
 spreading, 5-toothed, anther-bases forked, style-arms  
 slender; achenes  $\frac{1}{6}$  in., narrowed at both ends, ribbed, slight-  
 ly curved, shortly beaked, transversely wrinkled.
- Crepis foetida,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Crepis sibirica,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Crepis blattaroides,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Crepis japonica,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Crepis acaulis,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Pterotheca Falconeri,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Hieracium vulgatum,** medium size to large, perennial, juice milky, hairy,  
**Hawkweed,** hairs straight or star-shaped; leaves 3-5 in., broadly lan-  
 COMPOSITÆ. ceolate, smooth above, hairy below, coarsely toothed, radi-  
 F. B. I. iii. 399. cal many, persistent, long-stalked, stem leaves, lower  
 Himalaya, stalked, upper sessile; flowers yellow, in many black,  
 6-10,000 ft. glandular, hairy, stalked heads  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, bracts of  
 Simla, Mahasu heads many, black, hairy, narrow, short-pointed, inner  
 (Collett). nearly equal, outer smaller, floor of head flat, bristly,  
 Kashmir. pappus plentiful, tawny, rough, rigid, bristly, ligules long,  
 spreading, 5-toothed, anther-bases not forked, style-arms  
 slender; achenes  $\frac{1}{10}$  in., black, ribbed, not beaked.
- Hieracium crocatum,** see Herbs, Erect, Unbranched. Alternate, Exstipulate,  
 Simple.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Hieracium  
prenanthoides,**  
COMPOSITÆ.  
F. B. I. iii. 400.  
Northern Kashmir,  
8-10,000 ft.

medium size to large, perennial, hairy or smooth, stem leafy, branched, glandular above, leaves 1-3 in., rather thin, with scattered bristles, radical none, stem leaves oblong or ovate or linear-oblong, minutely toothed or entire, waxy bluish-green beneath, uppermost leaves heart-shaped, flowers in heads 1 in. diam., forming branched leafy racemes in flat-topped clusters, bracts of heads velvety; achenes nearly  $\frac{1}{6}$  in., ribbed, red-brown; for other characters see the last described species.

**Hieracium  
umbeilatum,**  
COMPOSITÆ.  
F. B. I. iii. 400.  
Himalaya,  
5-10,000 ft.  
Matiana, in woods  
(Collett).  
Kashmir.

like the last species, but stem leaves sessile, linear or linear-oblong, heads usually many in irregular umbels, stalks velvety, bracts of heads many, black, downy, outer with recurved tips.

**Hieracium virosum,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Lactuca  
rapunculoides,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca Lessertiana,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca  
sagittarioides,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca polycephala,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Prenanthes  
Brunoniana,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Pieridium  
tingitanum,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Sonchus maritimus,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS NOT IN HEADS.

**Cephalostigma  
hirsutum,**

CAMPANULACEÆ.

F. B. I. iii. 428.

Himalaya,

2-5,000 ft.

Simla, common on  
banks (Collett).

Kashmir.

small, much branched, roughly hairy, stem stiff; leaves  $\frac{1}{3}$ -1 by  $\frac{1}{6}$ - $\frac{1}{4}$  in., broadly lanceolate, round-toothed, margin wavy and crisped, nearly sessile; flowers  $\frac{1}{8}$  in., blue, in small, branching racemes, upper bracts very small, flower stalks  $\frac{1}{6}$ - $\frac{1}{2}$  in., calyx sparsely hairy, 5-toothed, teeth  $\frac{1}{10}$  in., linear-lanceolate, corolla deeply 5-lobed, lobes linear-lanceolate, spreading, stamens 5, stigma 3-lobed; capsule  $\frac{1}{10}$  in., round, 3-valved, seeds many, 3-angled.

**Wahlenbergia  
gracilis,**

CAMPANULACEÆ.

F. B. I. iii. 429.

The Plains to

7,000 ft.

Simla, Boileaugunge,  
in fields (Collett).

small to medium size, perennial, smooth or hairy, sometimes nearly prostrate, branched or not; leaves  $\frac{1}{2}$ -2 $\frac{1}{2}$  by  $\frac{1}{12}$ - $\frac{1}{2}$  in., sometimes opposite, linear to narrowly oblong, more or less toothed; flowers  $\frac{1}{6}$ - $\frac{2}{3}$  in., pale blue, long-stalked, solitary, or in branching racemes, upper bracts small, linear, calyx above the ovary, 5-toothed, smooth, teeth  $\frac{1}{12}$ - $\frac{1}{6}$  in., linear, base triangular, corolla bell-shaped, divided into 5 broad oblong lobes, stamens 5, stigma 3-lobed; capsule  $\frac{1}{4}$  in., tapering into the stalk, seeds many, small, oblong, with rounded ends, flattened, smooth.

**Phyteuma  
Thomsoni,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Campanula latifolia,  
Blue bell of Scotland,**

CAMPANULACEÆ.

F. B. I. iii. 439.

Himalaya,

8-11,000 ft.

Hattu (Collett).

Kashmir.

medium size to large, smooth, stout, furrowed; leaves 2 $\frac{1}{2}$ -5 by 2-3 in., broadly lanceolate or ovate, upper nearly sessile, roughly velvety beneath; flowers 1-1 $\frac{1}{2}$  in., dark purple, in racemes, lower ones long-stalked, calyx ovoid or globose, calyx teeth 5,  $\frac{1}{2}$ - $\frac{3}{4}$  in., lanceolate, corolla bell-shaped, lobes 5, short-pointed, stamens 5, dilated at the bases, stigma 3-5-lobed; capsule  $\frac{1}{2}$  by  $\frac{1}{3}$  in., smooth, seed  $\frac{1}{12}$  in., many.

**Campanula  
canescens,**

CAMPANULACEÆ.

F. B. I. iii. 439.

The Plains to

5,000 ft.

Madhopur.

small to medium size, annual, hairy, slender; leaves 1 by  $\frac{1}{4}$ - $\frac{1}{3}$  in., oblong or lanceolate, round-toothed, flowers many, clustered in branching racemes, often dimorphic, *i.e.*, one flower complete, another without corolla or stamens, calyx teeth  $\frac{1}{5}$  in., in the perfect flowers,  $\frac{1}{12}$  in. in imperfect ones, linear-lanceolate, corolla  $\frac{1}{4}$  by  $\frac{1}{6}$  in., widely bell-shaped, shortly lobed, greyish-purple, capsule  $\frac{1}{6}$ - $\frac{1}{4}$  in. diam., in imperfect flowers  $\frac{1}{10}$  in., producing perfect seeds, seeds very minute, oblong with rounded ends, hardly flattened; for other characters see the last species.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

FLOWERS NOT IN HEADS.

**Campanula colorata,**

CAMPANULACEÆ.

F. B. I. iii. 440.

The Plains to  
10,000 ft.

Simla (Collett).

Kashmir.

small to medium size, stem cylindrical, hairy, much branched or zigzag, leaves 1 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., lanceolate, often narrowed into the blade, toothed, with slightly rounded notches, softly sparsely hairy on both surfaces, flowers  $\frac{1}{3}$  by  $\frac{1}{6}$  in., purple or greyish-purple, in clusters or branching racemes; for other characters see the last species.

**Campanula  
cashmiriana,**

CAMPANULACEÆ.

F. B. I. iii. 441.

Kashmir,

6-11,000 ft.

Baluchistan

(Lace).

small to large, stem softly hairy, leaves oblong, closely softly hairy on both surfaces, corolla  $\frac{1}{2}$ -1 by  $\frac{1}{6}$ - $\frac{2}{3}$  in., broadly bell-shaped, bright blue; for other characters see the last species.

**Heliotropium  
zeylanicum,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Heliotropium  
dasycarpum,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Heliotropium  
undulatum,**

*Pipat-buti,*

*juti-misak.*

BORAGINACEÆ.

F. B. I. iv. 150.

The Plains  
to 1,000 ft.

Kalabagh on the  
Indus.

Baluchistan

(Stocks).

small to medium size, harsh, rough; leaves  $\frac{1}{2}$ -1 $\frac{1}{4}$  in., lanceolate, bristly, margins crisped with minute round teeth, barely stalked, often wrinkled; flowers  $\frac{1}{6}$  in., white, sessile, bractless on rigid spikes, calyx  $\frac{1}{16}$  in., lobes 5, narrow, oblong, rough, stiff, persistent, corolla-tube  $\frac{1}{8}$  in., tubular, rough without, lobes 5, spreading, very small, ovate, throat hairless, stamens 5, on the corolla, not protruding, style short, stigma conical; nutlets 4,  $\frac{1}{12}$  in., forming a 4-pointed mitre with a hole at the apex. This plant and the next are used in Indian medicine to cure scorpion stings, snake bites, and the bites of rabid animals.

**Heliotropium  
indicum,**

*Hatta-juri.*

BORAGINACEÆ.

F. B. I. iv. 152.

The Plains in moist  
places.

Sargodha.

small to medium size, annual, hairy, leaves 1-4 in., ovate, just toothed, stalked, more or less woolly, sometimes nearly opposite, spikes 1-8 in., mostly leaf-opposite, calyx lobes linear, corolla lobes round-toothed, fruit separating into two 2-seeded 2-pointed nutlets; for other characters see the last species.

HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

**Cynoglossum  
micranthum,**

*Nila-krai.*

BORAGINACEÆ.

F. B. I. iv. 156.

The Plains to  
8,000 ft.

Simla

(Collett)

Kashmir.

medium size to large, hairy, hairs long, white, with bulbous bases; leaves  $1\frac{1}{2}$ - $3\frac{1}{2}$  by  $\frac{1}{4}$ - $\frac{1}{2}$  in., narrowly lanceolate, pointed at both ends, very rough above, minutely round-toothed; flowers  $\frac{1}{10}$  in. diam., white scales in the throat, blue-black, in widely-forked racemes, upper flowers sessile, lower shortly stalked, calyx 5-lobed, lobes minute, blunt, corolla lobes 5, blunt, stamens 5, beneath the corolla throat scales, style short; nutlets 4,  $\frac{1}{20}$  in., ovoid, forming a depressed pyramid, with hooked bristles on all sides.

**Cynoglossum  
lanceolatum,**

BORAGINACEÆ.

F. B. I. iv. 156.

The Plains.

very like the last species, but leaves broadly lanceolate, strongly nerved beneath, racemes long with all the flowers stalked, nutlets  $\frac{1}{8}$  in.

**Cynoglossum  
denticulatum,**

BORAGINACEÆ.

F. B. I. iv. 157.

The Plains to

9,000 ft.

like the last species, but leaves ovate or oblong-lanceolate, more or less toothed, calyx lobes ovate, nutlets bordered with a line of broad-based, united hooked bristles, faces nearly naked.

**Cynoglossum  
Wallichii,**

BORAGINACEÆ.

F. B. I. iv. 157.

Himalaya,

4-10,000 ft.

Simla, Mahasu

(Collett).

Baluchistan

(Duke).

very like the last species, but sometimes prostrate, leaves lanceolate to ovate, calyx lobes oblong.

**Solanum nigrum,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Nicandra  
physaloides,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Datura  
Stramonium,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS UNITED.

- Datura fastuosa,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Hyoseyamus niger,** see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Hyoseyamus, muticus,** see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Verbascum Thapsus,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Mazus rugosus,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.

## STAMENS TWO.

- Veronica deltigera,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Veronica Anagallis,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Veronica biloba,** see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Veronica laxa,** see Herbs, Erect, Opposite, Exstipulate, Simple.
- Veronica cana,** see Herbs, Erect, Opposite, Exstipulate, Simple.
- Veronica javanica.** see Herbs, Erect, Opposite, Exstipulate, Simple.
- Veronica arvensis,** see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Veronica serpyllifolia,** see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Chirita bifolia,** see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Chirita pumila,** see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

STAMENS FOUR.

- Scrophularia calycina**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Scrophularia Scopoli**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Scrophularia polyantha**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Buchnera hispida**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Centranthera hispida**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Leptorhabdos linifolia**, very like *Leptorhabdos Benthamiana*, except that the leaves are linear and calyx lobes linear-lanceolate: see under Herbs, Erect, Alternate, Exstipulate, Lobed.
- Lindenbergia macrostachya**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Lindenbergia polyantha**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Lindenbergia urticæfolia**, see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.
- Pedicularis carnosa**,  
**Lousewort**,  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 313.  
 Himalaya,  
 5-9,000 ft.  
 Simla, Mashobra  
 (Collett).  
 small to medium size, annual, roughly velvety, branches ascending; leaves 1-3 by  $\frac{1}{3}$ - $\frac{2}{3}$  in., ovate or oblong, teeth rounded, blade prolonged into the leaf stalk, tip blunt; flowers 1 in. long, pink purple, in racemes or spikes 1-6 in. long, bracts often longer than the flowers, leafy, calyx 5-lobed, lobes crested, corolla 2-lipped, tube twice as long as the calyx, upper lip arched, curved from the swollen middle, beak straight, blunt-pointed, lower lip  $\frac{3}{4}$  in. broad, 3-lobed, stamens 4, in unequal pairs, under the upper lip, style slender, stigma nearly round; capsule broadly oblong, short-pointed, slightly protruding from the calyx, seeds  $\frac{1}{4}$  in., many, circular, flattened, black-dotted.

HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS UNITED.

COROLLA TWO-LIPPED.

STAMENS FOUR.

**Platystemma  
violoides,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple  
Toothed.

STAMENS FIVE.

**Lobelia trialata,**  
CAMPANULACEÆ.  
F. B. I. iv. 425.  
The Plains to  
5,000 ft.  
Naldera (Collett).

small to medium size, annual, smooth, stem 3-angled,  
winged; leaves  $\frac{1}{4}$ -1 in., ovate or lanceolate, sharply toothed,  
or round toothed towards the tip, base wedge-shaped,  
entire, almost sessile; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in., pale blue or white  
on 1-flowered, slender axillary stalks, calyx 5-toothed,  
teeth linear, short-pointed, corolla 2-lipped, upper lip 2-fid,  
lower 3-lobed, stamens 5, anthers united, tipped with  
bristles, stigma 2-lobed; capsule  $\frac{1}{5}$ - $\frac{1}{8}$  in., 2-valved, seeds  
flattened, blunt.

PETALS NONE.

**Caltha palustris,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Acroglochin  
chenopodioides,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Chenopodium album,**  
**White Goose-foot,**  
*Bathu, lunak.*  
CHENOPODIACEÆ.  
F. B. I. v. 3.  
The Plains to  
12,000 ft.  
Simla (Collett).  
Kashmir.  
Baluchistan (Lac.)

medium size to large, pale green or mealy-white, stem  
angled, often striped green, red, or purple; leaves 1-2 in.,  
when cultivated often 4-6 in., stalked, lower ovate or oblong,  
margins more or less grooved, toothed, or entire, angled  
or lobulate, upper usually narrow, entire; flowers minute,  
green, sessile, clustered in short axillary simple or branching  
clusters often forming large terminal branching racemes,  
sepals 3-5, keeled, petals none, stamens 1-5, styles 2-3,  
seed vessels (utricles) membranous, contained in the per-  
sistent sepals, seeds smooth. This plant is grown as a rain  
crop, the seed is as nutritious as buck wheat, the leaves are  
eaten as a pot herb.

**Chenopodium  
Botrys,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

LEAF MARGINS TOOTHED.

PETALS NONE.

**Chenopodium  
opulifolium,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Chenopodium  
Blitum,***Sundar, kupald.*

CHENOPODIACEÆ.

F. B. I. v. 5.

Kashmir, 8,500 ft.

Baluchistan (Lace).

medium size, smooth, stem rather stout, white; leaves 1-3 in., bright green, triangular, base forked or heart-shaped, long-pointed, deeply unequally toothed, stalk slender, longer or shorter than the blade; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., in sessile axillary clusters and in terminal leafy spikes, sepals 1-3, succulent, berry-like in fruit, not enclosing the seed vessel, stamen 1, seed smooth, margin blunt, opaque.

**Euphorbia pilosa,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Euphorbia  
mieraetina,**

EUPHORBIACEÆ.

F. B. I. v. 261.

Kashmir on Pir

Panjal

(Jacquemont).

small, perennial, slightly hairy, stems short; leaves minute below,  $\frac{1}{2}$  in. higher up the stem, oblong with rounded ends, distant rounded teeth, floral leaves equal to the rays, clustered at the end of stem or branches; flowers in compound umbels, rays (flower stalks)  $\frac{1}{2}$ - $\frac{3}{4}$  in., male and female organs in one cup-shaped 4-5-lobed calyx, lobes ovate with few scattered hairs, almost concealed by 5 horizontal kidney-shaped glands placed in their angles, glands smooth, rounded, fleshy, margins woolly, stamens many, anthers globular, surrounding a stalked orbicular depressed, warted, 3-lobed capsule, hanging down on one side, styles 3, united at the base, dividing into 2 seeds  $\frac{1}{10}$  in. diam., ovoid.

**Euphorbia  
helioscopia,****Sun spurge,***Gunda-but,**chatriwal.*

EUPHORBIACEÆ.

F. B. I. v. 262.

The Plains to

8,000 ft.

Simla (Collett).

Gurgaon.

Baluchistan

(Stocks).

small to medium size, annual, smooth; much branched above, leaves  $\frac{1}{2}$ -2 in., stem leaves ovate, with a broad tip or oblong, narrowed into the stalk, leaves round the flowers 2-4, small, flowers in umbels as in the last species, rays 5, calyx  $\frac{1}{10}$  in. diam., top-shaped, smooth, 4-lobed, glands yellow, rounded, entire, styles ununited, capsule  $\frac{1}{8}$  in. diam., smooth, seeds minutely net-veined; for other characters see the last species. The juice is used in skin diseases, and the seed as a vermifuge.

**Euphorbia falcata,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## LEAF MARGINS TOOTHED.

## PETALS NONE.

**Chrozophora tinctoria**, see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Chrozophora obliqua**, see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Chrozophora plicata**, see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Acalyph brachystachya**, small, annual, weak, straggling, more or less velvety, nettle-like; leaves 1-3 in., ovate, pointed, round-toothed, base heart-shaped; flowers minute, green, in small sessile clusters in short axillary spikes  $\frac{1}{2}$  in. long, both sexes on the same spike, male flowers few, at the end of spikes, sepals 4, stamens 8, female flowers 1-3, sessile, in the axils of bracts, cut into 3 linear, entire, one-nerved, blunt spreading lobes, sepals 3-4, styles free, thread-like, long, divided into comb-like processes; capsules roughly hairy within the bracts, 3-celled, 3-seeded, seeds nearly round, nearly smooth.

**EUPHORBIAEAE.**  
F. B. I. v. 416.  
Himalaya,  
4-8,000 ft.  
Simla (Collett).

**Acalypha ciliata**, like the last species but larger, leaves 2-3 in., sharply toothed, long-pointed, spikes  $\frac{3}{4}$  in., bracts of female flowers pale coloured, usually 6-10, circular, with a long marginal fringe, capsule smooth. This plant acts as a laxative and vermifuge.

**Kuppi, kokali.**  
**EUPHORBIAEAE.**  
F. B. I. v. 417.  
The Plains to  
6,000 ft.  
Valleys below Simla  
(Collett).  
Subathu.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Adonis aestivalis**, medium size, annual, nearly smooth, leafy, branched or not; leaves much lobed and divided into thread-like segments, sessile; flowers  $\frac{1}{2}$  in. diam., yellow or scarlet with a purple centre, solitary at the end of stem or branches, sepals 5, ovate, green or slightly coloured, soon falling off, petals 5-8, longer than the sepals, spreading, stamens many, fruit ovoid or oblong, of many, small, wrinkled, pitted carpels, tipped with the persistent styles; closely allied to the Pheasant's eye, *Adonis autumnalis* of Britain.

**RANUNCULACEAE.**  
F. B. I. i. 15.  
The Plains from  
1-6,000 ft.  
Rawalpindi,  
Peshawar,  
Kashmir, Hazara,  
Kotgarh (Collett).  
Baluchistan  
(Stocks).

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

**Adonis  
chrysoyathus,**  
RANUNCULACEÆ.  
F. B. I. i. 15.  
Himalaya, in  
Chamba and  
Kashmir.

small, perennial, rootstocks horizontal, scaly, stems several, leafy; radical leaves 3-6 in., much lobed and divided, segments narrowly linear; flowers 2 in. diam., yellow, sepals 7-8, ovate with a broad tip, many-nerved, petals 16-24, twice the sepals in length, narrowly ovate with a broad tip, blunt, not spreading at first, stamens many; fruit of many carpels in a dense head,  $\frac{2}{3}$  in. diam., carpels smooth, flattened in front, convex and keeled behind, not angular, swollen, style tapering, bent back.

**Adonis  
serobiculata,**  
RANUNCULACEÆ.  
F. B. I. i. 15.  
Kishtwar (Stewart).

very like *Adonis æstivalis*, but the achenes are more sharply angled with a flattened collar at the base.

**Ranunculus,  
hirtellus,**  
RANUNCULACEÆ.  
F. B. I. i. 18.  
Himalaya,  
6-10,000 ft.  
Mahasu, Narkanda  
(Collett),

small to medium size, perennial, slightly hairy, branched, many-flowered; radical leaves  $1\frac{1}{4}$ -2 in. diam., deeply 3-lobed, heart-shaped, long-stalked, segments coarsely toothed, often lobed, stem leaves digitately 3-5-fid, segments narrow, entire or toothed near the tip; flowers  $\frac{1}{2}$  in. diam., yellow, in branching racemes, sepals 5, green, soon falling off, petals 5, with a glandular spot at the base, stamens many, fruit oblong, of many carpels, carpels sometimes flattened, crowned by the style, which is sometimes hooked. Closely allied to *Goldilocks*, *Ranunculus auricomus* of Britain.

**Ranunculus  
sceleratus,  
Celery-leaved  
Buttercup  
or Crow-foot,**  
RANUNCULACEÆ.  
F. B. I. i. 19.  
The Plains to  
5,000 ft.  
River bed below  
Paniah, Simla,  
Sutlej Valley  
(Collett).  
Peshawar.

small to large, annual, smooth, yellowish-green, stem stout, hollow, leaves radical,  $\frac{1}{2}$ - $1\frac{3}{4}$  in. diam., stalked, deeply divided into 3 wedge-shaped segments, segments lobed, bluntly toothed near the top, stem leaves sessile, flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., pale yellow, many, sepals equal in length to the petals, reflexed, achenes many, small, blunt, or pointed, smooth, in oblong to cylindrical heads; for other characters see the last species. This plant is acrid and is sometimes used to raise blisters. It is found on wet ground.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

**Ranunculus lætus,**  
**Buttercup,**  
RANUNCULACEÆ.  
F. B. I. i. 19.  
Himalaya,  
4-8,000 ft.  
Sutlej Valley.

medium size, perennial, covered with flat-lying hairs, rootstock woody, leaves radical 2-4 in. diam., long-stalked, deeply 3-lobed, segments deeply cut, sharply toothed, stem-leaves smaller, shortly stalked, flowers 1 in. diam., bright yellow, long-stalked, sepals hairy, achenes in round heads, smooth, flattened, not dotted, margins thickened; for other characters see the last species. This plant is closely allied to *Ranunculus acris* of Britain.

**Ranunculus**  
**muricatus,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Ranunculus**  
**arvensis,**  
**Corn Buttercup,**  
*Chambal.*  
RANUNCULACEÆ.  
F. B. I. i. 20.  
Himalaya,  
4-7,000 ft.  
Simla, in cornfields  
(Collett).  
Kashmir,  
Pathankot,  
Baluchistan  
(Stocks).

small to medium size, annual, pale green, slightly hairy only on the upper parts, leaves radical, 1-3 in. diam., long-stalked, soon withering, wedge-shaped or ovate with a broad tip, 2-3-toothed or lobed, stem leaves shortly stalked, deeply divided into 2 or 3 narrow lobes, lobes entire or the tip lobed or toothed, flowers  $\frac{1}{2}$  in. diam., pale yellow, sepals pressed against, and half the length of the petals, achenes 5-10, in round heads, flattened, usually covered with hooked spines, styles straight or hooked; for other characters see the last species.

**Delphinium**  
**uncinatum,**  
RANUNCULACEÆ.  
F. B. I. i. 24.  
Himalaya, west  
of the Jhelum,  
2-7,000 ft.  
Salt Range.

medium size, annual, or perennial, almost smooth, few-leaved, branched, or not; leaves radical 2 in., deeply divided into 5 parts, segments deeply divided, stem leaves smaller; flowers  $\frac{1}{2}$  in. long, white or bluish-purple in long many-flowered densely glandular-hairy or smooth racemes, sepals 5, petal-like, free, the upper one prolonged behind in a hooked blunt swollen spur, others flat, petals 4, 2 upper each prolonged as a spur within the spurred sepals, blade small, 2 lateral petals flat, stalked, blades smaller than the sepals, stamens many, flattened at the base, tapering upwards; follicles 3, many-seeded, tipped with the persistent styles, seeds wrinkled or folded. Allied to the Larkspur, *Delphinium Ajacis* of Britain.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

**Delphinium  
incanum,**

RANUNCULACEÆ.  
F. B. I. i. 25.  
Himalaya,  
6-8,000 ft.  
Kashmir.

like the last species, but the leaves are cut into three, the segments are much divided, the flowers are  $1\frac{1}{2}$  in. long, bright blue, the spur almost straight, cylindric, anterior petals 2-fid.

**Delphinium  
saniculæfolium,**

RANUNCULACEÆ.  
F. B. I. i. 25.  
The dry hills west of  
the Jhelum  
(Fleming).

medium size, branches spreading, stiff, grey velvety or smoothish, leaves  $1\frac{1}{2}$ -3 in. diam., radical leaves nearly cut to the base, lateral segments deeply 2-lobed, lobes all wedge-shaped and divided, flowers  $\frac{1}{2}$  in. long, pale blue, in many-flowered long racemes, spur rather longer than the flowers, awl-shaped, anterior 3-fid, white, back hairy, follicles 3, smooth or velvety; for other characters see the last species.

**Delphinium  
denudatum,**

*Munila, judwar.*  
RANUNCULACEÆ.  
F. B. I. i. 25.  
Himalaya,  
5-10,000 ft.  
Simla (Collett).  
Kashmir.

medium size, smooth or slightly downy, leaves radical, 2-6 in. diam., circular, long-stalked, divided nearly to the base, segments 5-9, narrow, pinnately lobed, often toothed, stem leaves few, lower nearly sessile, upper sessile, 3-lobed, lobes narrow, mostly entire, flowers  $1-1\frac{1}{2}$  in. long, few, scattered in much branched racemes, bracts linear, bracteoles 2, sepals spreading, from deep blue to yellowish-grey, spur cylindric, nearly straight, petals blue, lateral 2-lobed, hairy; for other characters see the last species.

**Delphinium  
elatum,**

RANUNCULACEÆ.  
F. B. I. i. 26.  
Himalaya,  
10-12,000 ft.  
Kashmir.

medium size to large, stem smooth or hairy, leaves 4-6 in. diam., rounded or kidney-shaped, 5-7-lobed or divided, segments oblong-wedge-shaped, 3-lobed or variously cut, flowers pale blue or purplish, hairy outside, in long much branched racemes, lower bracts leafy, 3-lobed, bracteoles linear, sepals oblong, blunt; spur awl-shaped, equal to the sepals; for other characters see the last species.

**Delphinium  
vestitum,**

*Juhi.*  
RANUNCULACEÆ.  
F. B. I. i. 26.  
Himalaya,  
8-12,000 ft.  
Fagu, Narkanda  
(Collett).  
Sangri.

medium size to large, unbranched below, very hairy, leaves radical 6-12 in. diam., stalk 6-12 in., 5-7-lobed, lobes rounded, deeply cut or toothed, stem leaves 2-3, similar but smaller, flowers  $1-1\frac{1}{2}$  in. long, in crowded branched or unbranched racemes, often 12 in. long, bracts linear or lanceolate, lower sometimes 3-lobed, bracteoles 2, sepals dark blue, erect, tips converging, broad, rounded, equal to or longer than the conical incurved spur, petals dark blue, lateral ovate, entire; for other characters see the last species.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

**Delphinium  
cashmirianum,**

*Amlin.*

RANUNCULACEÆ.

F. B. I. i. 26.

Himalaya,  
11-16,000 ft.  
Kashmir.

like the last species, but more softly hairy, smaller, flowers in a flat-topped cluster, formed of few-flowered racemes, spur straight, conical, sepals 1 in. long, follicles 3-7.

**Aconitum  
Lycotonom,**

RANUNCULACEÆ.

F. B. I. i. 28.

Himalaya,  
7-11,000 ft.  
Baghi Forest  
(Collett).  
Kashmir.  
The Chor.

large, perennial, smooth or velvety, stem hollow, much branched; leaves 6-10 in. diam., deeply divided, circular, segments 5-9, lobed and sharply toothed, lower long-stalked, upper nearly sessile; flowers 1 in. long, pale yellow, or dull purple in long, branched, terminal racemes, felted, bracts minute, sepals 5, petal-like, ununited, upper one helmet-shaped, with a short beak and a long dorsal cylindrical or conical prominence, the others flat, the 2 lateral broader than the 2 lower and much shorter than the helmet, petals 2 or 4, concealed within the sepals, 2 upper in the helmet, long-stalked with a short concave spurred blade, 2 lower very small or absent, stamens many, flat, wide at the base, tapering upwards, styles short, straight; follicles 3, spreading, seeds many, coat folded.

**Aconitum Napellus,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Aconitum  
heterophyllum,**

*Atis, sukkihari.*

RANUNCULACEÆ.

F. B. I. i. 29.

Himalaya,  
8-12,000 ft.  
Fagu, Narkanda  
(Collett).  
Mahasu, Kashmir,  
Hazara.

medium size, branched or not, leaves 2-4 in. diam., ovate or circular-heart-shaped, more or less 5-lobed or toothed, teeth blunt or short-pointed, stalked, upper leaves stem-clasping, sharply toothed, sessile, flowers 1 in. long, dull green-blue with purple veins, in many-flowered branched racemes, bracts sharply toothed, helmet-pointed in front, top rounded, lateral sepals as long as the helmet, follicles 5, downy, seed coat smooth; for other characters see the last species. The root of this plant supplies a valuable febrifuge, *atis*.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

**Papaver hybridum,  
Poppy,**

PAPAVERACEÆ.

F. B. I. i. 117.

The Plains west of  
the Jhelum,  
Peshawar,  
Rawalpindi.

small, annual, little branched, juice milky; leaves cut pinnately into segments, which are again cut, somewhat hairy, radical stalked, stem leaves sessile; flowers 1-2 in. diam., scarlet with a black spot on long stalks, nodding in bud, sepals 2, ovate, hairy, blunt, concave, falling off as the flower opens, petals 4 in unequal pairs, crumpled in bud, soon falling off, stamens very many, thickened upwards, style none, 4 stigmatic rays on the capsule; capsule  $\frac{1}{2}$  in. long, smooth, narrowly oblong, opening by pores close under the rim of the stigmatic disk, seeds many, kidney-shaped, small, surface minutely netted.

**Papaver Rhæas,  
Field poppy,***Lala, lal post.*

PAPAVERACEÆ.

F. B. I. i. 117.

Himalaya,  
5-7,000 ft.  
Kashmir.  
Rawalpindi.

very like the last species, but a little larger, flowers much larger, scarlet, capsule smooth, stalked, stigmatic rays 8-12.

**Papaver dubium,  
Longheaded Poppy,**

PAPAVERACEÆ.

F. B. I. i. 117.

Himalaya,  
4-7,000 ft.  
Simla, in fields.  
(Collett).

very like the last species, but often smooth, leaf segments usually narrower, stigmatic rays 6-12, capsule ovoid, sessile.

**Papaver somniferum,  
Opium poppy,***Post, afim.*

PAPAVERACEÆ.

F. B. I. i. 117.

The Plains to  
7,000 ft.  
Cultivated.

medium size to large, annual, smooth, often unbranched, leaves oblong, stem-clasping, lobed and toothed, flowers large, whitish purple or scarlet, sepals smooth, stigmatic rays 5-12, capsule 1 in. diam., round, stalked, seeds white or black; for other characters see the last species. Opium is the hardened juice which exudes from incisions made on the surface of the half ripened capsules. Oil is expressed from the seeds.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

- Argemone Mexicana,** medium size to large, annual, juice yellow, smooth  
**Mexican or Prickly** with bluish-green waxy gloss, prickly; leaves 3-7 in., ob-  
**Poppy,** long, cut into pinnate, spinous toothed segments, thistle-  
*Salkanta,* like, half stem-clasping, variegated green and white;  
*bher-band.* flowers 1-2 in. diam., bright yellow, terminal on short leafy  
 PAPAVERACEÆ. branches, sepals 3, prickly, ovate, produced below the tip  
 F. B. I. i. 117. into a short horn, petals 6, stamens very many, style  
 The Plains to very short, stigma 4-6-lobed; capsule 1-1½ in., oblong-  
 5,000 ft. ovoid, prickly, opening by 4-6 valves, seeds many, round,  
 Badrighat below surface netted. Oil is expressed from the seeds for illumi-  
 Jutogh (Collett). nating purposes, it is used as an aperient in half drachm  
 doses, the juice is used in dropsy, jaundice and skin  
 diseases.
- Meconopsis aculeata,** medium size, annual, prickly; leaves 4-8 in., oblong  
*Gudi, kunda.* or lanceolate, long-pointed, divided pinnately into seg-  
 PAPAVERACEÆ. ments, long-stalked, stem leaves sessile; flowers 2-3 in.  
 F. B. I. i. 118. diam., bright blue-purple in simple or branched racemes,  
 Himalaya, stalks slender, prickly in fruit, sepals 2-3, petals 4-5, stamens  
 11-15,000 ft. many, style half as long as the capsule, stigmatic lobes  
 The Chcr radiating on its clubbed extremity; capsule 1½-2 in.,  
 (Collett). oblong, short, densely prickly, seeds many, small, wrinkled.  
 Kashmir. In Kashmir the root is supposed to have narcotic pro-  
 Marali. perties.
- Corydalis Govaniana,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Corydalis Moorcroftiana,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed
- Corydalis Gortschakovii,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Corydalis cornuta,** small to medium size, root spindle-shaped, perennial,  
 FUMARIACEÆ. stems often prostrate, succulent, branched; leaves long-  
 F. B. I. i. 126. stalked, much divided, leaflets deeply lobed, segments  
 Himalaya, small, ovate; flowers ½-¾ in., yellow, tips purple, in terminal  
 8-10,000 ft. many-flowered dense long racemes, bracts small lobed  
 Simla (Collett). or entire, sepals 2, small, scale-like, petals 4, erect, tips  
 converging, the two outer larger than the two inner, united  
 at the base, the upper one broad, concave, produced into  
 a hollow spur, curved blunt at the tip, lower one flat, narrow,  
 inner petals narrow, stalked, keeled, stamens 6 in 2 sets of  
 three, lower set with spurs projecting into the petal spur,  
 style thread-like, stigma 2-lobed; capsule ½ in., ovate,  
 2-valved, seeds several, opaque.



## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Fumaria parviflora,**  
**Fumitory,***Pitpapra, shahitara.*

FUMARIACEÆ.

F. B. I. i. 128.

The Plains to

6,000 ft.

Simla (Collett).

Rawalpindi,

Lahore, Gurgaon,

Baluchistan

(Stocks).

small, annual, slender, pale green, much branched; leaves 2-3 in., much divided into lobes, again divided into 5 segments; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., whitish or pink with purple tips in terminal or leaf-opposed racemes, bracts lanceolate, sepals 2, small petals 4, 2 outer dissimilar, upper broad, concave, produced into a short rounded spur, lower flat, narrow, 2 inner narrow, stalked, keeled, stamens and style as in the last species; fruit very small, round, wrinkled when dry, rounded at the top with 2 pits, seed one. This plant is used as a febrifuge and a diaphoretic.

**Barbarea vulgaris,**  
**Yellow rocket or**  
**Winter cress,**

CRUCIFERÆ.

F. B. I. i. 134.

Himalaya,

6-10,000 ft.

Simla (Collett).

small to medium size, perennial, smooth, stems angled, stiff, leafy, branches few, short; leaves 2-4 in., pinnately lobed, lower lobes few, small, narrow, terminal lobe large, ovate, sometimes all narrow or the leaves oblong, deeply toothed, lower leaves stalked, upper sessile, stem-clasping; flowers small, yellow, in racemes, sepals 4, erect, equal, alike, petals 4, stalked, equal, spreading, placed cross-wise, stamens 6, 2 short, 4 long, green fleshy glands near the base of the stamens, style short, stigma round; capsule  $\frac{3}{4}$ -1 $\frac{1}{2}$  in., linear, 4-angled, erect or nearly spreading, seeds small, in one series, ovoid without a margin.

**Arabis glabra,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Arabis tibetica,**

CRUCIFERÆ.

F. B. I. i. 136.

Kashmir,

9-16,000 ft.

small, perennial, with star-shaped hairs, stems many, branched, leafy; leaves radical stalked, ovate with a broad tip or oblong, the blade prolonged down the stalk, more or less hairy, lobed or toothed upper stem leaves sessile, lanceolate, coarsely toothed or entire; flowers small, white or pinkish, in racemes, sepals 4, short, erect, lateral pouched, stellately hairy, petals 4, twice as long as the sepals, stalk short, stamens and style as in the last species; capsule 1 $\frac{1}{2}$  in. long, narrow, linear, curved, smooth, seeds small, in one series, not margined.

**Cochlearia flava,**

CRUCIFERÆ.

F. B. I. i. 145.

The Plains.

small, annual, smooth, branched, root long, spindle-shaped, leaves 4-5 in., lanceolate, pinnately divided, lower stalked, upper smaller, shortly stalked, base forked, flowers small, yellow, sepals spreading, equal at the base, petals entire, shortly stalked, capsules round, smooth, styles short, thick, seeds many, wrinkled, in 2 series; for other characters see the last species. This plant is found in damp places.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

- Malcolmia torulosa**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Sisymbrium Sophia**, medium size, annual, slightly velvety or quite smooth, leafy, branches ascending, leaves much divided, segments short, linear, flowers small, yellow, in loose bractless racemes, sepals short, petals long-stalked, capsules 1 in., spreading or erect on long slender stalks, cylindric, somewhat flattened, curved, almost beaded, mid rib prominent, stigma almost sessile; for other characters see the last species.  
**Flixweed**,  
 CRUCIFERÆ.  
 F. B. I. i. 150.  
 The Plains, west of, the Jhelum, 1-7,000 ft.  
 Salt Range, Peshawar, Kashmir, Baluchistan (Stocks).
- Sisymbrium Columnæ**, large, annual, slightly branched, smooth or hairy below, leaves lobed with the end lobe largest, angled and in upper leaves forked, segments ovate-oblong to lanceolate, toothed, and pointing backwards, flowers large, pale yellow, sepals erect, smooth, capsule 3-4 in. long, spreading, very slender, curved, stalk very stout; for other characters see the last species.  
 CRUCIFERÆ.  
 F. B. I. i. 150.  
 Himalaya, 7-10,000 ft.  
 Kashmir.
- Sisymbrium Irio**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Sisymbrium Loeselii**, like the last described species, but more branched, style short with a distinct 2-lobed stigma.  
 CRUCIFERÆ.  
 F. B. I. i. 151.  
 Kashmir, 5-7,000 ft.
- Sisymbrium Alliaria**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Brassica nigra**, large, annual, more or less hairy, stiff, branched; leaves 4-8 in., all stalked, lower lobed with a large terminal lobe, upper entire; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., bright yellow, in long naked racemes, sepals 4, spreading, lateral pouched at the base, petals 4, placed cross wise, stamens 6, 4 inner longer in opposite pairs; capsules  $\frac{1}{4}$ - $\frac{1}{2}$  in., slender, pressed against the stem, beaded, cells 3-5-seeded, beak slender, seedless, seeds oblong.  
**Black mustard**,  
*Rai*.  
 CRUCIFERÆ.  
 F. B. I. i. 156.  
 The Plains to 9,000 ft.

## HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Brassica campestris,** medium size to large, annual, root spindle-shaped, stem sometimes unbranched; leaves, lower 6-8, pinnately divided with the terminal lobe largest, rounded, stalked, upper smaller, oblong or lanceolate, base forked, bluish-waxy green above, more or less hairy beneath; flowers 1 in. diam., bright yellow, in flat-topped clusters, lengthening sepals nearly erect, waxy bluish-green turning yellow before falling, inner pair longer than the outer, petals falling before the cluster lengthens; capsules 2-3 in. long, beak stout, conical, often 1 in. long and seedless, seeds 30-80, nearly round, nearly smooth, dingy white to brown; for other characters see the last species. The oil expressed from the seeds (*kirwa tel*) is used for cooking and lighting.
- Indian Colza,**  
*Kali sarson.*  
CRUCIFERÆ.  
F. B. I. i. 156.  
The Plains to 6,000 ft.
- Brassica Napus,** like the last species of which it is almost a variety, but smaller, more branched, leaves smaller, flowers smaller, petals with a pale green narrow stalk, capsules beaded, seeds 20, bright brown, finely wrinkled. The seed is largely exported.
- Indian Rape,**  
*Toria, pila sirson.*  
CRUCIFERÆ.  
F. B. I. i. 156.  
The Plains to 6,000 ft.
- Brassica** small, annual, hairy or smooth, leaves radical in a rosette, pinnately divided with the lobes pointing backwards and terminal lobe largest, rounded, lobes toothed, with scattered white hairs, stem leaves linear-lanceolate, entire or divided, flowers small, pale yellow, capsules  $2\frac{1}{4}$  in., erect, slender, smooth, flattened, beaded, beak  $\frac{3}{4}$  in., slender, tapering, seeds flattened; for other characters see the last species.
- Tournefortii,**  
CRUCIFERÆ.  
F. B. I. i. 156.  
The Plains.  
Western Thibet (Edgeworth).  
Cultivated.
- Brassica juncea,** large, annual, smooth, stems tinged with purple, leaves, lower stalked, blades 6-8 in., pinnately divided or with the terminal lobe largest, upper small, nearly sessile, lanceolate, toothed, flowers  $\frac{1}{2}$  in. diam., bright yellow, in short flat-topped clusters, lengthening into racemes 8 in. long, sepals spreading, petal stalks green, capsules  $2\frac{1}{2}$  in. long,  $\frac{1}{2}$  in. thick, beaded, beak narrowly conical, nearly  $\frac{1}{2}$  in. long, seeds many, round, brown, finely wrinkled; for other characters see the last species. This plant is widely cultivated for the production of mustard oil.
- Asl rai,*  
*badshahi-lai,*  
*chotiya-lai.*  
CRUCIFERÆ.  
F. B. I. i. 157.  
The Plains to 6,000 ft.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Brassica alba,**  
**White mustard,**  
*Sufed rai.*  
CRUCIFERÆ.  
F. B. I. i. 157.  
The Plains.  
Ferozepore.

medium size, annual, hairy, leaves stalked, hairy, pinnately divided, segments ovate, toothed, capsules 1 in., stalked, cylindrical, spreading, beaded, beak  $\frac{1}{2}$  in., flattened, 1-2-seeded; for other characters see *Brassica nigra*. This plant is rarely cultivated as a field crop, usually found in English gardens and eaten young with cress.

**Diploaxis Griffithii,**  
*Burani muli,*  
*sizgai.*  
CRUCIFERÆ.  
F. B. I. i. 157.  
The Plains west of  
the Indus,  
Kalabagh,  
Salt Range.

medium size to large, annual, stout, hairy, leaves lower shortly stalked, oblong, entire or toothed, or pinnately divided, upper lanceolate, less divided, flowers large, purplish or white, sepals 4, spreading, equal at the base, capsules  $1\frac{1}{2}$ - $2\frac{1}{4}$  in., linear, flattened, seeds many, flattened, in 2 series, oblong; for other characters see *Brassica*. This plant is eaten as a pot herb.

**Eruca sativa,**  
*Taramira, duan.*  
CRUCIFERÆ.  
F. B. I. i. 158.  
The Plains to  
10,000 ft.  
Mashobra (Collett).  
Lahore.

medium size, annual, smooth or slightly hairy, bluish-green waxy gloss; leaves 1-4 in., pinnately divided, sessile, segments coarsely toothed, terminal one largest, upper leaves smaller, nearly entire; flowers  $\frac{3}{4}$ -1 in. diam., pale yellow or white, in racemes, darkly veined sepals 4, erect, lateral pouched, petals 4, stalked, stamens 6, 2 short stigma round; capsule  $\frac{1}{2}$ -1 in., pressed against the stem, erect, oblong-ovoid, prolonged in a flat, pointed seedless beak, seeds in 2 rows, many, round. This plant is cultivated as a field crop in winter, oil extracted from the seeds is chiefly used for burning, too acrid for food.

**Capsella**  
**Bursa-pastoris,**  
**Shepherd's purse,**  
CRUCIFERÆ.  
F. B. I. i. 159.  
The Plains to  
8,000 ft.  
Simla (Collett).  
Rawalpindi.  
Lahore.

small, annual, root long, tapering, stem more or less covered with forked hairs; leaves radical, usually pinnately divided, sometimes lanceolate, terminal lobe broadly triangular, segments nearly entire, upper pinnately divided, lobed at the base, stem clasping, uppermost lanceolate; flowers  $\frac{1}{10}$  in. diam., white, in racemes, sepals 4, spreading, equal at the base, petals 4, short, stamens 6, 2 shorter; capsules  $\frac{1}{4}$  in. diam., flat, triangular, seeds many, in 2 rows. A common weed.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Lepidium sativum,** small, annual, smooth ; leaves radical long stalked  
**Garden cress,** twice pinnately divided, stem leaves sessile, pinnately  
*Halim, shargundei.* divided or lanceolate; flowers small, white, in long racemes,  
 CRUCIFERÆ. sepals 4, erect, equal at the base, petals 4, stamens 6, 2  
 F. B. I. i. 159. shorter; capsules  $\frac{1}{2}$  in., ovate with a notch at the tip,  
 The Plains to margins winged, seeds solitary in each cell. A garden  
 9,000 ft. crop. The leaves are eaten raw and the seeds used as  
 Simla (Collett). a cure for dysentery as they are very mucilaginous.
- Lepidium Draba,** medium size, perennial, velvety, branched or not,  
*Bijindak.* stem zig-zag, leaves oblong, waxy and toothed, upper lobed  
 CRUCIFERÆ. at the base, flowers in branching racemes, capsules  $\frac{1}{2}$  in.  
 F. B. I. i. 160. triangular; for other characters see the last species. This  
 The Plains. plant is used as a pot herb and for fodder.  
 Peshawar.
- Thlaspi arvensis,** see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed.
- Thlaspi** see Herbs, Erect, Alternate, Exstipulate, Simple,  
**cardiuncarpum,** Toothed.
- Thlaspi alpestre,** see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed.
- Neslia paniculata,** see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Entire.
- Chorispora tenella,** see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Entire.
- Sedum trifidum,** small, perennial, smooth, rootstock woody with a  
 CRASSULACEÆ. crown of scales, stems annual; leaves 2-4 in., oblong, suc-  
 F. B. I. ii. 420. culent, sessile, 3-5-lobed, lobes spreading, unequal,  $\frac{1}{4}$ -1 in.,  
 Himalaya, entire or toothed, blunt; flowers  $\frac{1}{4}$  in. long in bud, white  
 6-12,000 ft. or pale pink, stalked in branched leafy clusters, calyx 4-5,  
 Simla (Collett). lobed nearly to the base, lobes narrow-lanceolate, petals  
 Dalhousie. 4 or 5, linear-lanceolate, twice as long as the calyx lobes,  
 stamens twice as many as the petals; follicles 4-5, many-  
 seeded, styles short, recurved in fruit, seeds oblong with  
 rounded ends, flattened. This plant grows on rocks and  
 trees; it turns crimson when withering.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## .PETALS UNUNITED.

**Oenothera rosea,** see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Eryngium** medium size to large, perennial, stem unbranched  
**cœruleum,** below, branched above, smooth, spinous; leaves radical,  
*Dudhali, poli,* 5 by  $1\frac{3}{4}$  in., stalks 2-6 in., oblong-heart-shaped, not lobed,  
*pahari gajar.* round-toothed, not spiny, lower stem leaves similar, but  
 UMBELLIFERÆ. smaller, upper stem leaves sessile, palmately divided into  
 F. B. I. ii. 669. lanceolate spiny segments; flowers small, white, in un-  
 Kashmir, branched heads, bracts 5-6, 1 in., linear with a few spines  
 5-6,000 ft. on the margins, bracteoles linear, spiny, longer than the  
 flowers, calyx 5-toothed, teeth lanceolate, awl-shaped,  
 spiny, calyx tube densely scaly, petals 5, white, narrow,  
 erect, stamens 5; fruit  $\frac{1}{2}$  in., nearly cylindric, carpels 2,  
 dorsally nearly flat, nearly concave on the inner face,  
 primary ridges not prominent, secondary absent, oil canals  
 inconspicuous, axis wanting, one seed in each carpel. The  
 root is taken as an aphrodisiac and nervine tonic.

**Eryngium** very like the last species, but radical and lower stem  
**Billardieri,** leaves are divided and the stem is branched below.

UMBELLIFERÆ.  
 F. B. I. ii. 670.  
 Kashmir,  
 5-6,000 ft.

**Sanicula europaea,** medium size to large, annual, smooth; leaves palmate-  
**Sanicle** ly divided into 3-5 segments, ovate, toothed, often lobed,  
 UMBELLIFERÆ. teeth finely pointed, radical leaves 2-6 in. diam., long-  
 F. B. I. ii. 670. stalked, stem leaves few, smaller, umbels are formed of  
 Himalaya, small umbels on rays, bracts few, leaf-like, rays unequal,  
 4-12,000 ft. frequently forking, branches ending in a small head of  
 Simla, Mashobra flowers with small linear bracteoles, flowers minute, white,  
 (Collett). chiefly one sexual perfect, flowers sessile, male stalked,  
**Kashmir.** calyx tube woolly, almost prickly, teeth green, lanceolate,  
 petals white, notched. fruit  $\frac{1}{10}$  in., ovoid, flattened, covered  
 with hooked bristles; for other characters see the last  
 species.

**Coriandrum** see Herbs, Erect, Alternate, Exstipulate, Compound.  
**sativum,**

**Cuminum Cymnum,** see Herbs, Erect, Alternate, Exstipulate, Compound.

HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Dichrocephala  
latifolia,**

COMPOSITÆ.  
F. B. I. iii. 245.  
Himalaya,  
1-9,000 ft.  
Simla (Collett).

medium size, annual, velvety or hairy; leaves  $1\frac{1}{2}$ -4 in., stalked, pinnately divided lobes, irregularly coarsely toothed, terminal lobe broadly ovate; flowers minute, inner yellow, outer white, in heads,  $\frac{1}{6}$  in. diam., discoid on slender stalks forming branching racemes, pappus of inner flowers none, of outer 2 minute bristles, corollas, outer very slender, 2-3-toothed, inner 4 or 5-lobed; achenes smooth, flat.

**Dichrocephala  
chrysanthemifolia,**

COMPOSITÆ.  
F. B. I. iii. 245.  
Himalaya,  
6-7,000 ft.  
Simla (Collett).

like the last species, but the leaves are smaller, stem-clasping, heads  $\frac{1}{4}$  in. diam., usually solitary on thick, diverging stalks, corollas turning dull purple before withering.

**Cyathocline lyrata,**

COMPOSITÆ.  
F. B. I. iii. 246.  
The Plains to  
5,000 ft.  
Sutlej Valley  
(Collett).

small to medium size, annual, velvety, sweet scented; leaves 1-5 in., sessile, pinnately divided, lobes narrow, sharply toothed; flowers very minute, rose purple white in discoid heads  $\frac{1}{6}$  in. diam., arranged in small rounded branched flat-topped clusters, floor of heads elevated, concave, naked, bracts of heads in 2 series, lanceolate margins transparent, pappus none, inner flowers 2-toothed, outer 5-toothed, anther-bases not tailed: achenes (seeds) minute oblong, smooth. This plant usually grows on the borders of rice fields and the banks of streams and ditches.

**Blumea laciniata,**

COMPOSITÆ.  
F. B. I. iii. 264.  
The Plains.

large, annual, stout, velvety or woolly; leaves large, membranous with lobes pointing back or with a large terminal lobe or almost pinnately divided, toothed; flowers minute, yellow, in many heads,  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., on sepals in flat-topped open clusters, floor of head flat, naked, velvety, bracts of head outer few short, inner many, narrow, short-pointed, slightly longer than the flowers, pappus white, inner flowers 5-toothed, outer 2-3-toothed, anther-bases forked, tails small, slender; achenes minute, ribbed, silky.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

- Blumea membranacea**,  
COMPOSITÆ.  
F. B. I. iii. 265.  
The Plains.                   very like the last species, but more slender, more branched, flower stalks slender, glandular, floor of head very narrow, smooth, bracts slender with scattered bristles on the margins.
- Laggera pterodonta**,           see Herbs, Erect, Alternate, Exstipulate, Simple Toothed.
- Laggera aurita**,                see Herbs, Erect, Alternate, Exstipulate, Simple Toothed.
- Carpesium trachelifolium**,    see Herbs, Erect, Alternate, Exstipulate, Simple Toothed.
- Xanthium strumarium**,  
**Burweed**,  
*Chota dhatura*,  
*ban-okra*, *wangan*  
*tsuru*.  
COMPOSITÆ.  
F. B. I. iii. 303.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).                    medium size to large, annual, rough, coarse; leaves long-stalked, heart-shaped, lobed, toothed, triangular, 2 by 1 in., or circular, 4 in. diam.; flowers male and females in separate heads, combined in axillary or terminal clusters on the same plant, male heads highest, round,  $\frac{1}{3}$  in. diam., bracts few, short, narrow, in one series, floor of head cylindric, flowers many, each in a transparent scale, pappus none, corolla white or green, 5-toothed, female heads ovoid,  $\frac{1}{2}$  in. long, outer bracts few, short, inner many, in one series, narrow, united, covered with hooked bristles and crowned with 2-hooked beaks, flowers 2, pappus and corolla none, style branches long, protruding between the beaks, achenes ovoid, thick, enclosed in the hardened bracts. This weed is common round villages, it is a good diuretic, useful in irritability of the bladder, in gleet and leucorrhœa. An oil is expressed from the seeds.
- Matricaria chamomilla**,        see Herbs, Erect, Alternate, Exstipulate, Lobed, Inner, flowers tubular, Outer ligulate.
- Cotula anthemoides**,  
*Babuna*.  
COMPOSITÆ.  
F. B. I. iii. 316.  
The Plains.                   small, annual, hairy or almost smooth, often prostrate; leaves  $\frac{1}{3}$ - $\frac{1}{4}$  in., much divided, segments lobed, lobes triangular-lanceolate, stalks half stem-clasping; flowers minute, yellow, in solitary terminal heads  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., on thread. like naked stalks, floor of heads nearly flat, tubercled, bracts of heads nearly in 2 series, margins transparent, inner



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

corollas 4-toothed, outer conic or none, anther-bases blunt, entire, pappus none; achenes ovate with thick narrow wings. The plant is used as an application to sore eyes.

**Cotula  
hemisphærica,**  
COMPOSITÆ.  
F. B. I. iii. 316.  
The Plains.

small, annual, smooth or hairy above, leaf segments very many, linear, terminating in a short hard point, heads drooping in fruit, achenes angled, not winged; for other characters see the last species.

**Tanacetum gracile,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Tanacetum  
nubigenum,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Artemisia  
Dracunculus,  
Tarragon,**  
COMPOSITÆ.  
F. B. I. iii. 321.  
Himalaya,  
14-16,000 ft.  
Lahul (Jaeschke).

medium size, perennial, green, strongly-scented, smooth, stem grooved, ribbed; leaves radical divided into 3 segments or none, stem leaves 1-1½ in., sessile, linear or linear-oblong, entire or toothed; flowers very minute, greenish in nearly round heads ½ in. diam., sessile or stalked in branching racemes, bracts of heads broadly oblong with a very broad transparent margin and a very narrow green disk, floor of head naked, pappus none, outer corollas 2-3-toothed, inner 5-toothed, anther-bases blunt, achenes very minute, oblong, faintly streaked. This plant was introduced into Europe, and is cultivated for flavouring in cookery, it is not apparently used for this purpose in India.

**Artemisia parviflora,**  
*Kanyurts.*  
COMPOSITÆ.  
F. B. I. iii. 322.  
Himalaya,  
3-10,000 ft.

medium size to large, perennial, shrubby, scentless, smooth or slightly hairy, stem grooved, much branched, leaves 1-2 in. long, wedge-shaped, stalked or nearly sessile, divided at the tip or entire, all have 2 strap-shaped stipule-like lobes near the base of the leaf stalk, flowers 6-10, very minute, greenish, in round nodding heads ⅓-½ in. diam. in long straight branching racemes, achenes oblong with rounded ends, smooth, brown; for other characters see the last species.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Artemisia scoparia**, medium size, annual, rootstock often perennial, smooth  
*Pila-jau*, below, green and slightly hairy above, branches many,  
*churi saroj, danti*, slender, faintly scented, leaves radical 1-3 in. long, stalked,  
 COMPOSITÆ. broadly ovate, much divided, segments linear, stem leaves  
 F. B. I. iii. 323. thread-like, flowers very minute and numerous, nodding,  
 The Plains to sessile or on threadlike stalks in one-sided branched ra-  
 7,000 ft. cemes, bracts of heads oblong, glistening, blunt, thin with  
 Valleys below Simla narrow green disks, achenes  $\frac{1}{80}$  in. long; for other characters  
 (Collett). see the last species. This plant is used for its purgative  
 Rawalpindi action.  
 (Douie).  
 Baluchistan  
 (Hughes-Buller).

**Artemisia annua**, medium size, annual, very slender, strongly scented,  
 COMPOSITÆ. smooth, branches deeply grooved, leaves lower much di-  
 F. B. I. iii. 323. vided, broad, 3 in. diam., segments toothed or lobulate, with  
 N.-W. F. Province stipule-like divided at the base of the stalk, heads  $\frac{1}{12}$ - $\frac{1}{10}$   
 5-5,000 ft. in. diam., nearly round in very slender one-sided branched  
 (Stewart). drooping racemes, bracts of the heads smooth, inner  
 circular, green, with thin margins, afterwards altogether  
 papery, shining; for other characters see the last species.

**Artemisia maritima**, medium size, perennial, shrubby below, much branch-  
**Worm seed**, ed, leaves  $\frac{1}{2}$ -2 in., lower ovate, twice divided, segments  
 or **santonica**, small, spreading, linear, blunt, stalks slender, upper leaves  
*Shih, sarigun,* undivided, linear, heads 3-8-flowered, ovoid or oblong,  
*afsantin-ul-bahr.* erect, often reddish, crowded in spiked tufts, bracts of  
 COMPOSITÆ. heads linear-oblong, outer green felted, inner thin, short-  
 F. B. I. iii. 323. pointed, smooth; for other characters see the last species.  
 Himalaya, The flower heads are used as anthelmintics. Santonin,  
 7-9,000 ft. which is much used in European medicine, is obtained  
 Kashmir. from these flower heads.  
 Baluchistan  
 (Lace).

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Artemisia vulgaris,** medium size to large, perennial, aromatic, shrub-like,  
**Mugwort, Flea bane,** grey velvety or felted, stems leafy, much branched, leaves  
*Chambra, afsantin,* lower 2-4 in. long, stalked, ovate, much divided, grey felted  
*būimadaran.* beneath, stipule-like lobes at the base, stem leaves often  
 COMPOSITÆ. sessile, linear-lanceolate, entire or 3-fid, heads  $\frac{1}{8}$ - $\frac{1}{6}$  in.,  
 F. B. I. iii. 325. ovoid or rounded, clustered or seriate, in nearly one-sided  
 Himalaya, branched racemes, brownish, yellow, bracts round, heads  
 5-12,000 ft. wooly or nearly smooth, outer green, inner thin; for other  
 characters see the last species.

**Artemisia** very like the last species, but rootstock creeping,  
**Roxburghiana,** not shrubby, leaves smaller, more finely cut, flowers nearly  
 COMPOSITÆ. always purple.  
 F. B. I. iii. 326.  
 Himalaya,  
 5-10,000 ft.  
 Kashmir.

**Artemisia vestita,** very like the last species, but more shrubby, leaves  
 COMPOSITÆ. still more finely divided, upper surface green, white-felted  
 F. B. I. iii. 326. beneath.  
 Himalaya,  
 7-10,000 ft.  
 Simla (Collett).  
 Kashmir,  
 Salt Range.

**Artemisia laciniata,** very like the last species, but leaves smaller, both  
 COMPOSITÆ. surfaces alike, heads larger, flowers more numerous.  
 F. B. I. iii. 326.  
 Kashmir,  
 9,000 ft.  
 (Clarke).

**Artemisia** very like *Artemisia Roxburghiana* above, but the heads  
**Moorcroftiana,** form long interrupted spikes or racemes with spaces of  
 COMPOSITÆ.  $\frac{1}{4}$ - $\frac{3}{4}$  in. between the solitary heads or clusters of 2-3 heads.  
 F. B. I. iii. 327.  
 Kashmir,  
 9-13,000 ft.  
 Spiti.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Artemisia**  
**Absinthium,**  
**Wormwood,**  
*Vilayati afsantin.*  
COMPOSITÆ.  
F. B. I. iii. 328.  
Kashmir,  
5-7,000 ft.  
(Thomson).

medium size to large, perennial, grey velvety, very aromatic, stems angular, ribbed; leaves 1-2 in., ovate or ovate with broad tips, two or three times divided into spreading linear or lanceolate blunt segments, grey on both surfaces, radical and lower stem leaves narrowed into winged stalks; heads  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., stalked, half round, in drooping terminal one-sided racemes, bracts round, heads oblong, grey, narrow thin margins, inner circular broad thin margins, floor of heads covered with long straight hairs; flowers yellow, anthers long-pointed, achenes  $\frac{1}{4}$  in. long; for other characters see the last species. This plant is used as a stomachic tonic and vermifuge. The oil is a narcotic poison, a French liqueur is prepared from it.

**Artemisia**  
**Sieversiana,**  
*Afsantin, dauna.*  
COMPOSITÆ.  
F. B. I. iii. 329.  
Himalaya,  
8-10,000 ft.  
Kashmir.  
Lahul.

very like the last species, but annual, heads much larger, widely separated on long loose racemes, anthers bristle-pointed, its properties are very similar to those of the last species.

**Gynura angulosa,**

see Herbs, Erect, Alternate, Exstipulate, Simple. Toothed.

**Emilia sonchifolia,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Sencio Levingii,**

see Herbs, Erect, Alternate, Exstipulate, Simple. Toothed.

**Echinops echinatus,**  
COMPOSITÆ.  
F. B. I. iii. 358.  
The Plains to  
3,000 ft.  
Rawalpindi.  
Baluchistan  
(Hughes-Buller).

medium size, annual, thistle-like, stiff, spreading, much branched, white cottony; leaves 3-5 in., oblong, sessile, pinnately divided, lobes triangular or oblong, spinous, spines often  $1\frac{1}{2}$  in., heads in white balls 1- $1\frac{1}{2}$  in. diam., with many stout spines, each head contains one flower, outer bracts 6-8, lanceolate, smooth, inner  $\frac{1}{3}$  in. long, united, tips bristly, hardening round the silky achene, pappus of short bristles, corolla tubular, slender, deeply cut into 5 segments, anther-bases forked, style-arms thick.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Echinops cornigerus**, very like the last species, but stem undivided below,  
COMPOSITÆ. very leafy, leaves much larger, balls much larger, often  
F. B. I. iii. 358. without spines, flowers much larger.

Himalaya,  
6-9,000 ft.  
Simla (Collett).  
Kashmir.

**Echinops niveus**, very like the last species, but the leaves are much  
COMPOSITÆ. more divided, often curved back.

F. B. I. iii. 359.  
Himalaya,  
4-6,000 ft.  
Simla (Collett).

**Cousinia minuta**, small, annual, branches spreading, thistle-like; leaves  
*Lakhtei, kandiari.* sessile, oblong or lanceolate, pinnately divided, somewhat  
COMPOSITÆ. spinecent, grey, cobwebby on both surfaces; flowers yellow,  
F. B. I. iii. 359. in small numerous heads, round, terminal or in the forks of  
The Plains, west of the branches, floor of heads with smooth bristles, bracts  
the Jhelum. round heads, 15-20, triangular-lanceolate, stout, spread-  
Salt Range. ing, turned back, tips spinous, pappus hairs in one series,  
Sakesar. rough, soon falling off, corollas tubular, slender, unequally  
Rawalpindi. 5-fid, anther-bases forked; achenes smooth, ovoid with a  
broad top, flattened, 5-7-angled, abruptly ended with  
minutely toothed ring. This plant when young is eaten  
as a vegetable in the Salt Range.

**Cousinia Thomsoni**, large, biennial, stout, cottony, stem not winged,  
COMPOSITÆ. branched, leaves radical, 5-10 by  $\frac{3}{4}$ - $1\frac{1}{4}$  in., stalked, linear,  
F. B. I. iii. 360. deeply pinnately divided, segments horizontal, triangular,  
Himalaya, with a stiff long spine, cobwebby above, white felted be-  
10-14,000 ft. neath, stem leaves ovate-lanceolate, sessile or forked at  
Lahul. the base, flowers  $\frac{1}{2}$ - $\frac{1}{3}$  in. long, in terminal stalked heads,  
 $1\frac{1}{2}$ -2 in. diam., bracts of heads many, woolly,  $\frac{1}{3}$ - $1\frac{1}{2}$  in. long,  
floor of heads with rough hairs,  $\frac{2}{3}$  in.; for other characters  
see the last species.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

- Cousinia auriculata**, very like the last species, but smaller, heads solitary, COMPOSITÆ. bristles of the floor of the head twisted below.  
F. B. I. iii. 360.  
The Plains west of the Indus.  
Kashmir Valley.
- Cousin a microcarpa**, very like the last species, but more slender, radical leaves with the segments pointing backwards, stems COMPOSITÆ. winged, pappus none.  
F. B. I. iii. 360.  
Kashmir,  
5-6,000 ft.
- Carduus nutans**, medium size to large, biennial, often unbranched, **Musk Thistle**, stout, cobwebby, stem winged, wings spinous, grooved; *Kanchari, tiso. bada-* leaves 6-12 in., oblong, pinnately lobed, margins wavy, *ward.* spiny; flowers crimson, in clustered or solitary nodding heads,  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. diam., ovoid or round, bracts of heads lanceolate with awl-like points or outer or all ending in erect or reflexed spines, floor of head flat, densely bristly, pappus soon falling off, copious, long, rough, united below into a ring, corolla-tube long, deeply 5-lobed, anther-bases forked, style-arms short, blunt; achenes smooth, 4-angled, pale brown. The leaves are used to curdle milk, and the flowers as a febrifuge.
- Carduus arvensis**, large, stems many, not winged, often unbranched, not **Creeping Thistle**, perennial, creeping, tufts of different sexes; leaves 3-5 in. long, sessile, linear-oblong or ovate with a broad tip, *Bhur-bhur.* pinnately lobed, lobes separating with spinous tips, felted beneath, rough above; flowers dull purple, male in round heads  $\frac{1}{2}$ -1 in. diam., female in much longer heads with looser bracts, heads generally solitary or clustered, bracts of heads smooth or cobwebby, outer short, ovate, or triangular ending in a short spine, inner gradually longer with wavy, often recurved tips, innermost linear-lanceolate with thin margins, floor of heads densely bristly, pappus copious, long, soon falling off, with a ring at the base, corolla-tube long, deeply divided into 5 lobes, anther-
- COMPOSITÆ.  
F. B. I. iii. 361.  
Himalaya.  
6-12,000 ft.  
Simla, Narkanda, in fields (Collett).  
Kashmir, Hazara,  
Murree (Douie).
- COMPOSITÆ.  
F. B. I. iii. 362.  
The Plains to 7,000 ft.  
Valleys below Simla (Collett).  
Choa Saidan Shah,  
Gujar Khan (Douie).  
Baluchistan (Lace).

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

bases forked, style arms short, blunt, achenes smooth, linear-oblong, flattened, 4-angled, pale brown. A common weed in cultivated land. The seeds yield an oil sometimes used for burning. *Cnicus* and *Carduus* are very like each other, but *Cnicus* has greener bracts and more feathery pappus.

***Cnicus involueratus*,**

COMPOSITÆ.

F. B. I. iii. 362.

Himalaya,

8-12,000 ft.

Kashmir.

like the last species, but radical leaves 12 in. long, deeply pinnatifid, stalked, bristly above, felted below, stem leaves broad, stem clasping, heart-shaped, flowers pale yellow, 1 in. long, male and female in the same heads,  $1\frac{1}{2}$  to  $2\frac{1}{2}$  in. diam., bracts of heads all spinulose, corollas 5-lobed, but not deeply, pappus  $\frac{2}{3}$  in., brown.

***Cnicus argyranthus*,**

COMPOSITÆ.

F. B. I. iii. 362.

Himalaya,

6-9,000 ft.

Simla, Fagu,

(Collett).

Murree.

very like the last species, but more slender, leaves always smooth above, heads  $\frac{3}{4}$ -1 in., more numerous, smaller, densely clustered, corollas  $\frac{1}{2}$  in., white, pappus  $\frac{1}{2}$  in., nearly white.

***Cnicus Wallichii*,**

COMPOSITÆ.

F. B. I. iii. 363.

Himalaya,

5-9,000 ft.

Simla, in fields

(Collett).

Murree.

like the last species, but larger, the tips of the inner bracts dilated, occupying a large part of the head, flowers dull yellow,  $\frac{2}{3}$  in. long, pappus brownish white.

***Silybum Marianum*,**

or *Carduus*

***Marianus*,**  
**Milk thistle,**

COMPOSITÆ.

F. B. I. iii. 364.

The Plains west of  
the Indus to

8,000 ft.

Hazara, Kashmir.

medium size to large, annual or biennial, shining, smooth, stem grooved, not winged; leaves large, with strong spines, lobed, green above marbled with white; flowers rose-purple in large solitary, terminal, nodding heads, 1-2 in. diam., bracts of heads leathery with a spine  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, outer with a short point, floor of head fleshy, densely bristly, pappus white, united at the base, anther-bases forked, style nearly entire; achenes  $\frac{1}{4}$  in., transversely wrinkled, black or grey, flattened.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Saussurea  
candicans,**  
*Batula, kala ziri.*  
COMPOSITÆ.  
F. B. I. iii. 373.  
The Plains from  
2-7,000 ft.  
Salt Range,  
Hazara, Kashmir,  
Simla (Collett).  
Baluchistan (Lace).

medium size to large, annual, leafy, unbranched below, heads erect; leaves radical, 1-6 by  $\frac{1}{2}$ - $1\frac{1}{2}$  in., sometimes 18 by 6 in., stalked, oblong or ovate, with a broad tip, pinnately lobed at the base, generally smooth above, white-cottony or felted beneath, stem leaves sessile, smaller, lanceolate, few; flowers pale red in erect long-stalked solitary, or clustered heads,  $1-1\frac{1}{2}$  in. diam., bracts of heads lanceolate, long-pointed, cottony or velvety, floor of heads with long bristles, pappus-hairs  $\frac{1}{2}$  in. long, very slender, corollas  $\frac{1}{2}$  in. long, anther-bases deeply and irregularly divided; achenes  $\frac{1}{8}$  in., 5-angled, rough. The seeds are used as a carminative in Indian medicine.

**Saussurea,  
hypoleuca,**  
*Kat, kust.*  
COMPOSITÆ.  
F. B. I. iii. 374.  
Himalaya,  
7-13,000 ft.  
Hatu (Collett).  
Kashmir.

large, annual, slender, leafy, branched above, heads nodding; leaves white-felted beneath, radical 6-10 in., narrow, pinnately divided, lateral lobes pointing back, terminal lobe much larger, oblong, stem-leaves 3-8 in., pinnately lobed, lateral lobes 2-4 pairs, oblong, less than 1 in. long, terminal lobe 2-4 by 1-3 in., triangular, short-pointed; flowers dark-purple, in solitary nodding, globose heads,  $1\frac{1}{2}$ -2 in. diam., bracts of heads lanceolate, long-pointed, bristly, purple, floor of heads with long bristles, anther tails long, awl-shaped, split at the tip or not; achenes  $\frac{1}{8}$  in., 4-angled, pappus  $\frac{1}{3}$  in., brown.

**Saussurea Jacea,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Saussurea Lappa,  
The Costus,**  
*Kat, kust.*  
COMPOSITÆ.  
F. B. I. iii. 376.  
Kashmir,  
8-12,000 ft.  
(Falconer).

very large, stem undivided below, velvety; leaves rough above, smooth beneath, irregularly toothed, radical with the stalk 2-3 ft. long, stalk lobed and winged, terminal lobe often 12 in. across, stem leaves 6-12 in. long with the stalk, base forked, half stem-clasping; flowers  $\frac{3}{4}$  in. long, dark purple, in nearly round, sessile, axillary or clustered heads,  $1-1\frac{1}{2}$  in. diam., bracts of heads many, purple, ovate-lanceolate, long-pointed, stiff, recurved, floor of heads with long bristles, anther tails fringed, pappus hairs  $\frac{2}{3}$  in., brown, achenes  $\frac{1}{3}$  in., curved, flattened, top cupped. The root is exported in large quantities from Kashmir; it has a scent like orris root, and is much used in perfumery, also in Hindu medicine as a tonic and aphrodisiac, and as a cure for asthma, toothache, rheumatism, and as an application to ulcers especially when attacked by maggots.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

- Serratula pallida**, see Herbs, Erect, Unbranched, Alternate, Exstipulate, Lobed.
- Tricholepis elongata**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Tricholepis tibetica**, see Shrubs, Alternate, Exstipulate, Lobed.
- Volutarella divaricata**, medium size, annual, straggling, stiff, branches long, angled; leaves 1-2 by  $\frac{1}{4}$ - $\frac{2}{3}$  in., rarely 6 by 3 in., oblong, pinnately divided, lobes rounded with an abrupt point, crisped or waved; flowers  $\frac{1}{2}$  in., pale purple in hard spiny heads,  $\frac{1}{2}$ -1 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., bracts of heads with a long spreading or recurved spine, bristles of floor of head short, pappus hairs roughish silvery brown, corollas  $\frac{1}{2}$  in. long, lobes 5, linear, anther-bases forked; achenes in., 4-5-angled, dotted, top broad. A troublesome weed.  
*Badaward.*  
COMPOSITÆ.  
F. B. I. iii. 383.  
The Plains to 3,000 ft.  
Sargodha, Shahpur District.  
Baluchistan (Lace).
- Zoëgia purpurea**, small, annual, slender, smooth; leaves radical pinnately divided, stem leaves undivided; flowers purple, in long-stalked heads, floor of head densely bristly, bract of heads many, thin, bristly, tips bright purple, pappus of outer chaffy scales, middle long smooth bristles, inner short bristles, corollas 5-lobed, slender, anther-bases forked; achenes ovoid, shining, obscurely ribbed, with concentric ridges below the top.  
COMPOSITÆ.  
F. B. I. iii. 384.  
Hills between Kashmir and Waziristan (Stewart).  
Baluchistan (Lace).
- Centaurea Cyanus**, medium size, annual or biennial, branched or not, slender, cottony; leaves narrow, radical pinnately lobed with the terminal lobe largest or simple; stem-leaves linear; flowers blue, in solitary or clustered heads, bracts of the heads oblong, cottony, blunt, broad tip with toothed edges, floor of head densely bristly, outer corollas larger than inner, anther-bases forked, achenes oblong, somewhat 4-angled, grey, silky.  
**Corn Flower or Blue bottle.**  
COMPOSITÆ.  
F. B. I. iii. 384.  
The Plains, west of the Jhelum.  
Baluchistan.  
(Hughes-Buller).

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Centaurea depressa**, very like the last species, but the heads are larger and the leaves are broader.

COMPOSITÆ.  
F. B. I. iii. 385.  
The Hills west of  
the Indus.  
Baluchistan  
(Stocks).

**Centaurea Calcitrapa, Star-thistle**, like the last species, but the branches angular, widely spreading, bracts narrow, terminating in a yellow spine, flowers purple, pappus none, achenes small, white.

COMPOSITÆ.  
F. B. I. iii. 384.  
The Plains to  
3,500 ft.  
Kashmir,  
Rawalpindi,  
Choa Saidan Shah  
(Douie).  
Baluchistan  
(Hughes-Buller).

**Centaurea iberica**, very like the last species, but heads smaller, flowers paler, pappus very short.

COMPOSITÆ  
F. B. I. iii. 385.  
Kashmir,  
5-6,000 ft.  
Baluchistan  
(Stocks).

**Centaurea polycephala**, like the last species, but the branches with round white stems, outer bracts green, leaflike, pappus scaly.

COMPOSITÆ.  
F. B. I. iii. 385.  
The Plains, west of  
the Jhelum.  
Peshawar (Stewart).  
Baluchistan  
(Stocks).

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

- Carthamus lanatus**, small to medium size, annual, stiff, cobwebby, cottony or nearly smooth; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., hairy, hard, green, radical pinnately lobed, end lobe largest, stem leaves ovate, half stem-clasping with a forked toothed base strongly 3-nerved, spinescent; flowers pale yellow in heads 1- $1\frac{1}{2}$  in. diam., outer bracts of heads 1-2 in., spreading, projecting beyond the flowers, lanceolate, leafy, prickly on the sides, lower linear brown, thin, tip spinescent, bristles of the floor of the heads very long, anther-bases forked, tails fringed, pappus longer than the achenes of swordshaped scales, silvery or bronze-coloured; achenes  $\frac{1}{4}$  in., thick, 4-angled, pitted above, pale yellowish or grey.
- COMPOSITÆ.**  
F. B. I. iii. 386.  
Kashmir,  
5-6,000 ft.
- Brachyaetis umbrosa**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Conyza stricta**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Inula Royleana**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Vicoa auriculata**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Vicoa vestita**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Glossocardia linearifolia**, small, annual, smells like fennel, much branched from the base, often prostrate; leaves  $\frac{1}{2}$ -2 in., pinnately divided, stalk long, slender, blade broadly ovate, segments thread-like; flowers yellow, in shortly stalked heads  $\frac{1}{3}$  in. long, bracts of heads few, inner oblong with thin broad margins, outer one to three, slender, floor of heads flat, scales few, flat, inner corollas 4-toothed, outer ligulate, ligule 2-toothed, anther bases blunt, entire, pappus of 2 stiff bristles; achenes  $\frac{1}{4}$  in. long, narrowly oblong, flattened, faces bearded.
- COMPOSITÆ.**  
F. B. I. iii. 308.  
The Plains, east of the Sutlej, Delhi.
- Achillea millefolium**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

**Anthemis  
odontostephana,**

COMPOSITÆ.  
F. B. I. iii. 312.  
N.-W. F. Province,  
Peshawar (Vicary).  
Baluchistan  
(Griffith).

small, perennial, stems many, from the root, grey velvety; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, ovate, pinnately divided, segments entire or 3-5-lobed; flowers and heads like the last species, but the floor of the heads covered with awl-shaped scales; achenes crowned with blunt short teeth.

**Allardia tomentosa,**

COMPOSITÆ.  
F. B. I. iii. 313.  
Himalaya,  
13-16,000 ft.  
Kashmir.

small, perennial, tufted, covered with white wool, branches long, ascending, leafless upwards; leaves  $1\frac{1}{2}$ -3 in. long, pinnately divided, oblong or linear-oblong, segments various; flowers white, rosy or pink in terminal stalked heads, 2-3 in. diam., bracts of heads woolly, floor of head flat, naked, ligules 1 in. long, very many, entire, linear, disk-flowers tubular, 5-fid; achenes smooth, 5-angled, grooved and wrinkled, pale, pappus  $\frac{1}{8}$ - $\frac{1}{4}$  in. long, consisting of stiff purplish bristles, tips whitish or yellowish.

**Matricaria  
Chamomilla,  
Persian Chamomile,  
Babuna, suteigul.**

COMPOSITÆ.  
F. B. I. iii. 315.  
The Plains.

small, annual or perennial, aromatic, much branched, smooth; leaves 2-3 in, twice pinnately divided, segments thread-like; flowers, inner tubular, yellow, outer ligulate, white in solitary, long stalked heads,  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., bracts of heads oblong, margins white, floor of heads bare, pappus none, corolla inner tubular, 4-5-toothed, outer ligulate, ligule long, rarely short, anther-bases blunt, not divided; achenes small, grey, 4-5 ribbed on one side. The flower heads and oil are used instead of true Chamomile (*Anthemis nobilis*) as a tonic, febrifuge and in an infusion as an anodyne.

**Matricaria præcox,**

COMPOSITÆ.  
F. B. I. iii. 316.  
N.-W. F. Province,  
Peshawar.

like the last species, but not aromatic, leaves only once pinnately divided, bracts of heads with red margins, achenes ribbed on both sides, crowned with a lobed cup. This plant, when dry, may be mistaken for *Anthemis odonto-stephana*.

HERBS, ERECT WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

- Senecio graciliflorus**, large, annual, smooth, stem round, zigzag, sometimes  
 COMPOSITÆ. angled and grooved; leaves 4-6 by 2-4 in., thin, stalked  
 F. B. I. iii. 338. at the base, not lobed at the base, pinnately divided into  
 Himalaya, oblong, short-pointed, coarsely toothed segments, upper  
 8-13,000 ft. leaves linear, sessile; flowers yellow, in numerous, often  
 Mahasu, Narkanda drooping, 5-8-flowered narrowly cylindric,  $\frac{1}{3}$  in. long, heads,  
 (Collett). in small clusters, forming terminal flat-topped branching  
 Patarnala, racemes, bracteoles many, narrow, bracts of heads 5-7,  
 Kashmir. linear, floor of heads naked, corollas inner 5-toothed, outer  
 of 3-5 ligules deeply toothed, pappus white,  $\frac{1}{10}$  in., anther-  
 bases blunt; achenes  $\frac{1}{10}$  in., ribbed.
- Senecio chrysanthemoides**, like the last species, but stem not zig-zag, leaves  
 COMPOSITÆ. larger, terminal lobe much the largest, ovate, irregularly  
 F. B. I. iii. 339. lobed and toothed, stem-clasping with basal lobes, deeply  
 Himalaya, toothed, upper leaves with many lobes, leaves often  
 8-13,000 ft. purple beneath, bracts of heads 10-12, oblong, ray flowers  
 Simla, Mahasu 8-12, ligules 3-toothed.  
 (Collett).  
 Kashmir.
- Senecio coronopifolius**, small, annual, much branched from the base, slender,  
 COMPOSITÆ. smooth, leaves 1-2 in., scattered, all on the stem, fleshy,  
 F. B. I. iii. 341. narrow, pinnately divided, lower stalked, upper stem-  
 Northern Kashmir, clasping, lobed at the base, heads  $\frac{1}{3}$  in. diam., few, many-  
 8-17,000 ft. flowered, on long bracteolate stalks forming loose flat  
 (Thomson). topped branching racemes, bracts of heads 15-20, narrow,  
 short-pointed, ray flowers 8-12, ligules rolled up, inner  
 flowers very slender, achenes rough, pappus white; for  
 other characters see the last species.
- Senecio Thomsoni**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed.
- Senecio pedunculatus**, small to medium size, annual, slender, much-branched  
 COMPOSITÆ. from the base; leaves all stem ones pinnately divided,  
 F. B. I. iii. 342. lobes linear, base simple or dilated and half stem clasping,  
 Himalaya, flowers yellow in many-flowered narrowly bell-shaped, long-  
 9-12,000 ft. stalked heads  $\frac{1}{6}$  in. forming loose, flat-topped clusters,  
 Kashmir. bracts round heads, 10-16 linear, long-pointed, ligules  
 very short, achenes slender, pappus white; for other cha-  
 racters see the last species.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Cichorium Intybus,**  
**Wild Chicory,**  
*Kasni, hand, gul,*  
*suchal.*

COMPOSITÆ.

F. B. I. iii. 391.

The Plains to  
6,000 ft.Simla, Boileauganj  
(Collett).

small to medium size, perennial, root tapering, fleshy, stem angled, grooved; leaves, radical 3-6 in., pinnately divided, lobes toothed, pointing backwards, upper leaves small, entire; flowers blue, in solitary terminal or axillary clustered heads, 1-1½ in. diam., stalk thickened in the middle, bracts of heads green, glandular-hairy, floor of heads naked or slightly fringed, corollas all with 5-toothed ligules, style-arms long, pappus of short, erect, blunt scales; achenes small, pale, angled with the crown of pappus scales. The cultivated variety of this, *C. Endivia*, is found in a few places.

**Lapsana communis,**  
**Nipplewort,**

COMPOSITÆ.

F. B. I. iii. 391.

Kashmir,  
5-6,000 ft.

medium size, annual, smooth or hairy, much-branched, leafy; leaves, lower stalked, pinnately divided, terminal lobe largest, toothed, stem leaves ovate, upper linear, entire; flowers yellow, in many small loosely clustered heads, ½ in. long, on short slender naked stalks, bracts of heads 8-10, linear, stiff, keeled, blunt, smooth or glandular, floor of heads flat, naked, pappus none; achenes ⅓ in., pale, shining, curved, 20-30 ribbed, ribs slender.

**Rhagadiolus**  
**Hedynois,**

COMPOSITÆ.

F. B. I. iii. 392.

Kashmir (Falconer).  
Baluchistan  
(Stocks).

small, annual, smooth or slightly hairy, branches many from the root; leaves 1-3 in., ovate-oblong, pinnately divided or toothed; flowers yellow, in axillary or terminal heads, ¼-⅓ in., bracts of the heads in one series, later on keeled and embracing the outer achenes, floor of heads naked, pappus of inner flowers scaly, outer short; achenes ¼-½ in., longer than the bracts, curved, narrow, smooth, beaked.

**Crepis foetida,**  
**Hawk's beard,**

COMPOSITÆ.

F. B. I. iii. 393.

The Plains from  
1-8,000 ft.Rawalpindi  
(Douie).

Kashmir.

Baluchistan (Lace).

small, annual, rough, branches many from the root; leaves, lower 2-6 in., pinnately divided, toothed, end lobe the largest, upper smaller, toothed or entire, heart-shaped, base half stem-clasping; flowers bright yellow, in long-stalked (in bud drooping), terminal clustered heads, ½ in. diam., bracts of heads many, outer rough with hooked hairs, then hardened and keeled, floor of heads flat, naked, pappus ¼ in., soft, dirty white, corollas all ligulate, ligules long, 5-toothed; achenes; outer ¼ in., curved, pale, inner ⅓-½ in., straight, many-ribbed, red brown, beak very slender equal to the body.

**Crepis sibirica,**

see Herbs, Unbranched, Alternate, Exstipulate,  
Simple.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

- Crepis tenuifolia**, small to medium size, perennial, root woody, stems many, stout, much branched, smooth; leaves 4-8 in., narrow, radical, long-stalked, pinnately divided, lobes distant, slender, long-pointed, toothed or entire, stem leaves linear, entire; flowers yellow, in many heads,  $\frac{1}{2}$  in. long, forming flat-topped clusters, stalks bracteate, slightly velvety, bracts of heads, inner linear, outer very small, grey; achenes  $\frac{1}{3}$  in., red-brown, flattened, shortly beaked, ribbed, rough, pappus silvery, soon falling off.  
**COMPOSITÆ.**  
 F. B. I. iii. 395.  
 Northern Kashmir,  
 12-15,000 ft.
- Crepis japonica**, small, annual, smooth, stems slender, branching, tufted, leaves 2-6 in., radical, long-stalked, deeply lobed, lobes irregular, terminal largest, stem leaves few, small, flowers pale yellow, in many long-stalked heads  $\frac{1}{8}$ - $\frac{1}{4}$  in., forming branching flat-topped racemes, stalks bracteolate, bracts of heads 6-8, narrowly oblong, smooth, erect, green, recurved in fruit with a strong midrib, achenes  $\frac{1}{2}$  in., hardly beaked; for other characters see the last species.  
**COMPOSITÆ.**  
 F. B. I. iii. 395.  
 The Plains to  
 10,000 ft.  
 Simla (Collett).
- Crepis acaulis**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Pterotheca Falconeri**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Lactuca Scariola**, medium size to large, annual or biennial, somewhat prickly towards the base, leafy, branched; leaves 5-7 in., pinnately divided, segments toothed, pointing backwards, midribs and nerves prickly, stem leaves lobed at the base, half stem-clasping; flowers yellow, in erect, cylindric, few-flowered, smooth, branching racemed heads  $\frac{1}{2}$  in. long, stalks bracteate, white, bracts of heads, outer triangular, inner linear, pappus silvery; achenes  $\frac{1}{4}$  in., many-ribbed, ribs rough, brown, beak very slender, as long as the body. (Var. *sativa*, the garden lettuce, is smoother, more succulent, achenes black). This plant acts as a weak sedative.  
**COMPOSITÆ.**  
 F. B. I. iii. 404.  
 Himalaya,  
 6-11,000 ft.  
 Mashobra, Sutlej  
 Valley (Collett).  
 Murree,  
 Baluchistan  
 (Lace).
- Lactuca undulata**, small, annual, succulent, smooth, stem short, branched from the base, leafy, leaves 2-3 in., dark-green, radical, sessile, pinnately divided, lobes entire or but little toothed, stem leaves half stem-clasping, base dilated or lobed, flowers bluish or pinkish white in terminal or clustered erect, narrow, cylindric few-flowered heads 1 in. long, achenes  $\frac{1}{2}$ - $\frac{2}{3}$  in. long, beak very long, tip cleft, embracing the base of the beak; for other characters see the last species.  
**COMPOSITÆ.**  
 F. B. I. iii. 404.  
 The Salt Range  
 (Fleming).  
 Baluchistan  
 (Stocks).

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Lactuca dissecta,**

COMPOSITÆ.

F. B. I. iii. 405.

Himalaya,

4-8,000 ft.

Simla (Collett).

Kashmir, Sakesar,

Salt Range,

Baluchistan (Lace).

very like the last species, but flowers blue, beak of achenes shorter, twice the body, heads  $\frac{1}{4}$ - $\frac{1}{2}$  in. long.

**Lactuca longifolia,**

COMPOSITÆ.

F. B. I. iii. 405.

Himalaya,

4-9,000 ft.

Shali, Daha

(Collett).

Kashmir.

like the last, but the leaves are often entire with forked base and half pinnately cut lobes, very long, linear, beak of achenes shorter, only equal in length to the body or less.

**Lactuca**

**rapunculoides,**

COMPOSITÆ.

F. B. I. iii. 407.

Himalaya,

9-12,000 ft.

Kashmir, Lahul.

medium size to large, perennial, root tuberous or spindle-shaped, often unbranched, leafy, smooth or slightly bristly above, leaves, lower long-stalked, heart- or triangular-shaped with margins incurved or variously toothed, upper with winged stalks, forked at the base with 2 lobes, uppermost nearly sessile, often lanceolate, heads  $\frac{1}{2}$ - $\frac{3}{4}$  in., blue or purple, drooping in clusters, bracts of heads very small, inner few, very narrow with dilated tips, achenes  $\frac{1}{3}$  in. long, very narrow, slightly flattened with rounded edges, narrowed into a brown beak, pappus dirty white; for other characters see the last species.

**Lactuca decipiens,**

COMPOSITÆ.

F. B. I. iii. 407.

Himalaya,

8-10,000 ft.

Kashmir, Dras.

like the last, but the leaves are much lobed, heads much larger,  $\frac{2}{3}$  in. long.

**Lactuca hastata,**

COMPOSITÆ.

F. B. I. iii. 407.

Himalaya,

4-12,000 ft.

Simla, Theog, in forest (Collett).

like the last, but much larger, leaves sometimes a foot long, heads  $\frac{3}{4}$  in. long, achenes quite flat, achenes contracted into a brown cleft tip in which the white beak is situated.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Lactuca macrorhiza**, small to large, perennial, root tuberous, alpine forms very small with few leaves and scapes, leaves variable in size and shape, usually pinnately lobed, sometimes orbicularly heart-shaped, stalks dilated or lobed at the base, naked or winged, flowers grey blue in terminal drooping heads  $\frac{1}{2}$ - $\frac{3}{4}$ , forming clusters, bracts of heads, outer lanceolate, very much shorter than the 6-10 linear oblong inner ones, achenes  $\frac{1}{6}$ - $\frac{1}{4}$  in., flat, black, smooth, 5-ribbed on either side, narrowed into a white beak,  $\frac{2}{3}$ rds the length of the body, pappus silky white, equal to the achenes; for other characters see the last species.

COMPOSITÆ.  
F. B. I. iii. 408.  
Himalaya,  
6-12,000 ft.  
Simla, Mahasu,  
(Collett).  
Kashmir,  
The Chor.

**Lactuca Lessertiana**, like the last species, but never large, leaves sometimes simple, heads blackish, flowers blue, beak of achenes stout, pale, pappus yellowish, shorter than the achenes.

COMPOSITÆ.  
F. B. I. iii. 408.  
Himalaya,  
8-13,000 ft.  
Kashmir.

**Lactuca sagittarioides**, small to medium size, biennial, smooth, stems usually tufted, slender, 6-18 in., branched; leaves radical, 2-3 in. long, long-stalked, forked at the base, lateral lobes horizontal, leaf stalk 6-10 in. long, narrowly winged at the top; flowers yellow, in erect heads,  $\frac{1}{3}$  in. long, on naked flowering stems 6-18 in. long, branched above into a flat-topped cluster, bracts of head green, outer very small, inner 6-10, linear-oblong; achenes  $\frac{1}{10}$  in., smooth, oblong-lanceolate, narrowed into the slender white beak, pappus white, as long as the achenes.

COMPOSITÆ.  
F. B. I. iii. 410.  
Himalaya,  
east of the Ravi,  
5-6,000 ft.  
Daha in Giri Valley  
(Collett).  
Dharmsala.

**Lactuca polycephala**, small to medium size, annual, smooth, slender, found in wet places, leaves radical 3-10 by  $\frac{1}{4}$ - $\frac{3}{4}$  in., linear or lanceolate, pinnatifid or toothed, narrowed to the base, stalked, stem leaves sessile, oblong or lanceolate, finely long-pointed, forked at the base with pointed lobes, flowers yellow, in many-flowered heads  $\frac{1}{6}$ - $\frac{1}{4}$  in., arranged in branching umbel-shaped clusters, bracts of heads, outer minute, inner 6-10, linear-oblong, green, achenes  $\frac{1}{8}$  in., red brown, hardly flattened, with 10 strong smooth ribs, narrowed into a short slender brown beak, pappus  $\frac{1}{8}$  in., silvery; for other characters see the last species.

COMPOSITÆ.  
F. B. I. iii. 410.  
The Plains to  
6,000 ft.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

- Prenanthes Brunoniana**,  
COMPOSITÆ.  
F. B. I. iii. 411.  
Himalaya,  
6-9,000 ft.  
Simla (Collett).  
Kashmir.  
very like a *Lactuca*, but the heads are fewer flowered, narrower, flowers rose-purple, achenes have no beak.
- Prenanthes violæfolia**,  
see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Picridium tingitanum**,  
see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Sonchus asper**,  
**Sow thistle**,  
COMPOSITÆ.  
F. B. I. iii. 414.  
The Plains to  
12,000 ft.  
Simla (Collett).  
Kashmir.  
Baluchistan (Lace).  
medium size, annual, flowers from December to April, smooth, succulent, juice milky, stems hollow, grooved or angled; leaves 6-10 by 2-3 in., radical stalked, hard, pinnately lobed or lanceolate, toothed, teeth long, unequal, spinous, stem leaves half stem-clasping, forked, basal-lobes recurved, rounded; flowers yellow, in ovoid many flowered heads  $\frac{3}{4}$ -1 in. diam., forming terminal branching racemes, bracts of heads many, smooth, overlapping, green, outer smaller, floor of head naked, flat, ligules long spreading, 5-toothed, pappus copious, white, not feathery; achenes oval, flattened, 3-5-ribbed on each face, minutely transversely wrinkled, not beaked.
- Sonchus oleraceus**,  
**Sow thistle**,  
*Dodak*.  
COMPOSITÆ.  
F. B. I. iii. 414.  
The Plains to  
8,000 ft.  
Simla (Collett).  
Baluchistan  
(Stocks).  
very like the last species, but flowers in the summer only, leaves prickly, not spinous, teeth small, thin, terminal lobe large. The root and leaves were once used as *galactagogues*: the latter are eaten as a vegetable and given to cattle.

HERBS, ERECT WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Sonchus arvensis,**  
**Corn sow thistle,**  
*Sahadevi bari.*

COMPOSITÆ.  
F. B. I. iii. 414.  
The Plains to  
8,000 ft.  
Simla (Collett).

very like the last species, but flowers in the autumn, rootstock creeping, leaves with the lobes pointing backwards, heads and stalks glandular hairy. This plant is considered mildly sedative, the milky juice when dry looks like opium.

**Sonchus maritimus,**

COMPOSITÆ.  
F. B. I. iii. 414.  
N.-W. F. Province,  
Peshawar  
(Stewart).  
Baluchistan  
(Stocks).

very like the last species, but leaves linear-oblong, entire or toothed with the gaps rounded, heads few, smooth, achenes with thick end margins, faces with a thick middle rib and two slender lateral ones.

**Launæa**  
**aspleniifolia,**

COMPOSITÆ.  
F. B. I. iii. 415.  
The Plains.

medium size, biennial or perennial, juice yellow, smooth, flowering stems many from the root; leaves 3-6 in., narrowly ovate with broad tip, lobed or pinnately divided, lobes minutely toothed, stem-leaves few; flowers yellow, in smooth terminal heads,  $\frac{1}{2}$  in. diam., on bracteate stalks, forming branching racemes, bracts of heads green, outer small, inner linear, margins thin, floor of head flat, naked, anther-bases forked, style arms slender, pappus  $\frac{1}{3}$  in., copious, hairs white, not feathery, united into a ring; achenes  $\frac{1}{12}$  in., narrow, angled, ribs 4-5, very stout, not winged.

**Launæa**  
**chondrilloides,**

COMPOSITÆ.  
F. B. I. iii. 415.  
The Plains west of  
the Ravi, Multan,  
Rawalpindi.

like the last species, but leaves more divided, stem-leaves sessile, forked at the base, heads rather larger.

**Launæa secunda,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Launæa nudicaulis,**

*Batthal, dudhlak.*

COMPOSITÆ.

F. B. I. iii. 416.

The Plains to

6,000 ft.

Valleys below Simla

(Collett).

Baluchistan

(Duke).

like the last described species, but lobes of leaves point backwards, teeth of leaf margins white, cartilaginous, achenes distinctly ribbed, not winged, much shorter than the pappus. The plant is used in Indian medicine.

**Launæa glomerata,**

COMPOSITÆ.

F. B. I. iii. 417.

The Plains.

like the last species, but heads broader, bracts of heads more blunt, more flowers in the heads, achenes shorter than the pappus, corky, thickly ribbed, outer achenes 2-winged.

FLOWERS NOT IN HEADS.

**Solanum nigrum,**

**Black night-shade,**

*Kambei, makoi,*

*kachmach.*

SOLANACEÆ.

F. B. I. iv. 229.

The Plains to

7,000 ft.

Simla in woods.

(Collett).

medium size, perennial, shrubby, smooth or slightly velvety, not prickly; leaves  $3\frac{1}{2}$  by 2 in., lobed or coarsely toothed, ovate or oblong, narrowed at both ends; stalk  $\frac{3}{4}$  in.; flowers  $\frac{1}{2}$  in. diam., white, on nearly umbelled, short stalks, 5-8,  $\frac{1}{3}$  in., united on to main stalks, which are extra-axillary,  $\frac{1}{4}$ - $\frac{3}{4}$  in. long, calyx saucer-shaped, 5- rarely 4- or 6-toothed, teeth blunt,  $\frac{1}{20}$  in., corolla 5- rarely 4- or 6-lobed, wheel-shaped, tube short, stamens 5, rarely 4 or 6, in the corolla throat, anthers nearly uniting together to form a cone, style short, thick, stigma small; berry  $\frac{1}{4}$  in. diam., red or black, rarely yellow, round, seeds  $\frac{1}{20}$  in., discoid, very many, almost smooth. This plant has diuretic, tonic, alterative, and laxative properties.

**Solanum coagulans,**

*Bari mauhari.*

SOLANACEÆ.

F. B. I. iv. 236.

The Plains.

medium size to large, perennial, bushy, leaves 3-6 by 2-4 in., ovate, lobed or coarsely toothed, woolly beneath with star-shaped hairs, prickly, flowers 1-1 $\frac{1}{4}$  in. diam., blue, in lateral few-flowered clusters on main stalks, often paired, one bearing a perfect the other a cluster of male flowers, calyx-lobes triangular, tube bell-shaped, calyx at flowering time often spinous, corolla shortly lobed, hairy on the plaits without, berry 1 in. diam., yellow, much larger than the calyx, edible; for other characters see the last species.

## HERBS, ERECT WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

## FLOWERS NOT IN HEADS.

**Solanum  
xanthocarpum,***Katehi, ringni.*

SOLANACEÆ.

F. B. I. iv. 236.

The Plains to  
7,000 ft.

Simla,

Baluchistan

(Lace).

small, very prickly, spreading, rough with star-shaped hairs; leaves 2-4 in., oblong, pinnately divided, nerves on both surfaces armed with long straight prickles; flowers 1 in. diam., blue, solitary or in small clusters, calyx  $\frac{1}{5}$  in., lobes ovate-oblong, prickly, hardly enlarging in fruit, corolla lobes shallow, velvety without; berry  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., round, yellow or whitish with green blotches, seeds  $\frac{1}{12}$  in. diam., smooth. This plant is much used as an expectorant and diuretic.

**Lycopersicum  
esculentum,**

see Herbs, Erect, Alternate, Exstipulate, Compound.

**Physalis minima,**

see Herbs, Erect, Alternate, Exstipulate, Simple.

**Physalis peruviana,**

see Herbs, Erect, Alternate, Exstipulate, Simple.

## PETALS UNITED.

**Nicandra  
physaloides,**

SOLANACEÆ.

F. B. I. iv. 240.

Himalaya,

3-6,000 ft.

Simla (Collett).

Kashmir.

medium size to large, annual, smooth, native of Peru; leaves 4-7 in., ovate-lanceolate, irregularly lobed and toothed; flowers 1-1 $\frac{1}{2}$  in. diam., single on recurved, usually axillary stalks, calyx divided into 5 lobes, lobes in fruit 1 by  $\frac{2}{3}$  in., much enlarged, ovate, heart-shaped at the base, overlapping the berry, net-veined, corolla bell-shaped, 5-lobed in pleats, stamens 5, attached at corolla-base, style linear, stigma 3-5-lobed; berry  $\frac{1}{2}$  in. diam. round, seeds very many, flattened, nearly discoid. This plant is said to be diuretic.

**Datura Stramonium,  
Thorn apple,***Tattur, dattura.*

SOLANACEÆ.

F. B. I. iv. 242.

Himalaya,

3-8,000 ft.

Simla (Collett).

Kashmir (Thomson).

Baluchistan (Lace).

large, annual, nearly smooth; leaves 7 by 4 in., ovate, coarsely and irregularly lobed and toothed, stalk 1 in.; flowers 3-6 in. long, 1-3 in. across, white, single on short usually axillary stalks, calyx 1-1 $\frac{3}{4}$  by  $\frac{1}{4}$ - $\frac{1}{3}$  in., green, 5-toothed, tubular, corolla tubular, funnel-shaped, mouth wide, 5-lobed, lobes  $\frac{1}{4}$  in., folding at the angles, lobes ending in long narrow points, stamens 5, attached near the base of the tube, not protruding, style thread-like, stigma 2-lobed; capsule 1 $\frac{1}{2}$  by 1 in., ovoid, erect, covered with rigid sharp prickles, 4-celled, opening by 4 valves, seeds many, flattened, wrinkled. The seeds are used for poisoning, and medicinally for asthma, the leaves are also used for the latter purpose.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

- Datura fastuosa,**  
*Kala dhatura.*  
SOLANACEÆ.  
F. B. I. iv. 242.  
The Plains,  
Baluchistan.
- very like the last, but leaves less lobed, corolla often purple, larger, 7 in. long and 5 in. across the mouth, capsule shorter, recurving when mature, opening irregularly.
- Hyoseyamus niger,** see Herbs, Erect, Alternate, Exstipulate, Simple.
- Hyoseyamus pusillus,** see Herbs, Erect, Alternate, Exstipulate, Simple.
- Verbascum celsioides,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 250.  
The Plains, Hasan  
Abdal (Aitchison).  
Kana Plain,  
Rawalpindi.
- large, annual, velvety, glandular, often unbranched, stem thick; leaves, lower, 4-6 in., pinnately divided, stalked, upper heart-shaped, forked at the base, sessile, long-pointed; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in., yellow, in a long loose raceme, bracts ovate-lanceolate, each flower stalk  $\frac{1}{2}$ - $\frac{3}{4}$  in., calyx 5-lobed, lobes oblong blunt, overlapping, corolla  $\frac{1}{2}$  in. diam., wheel-shaped, lobes 5, broad, stamens 4-5, woolly, stigma undivided; capsule ovoid, valves separating from the axis, seeds many, wrinkled.
- Celsia coromandeliana,**  
*Kulahalla.*  
SCROPHULARIACEÆ.  
F. B. I. iv. 251.  
The Plains to  
5,000 ft.  
Sutlej Valley  
(Collett).
- very like the last species, but lower leaves pinnately divided with a large terminal lobe, stem leaves ovate-oblong, sessile, not forked, stamens only four. The juice of this plant is used in dysentery as an astringent and sedative, also as an expectorant in bronchitis.
- Scrophularia lucida,** see Herbs, Erect, Opposite, Exstipulate, Lobed.
- Scrophularia variegata,** see Herbs, Erect, Opposite, Exstipulate, Lobed.
- Scrophularia scabiosæfolia,** see Herbs, Erect, Opposite, Exstipulate, Lobed.
- Veronica hederæfolia,** see Prostrate Herbs, Alternate, Exstipulate, Lobed.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Sopubia trifida**, medium size, annual, slender, roughly velvety, branches ascending; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., mostly divided into three, linear, sessile, lower opposite, or clustered, upper alternate, undivided; flowers  $\frac{1}{2}$  in. diam., yellow in many terminal bracteate racemes, calyx 5-toothed, bell-shaped, woolly inside, corolla 5-lobed, tube short, lobes spreading, nearly equal, stamens 4 in unequal pairs, style long, broadened into a flat stigma; capsule ovoid, longer than the calyx.

SCROPHULARIACEÆ.  
F. B. I. iv. 302.  
Himalaya,  
3-7,000 ft.  
Jako, Simla  
(Collett).

**Leptorhabdos Benthiana**, medium size, annual, smooth, stem slender or stout, branched above, branches straight, erect, very slender; leaves 1-3 in., deeply pinnately divided, segments linear or thread-like, lower leaves opposite, upper alternate; flowers  $\frac{1}{3}$  in. diam., pale pink in slender bracteate, minutely glandular racemes, calyx 5-toothed, bell-shaped, corolla 5-lobed, tube short, lobes spreading, nearly equal, stamens 4 in unequal pairs, style long, stigma minute; capsule  $\frac{1}{8}$  in., oblong, flattened, enclosed in the calyx, seeds 2-4, wrinkled.

SCROPHULARIACEÆ.  
F. B. I. iv. 303.  
Himalaya,  
5-11,000 ft.  
Simla, Mashobra,  
Matiana (Collett).  
Kashmir,  
Baluchistan (Lace).

**Pedicularis pectinata**, small to medium size, branched or not, stout, smooth; leaves, lower, 3-6 in., pinnately divided, lanceolate, segments toothed or pinnately divided, stem-leaves 3 by 2 in., whorled, stalked, lanceolate, pinnately divided, segments toothed; flowers  $\frac{3}{4}$  in., rose red, scattered on spikes, 2-6 in. long, often hairy, bracts ovate-lanceolate, as long as the calyx, calyx  $\frac{1}{2}$  in. long, swollen in fruit, teeth 5, entire, short-pointed, corolla-tube as long as the calyx, 2-lipped, upper lip swollen, sickle-shaped, beak long, tip twisted, stamens 4, in unequal pairs, hairy, attached at the bottom of the tube, style slender, stigma nearly round; capsule  $\frac{1}{2}$  in., ovoid, short-pointed, seeds  $\frac{1}{8}$  in., ridged, deeply pitted. This plant is used as a cure for hæmoptysis.

SCROPHULARIACEÆ.  
F. B. I. iv. 306.  
Himalaya,  
7-11,000 ft.  
Theog, Narkanda  
(Collett).  
Kashmir.

**Pedicularis tenui ostris**, like the last species, but the stem-leaves have blunt, round-toothed segments, bracts long-pointed, flowers yellow.

SCROPHULARIACEÆ.  
F. B. I. iv. 307.  
Himalaya,  
7-11,000 ft.  
Kashmir, Lahul.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

- Pedicularis gracilis**, like *P. pectinata* above, but stem slender, beak of  
 SCROPHULARIACEÆ. corolla not twisted, colour of flower the same, seeds very  
 F. B. I. iv. 307. minute.  
 Himalaya,  
 6-10,000 ft.  
 Mahasu, Narkanda  
 (Collett).
- Pedicularis porrecta**, small, rootstock perennial, stems many from the root,  
 SCROPHULARIACEÆ. leaves  $\frac{1}{4}$ -1 in., oblong, pinnately divided, lobes oblong,  
 F. B. I. iv. 307. blunt tipped, toothed, bracts pinnately divided, flowers  $\frac{3}{4}$   
 Himalaya, in. long, beak long, twisted, seeds not as minute as those  
 10-12,000 ft. of the last species ; for other characters see the last species.  
 Towards Kashmir,  
 (Royle).
- Pedicularis verticillata**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Pedicularis pycnantha**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Pedicularis megalantha**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Pedicularis tubiflora**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Sesamum indicum**, see Herbs, Erect, Opposite, Exstipulate, Lobed.

PETALS NONE.

- Anemone vitifolia**, medium size, rootstock perennial, stout, woody, stem  
 RANUNCULACEÆ. white velvety, stout ; leaves, radical, long-stalked, 4-8 in.  
 F. B. I. i. 8. across, circular, heart-shaped, deeply 5-lobed, sharply  
 Himalaya, toothed, upper surface smooth, lower white-felted, floral  
 5-10,000 ft. leaves similar but smaller and shortly stalked ; flowers  
 Simla  $1\frac{1}{2}$ -2 in. diam., white in compound stalked clusters, sepals  
 (Collett). 5-8, silky outside, petal-like, petals none, stamens many,  
 styles many, short ; fruit a head of many woolly achenes.
- Anemone rivularis**, like the last species, but leaves divided into three,  
 RANUNCULACEÆ. segments in threes, flowers a little smaller, bluish outside,  
 F. B. I. i. 8. styles hooked.  
 Himalaya,  
 above 5,000 ft.  
 Simla (Collett).



## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS NONE.

- Caltha palustris,**  
**Marsh marigold,**  
*Mamiri, baringu.*  
RANUNCULACEÆ.  
F. B. I. i. 21.  
Himalaya,  
8-10,000 ft.  
The Chor (Collett).  
Hattu.  
Hazara.  
medium size, perennial, smooth, rootstock thick, creeping, stem stout, branched, leafy; leaves, radical, 2-5 in. across, circular or kidney-shaped, long-stalked, shining, deeply hollowed at the base, teeth small, close, regular, stem leaves smaller, upper sessile, embracing the stem like a cup; flowers yellow or white, 1-2 in. diam., terminal sepals 5 or 6, petal-like, oval or oblong blunt, petals none, stamens many; fruit a head of many narrow flattened, many-seeded follicles beaked with the persistent styles. The root is considered poisonous in Hazara.
- Acrolochin**  
**chenopodioides,**  
see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Chenopodium**  
**album,**  
see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Chenopodium**  
**opulifolium,**  
CHENOPODIACEÆ.  
F. B. I. iv. 3.  
Kashmir and  
Lahul, 6-8,000 ft.  
medium size, mealy white, especially on the flowers and lower surface of the leaves, stems angled and grooved; leaves 1½ by 1½ in., broad, blunt, margins irregularly lobed; flowers minute, greenish, 2-sexual in axillary clusters, sepals 3-5, keeled, stamens 1-5, styles 2-3; seed vessel flattened, covered by the sepals, seed dotted, margin rounded.
- Chenopodium**  
**murale,**  
**Nettle-leaved**  
**Goose foot,**  
*Batu, kurund,*  
*kharatua.*  
CHENOPODIACEÆ.  
F. B. I. v. 4.  
The Plains.  
Baluchistan  
(Hughes-Buller).  
small, nearly smooth, bright green, rather foetid; leaves ¾-3 in., broad, ovoid, angular sides lobed, sharply toothed, base wedge-shaped, stalked long or short, flowers in slender spikes, forming loose dense axillary clusters, sepals bluntly keeled, incurved in fruit, seed sharply keeled, dotted, horizontal; for other characters see the last species. This plant is used as a pot herb.
- Chenopodium**  
**Botrys,**  
CHENOPODIACEÆ.  
F. B. I. v. 4.  
Himalaya,  
4-10,000 ft.  
Simla (Collett).  
Peshawar.  
Baluchistan (Lace).  
small to medium size, very aromatic, stem grooved, ribbed, velvety with glands, a weed of cultivation, leaves 1-3 in., lower stalked, ovate or oblong-lobulate, upper more lanceolate, entire, flowers solitary or clustered, in short axillary or long terminal racemes, sepals velvety-glandular, enclosing the seed vessel, seed horizontal, nearly round, smooth, margin blunt; for other characters see the last species. The oil is used in America and France for coughs and colds and in the former as a vermifuge.

## HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS NONE.

**Spinacia oleracea,**  
**Spinach,**  
*Valayati sag, palak.*  
 CHENOPODIACEÆ.  
 F. B. I. v. 5.  
 The Plains to  
 7,000 ft.  
 (Cultivated).

medium size, annual, smooth; leaves angular, ovate, long-pointed, broadly sharply pinnately lobed; flowers minute, greenish, males and females on different plants, male flowers in terminal leafless spikes, sepals 4-5, green, undivided, stamens 4-5, thread-like, female flowers in axillary clusters, calyx 2-4-toothed, in fruit enclosing the seed vessel, stigmas long, thread-like, united below, seed vessel hard, flattened, seed vertical. The leaves are eaten as a vegetable, and as a solvent of urinary calculi.

## COMPOUND LEAVES.

## PETALS UNUNITED.

**Aquilegia vulgaris,**  
**Columbine,**  
 RANUNCULACEÆ.  
 F. B. I. i. 23.  
 Himalaya,  
 5-10,000 ft.  
 Simla (Collett).  
 Kashmir,  
 Baluchistan (Lace).

medium size, root perennial, thinly hairy, stems leafy; leaves with a waxy green gloss, lower long-stalked pinnate, pinnules with 3 leaflets, upper shortly stalked, leaflets 3, deeply 3-lobed, segments coarsely round-toothed; flowers 1 in. diam., yellow-green, nearly white or purplish, drooping in a loose branching raceme with a few sessile leaves at the forks, sepals 5, flat, ovate-lanceolate, soon falling off, petals 5, base of each produced into a blunt hooked spur, projecting between the sepals, stamens many, inner ones reduced to scales; follicles 5, sessile, tipped with the persistent styles, many-seeded.

**Actæa spicata,**  
**Baneberry,**  
**Herb Christopher,**  
 RANUNCULACEÆ.  
 F. B. I. i. 29.  
 Himalaya,  
 6-10,000 ft.  
 Narkanda (Collett).  
 Hazara.

medium size, perennial, rootstock woody, horizontal, covered with leafless sheaths; leaves 12 in., pinnately compound, pinnules often with 3 leaflets, leaflets ovate-lanceolate, pointed, often lobed, pointed, deeply and sharply toothed; flowers  $\frac{1}{4}$  in. diam., white, crowded in short terminal racemes, lengthening in fruit, sepals 4, petal-like, concave, soon falling off, petals 4, shorter than the sepals, stamens many, stigma sessile, flat; berry ovoid, black, smooth, seeds many, flat, smooth. This plant is not used medicinally in this country. In America the poisonous nature of the berries is known, the plant is used for rheumatic and nervous diseases.

**Cimicifuga foetida,**  
**Jiunti.**  
 RANUNCULACEÆ.  
 F. B. I. i. 29.  
 Himalaya,  
 7-12,000 ft.  
 Patarnala (Collett).  
 Hattu.

large, perennial, leafy, smooth below, felted above; leaves 6-18 in., pinnately compound, leaflets 1-3 in., ovate or lanceolate, deeply sharply toothed, terminal leaflet 3-lobed; flowers  $\frac{1}{4}$  in. diam., white, crowded in short or long racemes, solitary in the axils of the upper leaves and combined in a terminal sometimes large and spreading branched raceme, sepals and petals 5-7, ovate, concave, one or two of the inner ones deeply 2-lobed, tips white, broad,

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

notched, stamens many, ultimately longer than the sepals, style short, stigma pointed; follicles 4-8,  $\frac{1}{2}$  in. long, flat, tipped with the styles, seeds 6-8. This plant is used in America to cure rheumatism.

**Pæonia Emodi,**  
**Pæony,**  
*Ud-salap, mamekh.*  
 RANUNCULACEÆ.  
 F. B. I. i. 30.  
 Himalaya,  
 5-10,000 ft.  
 Hazara.

large, perennial, stout, smooth; leaves 6-12 in. long, leaflets 3, usually 3-fid, segments lanceolate, pointed, entire; flowers 3-4 in. diam., white or red, few, usually solitary in the upper axils, buds round, sepals 5, circular, concave, green, persistent, outer ones ending in a leaflike point, petals 5-10, broadly ovate, concave, stamens many, style short, broad, recurved; follicles 1-3, ovoid; 1 in., seeds few, large. The tubers cure uterine and nervous diseases, the seeds are purgative and emetic.

**Epimedium elatum,**

see Herbs, Unbranched, Alternate, Exstipulate, Compound.

**Cardamine hirsuta,**

see Herbs, Unbranched, Alternate, Exstipulate, Compound.

**Cardamine**  
**impatiens,**

see Herbs, Unbranched, Alternate, Exstipulate, Compound.

**Cardamine**  
**macrophylla,**

see Herbs, Unbranched, Alternate, Exstipulate, Compound.

**Cleome**  
**brachycarpa,**  
 CAPPARIDACEÆ.  
 F. B. I. i. 169.  
 The Plains,  
 Sargodha,  
 Peshawar,  
 Baluchistan  
 (Hughes-Buller).

small, perennial, musky, glandular, rough, branched from the base; leaves with 3-5 leaflets, upper simple, leaflets  $\frac{1}{4}$ - $\frac{1}{2}$  in., ovate with a broad tip or oblong; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, yellow, long-stalked in leafy racemes, sepals 4, spreading, petals 4, stamens 6, sessile on the disk; capsule  $\frac{1}{3}$  in., oblong, roughish, seeds kidney-shaped, minute, smooth.

**Cleome viscosa,**  
*Hulhul, bugra.*  
 CAPPARIDACEÆ.  
 F. B. I. i. 170.  
 The Plains to  
 7,000 ft.  
 Simla (Collett).

medium size, annual, glandular-velvety, sticky, leaves digitately compound, leaflets 3-5, unequal, largest 1 in., nearly sessile, ovate, entire, flowers  $\frac{1}{2}$  in., yellow, long-stalked in racemes, petals reflexed, stamens 12-20, capsule 2-3 in., linear, seeds wrinkled; for other characters see the last species. The seeds are used in medicine and curries, they act like those of mustard and are vermifuge.

## HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Gynandropsis  
pentaphylla,***Kathal, parhar.*

CAPPARIDACEÆ.

F. B. I. i. 170.

The Plains.

Gurdaspur.

medium size, annual, glandular-velvety; leaves digitately compound, long-stalked, leaflets 1-2 in., broad ovate with a broad tip, short-pointed or blunt, entire or slightly toothed; flowers  $\frac{1}{2}$ - $\frac{2}{3}$  in., white or purplish in sticky racemes, bracts 3-lobed, sepals 4, erect, petals 4, spreading, long-stalked, open in bud, stamens 6, joined below to the slender stalk of the capsule, stigma sessile; capsule 2-4 in., long-stalked, nearly smooth, valves 2, seeds many, kidney-shaped, black, rough. A common weed. The leaves are eaten as a pot herb. The seeds are used medicinally like those of the last species.

**Bœninghausenia  
albiflora,***Pissu mar.*

RUTACEÆ.

F. B. I. i. 486.

Himalaya,

4-8,000 ft.

Simla (Collett).

Murree.

medium size, perennial, rooted, smooth or slightly velvety; leaves twice pinnate, stalk slender, leaflets  $\frac{1}{4}$ - $\frac{3}{4}$  in., ovate or heart-shaped with a broad tip, bluish waxy green beneath, terminal largest, stalked; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., white, inclined or nodding in compound terminal leafy many-flowered racemes, calyx very small, 4-5-lobed, persistent, petals 4-5, oblong, blunt, stamens 6-8, styles 3-5; fruit  $\frac{1}{4}$ - $\frac{1}{3}$  in. of 6-8 free papery, few-seeded, dotted carpels, seeds kidney-shaped, black. The leaves when crushed have a fœtid odour.

**Dictamnus albus,**

RUTACEÆ.

F. B. I. i. 487.

Himalaya,

6-8,000 ft.

Kashmir.

medium size, perennial, strongly scented, covered with small glands, stem thick, not woody; leaves 6-12 in., stalk very thick, angular, pinnate, with a terminal leaflet, gland-dotted, leaflets 9-15, opposite, 2-4 in., sessile, ovate-lanceolate, toothed, dark green; flowers 1-1 $\frac{1}{2}$  in. long, pink or white in an erect terminal raceme, 6-12 in. long, sepals 5, small, lanceolate, petals 5, much longer than the sepals, lanceolate, nearly equal, spreading, stamens 10, equal to the petals in length, hairy, glandular, bristle-tipped; capsule 1 in. diam., of 5 carpels, 2-3-seeded, tomentose, beaked, seeds black, shining.

## FLOWERS, MINUTE, IN UMBELS.

**Vicatia coniiifolia,**

UMBELLIFERÆ.

F. B. I. ii. 671.

Himalaya,

6-12,000 ft.

Hattu (Collett).

Kashmir.

medium size, perennial, smooth, stem striate, slightly leafy; leaves thrice pinnate, leaflets pinnately divided, segments linear, short-pointed; flowers minute, dark red, in compound umbels, main stalk 2-6 in., bracts linear, usually only one  $\frac{1}{3}$  in., primary rays 6-12,  $\frac{1}{2}$ -2 in. long, stiff, unequal, bracteoles 3-6, often as long as the umbellules, calyx-teeth none, petals 5, ovate, with a broad tip; fruit  $\frac{1}{8}$ - $\frac{1}{6}$  in., disc prominent, style short, carpels ovate, broadly grooved on the inner face, ridges slender, distinct, not winged, oil glands (vittæ) 2-3 in each furrow.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

FLOWERS, MINUTE, IN UMBELS.

**Vicatia millefolia,**

UMBELLIFERÆ.

F. B. I. ii. 671.

Kashmir, Tragbol,  
11,400 ft.

(C. B. Clarke).

like the last species, but the ultimate segments are much finer, thread-like, fruit much smaller, less grooved on the inner face.

**Elæosticta meifolia,**

UMBELLIFERÆ.

F. B. I. ii. 673.

The Plains.

medium size, annual, smooth, sometimes unbranched, root spindle-shaped; leaves 2 or 3 pinnate, ultimate segments linear; flowers minute, on 6-12 stalks,  $\frac{1}{6}$  in. long, in compound umbels with 5-11 rays,  $\frac{3}{4}$ - $1\frac{1}{2}$  in. long, bracts 5-6, lanceolate, bracteoles similar but smaller, calyx teeth none, petals notched at the tip, ovate with a broad tip, stamens 5, styles 2, short; fruit broader than long,  $\frac{1}{20}$  by  $\frac{1}{16}$  in., ridges none, oil glands minute, 2-1 in each furrow.

**Apium graveolens,**

Wild celery,

*Ajmud, bhutjhata.*

UMBELLIFERÆ.

F. B. I. ii. 678.

Himalaya,

1-2,000 ft.

Salt Range,

Choa Saidan Shah

(Douie).

Baluchistan

(Stocks).

medium size to large, biennial; leaves, radical, pinnate with large deeply lobed segments, stem leaves deeply divided into three, segments once or twice divided, coarsely toothed at the apex; flowers minute, white, on 6-16 stalks in compound umbels with 5-10 rays on a short leaf opposed main stalk, calyx-teeth none, petals 5, ovate, short-pointed, tip inflexed, stamens 5, styles 2; fruit  $\frac{1}{16}$ - $\frac{1}{12}$  in., orbicular, ridges distinct, narrow, vittæ broad. This plant is found in wet places, it is poisonous when wild: the seed is used as a spice, apiol—a drug—is obtained from this plant. The cultivated plant is eaten when blanched, the leaves and seeds are used for flavouring soups.

**Cicuta virosa,**

Cowbane or water  
hemlock.

UMBELLIFERÆ.

F. B. I. ii. 679.

Kashmir, Srinagar.

medium size to large, perennial, stem hollow, streaked; leaves pinnate, stem leaves 2-3 pinnate, segments lanceolate, toothed, leaflets 1-2 by  $\frac{1}{6}$ - $\frac{1}{3}$  in.; flowers minute, white, in compound umbels on main stalks, 2-3 in., terminal and leaf opposed, rays up to 15,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., bracts none, bracteoles 2-8,  $\frac{1}{3}$  in., linear, calyx-teeth 5, short-pointed, minute, petals 5, ovate with a broad notched tip, stamens 5, styles 2; fruit  $\frac{1}{16}$  in., ovoid, primary ridges broad, corky, blunt, furrows very narrow, one oil gland, seeds half round, flattened. This plant is poisonous.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

FLOWERS, MINUTE, IN UMBELS.

**Carum Carui,**

**Caraway,**

*Zira siyah.*

UMBELLIFERÆ.

F. B. I. ii. 680.

Kashmir,

9-12,000 ft.

medium size, smooth; leaves twice pinnate, ultimate segments of the lower leaves lanceolate,  $\frac{1}{8}$ - $\frac{1}{6}$  in., of the upper linear,  $\frac{1}{4}$ -1 in.; flowers minute, white, in compound umbels, rays 3-8,  $\frac{1}{4}$ -2 in., unequal, bracts 1-3, small, linear, or none, rarely divided, bracteoles small, linear or none, calyx-teeth 5, small, or none, petals 5, notched, often enlarged and irregular; fruit  $\frac{1}{8}$ - $\frac{1}{6}$  in., yellowish-brown, ovoid or oblong, sticky, laterally flattened, carpels rounded, narrowed upwards, primary ridges thin but very distinct, oil gland solitary, rather large; seeds dorsally somewhat flattened, smooth or slightly grooved on the inner face. This plant is often cultivated; the seed is used as a spice, and medicinally as a carminative in flatulent colic.

**Carum**

**Bulbocastanum,**

UMBELLIFERÆ.

F. B. I. ii. 681.

Kashmir,

6-9,000 ft.

Baluchistan

(C. B. Clarke).

like the last species, but stem shorter, root tuberous, ultimate segments of all leaves linear, twice as many rays, fruit oblong, not narrowed upwards.

**Carum**

**Roxburghianum,**

*Ajmad.*

UMBELLIFERÆ.

F. B. I. ii. 682.

The Plains.

like the last species, but root spindle-shaped, stem larger, ultimate segments of leaves narrowly linear-lanceolate, bracteoles 4-8, linear-lanceolate with thin bristly margins; fruit hairy. This plant is only known in its cultivated form, though it is very like *Carum stictocarpum*, which grows wild in Dehra Dun outside this area. The seed is used to flavour curries and as medicine in hiccup and vomiting.

**Carum copticum,**

**Bishop's weed,**

*Ajwain.*

UMBELLIFERÆ.

F. B. I. ii. 682.

The Plains

Baluchistan (Lace).

medium size, annual, root spindle-shaped, ultimate segments of leaves linear, often  $\frac{1}{2}$ -1 in. long, flowers pure white, bracts many, linear, sometimes divided, bracteoles 3-5, small, linear, rays velvety, fruit  $\frac{1}{12}$  in., ovoid, rough with hard tubercles, carpels dorsally flattened, ridges distinct, oil gland solitary, small; for other characters see the last species. Widely cultivated, only known wild as an escape: seeds are used as a spice. Omum water is the distilled water of the seeds, also thymol: the former is used in cholera, the latter is a strong antiseptic, and cure for hookworm disease.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## FLOWERS, MINUTE, IN UMBELS.

**Sium latijugum,**  
**Water Parsnip,**

UMBELLIFERÆ.

F. B. I. ii. 683.

Kashmir,

5-9,000 ft.

In ditches.

medium size, smooth; leaves pinnately compound, leaflets of the lower leaves 1 in., ovate or ovate-lanceolate; flowers white, in terminal or lateral compound umbels, bracts and bracteoles several, calyx-teeth none, petals notched, fruit oblong with rounded ends, ridges much broader than the furrows, furrows with only one oil gland.

**Pimpinella Saxifraga,**var. **dissectifolia,****Burnet Saxifrage,**

UMBELLIFERÆ.

F. B. I. ii. 685.

Kashmir,

Tilail, 13-000 ft.

small to medium size, biennial or perennial, branched from the root, stem curved, streaked, slightly leafy upwards; leaves radical pinnate, pinnæ deeply lobed, lobes lanceolate; flowers often pink or purplish, in compound umbels, flower stalks 5-10,  $\frac{1}{2}$  to  $\frac{1}{10}$  in., bracts none, bracteoles 3-5,  $\frac{1}{6}$  in., linear, rays 5-10,  $\frac{1}{8}$ - $1\frac{1}{2}$  in., unequal, stout, ascending, calyx-teeth none, petals 5, notched; fruit  $\frac{1}{8}$  in., nearly pentagonal, nearly dorsally flattened, inner face plain, ridges thin, distinct, oil glands 2-3 in each furrow, styles very short, seed concave on the inner face.

**Pimpinella****acuminata,**

UMBELLIFERÆ.

F. B. I. ii. 686.

Himalaya,

4-8,000 ft.

Simla (Collett).

Kashmir.

like the last species, but much larger, leaves twice pinnate, secondary pinnæ 1-2 in., toothed, long-pointed, flowers yellow-green, bracts 1-5, flower stalks  $\frac{1}{3}$ - $\frac{1}{2}$  in., petals soon falling off, fruit smooth.

**Pimpinella****diversifolia,**

UMBELLIFERÆ.

F. B. I. ii. 688.

Himalaya,

4-10,000 ft.

Simla (Collett).

large, perennial, hairy or velvety; leaves pinnately compound, leaflets 3 or 5, very variable in shape, lanceolate,  $1\frac{1}{2}$ -5 by 1-2 in., coarsely or finely toothed, usually heart-shaped, often long-pointed, leaflets 1-3 by  $\frac{1}{2}$ -1 in., toothed, sometimes deeply cut, bracts none or 1-2,  $\frac{1}{4}$ - $\frac{1}{2}$  in., linear, rays 6-16,  $\frac{1}{2}$ - $1\frac{1}{2}$  in., bracteoles 8-3,  $\frac{1}{8}$  in., or none, petals white, greenish, notched, 8-16, in an umbel; fruit velvety.

**Osmorrhiza****Claytoni,**

UMBELLIFERÆ.

F. B. I. ii. 690.

Himalaya,

5-8,000 ft.

Narkanda (Collett).

Kashmir.

large, perennial, roots smell of aniseed; leaves large, twice pinnate, leaflets in threes, 1-2 in., ovate or lanceolate, coarsely toothed, sometimes lobed; flowers white, 3 to 6 in a compound umbel, bracts 1-5, linear,  $\frac{1}{8}$  in., rays 3-6, slender, 1-4 in., drooping, bracteoles about 6, lanceolate,  $\frac{1}{4}$  in., petals white, notched; fruit  $\frac{3}{4}$  by  $\frac{1}{10}$  in., ridges slender, distinct, furrows 2-3, with oil glands.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

FLOWERS, MINUTE, IN UMBELS.

**Chærophyllum villosum,***Jangli gajar.*

UMBELLIFERÆ.

F. B. I. ii. 690.

Himalaya,

5-12,000 ft.

Simla, Fagu, Hattu,  
(Collett).

Serai near the Chor.

medium size to large, perennial, root tuberous or spindle-shaped, stem with many long hairs; leaves large, twice or thrice pinnate, hairy, leaflets finely divided, segments sharply lobed and toothed, sheaths of upper leaves inflated, hairy, margins white, bracts none, rays 36; flowers white, 10-15 in a compound umbel, bracteoles 2-5,  $\frac{1}{4}$ - $\frac{1}{3}$  in., linear, white margined, soon reflexed; fruit  $\frac{1}{3}$  in., ridges equal, distinct, blunt, furrows with one oil gland.

**Chærophyllum reflexum,**

UMBELLIFERÆ.

F. B. I. ii. 691.

Himalaya,

5-9,000 ft.

Simla, Fagu

(Collett).

like the last species, but much less hairy, fruit longer. barren flowers nearly always reflexed.

**Chærophyllum acuminatum,**

UMBELLIFERÆ.

F. B. I. ii. 691.

Himalaya,

5-9,000 ft.

Mahasu, Fagu,

Hattu (Collett).

like the last species, but more hairy, leaves once or twice pinnate, leaflets triangular, regularly toothed, rays 4-12, fruit  $\frac{1}{4}$  in.

**Chærophyllum capnoides,**

UMBELLIFERÆ.

F. B. I. ii. 691.

Kashmir.

medium size, perennial, root tuberous, nearly smooth; leaves once or twice pinnate, 4-8 in., ultimate segments  $\frac{1}{4}$ - $\frac{3}{4}$  by  $\frac{1}{8}$ - $\frac{1}{3}$  in., bracts none, rays 4-8, bracteoles 4-7,  $\frac{1}{6}$  in., lanceolate; fruit  $\frac{1}{4}$  in., oblong-lanceolate, black, minutely dotted, no oil glands.

**Chærophyllum cachemiricum,**

UMBELLIFERÆ.

F. B. I. ii. 691.

Himalaya,

7-12,000 ft.

Dalhousie,

Kashmir.

like the last species, but somewhat larger, fruit only  $\frac{1}{3}$  in., ridges just perceptible, one oil gland in the furrows.



HERBS, UPRIGHT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

FLOWERS, MINUTE, IN UMBELS.

**Scandix Pecten-****Veneris,****Venus's comb,**

UMBELLIFERÆ.

F. B. I. ii. 692.

Kashmir,

5-6,000 ft.

Salt Range,

Baluchistan

(Stocks).

small, annual, smooth or slightly hairy; leaves pinnately compound, ultimate segments small, narrow; flowers white, in short-stalked simple or compound umbels, bracts 1 or none, bracteoles  $\frac{1}{4}$  in., several, lanceolate, often divided or lobed at the apex, calyx-teeth none, or minute, petals notched; fruit 1 to 2 in., oblong, flattened, beak long, ridges blunt, broad, oil gland solitary in each furrow.

**Anthriscus****nemorosa,****Chervil,**

UMBELLIFERÆ.

F. B. I. ii. 692.

Kashmir,

7-11,000 ft.

very large, perennial, nearly smooth; leaves large, twice or thrice pinnate, leaflets broad, pinnately divided, segments entire or toothed; flowers white, many, in a compound umbel, calyx-teeth none or minute, petals notched, bracts 1-2 or none, bracteoles  $\frac{1}{4}$  in., 5-7, lanceolate, undivided, rays 10-15, stout, smooth; fruit  $\frac{1}{2}$  in., black, ovate-oblong, hairy, ridges acute at the apex.

**Seseli sibiricum,**

UMBELLIFERÆ.

F. B. I. ii. 693.

Kashmir.

large, perennial, nearly smooth; leaves 10-12 in., twice pinnate, pinnæ nearly prickly, secondary pinnæ 1-2 in., ovate, toothed; flowers white, in compound umbels, bracts none or one, rays 15-40, 1-2 $\frac{1}{2}$  in., velvety, bracteoles 5-10,  $\frac{1}{5}$  in., lanceolate, calyx-teeth triangular, minute, soon falling off; fruit  $\frac{1}{5}$  in., cylindrical, flattened, ridges strong, vittæ large.

**Seseli indicum,***Banjoan.*

UMBELLIFERÆ.

F. B. I. ii. 693.

The Plains, Kahuta,

Rawalpindi.

like the last species, but small, much branched; leaves less divided, calyx-teeth none, bracts 4-5, rays 8-16; fruit smaller, nearly round, ridges thick. The seed is used as anthelmintic and carminative in Bengal and Madras.

**Pycnocyela glauca,**

UMBELLIFERÆ.

F. B. I. ii. 694.

The Plains.

medium size, perennial, branched from the base, branches slightly velvety, rush-like, few-leaved; leaves pinnately divided, radical leaves long-stalked, ultimate segments long, linear, nearly cylindrical; flowers white, 9 in an umbellule forming an umbel  $\frac{1}{2}$  in. diam. on a long stalk, look like scabiosa, bracts 5-6,  $\frac{1}{3}$  in., linear, hairy, bracteoles similar but smaller, rays  $\frac{1}{3}$  in., petals white with a red mid-rib, notched, hairy, calyx-tube hairy, teeth small, lanceolate; fruit oblong-lanceolate,  $\frac{1}{3}$ - $\frac{1}{10}$  in., ridges thread-like; seeds lunate with a T-shaped groove on the inner face.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

FLOWERS, MINUTE, IN UMBELS.

- Foeniculum vulgare,** medium size to large, biennial or perennial; leaves  
**Fennel,** 2-4 pinnate, ultimate, segments linear, strongly scented  
*Saunf.* when rubbed; flowers yellow, in compound umbels, bracts  
 UMBELLIFERÆ. none, bracteoles none or a few, linear, calyx-teeth none,  
 F. B. I. ii. 695. petals notched; fruit oblong, not flattened, ridges promi-  
 The Plains to nent, furrows with oil glands, seed flattened, inner face  
 6,000 ft. slightly hollow, widely cultivated, root purgative, seeds  
 Baluchistan (Lace). carminative: the leaves are eaten as a pot herb.
- Prangos pabularia,** large, perennial, smooth; leaves 12-18 in., 3-4 pin-  
*Komal.* nate, ultimate segments  $\frac{1}{2}$ -1 in., bristle-like; flowers yel-  
 UMBELLIFERÆ. low, in compound umbels, 6-18 in. diam., bracts 4-8,  $\frac{3}{4}$  in.,  
 F. B. I. ii. 695. linear, bracteoles many, flower stalks 15-25 in an umbel,  
 Kashmir,  $\frac{1}{6}$ - $\frac{1}{3}$  in., calyx-teeth none, petals notched; fruit, *fitrasalium*,  
 6-11,000 ft.  $\frac{1}{4}$ - $\frac{3}{4}$  in., oblong, wings  $\frac{1}{8}$  in., broad, ridges large, oil glands  
 and a T-shaped groove. This plant is considered by some  
 a good fodder plant, the fruit is carminative and diuretic.
- Ligusticum** large, perennial, smooth, few leaved above; leaves  
**marginatum, and** 8-10 by 3 in., 1-3 pinnate, pinnæ 1-1 $\frac{1}{2}$  in., deeply divided;  
**elatatum,** flowers white, in compound umbels, on long stalks, bracts  
**Lovage,** 1-5,  $\frac{1}{4}$  in., linear, rays 12-20 $\frac{1}{2}$ -1 $\frac{1}{2}$  in., bracteoles 4-8,  $\frac{1}{8}$ - $\frac{1}{4}$   
 UMBELLIFERÆ. in., linear, calyx-teeth none; fruit smooth, ovate, flattened,  
 F. B. I. ii. 698. hardly  $\frac{1}{2}$  in. long, ridges all winged, lateral broadest.  
 Himalaya,  
 6-9,000 ft.  
 Simla, Mahasu,  
 Hattu (Collett).
- Selinum tenuifolium,** large, perennial, stems finely grooved, hollow; leaves  
 UMBELLIFERÆ. lower often 12 in. diam., 3-pinnate, tertiary pinnæ deeply  
 F. B. I. ii. 700. and finely divided; flowers white, in compound umbels,  
 Himalaya, rays many, hairy, bracts 4-8,  $\frac{3}{4}$ -1 $\frac{1}{2}$  in., linear, often toothed  
 6-13,000 ft. or lobed, bracteoles 5-12, often longer than the umbellule,  
 Mahasu, Matiana, white-margined, often lobed, calyx-teeth linear; fruit  
 Shali, Hattu smooth,  $\frac{1}{8}$  in., ovate or oblong, flattened ridges corky, all  
 (Collett). winged, lateral broadest.
- Selinum** very like the last species, but the leaves are rather  
**papyraceum,** less divided, rays less hairy, bracteoles not white  
 UMBELLIFERÆ. margined, fruit  $\frac{1}{8}$  in., much flattened, lateral wings papery  
 F. B. I. ii. 701. not corky.  
 Himalaya,  
 8-12,000 ft.  
 Kashmir.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

FLOWERS, MINUTE, IN UMBELS.

**Selinum Candollii,**

UMBELLIFERÆ.

F. B. I. ii. 700.

Kashmir,

7-8,000 ft.

very like the first species, but fruit  $\frac{1}{4}$  in., somewhat flattened, ridges all nearly equally winged, corky.

**Selinum vaginatum,**

UMBELLIFERÆ.

F. B. I. ii. 700.

Himalaya,

6-12,000 ft.

Mahasu, Hattu,

Patarnala (Collett).

like the first species, but bracts few, inconspicuous, leaves smaller, secondary pinnæ lanceolate, scarcely lobed or divided, oil glands obsolete.

**Pleurospermum**

**Govanianum,**

UMBELLIFERÆ.

F. B. I. ii. 700.

Himalaya,

10-15,000 ft.

Kashmir.

small, perennial or biennial, nearly smooth, stem thick, hollow; leaves 4-8 in., oblong, pinnate, pinnæ  $\frac{1}{2}$ - $1\frac{1}{2}$  in., toothed or cut but not deeply; flowers white or purple in compound umbels, rays 1-5 in., many, bracts 1-3 in., with an oblong entire white margined sheath and limb divided, bracteoles ovate with a broad tip, toothed at the apex, embracing the round umbellule; fruit  $\frac{1}{8}$  in., oblong with rounded ends, skin loose, glistening, netted, ridges winged hollow, furrows with one oil gland, lateral ridges narrowest, seeds distinctly grooved on the inner face.

**Pleurospermum**

**Candollii,**

UMBELLIFERÆ.

F. B. I. ii. 703.

Himalaya,

10-15,000 ft.

Kashmir.

very like the last species, but bracteoles entire, blunt tipped, the fruit has the lateral ridges broader and furrows with 2-3 oil glands.

**Pleurospermum**  
**angelicoides,**

UMBELLIFERÆ.

F. B. I. ii. 703.

Kashmir.

large, leaves 1-2 pinnate, 12-18 in., pinnæ 3-6 in., with oblong toothed segments, bracts 5-8,  $1-1\frac{3}{4}$  in., narrowly lanceolate, entire, white-margined, bracteoles 5-8,  $\frac{3}{4}$  in., narrowly lanceolate, entire, rays 10-20, 1-4 in., fruit  $\frac{1}{2}$ - $\frac{3}{4}$  in., lateral ridges broadest; for other characters see the first species of this genus.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

FLOWERS, MINUTE, IN UMBELS.

**Pleurospermum  
stylosum,**

UMBELLIFERÆ.  
F. B. I. ii. 704.  
Kashmir, Lahul,  
11-12,000 ft.

large, leaves 2-pinnate, pinnæ 1-3 in., often pinnately divided, segments of secondary pinnæ  $\frac{1}{2}$ -1 in., toothed or divided, bracts 4-6, 1-3 in., lobed or pinnately divided at the tip, rays 10-35,  $1\frac{1}{2}$ -3 in., bracteoles 6-10, lanceolate, entire or divided at the tip, calyx-teeth none, style bases prominent, ridges nearly equal, hardly winged, skin loose wrinkled; for other characters see the last species.

**Pleurospermum  
densiflorum,**

UMBELLIFERÆ.  
F. B. I. ii. 706.  
Himalaya, Kashmir,  
11-14,000 ft.

small, leaves 3-4 in., 3-4-pinnate, ovate, ultimate segments linear or linear-lanceolate, bracts 5-6, 1-2 in., oblong, tips pinnate or divided, rays 5-12, 1-2 in., bracteoles 5-8, oblong, white-margined, entire, or divided at the tip, fruit  $\frac{1}{5}$ - $\frac{1}{4}$  in., ridges 5, nearly equal, broad, dorsal 1-vittate, lateral furrows with 2 oil glands, seed grooved on the inner face; for other characters see the last species.

**Pleurospermum  
Brunonis,**

UMBELLIFERÆ.  
F. B. I. ii. 706.  
Himalaya,  
9-14,000 ft.  
Kashmir.

very like the last species, but fruit smaller,  $\frac{1}{8}$ - $\frac{1}{6}$  in., furrows all 1-vittate, seed plane on the inner face.

**Angelica glauca,  
Chura.**

UMBELLIFERÆ.  
F. B. I. ii. 706.  
Himalaya,  
8-10,000 ft.  
Narkanda, Hattu  
(Collett).  
Kashmir.

large, annual or biennial, smooth, root aromatic; leaves 1-2-3-pinnate, leaflets few, 1-3 in., ovate, toothed, waxy greenish-blue beneath; flowers white or purple in compound umbels, bracts several, 1 in., linear, bracteoles many,  $\frac{1}{4}$  in., calyx-teeth none, petals notched, ovate with a broad tip, rays 20-30, 1-3 in., fruit  $\frac{1}{2}$  by  $\frac{1}{4}$  in., flattened, lateral ridges broadly winged, furrows with one oil gland, seeds  $\frac{1}{18}$  in. wide, hardly grooved on the inner face. This plant is used as a cure for flatulence and dyspepsia, the root is used to give food the flavour of celery.

**Archangelica  
officinalis,  
Angelica,**

UMBELLIFERÆ.  
F. B. I. ii. 707.  
Kashmir,  
8-13,000 ft.

large, perennial; leaves 12-36 in., ovate, 2-3-pinnate, leaflets  $1\frac{1}{2}$ -4 by  $\frac{3}{4}$ -2 in., ultimate pinnæ sessile, toothed, terminal often 3-lobed; flowers white, in compound umbels, bracts few, small, bracteoles many, linear, as long as the umbellule, rays 10-30,  $1\frac{1}{2}$ -4 in., calyx-teeth none, petals ovate, hardly notched; fruit  $\frac{1}{3}$  by  $\frac{1}{6}$  in., lateral ridges usually winged, surface corky, oil glands many, small. The leaf stalks are used in confectionery and called angelica.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## FLOWERS, MINUTE, IN UMBELS.

**Ferula Thomsoni,**

UMBELLIFERÆ.

F. B. I. ii. 708.

Kashmir,

5-6,000 ft.

(Thomson).

(C. B. Clarke).

large, perennial, smooth; leaves 3-pinnate, lower leaves 12-24 in., ovate, tertiary pinnæ 2 by  $\frac{1}{2}$  in., nearly entire, mostly stalked, sheaths of stem leaves large with simple or almost compound umbels; flowers yellow, also in a terminal large leafless compound umbel, bracts none or small, soon falling off, bracteoles none or very small, calyx teeth none, petals ovate, blunt-tipped or notched; fruit  $\frac{1}{3}$  by  $\frac{1}{5}$  in., oblong, much flattened, lateral ridges winged, vittæ broad, one in the dorsal furrows.

**Ferula Jäschkeana,****Asafœtida,***Hing.*

UMBELLIFERÆ.

F. B. I. ii. 708.

Kashmir,

6-12,000 ft.

Common.

Baluchistan.

like the last species, but the leaflets on the margin are round toothed. This is probably the source of asafœtida from Kashmir, the drug oozes out of incisions on the roots, it is much used as a condiment in India and as a medicine for the cure of flatulence.

**Peucedanum****graveolens,****Dill,***Sowa.*

UMBELLIFERÆ.

F. B. I. ii. 709.

The Plains to

2,000 ft.

medium size, perennial, smooth, aromatic; leaves 2-3-pinnate, ultimate segments  $\frac{1}{3}$ -1 in., linear; flowers yellow, in compound umbels, bracts and bracteoles none, calyx teeth none or minute, petals ovate with a broad tip, notched, styles small; fruit  $\frac{1}{6}$  by  $\frac{1}{12}$  in., narrowly winged, oil gland large, solitary in each furrow, seed much flattened, inner face plane. The leaves are used as a pot herb, the fruit is used as a condiment, and as a medicine, being a cure for colic.

**Peucedanum****Thomsoni,**

UMBELLIFERÆ.

F. B. I. ii. 711.

Kashmir,

5-9,000 ft.

like the last species, but the stem is large, the leaves are 3-4 pinnate, ultimate segments  $\frac{1}{3}$  in., ovate, deeply divided, bracts and bracteoles few, umbels large, irregular, calyx-teeth none, fruit  $\frac{1}{4}$  in.

**Heracleum****Thomsoni,**

UMBELLIFERÆ.

F. B. I. ii. 711.

Himalaya,

9-15,000 ft.

Kashmir, Lahul,

Spiti.

small to medium size, perennial or biennial, grey velvety; leaves 6-10 in., 2-pinnate, ovate-lanceolate, ultimate segments  $\frac{1}{2}$ -1 in., pinnately divided; flowers white, in compound umbels, bracts 4-5,  $\frac{1}{8}$ - $\frac{1}{4}$  in., rays 4-10, 1-2 in., bracteoles 5-8,  $\frac{1}{6}$  in., ovate-lanceolate, white margined, petals ovate with a broad tip, notched, fruit  $\frac{1}{6}$ - $\frac{1}{4}$  by  $\frac{1}{8}$ - $\frac{1}{6}$  in., velvety, flattened, slightly winged, greenish, oil gland solitary in each furrow.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## FLOWERS, MINUTE, IN UMBELS.

**Heracleum  
pinnatum,**

UMBELLIFERÆ.

F. B. I. ii. 712.

Kashmir,

10-16,000 ft.

like the last species, but white velvety; leaves 1-pinnate, pinnæ ovate, toothed or divided, fruit  $\frac{1}{4}$ - $\frac{1}{5}$  in., ovate with a broad top, rather more winged, whitish.

**Heracleum  
cachemiricum,**

UMBELLIFERÆ.

F. B. I. ii. 712.

Himalaya,

5-8,000 ft.

Mashobra (Collett).

Murree, Kashmir.

medium size, stem leafless, leaves 2-pinnate, pinnæ 1-3 by  $\frac{1}{2}$ - $\frac{1}{3}$  in., sessile, nearly blunt-tipped, slightly toothed, bracts 2-4,  $\frac{1}{8}$ - $\frac{1}{4}$  in., lanceolate, rays 6-10, 1-2 in., bracteoles 5-8,  $\frac{1}{8}$  in., lanceolate, fruit  $\frac{1}{4}$  in., velvety, narrowly winged; for other characters see the first species.

**Heracleum  
canescens,**

UMBELLIFERÆ.

F. B. I. ii. 713.

Himalaya,

6-8,000 ft.

Simla, Mahasu

(Collett).

medium size, stem nearly leafless upwards, white, hairy; leaves 3-12 in., 1-2-pinnate, oblong or ovate, pinnæ  $\frac{1}{4}$ -3 in., ovate or oblong, short-pointed or blunt, toothed or lobed, bracts 1-4,  $\frac{1}{4}$  in., linear or lanceolate, or none, rays 6-16, 1-3 in., bracteoles 4-8,  $\frac{1}{4}$  in., linear or lanceolate, calyx-teeth linear, small, fruit  $\frac{1}{2}$  by  $\frac{1}{4}$  in., ovate with a blunt tip, broadly winged; for other characters see the first species.

**Heracleum  
candicans,**

UMBELLIFERÆ.

F. B. I. ii. 714.

Himalaya,

6-12,000 ft.

Simla, Mahasu,

(Collett).

Murree.

like the last species, but velvety not hairy, leaves and leaflets much larger.

**Zosimla  
absinthifolia,**

UMBELLIFERÆ.

F. B. I. ii. 717.

Base of the Hills

west of the Indus.

Baluchistan (Lace).

medium size, perennial, velvety or hairy; leaves 4-8 in., 2-4-pinnate, velvety, oblong-lanceolate, ultimate segments  $\frac{1}{4}$ - $\frac{1}{2}$  in., linear or narrowly lanceolate; flowers whitish-yellow, in compound umbels, rays 6-16, 1-3 in., often stout, bracts and bracteoles usually 5,  $\frac{1}{8}$ - $\frac{1}{6}$  in., lanceolate, calyx-teeth linear, petals ovate with a broad tip, notched; fruit  $\frac{1}{2}$  by  $\frac{1}{4}$  in., oblong with rounded ends, flattened, lateral ridge with a thick corky blunt wing, furrows with one oil gland.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## FLOWERS, MINUTE, IN UMBELS.

**Coriandrum sativum,** small to medium size, annual, smooth, strongly scented  
**Coriander,** when rubbed; leaves pinnately divided, segments of the  
*Dhanya.* lower leaves broadly ovate, lobed and toothed, of the upper  
 UMBELLIFERÆ. thread-like; flowers white or purplish, in compound umbels,  
 F. B. I. ii. 717. bracts none or few, linear, bracteoles few, thread-like,  
 The Plains to petals notched, ovate with a broad tip, calyx-teeth small,  
 2,000 ft. short-pointed; fruit nearly round, ridges not prominent,  
 Baluchistan (Lace). oil glands solitary under the secondary ridges, seeds con-  
 vex on one side, concave on the other. This plant is widely  
 cultivated, the leaves are eaten as a pot herb, the seeds  
 are used a condiment and a medicine.

**Cuminum Cyminum,** small to medium size, annual, slender, smooth; leaves  
**Cumin,** much divided, ultimate segments thread-like; flowers white,  
*Zira, zira sufed.* in compound umbels, rays few, bracts and bracteoles several,  
 UMBELLIFERÆ. linear, stiff, calyx-teeth small, awl-shaped, unequal,  
 F. B. I. ii. 717. petals oblong or ovate with a broad tip, notched; fruit  
 The Plains. cylindric, tip narrow, primary ridges thin, distinct, second-  
 ary slightly hairy, oil gland large, solitary under each  
 secondary ridge, seeds like those of *Carum Carui*, Cara-  
 way, but larger, lighter coloured, and with nearly twice  
 as many ridges on the fruit. This plant is much valued in  
 Indian medicine as a carminative.

**Daucus Carota,** medium size to large, annual or biennial, hairy, root  
**Carrot,** fusiform; leaves 2-3-pinnate, pinnæ divided, segments  
*Gajar.* narrowly lanceolate; flowers white, in compound umbels,  
 UMBELLIFERÆ. rays usually many, outer ones converging in fruit, bracts  
 F. B. I. ii. 718. usually very many, bracteoles many, 3-fid or simple, calyx-  
 Himalaya, teeth small or none, petals ovate with a broad tip, notched;  
 5-9,000 ft. fruit  $\frac{1}{10}$  in., somewhat flattened, all ridges prominent,  
 Kashmir, bristles on the secondary ridges, white, glistening, united  
 Cultivated in the at the base only, of the primary ridges sessile, almost  
 Plains and Hills. barbed, seeds half rounded, flattened on the back.

**Caucalis Anthriscus,** medium size to large, annual, roughly hairy; leaves  
**Hedge-Parsley,** 1-2-pinnate, leaflets lanceolate, divided, segments entire or  
 UMBELLIFERÆ. toothed, short-pointed; flowers pale pink, many, forming  
 F. B. I. ii. 718. compound long-stalked umbels, bracts 1-5,  $\frac{1}{5}$ - $\frac{1}{2}$  in., linear,  
 Himalaya, rays 5-12, very unequal, bracteoles several, linear, some-  
 3-9,000 ft. times longer than their umbels, calyx-teeth none, petals  
 Simla, Mashobra ovate with a broad-notched tip; fruit  $\frac{1}{8}$  in., primary and  
 (Collett). secondary ridges equally bristly, not prominent, bristles  
 Kashmir. rough, curved, almost hooked, not barbed, seeds half  
 rounded, deeply grooved on the inner face.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

## FLOWERS, MINUTE, IN UMBELS.

**Caucalis leptophylla,**  
UMBELLIFERÆ.  
F. B. I. ii. 719.  
Kashmir,  
4-6,000 ft.

like the last species, but leaves more finely cut, ultimate segments almost linear, umbels often lateral, main stalks 1-2 in., stout, rays 2-5, fruit larger, bristles longer, shining, almost barbed.

**Caucalis latifolia,**  
**Broad Caucalis,**  
UMBELLIFERÆ.  
F. B. I. ii. 719.  
Kashmir,  
5-8,000 ft.  
Baluchistan (Lace).

small, almost prickly, stiff, leaves 1-2-pinnate, pinnæ often 1-2 in., oblong, toothed or divided half way to the mid-rib, bracts and bracteoles small, oblong, thin, white, rays 3-4, 1-3 in., fruit  $\frac{1}{3}$  in., primary and secondary ridges equally prominent and bristly; for other characters see the last species.

**Psammogeton**  
**bitermatum,**  
*Gargira.*  
UMBELLIFERÆ.  
F. B. I. ii. 719.  
The Plains to  
3,000 ft.  
Baluchistan  
(Stocks).

small, annual, velvety or smooth, widely branched; leaves 1-2-pinnate, segments of the lower leaves ovate, pinnately divided into narrow lobes, segments of the upper narrowly wedge-shaped and divided; flowers white or purplish, in compound umbels on stalks 1-3 in., stout, lateral, and terminal, bracts 3-8,  $\frac{1}{4}$ - $\frac{1}{2}$  in., narrowly lanceolate or linear, rays 5-10,  $\frac{1}{2}$ -1 in., bracteoles 4-8,  $\frac{1}{4}$  in., lanceolate, sheathing the young umbellule, calyx-teeth none, petal ovate, with a broad-notched tip; fruit  $\frac{1}{8}$  in., ovoid, hairs on the ridges, white, styles very long, oil glands solitary under the secondary ridges. This plant is used in Sind as a stomachic.

## PETALS UNITED.

**Lactuca macrorhiza,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Polemonium**  
**cœruleum,**  
**Jacob's ladder,**  
**Greek Valerian,**  
POLEMONIACÆ.  
F. B. I. iv. 133.  
Himalaya,  
9-12,000 ft.  
Kashmir.

medium size to large, perennial, sticky, hairy or nearly smooth; leaves 5 by 3 in., pinnate, leaflets  $1\frac{1}{2}$  by  $\frac{1}{3}$  in., lanceolate or ovate-lanceolate; flowers 1 in. diam., blue, in terminal flat-topped clusters, calyx bell-shaped, lobes ovate or lanceolate-oblong, barely sharp-pointed, corolla funnel-shaped, lobes spreading, ovate with a broad tip, stamens 5, attached near the corolla base, hairy with a process below, style shortly 3-fid; capsule  $\frac{1}{8}$  in., ovoid, much overlapped by the calyx, seeds  $\frac{1}{10}$  in., many, smooth, not winged.



HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS UNITED.

**Lycopersicum  
esculentum,  
The Tomato,  
Bhatte,  
Villayati-bangan.**  
SOLANACEÆ.  
F. B. I. iv. 237.  
The Plains to  
6,000 ft.

large, annual, velvety; leaves 3-6 in., pinnate, leaflets toothed; flowers  $\frac{2}{3}$  in. diam., yellow, in few-flowered stalked clusters, sepals 5-6, narrow, corolla wheel-shaped, tube very short, lobes 5-6-fid, folded in bud, stamens 5-6, on the corolla tube converging in a long cone; berry  $\frac{1}{2}$  in. diam., red, round, in cultivation much enlarged, of varying shape, seeds many, flattened, covered with minute projections. This South American plant is widely cultivated and is found as an escape.

**Amphicome arguta,**  
BIGNONIACEÆ.  
F. B. I. iv. 385.  
Himalaya,  
7-8,000 ft.  
Road between  
Theog and Matiana,  
on rocks (Collett).

medium size, perennial, woody at the base, smooth; leaves 3-5 in., pinnate, leaflets 5-7, lanceolate, and one longest sometimes lobed; flowers  $1\frac{1}{2}$ -2 in. long,  $\frac{1}{2}$ - $\frac{3}{4}$  in. wide at the mouth, pink in erect or drooping racemes, calyx  $\frac{1}{3}$  in., teeth linear, short-pointed, corolla funnel-shaped, tube curved, lobes entire, stamens 4, in unequal pairs, anthers facing each other, with a tooth-like process at the base of the stamen; capsule 4-8 in. by  $\frac{1}{8}$ - $\frac{1}{6}$ , slender, cylindrical, seeds  $\frac{1}{2}$  by  $\frac{1}{12}$  in., with a transparent wing on each side, which is split into strips.

**Amphicome emodi,**  
BIGNONIACEÆ.  
F. B. I. iv. 385.  
Himalaya,  
2-9,000 ft.  
Sutlej Valley,  
Subathu, on rocks,  
Jagoti, Rohru Valley.  
Kashmir.

very like the last species, but the leaves are larger, leaflets more numerous, flowers larger, tube tinged with yellow.

PETALS NONE.

**Thalictrum elegans,**  
RANUNCULACEÆ.  
F. B. I. i. 10.  
Himalaya,  
10-13,000 ft.  
Hazara, the Chor  
(Collett).

small, perennial, slender, stiff; leaves 2-3 in., stalks long, sheathing, compound, leaflets  $\frac{1}{3}$  in., 3-lobed, stalked, bluish-green below; flowers very small, green purple, in branching racemes, sepals 4-5, petal-like, soon falling off, petals none, stamens many, thread-like, projecting beyond the sepals; fruit a head of small stalked achenes; achenes 6-12, shorter than their stalks, thin, ventrate (?) suture winged, stigmas nearly lateral, incurved.

HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

PETALS NONE.

**Thalictrum  
cultratum,**

RANUNCULACEÆ.  
F. B. I. i. 11.  
Himalaya,  
8-12,000 ft.  
Kashmir.

large, leaves large, sheaths with small ear-like stipules, leaflets  $\frac{1}{4}$ - $\frac{1}{2}$  in., bluntly 3-lobed, velvety beneath, flowers greenish-white, sepals  $\frac{1}{2}$  in., achenes shortly stalked, 3-ribbed on each side, style straight or hooked; for other characters see the last species.

**Thalictrum  
Chelidonii,**

RANUNCULACEÆ.  
F. B. I. i. 11.  
Himalaya,  
8-12,000 ft.  
Kulu.

large, much branched, leaves large, leaflets of lower leaves 1 in. diam., orbicular-heart-shaped, round-toothed or lobed, smooth and pale beneath, flowers 1 in. diam., lilac or purple in branching racemes with long stiff branches, flower stalks to 1 in., tips bent down often in fruit, sepals blunt, oblong with rounded ends, achenes long-stalked, many, thin netted, style curved in; for other characters see the last species.

**Thalictrum  
reniforme,**

RANUNCULACEÆ.  
F. B. I. i. 11.  
Himalaya,  
8-10,000 ft.  
Mashobra,  
Narkanda (Collett).  
Kulu.

large, much branched, glandular when young, leaves large, sheaths large, ending in stipule-like processes, leaflets 1-1 $\frac{1}{2}$  in. diam., orbicular-heart-shaped, slightly 3-lobed, flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., greenish-white, sepals  $\frac{3}{10}$  in., soon falling off, narrowly oblong, blunt-tipped, stamens as long as the sepals, tinged with purple, achenes  $\frac{3}{10}$  in., style straight, velvety, 3-ribbed on each side; for other characters see the last species.

**Thalictrum  
pauciflorum,**

RANUNCULACEÆ.  
F. B. I. i. 11.  
Himalaya,  
7-13,000 ft.  
Kashmir.

medium size, smooth, leaves small, nearly sessile, leaflets ovate with a broad tip, wedge-shaped, 3-4-lobed, netted, all stalked, mid leaflet longest stalked, one or a few small flowers in a branching raceme at the end of long branches, sepals ovate, 3-nerved, short-pointed, achenes 3-5, ovate with a broad tip, 3-nerved on each side, style straight; for other characters see the last species.

**Thalictrum  
pedunculatum,**

RANUNCULACEÆ.  
F. B. I. i. 12.  
Himalaya,  
6-9,000 ft.  
Simla, Mahasu,  
Narkanda (Collett).  
Murree.

medium size, sometimes half training, smooth, leaves 3-10 in., long-stalked, pinnules very long with 3 leaflets, leaflets  $\frac{1}{2}$ -1 in., circular or ovate with a broad tip, usually 3-lobed, coarsely round-toothed, flowers large, white, long-stalked in terminal branching racemes, sepals variable in size,  $\frac{1}{4}$ -1 in., oblong, blunt-tipped, twice as long as the stamens, achenes  $\frac{1}{2}$ - $\frac{2}{3}$  in., linear-oblong, tapering at both ends, strongly ribbed, style curved in; for other characters see the last species.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS NONE.

- Thalictrum rostellatum**,  
RANUNCULACEÆ.  
F. B. I. i. 12.  
Himalaya,  
7-12,000 ft.  
Mahasu, Fagu,  
Narkanda (Collett).  
The Chor.
- medium size, rather stiff, much branched, leaves 2-6 in., lower pinnules often with 3 leaflets, leaflets  $\frac{1}{4}$ - $\frac{1}{2}$  in., circular, more or less 3-lobed, round-toothed, sepals  $\frac{1}{10}$  in., ovate, white, stamens shorter than the sepals, achenes nearly  $\frac{4}{10}$  in., style straight, tip hooked; for other characters see the last species.
- Thalictrum saniculæforme**,  
see Herbs, Erect, Unbranched, Alternate, Compound.
- Thalictrum javanicum**,  
RANUNCULACEÆ.  
F. B. I. i. 13.  
Himalaya,  
6-12,000 ft.  
Simla (Collett).  
The Glen.
- medium size to large, leaves 4-12 in., pinnules usually with 3 leaflets, leaflets  $\frac{1}{2}$ - $1\frac{1}{4}$  in., circular or ovate-oblong, 3-lobed, entire or coarsely round-toothed, stipule-like processes, fringed, flowers small, white, clustered in many branched racemes, sepals  $\frac{1}{10}$  in., ovate, stamens longer than the sepals, achenes 8-15,  $\frac{1}{5}$  in., oblong, strongly ribbed, style short, hooked; for other characters see the last species.
- Thalictrum foliolosum**,  
*Phalijari, chitra*.  
RANUNCULACEÆ.  
F. B. I. i. 14.  
Himalaya,  
5-8,000 ft.  
Simla (Collett).
- large, smooth, leaves 6-18 in., pinnules often with 3 leaflets, leaflets  $\frac{2}{5}$ - $\frac{4}{5}$  in., oblong-ovate, 3-lobed, round- or sharp-toothed, leaf stalks sheathing with ear-like processes, flowers green, white or purple, in much branched bracteate racemes, sepals  $\frac{1}{5}$  in., ovate, stamens longer than the sepals, achenes 2-5,  $\frac{1}{5}$  in., sharply ribbed, oblong, sharp at both ends; for other characters see the last species. The root is used as a tonic in Indian medicine, it contains berberine in a soluble form.
- Thalictrum minus**,  
**Lesser Thalictrum**,  
RANUNCULACEÆ.  
F. B. I. i. 14.  
Himalaya,  
9-12,000 ft.  
Kashmir,  
Baluchistan (Lace).
- very like the last species, but the leaves though sheathing have no stipule-like processes, flowers always a dingy purple.

## HERBS, ERECT, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS NONE.

- Datisca cannabina,** large, stout, smooth ; leaves, lower pinnate, 12 in., leaflets 7-11, 6 by 1½ in., stalked, lanceolate, coarsely toothed, tip long-pointed, entire, upper leaves of branches 1-3 in., linear-lanceolate, toothed or entire ; flowers small, yellow, shortly stalked in axillary clusters, male and female on different plants, male flowers calyx tube very short, 5-lobed, petals none, stamens 11-13 on the calyx, female flowers calyx-tube ovoid, 3-angled, 3-toothed on the ovary, petals none, styles 3, each divided into 2 linear stigmas ; capsule ½ in., oblong, opening at the top, seeds many, minute. The root, bark, and wood supply a yellow dye, a medicine is also obtained from this plant which is used in rheumatism, also in fevers.
- Akalbir, bhanggihala.*  
DATISACEÆ.  
F. B. I. ii. 656.  
Himalaya,  
1-6,000 ft.  
Kashmir.
- Arisæma utile,** see Herbs, Erect, Unbranched, Alternate, Compound.
- Arisæma intermedium,** see Herbs, Erect, Unbranched, Alternate, Compound.
- Arisæma Wallichianum,** see Herbs, Erect, Unbranched, Alternate, Compound.
- Arisæma tortuosum** or **helleborifolium,** see Herbs, Erect, Unbranched, Alternate, Compound.
- Arisæma curvatum,** see Herbs, Erect, Unbranched, Alternate, Compound.
- Arisæma flavum,** see Herbs, Erect, Unbranched, Alternate, Compound.
- Arisæma Jacquemontii,** see Herbs, Erect, Unbranched, Alternate, Compound.

## UNBRANCHED HERBS.

HERBS, UNBRANCHED, WITH OPPOSITE STIPULATE SIMPLE LEAVES.

PETALS UNUNITED.

**Monsonia heliotropioides,** see Herbs, Erect, Unbranched, Alternate, Stipulate. Simple.

HERBS, UNBRANCHED, WITH OPPOSITE STIPULATE LOBED LEAVES.

PETALS NONE.

**Alchemilla vulgaris,** small to medium size, covered with silky hairs, root-stock perennial, creeping, stem 6-18 in., unbranched; radical leaves 2-3 in. diam., circular heart-shaped, 7-9-lobed, basal lobes overlapping, leaf stalks 6-18 in., stipules united into a funnel-shaped tube with short broad spreading toothed lips; flowers  $\frac{1}{2}$  in. diam., yellow-green, in loose or crowded flat-topped clusters, calyx 4-5-lobed, petals none, stamens 1-4, on the mouth of the calyx; achenes 1-2, enclosed in the membranous calyx-tube.

**Lady's Mantle,**  
ROSACEÆ.  
F. B. I. ii. 360.  
Kashmir,  
8-9,000 ft.

**Mollugo nudicaulis,** small, annual, smooth, slender, stems many, leafless, scapes rising from a tuft of radical leaves; leaves 1-2 in., oblong, blade prolonged, tapering to the base, stipules soon falling off; flowers green, in clusters on branching stalks, sepals 5,  $\frac{1}{12}$  in., oblong or oval, with thin margins, point blunt, petals none, stamens 3 or 5, stigmas 3, very small; capsule  $\frac{1}{12}$  in., round, many-seeded, seeds minute, black, netted, shining, a small process at the hilum.

**FICOIDEÆ.**  
F. B. I. ii. 664.  
The Plains.

**Polygonum islandicum,** see Herbs, Unbranched, Alternate, Stipulate, Simple.

**Elatostemma surculosum,** small, annual, stems 2-8 in., slender, tufted, weak; leaves  $\frac{1}{2}$ -1 in., lanceolate, sessile, few, lower entire, upper toothed towards the tip, each leaf with a small oblong one opposite, which is often deflexed, stipules minute, cystoliths many; flowers minute, green, one sexual, intermixed with minute bracteoles crowded in axillary, fleshy heads  $\frac{1}{10}$  in. diam., saucer-like, bordered by a circle of bracts, male and female on the same or different plants, male, sepals 4-5, stamens 4-5, female, sepals 3, unequal, persistent, stigma of a sessile tuft of hairs; achenes ovoid, flattened.

**URTICACEÆ.**  
F. B. I. v. 572.  
Himalaya,  
4-7,000 ft.  
Simla, on damp rocks (Collett).

## HERBS, UNBRANCHED, WITH OPPOSITE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

- Oxalis Acetosella,** small, perennial, velvety, root scaly, stemless; leaves  
**Wood sorrel,** all radical, 1-2 in. across, compound, leaflets 3, sessile,  
 GERANIACEÆ. ovate with a broad tip, faintly notched, lower surface often  
 F. B. I. i. 436. purple, stipules broad, large, thin; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam.,  
 Himalaya, white or pale lilac, solitary on long radical, 2-bracteate  
 8-12,000 ft. stalks, sepals 5, oblong, free, petals 5, veined with purple,  
 Baghi (Collett). stalked, 3-4 times as large as the sepals, stamens 10, 5 long,  
 Kashmir. 5 short, united at the base, styles 5, more or less united;  
 capsule  $\frac{1}{3}$  in., ovoid, smooth, 5-angled, 5-celled, seeds 2 or 3  
 in each cell, seeds ribbed lengthwise. The seeds are shot  
 out through the openings in the capsule.
- Guldenstædtia** see Herbs, Unbranched, Alternate, Stipulate, Com-  
**mirpourensis,** pound.
- Astragalus** see Herbs, Unbranched, Alternate, Stipulate, Com-  
**rhizanthus,** pound.
- Astragalus** see Herbs, Unbranched, Alternate, Stipulate, Com-  
**bakuensis,** pound.
- Oxytropis lapponica,** see Herbs, Unbranched, Alternate, Stipulate, Com-  
 pound.
- Oxytropis mollis,** see Herbs, Unbranched, Alternate, Stipulate, Com-  
 pound.
- Oxytropis Thomsoni,** see Herbs, Unbranched, Alternate, Stipulate, Com-  
 pound.
- Oxytropis tatarica,** see Herbs, Unbranched, Alternate, Stipulate, Com-  
 pound.
- Oxytropis** see Herbs, Unbranched, Alternate, Stipulate, Com-  
**microphylla,** pound.
- Trachydium Roylei,** see Herbs, Unbranched, Alternate, Stipulate, Com-  
 pound.

## PETALS NONE.

- Thalictrum alpinum,** small, perennial, slender, smooth, tufted, stem 3-6  
**Alpine Thalictrum,** in., leaves all radical, pinnate or rarely 2-pinnate, leaflets  
 RANUNCULACEÆ. small, rounded, 3-lobed, waxy bluish-green beneath;  
 F. B. I. i. 12. flowers minute, greenish in racemes on an undivided main  
 Himalaya, stalk, bracteoles oblong, thin, blunt, petals none, stamens  
 10-17,000 ft. many, anthers beaked; fruit a small head of stalked  
 oblong, streaked achenes.
- Thalictrum** see Herbs, Unbranched, Alternate, Stipulate, Com-  
**nicolajiforme,** pound.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Arabis glabra,**  
**Rock cress.**

CRUCIFERÆ.

F. B. I. i. 135.

Himalaya,  
5-10,000 ft.

large, annual or biennial, smooth except the leaves, stem 1-3 ft.; leaves oblong-lanceolate, radical ones 3-4 in., toothed, soon withering; stem-leaves alternate, smooth, entire, many, base lobed, lobes pointed; flowers small, white or pale yellow, in bractless terminal racemes, sepals 4, short, erect, lateral ones pouched, petals 4, stalked, stamens 6, 2 outer opposite lateral sepals, 4 inner longer in opposite pairs, stigma nearly sessile; pods 2-3½ in., slender, erect, crowded, smooth, linear, stalked, flat, seeds in 2 rows, margined.

**Arabis auriculata,**

CRUCIFERÆ.

F. B. I. i. 135.

The Plains west of  
the Jhelum,  
Margalla Pass,  
Pindigheb (Douie).  
Kashmir,  
5-6,000 ft.

small, annual, covered with star-shaped hairs, stem 3-12 in., sometimes branched, leaves ovate-oblong, radical ones toothed, blunt-pointed, stem-leaves with blunt basal lobes, flowers small, white, pods 1-1½ in., hairy, narrow, straight, slender, stigma small, sessile, seeds in one row, very small, margined; for other characters see the last species.

**Arabis alpina,**

CRUCIFERÆ.

F. B. I. i. 135.

Himalaya,  
5-12,000 ft.  
Simla (Collett).  
Murree.

small; annual, covered with forked and star-shaped hairs, sometimes slightly branched, leaves oblong-lanceolate, coarsely toothed, radical ones stalked, stem ones sessile with blunt basal lobes, flowers ⅓ in. diam., white, sepals smooth, petals spoon-shaped with long stalks, pods 1½-2½ in., erect, hairy, slender, seeds margined in one row; for other characters see the last species.

**Arabis**  
**amplixicaulis,**

CRUCIFERÆ.

F. B. I. i. 136.

Himalaya,  
5-9,000 ft.  
Narkanda (Collett).  
Murree (Douie).

like the last species but perennial, larger, pods horizontal or drooping, seeds not margined, larger.

**Arabis nuda,**

CRUCIFERÆ.

F. B. I. i. 137.

Kashmir,  
5-6,000 ft.

small, annual, slightly hairy, leaves all radical, oblong-ovate with a broad tip, entire or toothed, flowers small, yellow, on several erect, stiff, leafless, many-flowered stalks, 1-5 in. long, sepals equal, blunt, green, smooth, petals twice as long as the sepals, pods 1-1½ in., straight or curved, linear, much flattened, erect, seeds not margined; for other characters see the last species described.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Draba alpina,**  
**Whitlow grass**  
CRUCIFERÆ.  
F. B. I. i. 142.  
Himalaya,  
12-17,000 ft.  
Kashmir.
- small, perennial, rootstock stout with many crowded tufts of leaves, stems densely tufted, short, or 6-10 in.; leaves  $\frac{1}{4}$ -1 in., all radical or one on the flowering stalk oblong or lanceolate, hairy all over or only along the margins, hairs simple or forked; flowers rather large, yellow, solitary or clustered on radical stalks,  $\frac{1}{8}$ -6 in. long, sepals, petals and stamens as in *Arabis*; pods  $\frac{1}{8}$ - $\frac{1}{4}$  in. oblong with rounded ends, straight, smooth, 4-10-seeded, seeds in 2 rows, ovoid, flattened, not margined.
- Draba muralis,**  
**Wall Draba,**  
CRUCIFERÆ.  
F. B. I. i. 144.  
Kashmir,  
6,000 ft.
- small, annual, covered with star-shaped hairs, very slender, stem thread-like, zigzag, leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., broad-ovate-oblong with rounded ends, coarsely toothed, radical ones few, stem ones few, sessile, lobed at the base or not, flowers minute, white, in a short raceme, lengthening in fruit, petals small, narrow, entire, pods  $\frac{1}{3}$ - $\frac{1}{2}$  in., quite flat, seeds about 12; for other characters see the last species.
- Erophila vulgaris,**  
CRUCIFERÆ.  
F. B. I. i. 145.  
Kashmir,  
5-6,000 ft.
- small, annual; leaves all radical, spreading, ovate or oblong, entire or toothed, slightly hairy; flowers small, white, on slender radical stalks, 2-8 in., erect, smooth, sepals 4, erect, equal at the base, petals 4, ovate with a broad, divided tip, stamens 6; pods  $\frac{1}{3}$  in., oblong, flattened, twice as long as broad, stalks long, slender, seed in 2 rows, many, small.
- Eutrema**  
**primulæfolium,**  
CRUCIFERÆ.  
F. B. I. i. 152.  
Kashmir,  
6-11,000 ft.
- small, perennial, smooth, stemless, root thick, spindle-shaped, leaves 3-6 in., all radical, stalked, broad, oblong, prolonged into the stalk, toothed towards the tip; flowers small, white, in flat-topped clusters on leafy bracteate radical stalks, sepals 4, short, erect, oblong, persistent, equal at the base, petals 4, stamens 6; pods  $\frac{1}{2}$ -1 in., cylindrical, curved, smooth, seeds few, irregularly in one or two rows.
- Chorispora sabulosa,**  
CRUCIFERÆ.  
F. B. I. i. 167.  
Himalaya,  
7-10,000 ft.  
Kashmir.
- small, perennial, glandular-hairy, root thick, fleshy, spindle-shaped, dividing at the top; leaves all radical, tufted, stalked, oblong-lanceolate, entire or toothed; flowers large, yellow or purple, in bractless racemes springing from among the leaves, crowded at first, then lengthening to 6-9 in., sepals 4, erect, lateral ones pouched at the base, petals 4, stamens 6; pods  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, straight, curved or twisted, cylindrical with slight contractions, beak short, slender, cells many in 2 rows, one-seeded.



## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Saponaria vaccaria**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.
- Silene tenuis**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.
- Lychnis cachemiriana**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.
- Holosteum umbellatum**, small, annual, glandular, branched or unbranched, very slender; leaves  $\frac{1}{2}$ -1 in., narrow, radical, oblong with rounded ends, stalked; flowers  $\frac{1}{2}$  in. across, white or pale pink in terminal umbel-like clusters, erect, few, minor flower stalks half bent down after flowering, erect after fruiting, bracts small, thin, sepals 5, white, blunt, petals 5, rather longer than the sepals, stamens and styles 3-5; capsule longer than the sepals, nearly cylindric, seeds many, black, flattened, rough.
- Umbellate Holosteum**,  
CARYOPHYLLACEÆ.  
F. B. I. i. 227.  
Kashmir.
- Cerastium vulgatum**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.
- Stellaria bulbosa**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.
- Saxifraga diversifolia**, small to medium size, perennial, glandular-hairy, stems 6-18 in., leafy; leaves, radical ones crowded, long-stalked, narrowed into the stalk or ovate, nearly heart-shaped, stem leaves  $\frac{1}{2}$ -2 in., sessile or stem-clasping, ovate or broad oblong; flowers  $\frac{1}{2}$  in. diam., yellow, in terminal flat-topped clusters, calyx 5-lobed, lobes reflexed in fruit, glandular, petals 5, glandular at base, stamens 10, styles 2, divergent, distinct; capsule ovate-oblong, 2-beaked, seeds many, minute, oblong with rounded ends, angular.
- SAXIFRAGACEÆ.  
F. B. I. ii. 393.  
Simla, Mashobra,  
Mahasu.  
The Chor  
(Collett).  
Kashmir.
- Saxifraga micrantha**, like the last species, but velvety, leaves toothed, stem leafless with leaf-like bracts below the flower cluster, flowers white, petals hardly longer than the calyx-lobes, capsule smaller, seeds streaked by 10 or 12 rows of minute projections.
- SAXIFRAGACEÆ.  
F. B. I. ii. 394.  
Himalaya,  
9-11,000 ft.  
Dharamsala  
(C. B. Clarke).

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Saxifraga imbricata**, small, in tufts formed by stems, 1-3 in. long, branching, crowded, curved upwards, with densely crowded small blunt leaves  $\frac{1}{4}$  in. long, leaves  $\frac{1}{8}$ - $\frac{1}{4}$  in. long, ovate with a broad tip, upper leaves with a white perforated pit at the apex, smooth or slightly bristly, flowers very small, white, solitary, sessile, calyx lobes ovate, blunt, petals narrow, twice as long as the calyx lobes, soon falling off; for other characters see the last species.  
SAXIFRAGACEÆ.  
F. B. I. ii. 394.  
Himalaya,  
12-17,000 ft.
- Saxifraga Jacquemontiana**, like the last species, but flowers yellow, nearly sessile or on a glandular stalk,  $\frac{1}{2}$  in. long, seeds smooth.  
SAXIFRAGACEÆ.  
F. B. I. ii. 395.  
Himalaya,  
13-18,000 ft.  
Kashmir.
- Saxifraga ramulosa**, like the last species, but the yellow flowers one to two on glandular velvety stalks, margins of leaves cartilaginous, with 1-5 pits at the apex, sepals glandular-velvety, petals ovate with a broad tip, stalked, much longer than the calyx lobes.  
SAXIFRAGACEÆ.  
F. B. I. ii. 395.  
Himalaya,  
8-12,000 ft.  
Kashmir.
- Saxifraga filicaulis**, see Prostrate Herbs, Opposite, Exstipulate, Simple.
- Saxifraga Brunoniana**, stems very slender, wiry, tufted, 3-8 in., runners leafless, thread-like with terminal rooting buds, lower leaves crowded,  $\frac{1}{4}$ - $\frac{1}{2}$  in., narrowly lanceolate, smooth, margins bristly, upper leaves few, smaller, flowers  $\frac{1}{2}$  in. diam., yellow, 2-4 on one stalk, calyx lobes smooth, erect in fruit, petals 3 or 4 times the length of the calyx lobes; for other characters see the first of these species.  
SAXIFRAGACEÆ.  
F. B. I. ii. 397.  
Himalaya,  
10-16,000 ft.  
Hattu, the Chor  
(Collett).  
Kashmir.
- Saxifraga flagellaris**, like the last species, but flowers brighter yellow, larger, flower stalks very short, petals often with red lines near the base.  
SAXIFRAGACEÆ.  
F. B. I. ii. 397.  
Himalaya,  
13-17,000 ft.  
Kashmir.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Saxifraga ligulata,**  
or **ciliata,**  
*Bat pia, dharposh,*  
SAXIFRAGACEÆ.  
F. B. I. ii. 398.  
Himalaya,  
7-10,000 ft.  
Simla (Collett).  
Kashmir.
- rootstock very thick, stem short, thick, fleshy, leaves 2-6 in., ovate or orbicular, in the autumn increasing to 12 in. diam., turning red, heart-shaped at the base, margins entire, fringed with bristles, hairy on both sides, growing smooth with age, stalk stem sheathing, flowers  $1\frac{1}{4}$  in. diam., white, pink or purple, in a branching raceme on a stalk 4-10 in. long, styles very long, fruit nearly round; for other characters see the first of these species. The root, *pakhanbed*, is used as a tonic in fever, diarrhœa and cough.
- Saxifraga Stracheyi,**  
SAXIFRAGACEÆ.  
F. B. I. ii. 398.  
Himalaya,  
8-14,000 ft.  
Hattu, the Chor  
(Collett).  
Kashmir.
- like the last species, but leaves ovate with or without a broad tip, margins toothed, both surfaces smooth, leaf stalk sheathing nearly its whole length.
- Parnassia nubicola,**  
**Grass of Parnassus,**  
SAXIFRAGACEÆ.  
F. B. I. ii. 402.  
Himalaya,  
6-12,000 ft.  
Simla (Collett).  
Kashmir.
- small, perennial; leaves 1-2 in., radical, long-stalked, ovate or oblong-ovate, heart-shaped, entire, short-pointed; flower 1 in. diam., white, solitary on a slender angular radical stalk, 6-12 in. long, stalk sometimes bearing a leaf, calyx-tube short, lobes 5, blunt, petals 5, entire or slightly toothed, stamens 5, alternating with 5 fleshy, flattened, 3-lobed staminodes, only one stamen is erect at one time, style very short or none, stigma round, 3-lobed; capsule  $\frac{1}{2}$  in. long, ovoid with a broad top, 3-valved seeds, many, smooth, ovoid-oblong.
- Parnassia ovata,**  
SAXIFRAGACEÆ.  
F. B. I. ii. 403.  
Himalaya,  
8-15,000 ft.  
Kashmir.
- very like the last species, but smaller, style longer.
- Sedum rosulatum,**  
CRASSULACEÆ.  
F. B. I. ii. 420.  
Simla, on rocks,  
walls, etc. (Collett).  
Kashmir,  
5-9,000 ft.
- small, annual or perennial, succulent, smooth, rarely glandular-velvety; leaves radical  $\frac{1}{4}$ - $1\frac{1}{2}$  in., ovate, prolonged into the stalk with a broad tip, or almost circular, stem leaves  $\frac{1}{8}$ - $\frac{3}{8}$  in.; flowers  $\frac{1}{6}$  in., white, long-stalked in open loose clusters, calyx 4- or 5-lobed, nearly to the base, lobes oblong, smooth, rarely velvety, petals 4 or 5, free, oblong, nearly blunt, stamens twice as many as the petals, follicles 5, erect, small, thin-walled, seeds oblong with rounded ends, smooth, longitudinally streaked.

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

PETALS UNUNITED.

**Sedum  
adenotrichum,**

CRASSULACEÆ.

F. B. I. ii. 420.

Himalaya,

3-8,000 ft.

Simla (Collett).

Fagu, Kashmir,

Baluchistan.

like the last species, but larger size, larger flowers, sharp-pointed petals, petals striped with pink.

**Sedum trullipetalum,**

CRASSULACEÆ.

F. B. I. ii. 421.

Himalaya,

11-16,000 ft.

Kashmir.

like the last species, but smaller size; leaves ovate-lanceolate, petals yellowish-white with a very long base, ovate-heart-shaped or lanceolate.

**Sedum Ewersii,**

CRASSULACEÆ.

F. B. I. ii. 421.

Himalaya,

8-15,000 ft.

Matiana, Narkanda

(Collett).

Changlagalli

(Douie).

Basleo Pass.

like the last species, but larger size, leaves  $\frac{1}{2}$ -1 in. diam., nearly circular, flowers rose-purple, in dense clusters.

**Sedum pallidum,**

CRASSULACEÆ.

F. B. I. ii. 421.

The Plains west of

the Jhelum, Harru,

Hasan Abdal

(Aitchison).

Peshawar

(Vicary).

small, annual, stem 1-5 in., leaves 1 in., oblong to linear, flowers white, nearly sessile in clusters, sepals and petals 5, petals sharp-pointed, 3 times as long as the triangular sepals; for other characters see the last described species.

**Sempervivum  
acuminatum,**

CRASSULACEÆ.

F. B. I. ii. 422.

Himalaya,

10-15,000 ft.

Kashmir.

like the last species but one, but perennial, larger size, leaves more fleshy, radical leaves 1-2 $\frac{1}{2}$  in. long, lanceolate-ovate with a broad tip, or nearly linear, stem leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., sessile, alternate oblong with a long point, flowers purple-rose, sepals 8, petals 8, oblong-lanceolate, stamens 16, follicles 8, many-seeded, seeds narrow.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Sempervivum mucronatum,**

CRASSULACEÆ.

F. B. I. ii. 423.

Himalaya,  
10-12,000 ft.  
Kashmir.

like the last species, but of smaller size, flowers white, smaller sepals oblong-lanceolate, long-pointed, seeds much smaller.

**Sempervivum sedoides,**

CRASSULACEÆ.

F. B. I. ii. 423.

Kashmir, Pir  
Panjal (Falconer).

like the last species, but smaller, sepals oblong, not long-pointed.

## PETALS UNITED.

**Crassula indica,**

CRASSULACEÆ.

F. B. I. ii. 413.

Himalaya,  
east of the Sutlej,  
3-8,000 ft.  
Simla, Theog  
(Collett).

small, perennial, smooth, succulent; leaves 1-1½ in., radical ovate with a broad tip, the blade prolonged into the stalk, stem leaves alternate, sessile, oblong; flowers ½ in., dull pink, in a terminal branching cluster, calyx divided into 5 lobes, petals 5, much longer than the sepals, stamens 5; follicles 5, many-seeded, oblong, smooth, net-veined.

**Valeriana dioica,  
Marsh Valerian,**

VALERIANACEÆ.

F. B. I. iii. 211.

Himalaya,  
11-13,000 ft.  
Kashmir, Lahul.

small, perennial, smooth, rootstock slender, stem jointed; leaves, radical long-stalked, ovate, entire, blunt, stem leaves pinnately divided, lateral lobes few, narrow, terminal blunt; flowers white or pink, in flat-topped branching clusters, bracts small, oblong or linear, male flowers in compact clusters, calyx obscurely lobed, unrolling in fruit into 5-15 feathery bristles united at the base into a short wide funnel-shaped tube, corolla-tube 5-lobed, funnel-shaped, stamens 3, stigma divided into three or nearly entire; fruit oblong-lanceolate, flattened, 3 dorsal, 1 ventral, 2 submarginal ribs, one-celled, 2-barren cells undeveloped, crowned by the pappus-like calyx.

**Valeriana pyrolæfolia,**

VALERIANACEÆ.

F. B. I. iii. 212.

Himalaya,  
9-14,000 ft.  
Kashmir.

slightly velvety, rootstock thick, branching, stem succulent, leaves radical, 1 in. diam., orbicular, stalked, stem leaves sessile, ovate, fruit smooth; for other characters see the last species.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Valeriana Wallichii**, like the last species, but the radical leaves are sharp-pointedly toothed; fruit hairy, stem leaves sometimes compound. The root is used in Indian medicine as an anti-spasmodic.  
*Bala mushk.*  
 VALERIANACEÆ.  
 F. B. I. iii. 213.

**Valerianella dentata**, small, annual, branching, smooth or minutely velvety; leaves 1-1½ by ¼-½ in., oblong, entire or somewhat toothed; flowers white, in small heads forming flat-topped branching clusters, bracts small, narrowly lanceolate, calyx obliquely abruptly cut across, toothed, much shorter than the fruit, corolla-tube short, lobes 5, spreading, stamens 3, style minutely 3-fid; fruit ½ in., ovoid, velvety, barren cells reduced to thread-like ridges, the 2 thread-like cells forming a rim round an ovate-oblong slight depression.  
**Narrowfooted Cornsalad**,  
 VALERIANACEÆ.  
 F. B. I. iii. 214.  
 Kashmir.

**Valerianella Szovitziana**, small to medium size, annual, minutely velvety, leaves 2 by ⅓ in., oblong-linear, somewhat toothed, fruit ⅓-⅓ in., ovate-oblong, scarcely curved, velvety or hairy, barren cells as large as the fertile, calyx shortly cylindrical, with one long horizontal linear tooth; for other characters see the last species.  
 VALERIANACEÆ.  
 F. B. I. iii. 214.  
 Kashmir,  
 5-6,000 ft.

## FLOWERS, MINUTE, IN HEADS.

## ALL TUBULAR.

**Adenostemma viscosum**, medium size, annual, sticky and velvety, or smooth, robust or slender; leaves 6 by 3 in., lanceolate or ovate, coarsely toothed, narrowed into the stalk, uppermost sessile; flowers minute, white, all tubular in discoid heads ¼ in. forming flat-topped branching clusters, bracts round, heads green, in 2-series, pappus of 3 or 4 short club-like scales, corollas ⅓ in., 5-lobed, dilated upwards, style-arms long, thick; achenes ⅓ in., 3-4 angled, sticky.  
 COMPOSITÆ.  
 F. B. I. iii. 242.  
 The Plains to  
 5,000 ft.  
 Sutlej Valley  
 (Collett).

**Saussurea obvallata**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Saussurea Schultzii**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Saussurea Atkinsoni**, see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Saussurea sorocephala**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS.

## ALL TUBULAR.

- Jurinea ceratocarpa*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Serratula pallida*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Ainsliæa pteropoda*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Ainsliæa aptera*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- INNER TUBULAR, OUTER LIGULATE.
- Tussilago Farfara*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Cremanthodium Decaisnei*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Kœlpinia linearis*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Crepis sibirica*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Crepis acaulis*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Crepis Stoliezkaei*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Pterotheca Falconeri*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Picridium tingitanum*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Tragopogon gracile*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Tragopogon pratense*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Tragopogon porrifolium*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Scorzonera Stewartii*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Epilasia ammophila*, see Herbs, Unbranched, Alternate, Exstipulate, Simple.

## FLOWERS NOT IN HEADS.

- Wahlenbergia gracilis*, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Acanatholimon lycopodioides**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Statice cabulica**, see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Primula rotundifolia**,  
PRIMULACEÆ.  
F. B. I. iii. 488.  
Himalaya,  
11-12,000 ft.  
Kashmir. small, perennial, more or less covered with yellowish-white powder, stem none, flowers on long stalks; leaves radical, 1-4½ in. diam., circular heart-shaped at the base, toothed, thin, on long stalks, 6-12 in. long; flowers ½-¾ in. diam., purple, in many-flowered umbels on long stalks from the root, bracts many, mealy, calyx 5-cleft, corolla tube twice as long as the calyx, lobes flat, forming a wheel-shaped salver, mouth ringed, lobes ovate with a broad tip, stigma round, stamens 5, within the corolla tube; capsule ¼-½ in., oblong, 5-valved, seeds ⅓ in., oblong with rounded ends, pale, rough.
- Primula Clarkei**,  
PRIMULACEÆ.  
F. B. I. iii. 484.  
Kashmir,  
Poosiana,  
5,000 ft.  
(Clarke). like a *Viola*, small, perennial, quite smooth, rootstock woody, slender, leaves 1-1½ in., circular with hollowed base, toothed, tip rounded, thin, stalk 2-4 in., very slender, base narrowly sheathing, flowers ½ in., each on a separate slender stalk, the length of the leaf stalk, calyx broadly bell-shaped, lobes short, corolla tube slender, mouth not ringed, salver-shaped, lobes 2-fid, capsule round, enclosed in the calyx, seeds ¼ in. diam., nearly round, black; for other characters see the last species.
- Primula denticulata**,  
PRIMULACEÆ.  
F. B. I. iii. 485.  
Himalaya,  
7-13,000 ft.  
Simla on Jaku  
(Collott). small, perennial, somewhat powdery or mealy-looking, rootstock short, thick, leaves 2-4 in., blunt, oblong and prolonged into a short broad stalk, waved and wrinkled, minutely toothed or sessile, enlarging after flowering, base surrounded with fleshy scales, flowers ½ in. diam., purple to lilac, crowded into a round head-like umbel, terminal on a single bare radical stalk, 4-12 in. long., corolla-tube slightly ringed, seeds coarsely rough; for other characters see the last species.
- Primula sibirica**,  
PRIMULACEÆ.  
F. B. I. iii. 487.  
Kulu, Lahul,  
13-15,000 ft. small, perennial, not mealy-looking; leaves ½-1 in., ovate or oblong, prolonged into the stalk, blunt, entire or minutely round-toothed, leathery, crowded together, midrib barely visible, flowers ¼-¾ in. diam., pink, in a 3-6-flowered umbel on a slender main radical stalk, 3-6 in. high, bracts erect, linear, base shortly produced, as long as the minor flower stalks, calyx tubular, ¼ in., 5-ribbed, lobes short ovate, corolla tube slightly longer than the



## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

calyx, mouth not ringed, lobes flat, narrow, deeply cleft, capsule cylindric, protruding from calyx, seeds  $\frac{1}{40}$  in., pale, smooth, angular; for other characters see the last species.

**Primula involucrata,** like the last species, but larger, leaves broader, longer stalked, main flower stalk longer, stouter, flowers white, larger, mouth of corolla tube ringed, shorter capsule, larger seeds.  
 PRIMULACEÆ.  
 F. B. I. iii. 488.  
 Himalaya,  
 13-15,000 ft.  
 Kashmir.

**Primula elliptica,** like *P. sibirica* above, but leaves sharply toothed, main flower stalk longer, calyx bell-shaped, deeply cleft, corolla purple, lobes broad.  
 PRIMULACEÆ.  
 F. B. I. iii. 488.  
 Himalaya,  
 8-12,000 ft.  
 Kashmir.  
 Lahul.

**Primula rosea,** like the last species, but leaves more dense, nearly sessile, main flower stalk short, stout, corolla rose-red.  
 PRIMULACEÆ.  
 F. B. I. iii. 488.  
 Himalaya,  
 10-12,000 ft.  
 Kulu, Kashmir.

**Primula Stuartii,** much larger than any of the above species, mealy or not; leaves 5-10 in., leathery, nearly erect, broadly or narrowly lanceolate with a broad tip, minutely round or sharp-toothed, mid-rib very broad, leaf stalk broad and thin below; flowers loosely umbelled, calyx teeth linear or lanceolate, corolla yellow or purple, mouth contracted, seeds very rough.  
 PRIMULACEÆ.  
 F. B. I. iii. 490.  
 Himalaya,  
 12-16,000 ft.  
 Maralkund.

**Primula petiolaris,** mealy or not, generally on buds; leaves 2-6 in., oblong or ovate, thin, sessile or narrowed into a winged stalk, sharply or irregularly toothed; flowers  $\frac{3}{4}$ -1 in., purple to white, solitary on slender distinct radical stalks, corolla funnel-shaped, lobes toothed, sometimes rounded, mouth not ringed; capsule round, sunk in the broad calyx tube, seeds large, black, nearly round.  
 PRIMULACEÆ.  
 F. B. I. iii. 493.  
 Himalaya,  
 4-12,000 ft.  
 Simla, Matiana,  
 Mahasu, Narkanda  
 (Collett).  
 Maral.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Primula  
minutissima,**

PRIMULACEÆ.  
F. B. I. iii. 494.  
Himalaya,  
12-15,000 ft.  
Kashmir.

very small, densely tufted, forming large patches of rosettes, each  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., densely crowded, dark green, lanceolate, flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., purple, sessile, upon a very short 1-3-flowered stalk sunk among the leaves, calyx divided to the middle, lobes oblong or lanceolate, much shorter than the corolla tube, corolla very large for the plant, lobes heart-shaped with the broad part at the tip; for other characters see *P. sibirica*.

**Primula floribunda,**

PRIMULACEÆ.  
F. B. I. iii. 495.  
Himalaya,  
3-6,000 ft.  
Simla (Collett).  
Kashmir.

small, velvety-sticky, leaves  $1\frac{1}{2}$ -4 by  $\frac{1}{2}$ - $1\frac{1}{2}$  in., ovate, thin, narrowed into a broad winged stalk, coarsely and irregularly toothed, flowers  $\frac{1}{1\frac{1}{2}}$  in. diam., yellow, unequally stalked in one or several whorls, one above the other, on slender solitary or tufted main flower stalks, 4-8 in. high, corolla salver-shaped, lobes notched, tube long, mouth ringed, capsule round, enclosed in the calyx, seeds  $\frac{1}{10}$  in., black angled, rough; for other characters see *P. sibirica*.

**Androsace  
saxifragæfolia,**

PRIMULACEÆ.  
F. B. I. iii. 496.  
The Plains to  
4,000 ft.

small, annual, velvety-sticky; leaves  $\frac{1}{4}$ - $\frac{2}{3}$  in. diam., rounded, heart-shaped, round-toothed, blade and stalk of equal length; flowers small, pink to white, in umbels, surrounded with bracts, terminal on slender main stalks, bracts  $\frac{1}{8}$  in., minor flower stalks  $\frac{1}{4}$ - $1\frac{1}{2}$  in., very unequal, calyx deeply 5-cleft, enlarging in fruit, and spreading into a star-shape, corolla salver-shaped, tube short, 5-lobed, mouth ringed or with folds, stamens 5, enclosed in the corolla tube; capsule round, 5-valved, seeds minute, nearly round, deeply pitted.

**Androsace  
rotundifolia,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Androsace Aizoon,**

PRIMULACEÆ.  
F. B. I. iii. 497.  
Kashmir,  
8-11,000 ft.

medium size, perennial, leaves  $\frac{1}{4}$ -1 in., very many, densely crowded, lanceolate, sessile, bristly, cartiliginous, flowers small, on long main flower stalks, 6-24 in. long, bracts round the umbels,  $\frac{1}{10}$  in., ovate, minor flower stalks  $\frac{1}{4}$ - $\frac{3}{4}$  in., very unequal, calyx top-shaped, lobes oblong, blunt, divided to the middle, corolla lobes divided with appendages also split up; capsule with 2-fid valves, seeds large, angular, rough; for other characters see the last described species.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Androsace  
sempervivoides,**

PRIMULACEÆ.  
F. B. I. iii. 497.  
Kashmir,  
11,000 ft.  
Sind Valley  
(Collett).

like the last species, but much smaller, bearing runners, plants forming rosettes  $\frac{1}{2}$  in., nearly round, runners 1-1 $\frac{1}{2}$  in., short, stout, naked; leaves  $\frac{1}{4}$ - $\frac{1}{3}$  in., ovate with a broad tip, spoon-shaped thick, tip straight with short sharp point; flowers pink, small, unlabelled on a solitary scape 1-3 in., bracts linear-oblong, calyx broadly top-shaped, lobes 5, erect in fruit, corolla 5-lobed, salver-shaped, lobes ovate with a broad tip, tips rounded, stamens 5, included in the tube; capsule 1-2-seeded, seeds larger, oblong, one side convex.

**Erythræa  
Roxburghii,  
Charayatah.**

GENTIANACEÆ.  
F. B. I. iv. 102.  
The Plains to  
2,000 ft.

small, annual or perennial; leaves radical 1 by  $\frac{1}{3}$  in., ovate with a broad tip, many, persistent, stem leaves smaller, narrower; flowers  $\frac{1}{4}$  in., pink, on long stalks,  $\frac{1}{4}$ - $\frac{1}{2}$  in., in the forks of widely branching clusters, calyx  $\frac{1}{5}$  in., tubular, teeth 5, lanceolate or linear, corolla tube longer than the calyx, lobes 5, very small, spreading, stamens 5 near the top of the corolla, short, linear, style linear, stigmas 2; capsule oblong, equal to the calyx, nearly 2-valved, 2-celled, seeds very small, net-veined. The plant is very bitter and may be used as a tonic instead of chiretta.

**Erythræa Meyeri,**

GENTIANACEÆ.  
F. B. I. iv. 102.  
Kashmir,  
5-8,000 ft.

like the last species, but radical leaves few, often 2 or none, clusters not so much branched, corolla tube scarcely longer than the calyx, flowers white.

**Gentiana  
quadrifaria,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Margins Entire.

**Gentiana capitata,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Margins Entire.

**Gentiana venusta,**

see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Gentiana nubigena,**

GENTIANACEÆ.  
F. B. I. iv. 116.  
Himalaya,  
16-18,000 ft.  
Kashmir.

small, annual or perennial; leaves lower 2 $\frac{1}{2}$  by  $\frac{1}{4}$  in., stem leaves shorter, united at the base into a tube, oblong-linear; flowers 1 $\frac{1}{2}$  by  $\frac{2}{3}$  in., 1 to 3 on each branch, calyx  $\frac{1}{2}$  in., teeth 5,  $\frac{1}{5}$  in., the space between two often folded, corolla funnel-shaped, lobes 5,  $\frac{1}{3}$  in., short-pointed, stamens 5, stigmas 2; capsule 1 by  $\frac{1}{4}$  in., enclosed in the calyx, seeds very many, small.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Gentiana Kurroo**, small, perennial, stout, leaves radical 3 by  $\frac{1}{3}$  in.,  
*Karu, kutki, nilkant.* oblong or linear, stem leaves 1 in., linear united at the base  
 GENTIANACEÆ. into a tube, flowers  $1\frac{3}{4}$ -2 in. long,  $\frac{3}{4}$  in. diam., solitary  
 F. B. I. iv. 117. or racemed, calyx half as long as the corolla, lobes 5,  
 Himalaya, linear, corolla lobes  $\frac{1}{2}$  in., ovate, short-pointed, capsule  
 5-11,000 ft.  $\frac{3}{4}$  by  $\frac{1}{5}$  in., seeds twice as long as broad, short-pointed at  
 Shali, near the one end, nearly tailed at the other; for other characters  
 summit (Collett). see the last species.  
 Kashmir.
- Gentiana cortorta**, see Herbs, Erect, Opposite, Exstipulate, Simple,  
 Entire.
- Mazus rugosus**, small, annual, smooth or slightly hairy; leaves radi-  
 SCROPHULARIACEÆ. cal 1-3 in., oblong or ovate with a broad tip, narrowed to  
 F. B. I. iv. 259. a stalk-like base, coarsely toothed, stem leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in.,  
 The Plains to alternate, spoon-shaped; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in., pale blue or white,  
 7,000 ft. streaked with blue, upper lip darker, in racemes 1-6 flowers,  
 Simla (Collett). calyx bell-shaped, 5-lobed half way down, corolla upper  
 lip 2-lobed, erect, lower lip 3-lobed, spreading, stamens 4,  
 in unequal pairs, style slender, stigma divided; capsule  
 round or flattened, enclosed in the calyx, seeds many,  
 very minute, pale.
- Lancea tibetica**, small, slender, rootstock creeping, horizontal; leaves  
 SCROPHULARIACEÆ. radical 1- $3\frac{1}{2}$  in. long, blunt, leathery, narrowed into a  
 F. B. I. iv. 260. half stem-clasping stalk  $\frac{1}{4}$ -1 in. long; flowers  $\frac{3}{4}$ -1 in. long,  
 Himalaya, blue, in a very short terminal raceme sunk amongst the  
 11-16,000 ft. leaves, bracts lanceolate, calyx bell-shaped, 5-toothed,  
 Kashmir. corolla tube dilated above, upper tip nearly erect, concave,  
 2-lobed, lower lip large, 3-lobed, spreading, stamens 4, in  
 unequal pairs, style thread-like, stigma divided; fruit the  
 size of a pea, round, not splitting open, protruding beyond  
 the calyx, seeds many, small, nearly round, brown.
- Pierorhiza Kurrooa**, small, perennial, rootstock as thick as the little finger,  
*Kutki, kurru, kaur.* covered with withered leaf-bases; leaves radical, 2-4 in.,  
 SCROPHULARIACEÆ. spoon-shaped, toothed, rather leathery, tip rounded, base  
 F. B. I. iv. 290. narrowed into a winged sheathing stalk; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in.  
 Himalaya, long, bluish, in spikes 2-4 in. long on radical leafy flowering  
 9-15,000 ft. stems, calyx lobes 5, lanceolate, corolla tube curved, broad,  
 Kashmir. upper lip nearly hooded, notched; lower lip 3-lobed, shorter,  
 middle lobes shortest, stamens 4; capsule  $\frac{1}{2}$  in. long, ovoid,  
 seeds curved, netted. The root is used as a bitter tonic  
 and laxative with great effect in dropsy.

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

- Wulfenia Amherstiana**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 291.  
Himalaya,  
7-11,000 ft.  
Mahasu, Theog,  
Narkanda (Collett).  
Kashmir.
- small, perennial, smooth, rootstock woody; leaves 2-5 in., oblong-ovate, with a broad tip, coarsely round toothed or lobulate, leaf stalk  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long; flowers  $\frac{1}{3}$  in., blue, in bracteate one-sided spikes on radical stalks, calyx  $\frac{1}{8}$  in., 5-fid, segments short-pointed, corolla 4-lobed, lobes nearly erect, upper one minutely notched, stamens 2, included, style long, protruding, stigma minute, rounded; capsule  $\frac{1}{6}$  in., oblong, 2-lobed, seeds many, ovoid, concave on one side, convex on the other.
- Veronica ciliata**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 292.  
Himalaya,  
11-16,000 ft.  
Kashmir.
- small, annual, covered with greyish velvet; leaves  $\frac{2}{3}$ -1 $\frac{1}{2}$  in., ovate or oblong, blunt, entire or toothed; flowers  $\frac{1}{4}$  in. diam., blue, sessile in nearly round heads, bracts as long as the calyx, sepals 4, oblong, blunt,  $\frac{1}{4}$  in., corolla lobes broad, stamens 2, included; capsule  $\frac{1}{4}$  in., grooved, ovoid-oblong, blunt, tip notched, seeds round, flattened, flat one side, convex on the other.
- Striga lutea**,
- see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, corolla 2-lipped, stamens 4.
- Striga euphrasioides**,
- see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, corolla 2-lipped, stamens 4.
- Didymocarpus pedicellata**,  
GESNERACEÆ.  
F. B. I. iv. 345.  
Himalaya,  
2-5,000 ft.  
Chamba.
- small, stem hardly any, usually none; leaves 3-6 in., roundly ovate, smooth, dotted black, glandular above, leaf stalks 2-5 in.; flowers 1 in., purple, in many-flowered clusters on single stalks, 4 in. long, bracts  $\frac{1}{4}$  in., ovate, often united, calyx  $\frac{1}{4}$  in., funnel-shaped, lobes 5, rounded, corolla 5-lobed, stamens 2, perfect, anthers touching in pairs; capsule 1-1 $\frac{1}{4}$  in., linear, long-stalked, seeds oblong with rounded ends, small, smooth, minutely netted.
- Didissandra lanuginosa**,  
GESNERACEÆ.  
F. B. I. iv. 355.  
Himalaya,  
5-8,000 ft.  
Valleys below Simla  
(Collett).
- small, perennial, stemless; leaves 3 by 1 $\frac{1}{2}$  in., oblong with rounded ends or ovate, stalked, round-toothed, upper surface wrinkled, lower densely hairy; flowers  $\frac{1}{3}$  in. long, pale purple or white, in a terminal cluster on a tufted stalk 3-6 in. long, hairy at the base, calyx 5-lobed, persistent, lobes short-pointed, corolla 2-lipped, tube cylindric, upper lip erect, notched, lower larger, spreading, 3-lobed, stamens 4, in unequal opposite pairs, anthers touching, stigma flat, 2-lobed; capsule  $\frac{3}{4}$  in., erect, curved, short-pointed, seeds many, minute.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Lagotis glauca**,  
SELAGINACEÆ.  
F. B. I. iv. 559.  
Himalaya,  
11-15,000 ft.  
small, perennial, fleshy, rootstock stout, root fibres thick, fleshy; leaves, radical, 2-3 in., oblong or ovate, toothed, leaf stalk very thick, stem leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., blunt, half stem-clasping, often quite entire; flowers small, blue or purple, in spikes, 2-5 in. long, on several flowering stems 3-5 in. high, bracts  $\frac{1}{3}$ - $\frac{1}{2}$  in., calyx  $\frac{1}{3}$  in., 2-lobed, lobes minutely fringed, corolla slender, curved, 2-lipped, lower lip 2-4-lobed, stamens 2, anthers very large, kidney-shaped; drupe small, 2-celled.
- Dracocephalum speciosum**,  
LABIATÆ.  
F. B. I. iv. 665.  
Himalaya,  
12-15,000 ft.  
small to medium size, annual, stem stout, 4-angled; leaves, radical, 2-4 in. diam., round-heart-shaped, round-toothed, leaf stalk 5-12 in., slender, stem leaves smaller, sessile; flowers 1 in., blue-purple with dark spots, in dense heads, in whorls on a large solitary spike, bracts small, round, calyx  $\frac{1}{2}$  in., leathery, 2-lipped, upper lip ovate, lower lanceolate, 15-nerved, corolla-tube not ringed, 2-lipped, upper lip erect, notched, lower spreading, 3-lobed, midlobe largest, stamens 4, under the upper lip, nearly protruding; nutlets 4,  $\frac{1}{6}$  in., smooth, linear-oblong, top round-toothed.
- Dracocephalum nutans**,  
LABIATÆ.  
F. B. I. iv. 665.  
Kashmir.  
9-10,000 ft.  
like the last species, but stems several, sometimes branched, flowers smaller, blue, calyx often purple, lower lip bristle-like, nutlets smaller.
- Lallemantia Royleana**,  
see Herbs, Erect, Opposite, Exstipulate, Simple, Tooth-ed, corolla 2-lipped, stamens 4.
- Stachys floccosa**,  
see Herbs, Erect, Opposite, Exstipulate, Simple, Tooth-ed, corolla 2-lipped, stamens 4.
- Stachys sericea**,  
see Herbs, Erect, Opposite, Exstipulate, Simple, Tooth-ed, corolla 2-lipped, stamens 4.
- Lamium rhomboldeum**,  
see Herbs, Erect, Opposite, Exstipulate, Simple, Tooth-ed, corolla 2-lipped, stamens 4.

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

**Plantago major,  
Greater plantain,  
*Luhuriya, isafgol.***

PLANTAGINACEÆ.

F. B. I. iv. 705.

The Plains to  
10,000 ft.

Simla (Collett).

Peshawar.

Rawalpindi.

Kashmir.

Baluchistan

(Stocks).

small, perennial, smooth or hairy, rootstock stout; leaves 2-5 in., erect, oblong or oblong-ovate, 3-7-ribbed, nearly entire or toothed, leaf stalks sometimes 4 in. long; flowers small, green, crowded or scattered in long spikes, 3-15 in. long, on short stalks, bracts equal in length to the calyx, calyx 4-fid, segments  $\frac{1}{6}$  in., smooth, keeled, corolla 4-lobed, stamens 4, style thread-like; capsule small, enclosed in the calyx, 2-celled, cells 4-8-seeded, seeds very minute, black. This plant is used as an astringent in dysentery for which it is an excellent remedy.

**Plantago lanceolata,  
Rib-wort plantain,  
*Baltanga.***

PLANTAGINACEÆ.

F. B. I. iv. 706.

Himalaya,

5-8,000 ft.

Simla (Collett).

Kashmir,

Salt Range.

like the last species, but leaves are only shortly stalked, narrower, 3-5-ribbed, 1-2 in. long, axils woolly, spikes short, main flower stalks long, deeply furrowed, sepals bristly, corolla smooth, capsules 2-cells, only 1-2-seeded. This plant is used as an astringent.

**Plantago tibetica,**

PLANTAGINACEÆ.

F. B. I. iv. 706.

Himalaya,

4-11,000 ft.

Simla (Collett).

Kashmir.

very like the last species, but the leaves are not so long, axils of leaves not woolly, spike slender, bracts oblong, blunt.

**Plantago  
brachyphylla,**

PLANTAGINACEÆ.

F. B. I. iv. 706.

Himalaya,

9-13,000 ft.

Kashmir.

like the *Plantago major*, but smaller, and the seeds are only 1-2 in each cell and not angular.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Plantago  
amplexicaulis,**  
PLANTAGINACEÆ.  
F. B. I. iv. 706.  
The Plains west of  
the Sutlej.  
Baluchistan  
(Stocks).

small, annual or perennial, stemless or branched from the base, almost smooth, leaves 3-6 in., very narrowly lanceolate, finely long-pointed, base sheathing, margin entire or slightly toothed, 5-nerved, main flower stalks very numerous, stout, smooth, spikes  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, ovoid, flowers large, bracts cup-shaped, sepals rounded, corolla lobes ovate, short-pointed, seeds  $\frac{1}{8}$  in., boat-shaped, brown; for other characters see the last species.

**Plantago ovata,**  
*Ispaghul.*  
PLANTAGINACEÆ.  
F. B. I. iv. 707.  
The Plains to  
2,000 ft.  
West of the Sutlej.  
Baluchistan  
(Hughes-Buller).

like the last species, but leaves much narrower, often thread-like, corolla lobes concave, rounded, blunt. The seeds (*ispaghul*) are used to cure dysentery.

**Plantago ciliata,**  
PLANTAGINACEÆ.  
F. B. I. iv. 707.  
Punjab Hills, west  
of the Jhelum.  
Salt Range.  
Peshawar.  
Baluchistan (Lace).

like the last species, but smaller, usually stemless, leaves broader, woolly or silky, corolla lobes long-pointed, woolly, capsule cells one-seeded.

**Plantago Psyllium,**  
PLANTAGINACEÆ.  
F. B. I. iv. 707.  
The Plains to  
2,800 ft.  
West of the Indus.

annual, small, stem stiff, glandular, velvety, leaves 1- $1\frac{1}{2}$  in., linear or linear-lanceolate, flat, blunt, flower stalks shorter than the leaves; for other characters see the last species.

## STAMENS NONE.

## ANTHER ONE.

**Microstylis  
muscifera,**  
ORCHIDACEÆ.  
F. B. I. iv. 689.  
Himalaya,  
8-12,000 ft.  
Mashobra, Fagu,  
Hattu (Collett).

small to medium size, perennial, stem tuberous below, sheathed, root fibrous; leaves 2, 2-4 in., oblong or rounded, blunt, sessile or stalked; flowers  $\frac{1}{8}$  in., pale yellow-green in a terminal spike-like raceme on a flowering stem, 6-18 in. long, bracts lanceolate, shorter than the ovary, sepals 3, broadly lanceolate, petals 3, 2 lateral alike, spreading, the lower petal or lip ovate, short-pointed, column very short with short spreading arms, anther sessile on it, spur none; capsule ovoid, ribbed, seeds many, minute.



HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

**Liparis rostrata,**

ORCHIDACEÆ.

F. B. I. v. 694.

Himalaya,

5-8,000 ft.

Simla, Annandale,  
the Glen (Collett).

small, perennial, root fibrous, stem swollen at the base; leaves 2,  $\frac{1}{2}$ -2 in., ovate; flowers  $\frac{1}{2}$  in., yellow-green in a terminal raceme on a flowering stem 3-6 in., bracts  $\frac{1}{2}$ - $\frac{1}{3}$  in., base broad, sepals lanceolate, 3-nerved, spreading, turned back, petals as long, very slender, lip (lower petal) 2-lobed with a short sharp point between the lobes, margins minutely toothed, spur none, column long, curved, upper half winged, anther hinged at the back to the top of the column, pointed in front, stigma on top of the column between the wings.

**Oreorchis micrantha,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Calanthe tricarinata,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Calanthe puberula,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Calanthe  
plantaginea,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Eulophia campestris,***Salib-misri.*

ORCHIDACEÆ.

F. B. I. vi. 4.

The Plains.

small to medium size, perennial, rootstock tuberous, flowers appear long before the leaves; leaves long, narrow-plaited, flowers  $\frac{1}{2}$ - $\frac{2}{3}$  in., yellow or green with pink stripes, lip purple, many in nearly one-sided racemes on a flower stalk 6-18 in., stout or slender, sepals 3, spreading, slightly attached to the base of the lip, mid-lobe of corolla, petals 4, narrower, lip as long as the sepals, side-lobes rounded, spur conical, nearly wedge-shaped, column rather slender, anther terminal, 2-celled; capsule  $\frac{3}{4}$  in., oblong with rounded ends. The tubers are used as a tonic and aphrodisiac.

**Anætochilus  
Roxburghii,**

ORCHIDACEÆ.

F. B. I. vi. 95.

Himalaya,

below 5,000 ft.

East of the Sutlej.

Simla (Collett).

small, perennial, stem creeping below; leaves 1-1 $\frac{1}{2}$  in., ovate-heart-shaped, stalked, short-pointed, usually dark velvety green, netted with golden nerves; flowers  $\frac{3}{4}$  in., white, in glandular velvety terminal 3-5-flowered spike on a stout or slender main stalk, bracts lanceolate, sepals  $\frac{1}{2}$  in., dorsal smaller, forming a hood with the petals, ovate, green, petals broadly sword-shaped, white, terminal lobes of the open lip ovate with a broad tip as long as the fringed claw, spur as long as the sepals, column short, stigmatic lobes lateral.

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

- Spiranthes australis,** small to medium size, perennial, velvety, roots fleshy; leaves 2-4 in., linear-lanceolate, base sheathing; flowers  $1\frac{1}{6}$ - $\frac{1}{6}$  in., pink, rarely white, crowded in a spiral slender spike 2-6 in. long, bracts ovate-lanceolate, longer than the ovary, sepals lanceolate, the two lateral spreading, upper one with the petals forming a 3-lobed hood enclosing the column, tips recurved, tip oblong, joined to the foot of the column, base dilated, concave, having 2 small glands within, limb crisped along the margins, tip dilated, recurved, spur none, column short, prolonged upwards in a flat-pointed process, overhanging the circular green stigma.
- Lady's Tresses,**  
ORCHIDACEÆ.  
F. B. I. vi. 102.  
The Plains to  
8,000 ft.  
Simla (Collett).
- Zeuxine suleata,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Epipactis latifolia,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Epipactis consimilis,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Epipactis Royleana,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Orchis latifolia,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Herminium**  
**Monorchis,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Habenaria**  
**stenopetala,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Habenaria digitata,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Habenaria Susannæ,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Habenaria Pectinata** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Habenaria arietina,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Habenaria**  
**intermedia,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Habenaria**  
**marginata,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## STAMENS NONE.

## ANTHER ONE.

**Habenaria  
Aitchisoni,**

ORCHIDACEÆ.  
F. B. I. vi. 152.  
Himalaya,  
7-9,000 ft.  
Kashmir.

small to medium size, perennial, stem sometimes as thick as a goose-quill, sheaths few, small; leaves 1-3 in., circular, tipped with a rigid point, not margined, inserted above the base of the stem; flowers  $\frac{1}{3}$  in. diam., greenish, on a dense-flowered spike, bracts half as long as the ovary,  $\frac{1}{3}$  in., short- or long-pointed, sepals nearly equal, oblong-ovate, blunt, lateral spreading, dorsal erect, petals as long, ovate-lanceolate, lip as long as the sepals, divided to the base, side lobes longest, spreading, recurved, spur shorter than the short curved ovary, clubbed, stigmatic arms large, clubbed.

**Habenaria latilabris  
or Edgeworthii,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Habenaria densa,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Habenaria  
goodyeroides,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Habenaria  
Elizabethæ,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Habenaria galeanera,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Habenaria decipiens,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

## STAMEN ONE.

**Curcuma  
angustifolia,  
East Indian  
Arrowroot,  
Tikhur.**

SCITAMINEÆ.  
F. B. I. vi. 210.  
Valleys below Simla,  
4,000 ft.  
(Collett).

medium size, perennial, rootstock round, stemless; leaves stalk 6 in., blade 6-12 by 2-3 in., lanceolate; flowers  $\frac{1}{2}$  in., yellow, crowded, several in the axil of each bract, opening in succession, quickly fading, in stalked spikes 3-6 in. long, crowded by several enlarged, empty, pink bracts, lower bracts green, ovate, calyx short, 3-toothed, corolla tube  $\frac{1}{2}$  in., upper lobe erect, concave, ovate, 2 lateral lobes shorter, oblong, within the corolla 3-petal-like segments or staminodes, 2 lateral erect, the lower broader, spreading and usually lobed, stamen inserted on the mouth of the corolla tube, anther linear-oblong, curved,

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## STAMEN ONE.

forked below; capsule ovoid, 3-valved, seeds many, small, oblong. The starch called Arrowroot is chiefly derived from the root of this plant, which is cultivated for this purpose.

**Kæmpferia Galanga,**  
*Chandra mula.*

SCITAMINEÆ.

F. B. I. vi. 219.

The Plains,  
cultivated.

small, perennial, rootstock tuberous, root fibres cylindrical, stemless; leaves 3-6 in., nearly round and nearly sessile, flat on the ground, appearing with the flowers, deep green, 10-12-ribbed, margin not thickened nor coloured, stalk short, grooved; flowers 6-12,  $1\frac{1}{4}$  in. long, white with lilac, in spikes on radical main flower stalks, sweet-scented, soon falling off, opening in succession, bracts small, green, lanceolate, calyx as long as the bract, short, cylindrical, splitting down one side, corolla tube 1 in. long, slender, segments  $\frac{1}{2}$  in., lanceolate, staminodes  $\frac{1}{2}$  in., ovate-wedge-shaped, broad, petaloid, white, lip 1 in. broad, white with a lilac throat deeply bifid below the middle, lobes blunt, stamen one, anther crest small with 2 shallow blunt lobes, style long, thread-like, stigma top-shaped; capsule oblong. A perfume is obtained from the tubers, galanga.

**Kæmpferia rotunda,**  
*Bhui-champa.*

SCITAMINEÆ.

F. B. I. vi. 222.

The Plains,  
cultivated.

like the last species, but leaves 12 by 3-4 in., oblong, erect, stalked, purplish beneath, appearing after the flowers, flowers larger, more brightly coloured, more scented, corolla segments linear, anther crest deeply divided. The roots of this and the last species are used to reduce swellings.

**Hedychium**  
**coronarum,**

SCITAMINEÆ.

F. B. I. vi. 225.

The Plains,  
cultivated.

large, perennial, rootstock horizontal, tuberous, thick, stem long, leafy, leaves in 2 opposite rows; leaves 10-14 by 3-5 in., oblong or oblong-lanceolate, usually velvety beneath; flowers  $3\frac{1}{2}$  in., white or yellowish, fragrant, in dense flowered spikes, 6-12 in. long, outer bracts  $1\frac{1}{2}$ -2 in. by 1 in., first green then brown, oblong, 3-4-flowered, calyx shorter than the bract, cylindrical, green, corolla tube 3 in., segments linear, reflexing, half as long as the tube, lateral staminodes  $1\frac{1}{2}$ -2 by  $\frac{1}{2}$  in., oblong or oblong-lanceolate, lip  $1\frac{1}{2}$ -2 in. broad, shallowly bifid, narrowed suddenly to a short claw, short lobes rounded, stamen equal to the lip, stalk of stamen red, anther about  $\frac{1}{2}$  in., style long, thread-like, stigma nearly round; capsule oblong, smooth, 3-valved, orange inside, seeds many, small, surrounded by a fleshy crimson substance.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Hedychium  
spicatum,**  
*Sit-ruti, kapur-  
kachri.*

SCITAMINEÆ.  
F. B. I. vi. 227.  
Himalaya,  
5-7,000 ft.  
Simla (Collett).

like the last species, but leaves quite smooth underneath, bracts one-flowered, staminodes lanceolate, lip deeply bifid, not clawed, stamen shorter than the lip, capsule round. The root is used as a carminative and as a scent in religious ceremonies by Hindus.

**Zingiber Zerumbet,  
Ginger,**

*Kachur, nar kachur.*  
SCITAMINEÆ.  
F. B. I. vi. 247.  
The Plains.

large, biennial, rootstock horizontal, tuberous, pale yellow inside, stem leafy; leaves 12 by 2-3 in., oblong-lanceolate, smooth beneath, stem-clasping with long sheaths; flowers 1-1½ in. long, whitish with a yellow lip, in spikes 3-4 in. long, produced from the rootstock on long stalks, bracts 1-1½ in. long, orbicular, green with a paler edge, persistent, calyx cylindric, shortly 3-lobed, corolla tube cylindric, segments 3, 1 in. long, lanceolate, upper concave, lip with a midlobe  $\frac{3}{4}$  in. broad, mid-lobe notched, orbicular, basal-lobes large, orbicular, stamen pale, as long as the lip, style thread-like, stigma small, almost round; capsule 1 in., oblong, 3-celled, splitting, seeds large, round, with a fleshy appendage.

**Zingiber officinale,  
Ginger,**

*Adrak.*  
SCITAMINEÆ.  
F. B. I. vi. 246.  
The Plains,  
cultivated.

very like the last species, but the rootstock bears many sessile tubers, spike oblong-cylindric, bracts pointed, corolla segments greenish, lip small, purplish-black, mid-lobe not notched, stamen dark purple, very rarely has flowers, still more rarely seeds, cultivated. The rootstock is used as a carminative and a condiment.

**Zingiber  
Cassumunar,  
Ginger,**

*Banada.*  
SCITAMINEÆ.  
F. B. I. vi. 248.  
The Plains.

very like the last species, but rootstock perennial, bright yellow inside, leaves velvety beneath, bracts ovate, reddish, corolla segments whitish, lip yellowish-white with deeply bifid mid-lobe, basal auricles oblong, large, blunt, stamen yellowish-white, capsule small, round, cultivated as above.

**Alpinia Galanga,**

SCITAMINEÆ.  
F. B. I. vi. 253.  
The Plains.

large, rootstock perennial, horizontal, tuberous, slightly aromatic, stem leafy; leaves 1-2 ft. by 4-6 in., green and glossy on both sides, oblong-lanceolate, smooth beneath; flowers  $\frac{3}{4}$  in., white tinged with lilac, in a terminal branching raceme 6-12 in. long, calyx  $\frac{1}{4}$  in., greenish-white,

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

oblique at the throat, tubular, 3-toothed, corolla tube cylindrical, usually not longer than the calyx, corolla segments  $\frac{1}{3}$ - $\frac{1}{2}$  in., greenish-white, linear-oblong, upper usually broader and more convex, lip distinctly stalked,  $\frac{1}{2}$  in., ovate with a broad tip, notched, white, veined with lilac, with a pair of awl-shaped reddish glands at the base of the stalk, stamens shorter than the lip, curved, style thread-like, stigma nearly round; fruit  $\frac{1}{2}$  in., orange red, 3-celled; cultivated. The rhizome is used medicinally instead of ginger.

**Alpinia Allughas,**

SCITAMINEÆ.

F. B. I. vi. 253.

The Plains.

like the last species, but smaller, leaves narrower, calyx longer, lip pink, fruit black, cultivated. The rhizome is used as in the last species.

**Canna indica,***Hakik, sabbajaya.*

SCITAMINEÆ.

F. B. I. vi. 260.

The Plains,  
cultivated.

large, rootstock perennial, tuberous with many fibres, stem leafy; leaves 12 in., oblong, short-pointed; flowers 2 in., red and green, in a loose terminal raceme, bracts  $\frac{1}{2}$  in., ovate, green, sepals 3, small, lanceolate, corolla tube  $\frac{1}{4}$ - $\frac{1}{3}$  in., cylindrical, lobes 1 in., green, lanceolate, segments 3, lanceolate, outer staminal, segments 3,  $1\frac{1}{2}$  by  $\frac{1}{8}$ - $\frac{1}{4}$  in., red, lanceolate with a broad notched tip, lip rather shorter, reflexed, notched, style united to staminal tube below, stigma round; capsule  $\frac{1}{2}$ - $\frac{3}{4}$  in., tubercled, round, seeds black, the size of a pea. The seed supplies a purple dye, the root is used as a diaphoretic and diuretic.

**Musa sapientum,****Plantain, banana,***Kaila.*

SCITAMINEÆ.

F. B. I. vi. 262.

The plains to  
4,000 ft.

Baluchistan

(only found cultivated).

large, tree-like, stem succulent of leaf sheaths, cylindrical, shoots springing from the root; leaves 4-5 ft., oblong, bright green above, paler beneath; flowers  $1\frac{1}{2}$  in. long, yellowish-white, on a drooping spike, male above, female below, bracts 2, forming a spathe, lower 6-8 in., upper shorter, ovate, reddish, calyx 1- $1\frac{1}{2}$  in., 5-toothed at the tip, slit one side to the base, corolla shorter than the calyx, wrapped round the stamens and style, stamens 5, perfect, 6th obsolete, filaments stout, thread-like, style thread-like, stigma round, 6-lobed; fruit 4-5 in., oblong, 3-angled, fleshy, sweet when ripe, yellow, no seeds in the cultivated form. Much cultivated for its fruit.

**Iris Aitchisoni,**

IRIDACEÆ.

F. B. I. vi. 272.

The Salt Range,  
3,000 ft.

Vicary (Aitchison).

small, perennial, rootstock is a corm, 2 in. long, ovoid, coats brown, polished, stem 6-18 in. long, slender, 1-3-flowered; leaves 6-18 by  $\frac{1}{4}$  in., one inside the other on opposite sides of the base of the stem, slender, flat, sword-like; flowers lilac or yellow,  $2\frac{1}{2}$  in. long, one enclosed in a leaf-like spathe, divided deeply into 2 long narrow lanceo-

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

late segments, each flower has also 2 much shorter, narrow, membranous bracts, sepals 3, petal-like, shortly stalked, reflexed, petals 3, smaller, linear spreading, tube 1-1½ in., blade ½ in., stamens 3, inserted at the base of the sepals, style stout, stigmas petal-like, arching over the stamens, 2-fid, with a transverse dorsal crest; capsule leathery, 3-sided, enclosed in the spathe, seeds many.

**Iris spuria,**

IRIDACEÆ.

F. B. I. vi. 272.

Kashmir, 6,000 ft.  
(Clarke).

large, leaves 1-3 ft. by ½-1½ in., sword-like, leathery, streaked, spathes 2-3-flowered, 2-3 in. long, linear-oblong, flowers 2-3 in. diam., lilac, sepals ½ in., broad, stalk keeled, petals ½-¾ in., broad, style-arms 1 in. long, crests small, triangular, capsule 1-2 in., 6-ribbed, long-beaked; for other characters see the last species.

**Iris aurea,**

IRIDACEÆ.

F. B. I. vi. 273.

Kashmir (Royle,  
Jacqueumont).

very like the last species, but flowers yellow and larger.

**Iris milesii,**

IRIDACEÆ.

F. B. I. vi. 273.

Kulu and Rarbutta  
Valleys (Brandis).

like the last species, but the flowers are purple, the sepals are crested, style-arms with a large fringed crest, spathes many-flowered, flower heads branched.

**Iris nepalensis,***Chalnandar, sosan,*  
*shuti, chiluchi.*

IRIDACEÆ.

F. B. I. vi. 273.

Himalaya,  
5-10,000 ft.  
Simla (Collett).

small, rootstock with fleshy finger-like roots, leaves 6 in. long at flowering time, 24 in. by 6 in., afterwards streaked with purple lines and dots, spathes 1½-2 in. long, 2-3-flowered, flowers pale lilac, 1½ in. long, style-arms 1 in. and less, capsule 1-1½ in., oblong, flattened, 3-angled with a long slender beak; for other characters see the last species. Cultivated in Kashmir and Hazara in graveyards and gardens.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Iris kumaonensis**, very like the last species, but the stalk of the sepals  
*Piaz, karkar, tezma.* is bearded, spathe one-flowered, capsule ovoid.

IRIDACEÆ.

F. B. I. vi. 274.

Himalaya,

8-12,000 ft.

Marali (Collett).

Kashmir.

**Iris Hookeriana**, very like the last species, but the spathe much longer  
IRIDACEÆ. 5 in., and 2-3-flowered.

F. B. I. vi. 274.

Lahul.

## PETALS NONE.

**Aletris nepalensis**, small, perennial, grass-like; leaves 3-8 by  $\frac{1}{8}$ - $\frac{1}{4}$  in.,  
HÆMODOURACEÆ. radical grass-like, nerves prominent; flowers  $\frac{1}{2}$  in. long,  
F. B. I. vi. 264. white or pale pink in a short raceme on a stalk 4-12 in.  
Himalaya, long, velvety with one or two short leaves at the top, bracts  
10-15,000 ft. linear erect, calyx corolla-like, lobes 6, blunt, turned back,  
The Chor, Marali persistent, stamens 6, opposite and attached at the base  
(Collett). to the calyx lobes, style shorter than the stamens, 3-fid  
at the top; capsule round, 3-valved, seeds 6, brightly  
coloured.

**Ophiopogon** small to medium size, perennial, rootstock short, not  
**intermedius**, stout, covered with old leaf bases; leaves 6-24 by  $\frac{1}{6}$ - $\frac{1}{2}$  in.,  
HÆMODOURACEÆ. tufted, linear, margins very minutely toothed; flowers  
F. B. I. vi. 269.  $\frac{1}{4}$  in., white, sometimes tinged with violet, often in pairs  
Himalaya, in racemes 2-5 in. long on leafless stalks as long as the  
5-9,000 ft. leaves, bracts lanceolate, calyx bell-shaped, corolla-like,  
Simla (Collett). lobes 6 in 2 series, blunt, spreading, petals none, stamens  
Kashmir. 6, style longer than the stamens, minutely 3-lobed at  
the top; fruit of 6 berry-like blue seeds resting on the  
calyx.

**Crocus sativus**, small, perennial, rootstock a sheathed corm, stem  
**Saffron**, none; leaves radical, narrowly linear, grooved, margins  
*Kesar, zafran.* curved back; flowers violet, solitary or clustered, nearly  
IRIDACEÆ. sessile, calyx funnel-shaped, tube slender, lobes 6 in 2  
F. B. I. vi. 276. series, petal-like, petals none, throat of tube bearded stamens  
Kashmir only, 3, on the throat, anthers yellow, style-arms exerted,  
cultivated. orange red, nearly club-shaped, entire or lobulate; capsule  
oblong, seeds nearly round. This plant is cultivated for  
the dye, it is also used in Indian medicine.



## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Belamcauda chinensis,**

IRIDACEÆ.

F. B. I. vi. 276.

The Plains to  
6,000 ft.

small, perennial, rootstock creeping, stem erect, leafy ; leaves in 2 opposite rows, one bestriding the other, flat, sword-like ; flowers shortly stalked, main stalks branched, spathes several-flowered, bracts thin, calyx-tube very short, segments oblong, nearly equal, spreading, stamens 3, inserted at the base of the tube, style thread-like, arms long, tips kidney-shaped ; capsule ovoid with a broad top, seeds nearly round. This plant is only found cultivated.

**Hypoxis aurea,**

AMARYLLIDACEÆ.

F. B. I. vi. 277.

Himalaya,  
4-7,000 ft.

Simla (Collett).

small, perennial, root tuberous round or oblong, with black fibres and pale fleshy roots, stemless ; leaves 3-6 by  $\frac{1}{2}$  in., rarely 12 in., linear base sheathing, nerves prominent ; flowers  $\frac{1}{2}$  in., bright yellow, single or in pairs on axillary scapes shorter than the leaves, calyx sessile on the ovary, divided nearly to the base, segments 6, in 2 series, lanceolate, spreading, green on the back, stamens 6 at the base of the segments and shorter than they are, style short, column-like, stigmas 3, erect ; capsule  $\frac{1}{4}$  in., oblong, 3-valved, seeds many, small, black, round.

**Crinum defixum,**

see Water Plants, Opposite, Exstipulate, Simple.

**Crinum pratense,**

AMARYLLIDACEÆ.

F. B. I. vi. 282.

The Plains, rare,  
only cultivated.

large, perennial or biennial, bulbs 4-5 in. diam., ovoid or round, neck 2-2 $\frac{1}{2}$  in. ; leaves 6-8, 18-36 by 1 $\frac{1}{2}$ -2 in., linear, grooved, margin entire ; flowers 5-6 in., white, fragrant, nearly sessile, in umbels, 6-12-flowered on scapes 12 in. long, spathes 2, 2-3 in., triangular-lanceolate, calyx salver-shaped, calyx, tube 3-4 in., lobes 6, equal to the tube, lanceolate, petals none, stamens 6, on the throat of the tube, very long, red, spreading, style thread-like, stigma minute ; fruit nearly round, 3-celled, seeds large, few, rounded.

**Crinum latifolium,**

AMARYLLIDACEÆ.

F. B. I. vi. 283.

The Plains,  
cultivated.

like the last species, but much larger, stemless, leaves 3-4 in. broad, calyx tinged with red or nearly red over the back of the lobes, funnel-shaped, tube upcurved, lobes oblong or lanceolate, stamens curved.

**Paneratium verecundum,**

AMARYLLIDACEÆ.

F. B. I. vi. 285.

Foot of the  
Himalaya.

small, perennial or biennial, rootstock bulbous, round, 2 in. diam., neck long, cylindric ; leaves 1-1 $\frac{1}{2}$  by  $\frac{1}{2}$ - $\frac{3}{4}$  in., thin, lanceolate with a broad long-pointed tip ; flowers 4 $\frac{1}{2}$ -5 $\frac{1}{2}$  in. long, green, on 2-6-flowered umbellate stalks, stout, 12 in. long, spathes 2, lanceolate, calyx funnel-shaped, tubes 3-4 in., lobes 1 $\frac{1}{2}$  in., linear, petals none, stamens 6, united to form a toothed cup, a bifid tooth between

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

each stamen, stamens much longer than the teeth of the cup, cup  $\frac{3}{4}$ -1 in. long, style thread-like, longer than the stamens, stigma small; capsule large, 3-angled, seeds angled.

**Polygonatum  
geminiflorum,**

LILIACEÆ.

F. B. I. vi. 320.

Himalaya,

7-11,000 ft.

Kashmir.

medium size, perennial, rootstock horizontal, stem zigzag, rounded; leaves 2-4 in., oblong or linear-oblong, green with a bluish waxy gloss; flowers  $\frac{1}{2}$  in., white and green, 2 on each main stalk,  $\frac{1}{4}$ - $\frac{1}{2}$  in., calyx tube white, cylindric, lobes 6, green, much shorter than the tube, anthers 6, inserted above the middle of the tube, nearly sessile, style linear, straight, stigma small, berry round, blue-black, 3-celled, seeds nearly round, 2 in each cell.

**Polygonatum  
verticillatum,  
Whorled Solomon's  
Seal,***Mitha dudia,*  
*shakakal.*

LILIACEÆ.

F. B. I. vi. 321.

Himalaya,

6-11,000 ft.

Simla, Mashobra,

Narkanda (Collett).

Fagu, Kashmir.

like the last species, but larger, leaves arranged round the stem in fours or eights, sometimes curled up at the tip, stem grooved, flowers 2-3 on one stalk. The root is eaten as a food in the Kurram Valley and exported to Kabul and Peshawar.

**Polygonatum  
cirrifolium,**

see Climbing Plants, Opposite, Exstipulate.

**Hemerocallis fulva,**

LILIACEÆ.

F. B. I. vi. 326.

The Himalaya.

large, perennial, rootstock short with fleshy root fibres; leaves 12-24 by 1-1 $\frac{1}{2}$  in., radical, linear, ribbed, waxy bluish-green beneath; flowers 1-2 in. diam., orange yellow in a few branching raceme on a long naked main flower stalk, calyx funnel-shaped, segments 6 in 2 tubes, outer shorter than the inner, outer segments orange yellow, oblong, short-pointed, inner very much broader, recurved, stamens 6 inserted at the mouth of the tube, protruding, style thread-like, bent down; capsule 3-celled, leathery, seeds black, shining, angled. This plant is cultivated throughout India.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Asphodelus tenuifolius**,  
**Asphodel**,  
*Piazi, bokat.*  
 LILIACEÆ.  
 F. B. I. vi. 332.  
 The Plains to  
 7,000 ft.  
 Simla (Collett).  
 Kashmir,  
 Baluchistan  
 (Stocks)..
- small, annual, root fibres slender or fleshy; leaves 6-12 by  $\frac{1}{12}$  in., all radical, linear, slender, half rounded, hollow, long-pointed; flowers  $\frac{1}{4}$  in. long, white, in bracteate racemes on a branched main flower stalk, 6-24 in., calyx 6-lobed, lobes white with a central red brown streak, spreading, petals none, stamens 6, upper portion spindle-shaped, lower surrounding and covering the ovary, style straight, stigma 3-lobed; capsule  $\frac{1}{8}$  in. diam., round, wrinkled, seeds 3, 3-angled. This is a weed of cultivation. The seed is used in Indian medicine as a diuretic.
- Asphodelus comosus**,  
 LILIACEÆ.  
 F. B. I. vi. 332.  
 Lahul.
- like the last species, but much larger, flowers 1-1 $\frac{1}{4}$  in. diam., white, with a green streak, leaves 1 $\frac{1}{2}$  in., broad, thick.
- Eremurus himalaicus**,  
 LILIACEÆ.  
 F. B. I. vi. 332.  
 Himalaya,  
 7-10,000 ft.
- like the last species, but very much larger, leaves 12-36 by  $\frac{1}{2}$ -3 in., main flower stalk 24-36 in., flowers 1 in. diam., white, capsule  $\frac{1}{2}$  in. diam. triangular, the capsule has more seeds, seeds not winged.
- Eremurus persicus**,  
 LILIACEÆ.  
 F. B. I. vi. 333.  
 The Salt Range,  
 Sakesar  
 (Aitchison).  
 Baluchistan  
 (Stocks).
- like the last species, but much smaller, flowers white with a brown central band in each segment, capsule 1 in. broad, seeds broadly 3-winged.
- Allium ascalonicum**,  
**Shallot**,  
*Gandan, gandhana.*  
 LILIACEÆ.  
 F. B. I. vi. 337.  
 The Plains to  
 7,000 ft.  
 Baluchistan  
 (Hughes-Buller).
- small, annual, bulbs coated, strongly scented; leaves basal, narrow, hollow; flowers white, star-shaped, on very short minor stalks forming a head on one main flower stalk, enclosed at first in a spathe, calyx 6-lobed, petals none, stamens 6, inner stamens 2-toothed, style thread-like, stigma minute; capsule small, 3-celled, 3-angled, seeds few, black, flattened. This plant is cultivated as a condiment, is not found wild.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Allium porrum,****Leek,**

LILIACEÆ.

F. B. I. vi. 337.

The Plains to  
9,000 ft.

like the last species, but there is a leafy stem, leaves linear, flat, keeled, longer than the flower stalk, minor flower stalks longer. This plant is only found cultivated.

**Allium Cepa,****Onion,***Piyaz.*

LILIACEÆ.

F. B. I. vi. 337.

The Plains to  
9,000 ft., only found  
cultivated.  
Baluchistan.

like the last species, but bulb large, leaves hollow, rod-shaped, shorter than the swollen main flower stalk, head bearing flowers and small bulbs, stamens protruding, simple or 2-toothed. This plant is widely cultivated as a condiment and a food.

**Allium sativum,****Garlic,***Lahsan.*

LILIACEÆ.

F. B. I. vi. 337.

The Plains, only  
found cultivated.

like the last species, but leaves flat, main flower stalk slender, spathe long-beaked, inner stamens 2-toothed. This plant is widely cultivated as a condiment.

**Allium Semonovii,**

LILIACEÆ.

F. B. I. vi. 338.

Himalaya,  
8-14,000 ft.  
Kashmir.

bulb cylindric, tufted, leaves 2-3, hollow,  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., stout, about equal to the stout main flower stalk, spathes very long, persistent, heads  $1\frac{1}{2}$  in. broad, flowers yellow, bell-shaped, lobes  $\frac{1}{2}$ - $\frac{2}{3}$  in., oblong-lanceolate, long-pointed, stamens included; for other characters see the last species.

**Allium****Schœnoprasum,****Chives,**

LILIACEÆ.

F. B. I. vi. 338.

Himalaya,  
8-11,000 ft.

Kashmir,

Baluchistan (Duke).

like the last species, but bulbs clustered, narrow, leaves 1-2 slender, grooved or rounded above, flowers pink or pale purple, lobes linear or lanceolate, stamens dilated at the base. This plant is only found cultivated and in European gardens.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Allium**  
**atrosanguineum,**  
LILIACEÆ.

F. B. I. vi. 338.  
Kashmir, at Gilgit  
(Janner).

like the last species, but leaves stout, flowers dark red, lobes oblong blunt, stamens short, triangular-awl-shaped, united at the base.

**Allium**  
**Fedschenkoanum,**  
LILIACEÆ.

F. B. I. vi. 338.  
Kashmir at Barzil  
(Clarke).

like the last species, but leaves 3-5 by  $\frac{1}{2}$  in., much shorter than main flower stalk, 24-36 in., flower pale yellow, lobe oblong-lanceolate, long-pointed, stamens very short, inner with a dilated 2-toothed base, outer simpler.

**Allium rubellum,**  
*Jangli piaz, barani*  
*piaz.*  
LILIACEÆ.

F. B. I. vi. 339.  
The Plains to  
1,500-8,000 ft.  
Rawalpindi.  
Kashmir.  
Baluchistan  
(Stocks).

like the last species, but leaves 4-6, thread-like, half rounded or flattened, longer than the main flower stalk, flowers rosy, very small, stamens all simple, united at the very base.

**Allium lilacinum,**  
LILIACEÆ.

F. B. I. vi. 339.  
Himalaya,  
6-7,000 ft.  
Mahasu, Shali  
(Collett).

like the last species, but coats of bulb red-brown, leaves rounded or channelled, flowers larger, pale red, stamens protruding, inner 2-toothed at the very base.

**Allium Stracheyi,**  
LILIACEÆ.

F. B. I. vi. 340.  
Himalaya,  
9,000 ft.  
Kashmir.

slender, bulbs small, clustered, narrowly ovoid, produced into a long neck, leaves 3-4, 12 by  $\frac{1}{12}$  in., narrowly linear, blunt, flowers pale yellow or rosy, lobes oblong, blunt, stamens simple, free, far protruding; for other characters see the last species.

**Allium**  
**consanguineum,**  
LILIACEÆ.

F. B. I. vi. 340.  
Himalaya,  
8-10,000 ft.  
Kashmir.

very like the last species, but larger, flowers golden yellow, bulbs larger, longer with fibrous sheaths.

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

PETALS NONE.

**Allium Thomsoni,**

LILIACEÆ.

F. B. I. vi. 340.

Kashmir,  
12,000 ft.

like the last species, but bulbs tufted, leaves 4-5, 6-9 by  $\frac{1}{8}$ - $\frac{1}{3}$  in., rather stout, sheathing the lower third of the stout rounded main flower stalk, 12-24 in. long, heads rather larger, flowers red-purple, calyx lobes oblong-lanceolate, short-pointed.

**Allium Wallichii,**

LILIACEÆ.

F. B. I. vi. 341.

Himalaya,  
8-13,000 ft.  
Hattu (Collett).

large, bulbs hardly developed, clustered, stem base thickened, leaves basal, 24-36 by  $\frac{1}{3}$ - $\frac{2}{3}$  in., linear or sword-blade-shaped, flat, longer than the stout angled main flower stalk, short-pointed, flowers 1 in. diam., purple, star-shaped, flower head 2-3 in. diam., calyx lobes linear,  $\frac{1}{2}$  in., blunt, reflexed, capsule top-shaped; for other characters see the last species.

**Allium victorialis,**

LILIACEÆ.

F. B. I. vi. 342.

Himalaya,  
7-13,000 ft.  
Kashmir.

small, bulbs 2-3 in. long, clustered on an oblique root-stock, nearly conical or cylindrical, stem leafy; leaves 6-10 by 1-3 $\frac{1}{2}$  in. from below the middle of the main flower stalk, stalked, oblong-lanceolate, blunt, or short-pointed, shorter than the flower stalk, narrowed into the leaf stalk, waxy bluish-green, main flower stalk round below, angled above; flower  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., greenish-white or yellowish, star-shaped, head 1-1 $\frac{1}{2}$  in. diam., calyx lobes  $\frac{1}{4}$ - $\frac{1}{3}$  in., spreading, reflexed, oblong, stamens simple, longer than the sepals; capsule  $\frac{1}{4}$  in. diam., broader at the top.

**Allium Govanianum,**

LILIACEÆ.

F. B. I. vi. 344.

Himalaya,  
8-12,000 ft.  
The Chor (Collett).  
Marali.

medium size, bulbs 1-4 in., clustered on an oblique jointed rootstock, nearly cylindrical or conical, leaves 6-24 by  $\frac{1}{10}$ - $\frac{1}{3}$  in., basal, very narrowly linear, flattish, keeled, blunt, about the same length as the main flower stalk, which is acutely angled, flowers white,  $\frac{2}{3}$  in. diam., heads 2-3 in. diam., lesser flower stalks 1-1 $\frac{1}{2}$  in., calyx lobes  $\frac{1}{2}$  in. long, narrow, stamens shorter than the calyx lobes; for other characters see the last species.

**Allium Clarkei,**

LILIACEÆ.

F. B. I. vi. 344.

Kashmir.  
7-11,000 ft.  
Skardo (Clarke).

small, bulb 1 in. diam., ovoid, leaves 4-8, length 6-12 by  $\frac{1}{10}$ - $\frac{1}{8}$  in., very narrowly linear or thread-like, shorter than the slender main flower stalk, blunt, flat, flowers white, small,  $\frac{1}{3}$  in. diam., heads 1-1 $\frac{1}{2}$  in. diam., minor flowers stalks  $\frac{1}{2}$ - $\frac{2}{3}$  in., calyx lobes  $\frac{1}{4}$  in., long-pointed, stamens shorter than the calyx lobes, capsule  $\frac{1}{6}$  in. broad at the top; for other characters see the last species.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Allium atropurpureum**,  
LILIACEÆ.  
F. B. I. vi. 344.  
Himalaya,  
8-10,000 ft.  
Kashmir,  
(Falconer).

medium size, bulb nearly ovoid, not on a rootstock; leaves 2-4, length 12-24 by  $\frac{1}{10}$ - $\frac{1}{8}$  in., narrowly linear-oblong or lanceolate, shorter than the tall erect cylindrical hollow main flower stalk; leaves rose-purple, stellate, heads 2-2 $\frac{1}{2}$  in. diam., minor flower stalks  $\frac{1}{2}$ -1 in., calyx lobes linear-oblong, stamens about equal in length to the calyx lobes; capsules round.

**Dipcadi montanum**,  
LILIACEÆ.  
F. B. I. vi. 346.  
The Plains, Delhi  
(Vicary).

small, bulb small; leaves 4-6 in., rather fleshy, thread-like, deeply grooved above; flowers  $\frac{3}{4}$  in., white or greenish, in a 6-12-flowered raceme on a round main flower stalk 6-9 in., minor flower stalks  $\frac{1}{3}$ - $\frac{1}{2}$  in., bracts lanceolate, long-pointed, about equal to the minor flower stalks, calyx lobes 6, in 2 series, forming a tubular bell-shaped flower, strap-shaped, glandular at the tips, stamens 6, included; capsule  $\frac{1}{2}$  in. diam., short, broad, many-seeded, seeds  $\frac{1}{6}$  in., oblong with rounded ends, flat.

**Dipcadi serotinum**,  
LILIACEÆ.  
F. B. I. vi. 346.  
The Salt Range.  
Tilla.

like the last species, but leaves 6-18 in., flowers brown, smaller, bracts equal to or longer than the minor flower stalks, capsule sessile, leaves usually longer.

**Dipcadi hydysuricum**,  
LILIACEÆ.  
F. B. I. vi. 347.  
The Plains,  
Ludhiana  
(Edgeworth).  
Simla below  
5,000 ft.  
(Collett).

like the last species, but leaves much shorter, 4-6 in., bracts much shorter than the minor flower stalks, flowers with green tube and pale pink lobes.

**Urginea indica**,  
**Indian Squill**,  
*Kanda, phaphor*.  
LILIACEÆ.  
F. B. I. vi. 347.  
Himalaya,  
below 5,000 ft.  
Simla, Subathu  
(Collett).  
The Salt Range.

bulb more than  $\frac{1}{2}$  in., bitter; leaves radical 6-18 by  $\frac{1}{2}$ -1 in., linear, nearly in 2 rows; flowers appearing before the leaves,  $\frac{1}{3}$  in. long, white with green lines, drooping or spreading, bell-shaped, in a terminal raceme, 6-12 in. long, on a main stalk 12-18 in., lesser stalks of raceme 1-1 $\frac{1}{2}$  in. long, slender, sepals 6, white with 3 green ribs in the centre, tip rounded, petals none, stamens 6, shorter than the sepals; capsule  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, oblong, 3-valved, seeds many, flat, black. The bulb is much used in Indian medicine and also as a substitute for European squill.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Scilla Hohenackeri,**

LILIACEÆ.

F. B. I. vi. 349.

The Plains, west of the Jhelum, Hasan Abdal (Aitchison).

small, bulb  $\frac{1}{2}$ -1 in. diam., ovoid; leaves 4 to 6, 8-12 by  $\frac{1}{6}$ - $\frac{1}{4}$  in., linear; flowers blue,  $\frac{3}{4}$  in. diam., in few or many flowered racemes on a main flower stalk, 4-8 in., sepals 6, linear, recurved, blunt, petals none, stamens 6, anthers blue; capsule round, 3-lobed, 3-celled, seed 3-6, nearly round, black.

**Lilium giganteum,**

LILIACEÆ.

F. B. I. vi. 349.

Himalaya, 7-9,000 ft. Narkanda (Collett). Bahli.

large, bulb 3-4 in. diam., tufted, stem 6-12 ft. high, hollow, 2 in. diam. at the base, stem leaves alternate; leaves 12-18 in. long and broad, stalks of lower leaves 9-12 in., broadly heart-shaped; flowers 5-7 in. long, white, tube purplish within, very fragrant in racemes, 1-2 ft., bracts large, calyx lobes 6, lanceolate with a broad rounded and recurved tip, petals none, stamens 6, anthers  $\frac{1}{2}$  in., yellow; capsule 2-3 in., obtusely angled, seeds  $\frac{1}{4}$ - $\frac{1}{3}$  in. broad, very thin.

**Lilium nepalense,**

LILIACEÆ.

F. B. I. vi. 350.

Himalaya, 7-8,000 ft.

medium size to large, stem 2-3 ft., slender, stem leaves alternate, leaves 3-4 by  $\frac{1}{2}$ - $1\frac{1}{2}$  in., lanceolate, flowers 4-5 in., orange yellow, broadly funnel-shaped, solitary or few in a raceme or in umbel-like clusters, drooping, fragrant, calyx tube greenish outside with a stout rounded keel, calyx lobes 6, orange yellow with purple dots on the lower half of the recurved portion within, outer lobe lanceolate with broad tip, inner much broader, tips rounded, stamens 6, red, anthers 1 in., yellow, style protruding; for other characters see the last species.

**Lilium polyphyllum,**

LILIACEÆ.

F. B. I. vi. 351.

Himalaya, 6-12,000 ft. Kashmir. Simla (Collett).

bulb narrow, stem 3-4 ft., slender, leaves 4-5 in., linear or lanceolate with a broader tip, flowers 2 in. diam., dull-greenish or yellowish outside, white inside with long purple streaks, broadly funnel-shaped in a raceme on the naked top of the stem, 4-10-flowered, calyx lobes 6, lanceolate,  $\frac{3}{4}$  in. broad, revolute from the middle, stamens 6, protruding, anthers  $\frac{1}{2}$  in. long, capsule 1- $1\frac{1}{4}$ ; for other characters see the last species.

**Lilium****Thomsonianum,**

LILIACEÆ.

F. B. I. vi. 352.

Himalaya, 5-7,000 ft. Simla (Collett). Kashmir.

bulb 2- $2\frac{1}{2}$  in., stems 1-3 ft., very stout, stem leaves alternate, leaves 2-8 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., narrow, thin, sessile, narrowed to a fine point, flowers 1 $\frac{1}{2}$ -2 in. long, pale-pink, many in a terminal raceme, 4-8 in. long, minor flower stalks  $\frac{1}{4}$ - $\frac{1}{2}$  in., calyx lobes 6, tips rounded, recurved, capsule  $\frac{1}{2}$ - $\frac{3}{4}$  in.; for other characters see the last species.



## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Fritillaria Roylei,**

LILIACEÆ.

F. B. I. vi. 353.

Himalaya,

8-12,000 ft.

Hattu (Collett).

Marali.

bulb depressed, scales thin, stems 1-2 ft., naked below; leaves 3-6 in a whorl or upper opposite, 2-5 by  $\frac{1}{8}$ - $\frac{1}{2}$  in., linear-lanceolate, tips of upper leaves often linear and hooked; flowers 1-1 $\frac{1}{2}$  in., bell-shaped, yellow-green chequered with purple, nodding, terminal, solitary or 2-4 in a short raceme, calyx lobes 6, each with a sticky gland at the base, tips rounded and not recurved, stamens 6, anthers linear-oblong, style straight, thick, divided into 3 points; capsule  $\frac{1}{2}$ - $\frac{3}{4}$  in., ovoid with a broad tip, 6-angled, 3-valved, seeds many, small, flattened, minutely winged.

**Fritillaria imperialis,****Crown Imperial,**

LILIACEÆ.

F. B. I. vi. 353.

Himalaya,

7-9,000 ft.

Kashmir.

like the last species, but bulb larger, stem longer, leaves more crowded, all opposite, flowers larger, in umbels, yellow or brick-red, capsule almost 6-winged.

**Lloydia serotina,**  
**Mountain Lloydia,**

LILIACEÆ.

F. B. I. vi. 354.

Himalaya,

12-15,000 ft.

Kashmir.

Hattu (Collett).

Marali.

small, bulb  $\frac{1}{2}$ -1 in., slender, stem 3-6 in., with 1-2 small leaves; leaves 2-8 in., thread-like; flowers  $\frac{1}{3}$ - $\frac{2}{3}$  in. long, white with violet veins, few or solitary, calyx funnel-shaped, lobes 6,  $\frac{1}{3}$ - $\frac{2}{3}$  in., distinct, ultimately spreading, tips rounded, petals none, stamens 6, style thick, straight, tip 3-lobed; capsule  $\frac{1}{4}$ - $\frac{1}{3}$  in., nearly round, 3-valved, seeds many, small, flattened.

**Tulipa chrysantha,**

LILIACEÆ.

F. B. I. vi. 355.

The Plains.

The Salt Range.

Baluchistan

(Stocks).

small, bulb  $\frac{3}{4}$ -1 in. diam., stem 3-4 in.; leaves 4-5, lower 4-6 in., lanceolate, margins wavy, channelled, upper narrower; flowers 1-1 $\frac{1}{2}$  in. long, yellow within, reddish-brown without, on a main flower stalk, 1 to 3 flowers, calyx bell-shaped, 2 rows of sepals, outer oblong, long-pointed, inner ovate with a blunt or abruptly pointed tip, stamens 6, stigmas 3, nearly sessile. The bulbs are eaten in Baluchistan and at Peshawar.

**Tulipa stellata,***Bhumphor, jal**kukar, shandaigul.*

LILIACEÆ.

F. B. I. vi. 355.

Himalaya,

5-8,000 ft.

Simla (Collett).

like the last species, but leaves shorter, margins not wavy, flowers larger, white within, base yellow, rosy or greenish without.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Colchicum luteum,**

*Suringan,*  
*harantutiya.*

LILIACEÆ.

F. B. I. vi. 356.

Himalaya,  
4-7,000 ft.  
Campbellpore,  
Abbottabad,  
The Gallis,  
Kashmir, Chamba.

solid coated bulb, ovoid, coats brown; leaves 6-12 by  $\frac{1}{3}$ - $\frac{1}{2}$  in., few, strap-shaped, short at the flowering time, longer at the fruiting; flowers 1-1 $\frac{1}{2}$  in. diam., golden-yellow, tube 3-4 in. long, 1-3 flowers on a very short main flower stalk, calyx funnel-shaped, tube very long and slender, lobes 6, nearly equal, nearly erect, oblong, blunt, stamens 6, shorter than the lobes, anthers yellow, style thread-like, much longer than the lobes; capsule 1-1 $\frac{1}{2}$  in., valves with long recurved beaks. This plant has the same properties as European *Colchicum*, and is used in Indian medicine.

**Merendera persica,**

LILIACEÆ.

F. B. I. vi. 357.

The Salt Range,  
Baluchistan (Lace).

solid coated bulb, long-necked, coats bright red-brown; leaves 1-2 in. in the flowering time, 6-8 in. in the fruiting, dark green, linear, short-pointed; flowers 1 $\frac{1}{2}$ -2 in., pale lilac, 1 to 4 flowers on a short main flower stalk, calyx funnel-shaped, lobes with long slender stalks forming a tube, stamens 6, styles 3; capsule and seeds like those of *Colchicum luteum*. The root is probably sold as *Colchicum* in the bazaar.

**Iphigenia indica,**

LILIACEÆ.

F. B. I. vi. 357.

The Plains to  
7,000 ft.  
Simla, Mahasu  
(Collett).

bulb  $\frac{1}{2}$  in. diam., round, neck 1-2 in., sheaths brown, stem 3-10 in., erect, leafy; leaves few, 6-8 by  $\frac{1}{8}$ - $\frac{1}{2}$  in., upper smaller, linear; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, purplish, on minor flower stalks, 1-2 in., calyx star-shaped, lobes 6, equal, linear-awl-shaped, spreading; reflexed, stamens 6; capsule  $\frac{1}{4}$ - $\frac{3}{4}$  in., oblong, 3-grooved, seeds many, round.

**Trillium****Govanianum,**

LILIACEÆ.

F. B. I. vi. 361.

Himalaya,  
8-10,000 ft.  
Kashmir,  
Narkanda, Hattu  
(Collett).

small, smooth, rootstock creeping, short, thick, ringed, stem 6-10 in., erect; leaves in a whorl at the top of the stem with a flower in the centre, 1 $\frac{1}{2}$ -4 $\frac{1}{2}$  by 1 $\frac{1}{4}$ -4 in., broadly ovate; flower 2 in., dark purple, calyx persistent, lobes 6, distinct, narrowly lanceolate, spreading in flower, reflexed in fruit, stamens 6, style purple, divided into 3 arms to the base; berry  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., long linear round, fleshy, seeds many, ovoid.

**Paris polyphylla,**

LILIACEÆ.

F. B. I. vi. 362.

Himalaya,  
6-10,000 ft.  
Simla (Collett).

small to large, rootstock ringed, thick, creeping, stem 12-18 in., erect; leaves 4-9, 3-6 in., lanceolate, shortly stalked, long-pointed, arranged in a whorl at the top of the stem with a solitary stalked flower in the centre, calyx persistent, lobes 8-12, in 2 series, outer green, leaf-like, 1-4 in., inner yellow or yellow-green, usually shorter

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

PETALS NONE.

than the outer, sometimes longer, stamens 8-12, style divided almost to the base into 4-5 erect short arms with curved tips ; capsule 1 in. diam., yellow-brown, 4-5-valved, seeds many, ovoid, scarlet.

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

**Callianthemum  
cachemirianum,**  
RANUNCULACEÆ.  
F. B. I. i. 14.  
Himalaya,  
9-13,000 ft.  
Kashmir.

small, perennial, stemless, densely tufted, smooth, with waxy bluish-green gloss, root fibrous ; leaves all radical, pinnately divided into deeply cut rounded segments, long-stalked ; flowers 1-1½ in. diam., white, on one-flowered stalks, 2-4 in., shorter than the leaves, sepals 5, soon falling off, broadly rounded, petals 8-12, 3 times larger than the sepals, a pit at the base, oblong-wedge-shaped, broadly notched, stamens many ; fruits few, large ovoid ; achenes tipped by the short style.

**Trollius acaulis,**  
RANUNCULACEÆ.  
F. B. I. i. 22.  
Himalaya,  
11-13,000 ft.  
Kashmir.

small, perennial, rootstock stout, fibres thick, stem 3-6 in., longer in fruit ; base clothed with thick fibres, leafy above the middle ; leaves radical, long-stalked, deeply palmately divided, lobes oblong-lanceolate, stem leaves 1 to 3, similar, base of stalk sheathing ; flowers 2 in. diam., solitary, sepals 6-8, broad, oval, blunt or entire, spreading, petals 12-16, blade oblong, stamens very many ; carpels many, 1 inch long when ripe, thin, wrinkled, style persistent.

**Isopyrum  
thalioides,**  
RANUNCULACEÆ.  
F. B. I. i. 23.  
Himalaya,  
Lahul.

small, perennial, rootstock horizontal, fibrous or scaly, stem 4-8 in., slender ; leaves radical, much divided, segments 2-3-lobed, wedge-shaped at the base, thin, stem leaves alternate, 3-lobed ; flowers ½ in. diam., white, in few-flowered terminal branching racemes, sepals 5-6, oval, blunt, petals 5, very small, with a thread-like stalk, hooded, stamens 10 or more ; follicles 2-4, oval, beaked by the style.

**Corydalis rutæfolia,**  
FUMARIACEÆ.  
F. B. I. i. 122.  
Himalaya,  
6-10,000 ft.  
Simla (Collett).  
Murree (Douie).

small, perennial, rootstock slender, stem 3-8 in. ; leaves 2 or 3, pinnately divided, segments with 3 leaflets, nearly sessile ; flowers ¾-1 in., bright purple, tips dark, in 6-12 flowered racemes, bracts oblong or lanceolate, leaf-like, sepals 2, small, scale-like, petals 4, outer petals dissimilar, upper one broad, concave, produced at the base into a hollow spur about half as long as the petal, spur blunt, lower one flat, narrow, inner petals narrow, keeled, their

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

crested tips united over the stigma, stamens 6, united in 2 sets of 3, lower set spurred at the base, the spur inside the petal spur; capsule  $\frac{1}{3}$  in., ovate, oblong, seeds small, black.

**Corydalis**  
**cachemiriana,**

FUMARIACEÆ.  
F. B. I. i. 123.  
Himalaya,  
9-12,000 ft.  
Kashmir.

like the last species, but a bulb, small and scaly, instead of a rootstock, radical leaves long-stalked, palmately divided into 3-5 lobes, flowers bright blue, capsule linear-oblong, pendulous.

**Corydalis Govaniana,**  
*Butkis.*

FUMARIACEÆ.  
F. B. I. i. 124.  
Himalaya,  
8-12,000 ft.  
Hattu (Collett).

like the last species, but with a thick rootstock, crowned with withered leaf sheaths, leaves 2-pinnate, leaflets wedge-shaped, deeply lobed, bracts deeply lobed, flowers bright yellow. This plant is used in Indian medicine as a tonic.

**Corydalis**  
**Moorcroftiana,**

FUMARIACEÆ.  
F. B. I. i. 125.  
Himalaya,  
10-17,000 ft.

like the last species, but root spindle-shaped, flowers yellow with purple tips, leaves much divided.

**Corydalis**  
**Gortschakovii**

FUMARIACEÆ.  
F. B. I. i. 125.  
Kashmir,  
10-17,000 ft.

like the last species, but much larger, flowers larger.

**Arabis taraxicifolia,**

CRUCIFERÆ.  
F. B. I. i. 136.  
The Plains, west of  
the Indus.  
Peshawar  
(Stewart).

small, annual, hairy, stems 6-9 in., many, spreading, almost leafless, weak; radical leaves many, long-stalked, pinnately divided, terminal lobe large, rounded, entire, rarely toothed, lateral short, narrow, stalk 2-3 in., stem leaves few, alternate, sessile, oblong-lanceolate; flowers  $\frac{1}{2}$  in. diam., white or pale pink, in loose racemes, sepals velvety or smooth, petals  $\frac{1}{5}$  in., stamens 6, pods  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. linear, flattened, smooth, valves thin, veinless, style long, short-pointed, seeds in one series.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Sisymbrium Wallichii**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Sisymbrium Irio**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Raphanus sativus**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Saxifraga odontophylla**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Saxifraga sibirica**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Androsace rotundifolia**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

## PETALS UNITED.

- Adoxa Moschatellina**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Valeriana officinalis**, large, perennial, rootstock short, hardly thicker than the stem, bearing runners, stems 12-36 in. high, nodes minutely hairy; leaves pinnately divided, lobes narrowly oblong or linear, sometimes toothed, leaves often long-stalked; flowers white or pink, in large loose flat-topped branching racemes, bracts  $\frac{1}{2}$  in., oblong-linear, persistent, calyx lobes obscure in flower, forming in fruit 5-15 feathery bristles joined below into a short wide funnel-shaped tube, corolla tube funnel-shaped, lobes 5, spreading, stamens 3; fruit oblong-lanceolate, not hairy, flattened, 5-ribbed, 1-celled, 1-seeded, crowned by the persistent bristly feathered calyx. The root *asarun* is exported as a medicine and a perfume.

**Valerian**,  
VALERIANACEÆ.  
F. B. I. iii. 211.  
Kashmir,  
8-9,000 ft.  
Sonamerg.

**Valeriana Jæsehkei**, like the last species, but small, only 6-9 in. high, flower clusters only 1 in. diam., flowers small, radical leaves many at flowering time.

**Valerianaceæ**.  
F. B. I. iii. 212.  
Himalaya,  
Lahul.

**Valeriana Stracheyi**, slender, velvety, rootstock woody, very stout, stem 6-12 in. high, radical leaves none at flowering time, pinnately divided but with a large rhomboid terminal lobe, flower cluster dividing into straight slender spikes, fruit covered with soft scattered hairs; for other characters see the last species.

**Valerianaceæ**.  
F. B. I. iii. 212.  
Himalaya,  
4-8,000.  
Kashmir.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS.

## ALL TUBULAR.

- Tanacetum senecionis,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Tanacetum Falconeri,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Tanacetum longifolium,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Emilia sonchifolia,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Saussurea taraxicifolia,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Saussurea Kunthiana,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Saussurea Falconeri,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Saussurea candicans,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Saussurea hypoleuca,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Saussurea Lappa,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Jurinea ceratocarpa,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Jurinea macrocephala,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.
- Serratula pallida,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.

## INNER TUBULAR, OUTER LIGULATE.

- Centaurea Cyanus,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Centaurea depressa,** see Herbs, Erect, Alternate, Exstipulate, Lobed.

HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS.

INNER TUBULAR, OUTER LIGULATE.

**Gerbera lanuginosa,***Kapasi, sung.*

COMPOSITÆ.

F. B. I. iii. 390.

Himalaya,

4-8,000 ft.

Simla (Collett).

Murree.

Kashmir.

small, perennial, silky woolly; leaves radical  $2\frac{1}{2}$ -6 by  $\frac{3}{4}$ -3 in., ovate or lanceolate with a broad tip, lobulate towards the base, or pinnately divided with a large end lobe, smooth, shining above, densely cottony below; flowers white, in solitary heads on long leafless stalks, 4-12 in. long, bracts of heads many, erect, inner slightly longer than the pappus, outer shorter, floor of head flat, naked, pappus abundant, white, barbed, corolla tube slender, 2-lipped, inner 3-4-toothed, outer 3-toothed, anther bases divided, long-tailed, style-arms blunt; achenes rough, flattened, ribbed, narrowed at the tip. The white felt on the back of the leaves is used for tinder, to stop bleeding, also for weaving into a coarse cloth.

**Gerbera Kunzeana,**

COMPOSITÆ.

F. B. I. iii. 390.

Himalaya,

7-12,000 ft.

Hattu (Collett).

Kashmir.

like the last species, but with thread-like bracts on the flower stalks, pappus chestnut-brown.

ALL LIGULATE.

**Crepis sibirica,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Crepis tenuifolia,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Crepis Stoliczkaei,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Pterotheca****Falconeri,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Taraxacum,****officinale,****Dandelion,***Dudal, kanphul, shamukei.*

COMPOSITÆ.

F. B. I. iii. 401.

Himalaya,

1-18,000 ft.

Simla (Collett).

Mashobra, Mahasu.

small, perennial, juice milky, root woody, upright; leaves all radical, 2-8 in., narrowly oblong, pinnately divided, lobes linear or triangular, pointing back, sessile; flowers yellow, in smooth solitary heads on a leafless hollow stalk, 2-8 in. long, bracts of the head, inner linear, erect, almost equal, margins often white, tips usually thickened or hooked, outer short, ovate, erect or recurved, floor of head flat, naked, pappus abundant, white, soft, not feathery, ligules long, spreading, 3-5-toothed, often brown on the back, style-arms long; achenes smooth, flattened, ribbed, narrowed to the base, minutely spiny above the

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS.

## ALL LIGULATE.

middle, contracted into a long slender beak tipped with the pappus. The root is used in medicine.

**Taraxacum Wattei,**

COMPOSITÆ.

F. B. I. iii. 402.

Himalaya,

10-13,000 ft.

Shali Peak near

Simla (Collett).

Pangi in Sutlej

Valley (Watt).

very like the last species, but larger, head woolly, achenes white, beak stout, short, ribbed acutely.

**Lactuca Scariola,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca undulata,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca rapunculoides,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca sagittarioides,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Launea secunda,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

## FLOWERS NOT IN HEADS.

**Androsace rotundifolia,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Cortusa Matthioli,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

## PETALS UNITED.

**Mazus sureulosus,**

see Prostrate Herbs, Opposite, Exstipulate, Lobed.

**Pedicularis pectinata,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Pedicularis tenuirostris,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.



## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Pedicularis porrecta,**

see Herbs, Alternate, Exstipulate, Lobed.

**Pedicularis  
brevifolia,**

SCROPHULARIACEÆ.

F. B. I. iv. 307.

Himalaya,  
13-16,000 ft.  
Kashmir.

small, perennial, velvety or woolly, rootstock stout, stem stout; leaves less than 1 in., stem leaves sessile, oblong, pinnately divided, lobes short, toothed; flowers  $\frac{3}{4}$  in. long, in few-flowered spikes 1-1 $\frac{1}{2}$  in. broad, top-rounded nearly in the shape of heads, calyx lobes blunt, minutely round-toothed, corolla 2-lipped, tube  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, cylindric, twice as long as the calyx, upper lip sickle-shaped, erect, then swollen with a long straight curved beak, longer than the lower lip, lower lip with 3 spreading lobes, stamens 4, in unequal pairs, anthers under the upper lip, meeting in pairs, style slender, stigma nearly round; capsule  $\frac{1}{2}$  in., oblong, nearly straight, short-pointed, seeds  $\frac{1}{17}$  in. long, pale, finely streaked and dotted.

**Pedicularis  
verticillata,**

SCROPHULARIACEÆ.

F. B. I. iv. 309.

Himalaya,  
11-14,000 ft.  
Lahul (Jaeschke).

small, slightly hairy, rootstock rather slender, radical leaves 2-3 in., stalked, stem leaves few, shorter, in circles, sessile or nearly sessile, oblong or linear-oblong, pinnately divided, lobes rather distant, ovate, divided and minutely round-toothed, flowers  $\frac{3}{4}$  in. long, pink purple, in spikes 1-3 by 1 $\frac{1}{2}$  in., lower circle of flowers distant with leafy bracts, upper closer together, bracts usually longer than the calyx, pinnately divided or round-toothed, calyx  $\frac{1}{4}$  in., lobes broad, very short, corolla tube broad, twice as long as the calyx, upper lip small, nearly straight, abruptly ended, much smaller than the lower lip, lower lip  $\frac{1}{2}$ - $\frac{2}{3}$  in. diam., capsule  $\frac{1}{2}$  in., oblong-lanceolate, straight-long-pointed, twice the length of the calyx, seeds  $\frac{1}{18}$  in.; for other characters see the last species.

**Pedicularis  
pycnantha,**

SCROPHULARIACEÆ.

F. B. I. iv. 310.

Himalaya,  
6-7,000 ft.  
Lahul, Hazara,  
Baluchistan.

small, stout or slender, smooth or slightly hairy, rootstock stout with fleshy tuberous root fibres, crowned with membranous sheaths, stems several, radical leaves 4-6 by 1-1 $\frac{1}{2}$  in., many, lobes irregularly cut or toothed, stalks 1-2 in., stem leaves shortly stalked, all lanceolate or ovate-lanceolate, pinnately divided, lobes linear, bent back, flowers  $\frac{3}{4}$  in. long, bracts lanceolate, long-pointed, longer than the calyx, calyx lobes awl-shaped, corolla tube longer than the calyx, upper lip linear, straight, rather longer than the lower lip, rounded, capsule oblong, shorter than the calyx, short-pointed, seeds  $\frac{1}{8}$  in., large; for other characters see the last species.

**Pedicularis  
megalantha,**

see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Pedicularis bicornuta**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Pedicularis siphonantha**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 313.  
Himalaya,  
11-16,000 ft.  
small, slightly velvety or hairy, stems many, slender, leafy, leaves 2-6 by  $\frac{1}{4}$ - $1\frac{1}{4}$  in., stalked, linear-oblong, pinnately divided, lobes many, short, minutely round-toothed, flowers up to 2 in. long, rose-pink, axillary and in terminal racemes or heads, calyx  $\frac{1}{3}$ - $\frac{1}{2}$  in., lobes crested, corolla tube very slender, 3-6 times as long as the calyx, upper lip a slender ringed horn, gradually narrowed from the base to the tip, lower lip broadly 3-lobed, capsule  $\frac{1}{2}$ - $\frac{1}{3}$  in. long, broadly oblong, longer than the calyx; for other characters see the last described species. This plant is said to be used locally as a medicine.

**Pedicularis rhinanthoides**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Pedicularis tubiflora**, see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Pedicularis fissa**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 316.  
North Kashmir,  
Dras, 10-11,000 ft.  
(Henderson).  
stem stout, leafy, radical leaves 4-5 in., stalked, lanceolate, twice pinnately divided, lobes small, tough, toothed, flowers 1 in. long, pink, in dense-flowered woolly spikes, 2 in. long, lower bracts pinnately divided, middle ones divided into three, lobes lanceolate, round-toothed, longer than the calyx, calyx  $\frac{1}{2}$  in., swollen, woolly, teeth lanceolate, corolla quite smooth, corolla tube longer than the calyx, upper lip linear-oblong, sickle-shaped, swollen in the middle, incurved, shortly divided into two, hardly beaked,  $\frac{2}{3}$  in. long, lower lip shorter, broadly 3-lobed; for other characters see the last described species.

**Pedicularis versicolor**,  
SCROPHULARIACEÆ.  
F. B. I. iv. 316.  
Himalaya,  
9-13,000 ft.  
Kashmir.  
small, hairy above, stem solitary, stout with 1 to 2 leaves, leaves  $1\frac{1}{2}$ - $2\frac{1}{2}$  by  $\frac{1}{4}$ - $\frac{1}{3}$  in., stalk stout or slender, shorter than the blade, linear, divided pinnately, lobes short, oblong, blunt, round-toothed, flowers 1- $1\frac{1}{2}$  in. long, yellow, with the upper lip often pink or red, in racemes 1- $2\frac{1}{2}$  in. long, bracts pinnately divided, often longer than the calyx, calyx  $\frac{1}{3}$  in. long, lobes entire or toothed, corolla tube twice the length of the calyx, upper lip  $\frac{1}{3}$  in., erect, linear-oblong, slightly incurved, flattened, tip rounded, longer than the lower, lower  $\frac{1}{4}$ - $\frac{1}{2}$  in. broad, 3-lobed; for other characters see the last species.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Eremostachys  
superba,**

LABIATÆ.

F. B. I. iv. 695.

Peshawar

(Vicary).

Baluchistan.

large, stem straight, base  $\frac{3}{4}$  in. diam., softly hairy; radical leaves 8-12 in., ovate, pinnately divided, lobes cut into lobules, broad, blunt, stalk hairy, stem leaves few, ovate, small, sessile, pinnately divided; flowers 1 in., white, in dense-flowered circles on a stout woolly spike, floral leaves erect, concave, covering the flowers, soon falling off, calyx  $\frac{3}{4}$  in., nearly bell-shaped, woolly, mouth shortly broadly 5-lobed, corolla tube within the calyx, upper lip erect, hooded, bearded within, lower lip broad, 3-lobed, mid-lobe largest, stamens 4, ascending, anthers meeting, upper pair of stamens fringed at the base; nutlets 4, ovoid, with the top larger, 3-angled, top densely hairy, one-seeded.

**Eremostachys  
Vicaryi,***Gurgunna,  
rewandchini.*

LABIATÆ.

F. B. I. iv. 695.

Peshawar,

Salt Range,

Jhelum,

Baluchistan.

like the last species, but with stem and leaves larger, spikes longer, calyx and corolla smaller, calyx fully bell-shaped, scurfy, calyx teeth rounded. The seeds are used as a cooling medicine.

**Eremostachys  
acanthocalyx,**

LABIATÆ.

F. B. I. iv. 695.

Peshawar,

Baluchistan.

like the last species, but with linear-lanceolate spiny bracts, teeth of calyx also spiny.

## PETALS NONE.

**Anemone biflora,**

RANUNCULACEÆ.

F. B. I. i. 7.

Kashmir,

4-6,000 ft.

small, perennial, rootstock tuberous; radical leaves long-stalked, divided into 3 lobes, lobes nearly round or wedge-shaped, floral leaves sessile, lobed to the middle; flowers dull-red, small, 1 to 3 on a slender, smooth, main stalk 2-8 in. long, sepals 5-8, petal-like, no petals, stamens many; fruit a head of sessile achenes with short styles imbedded in wool.

**Anemone rupicola,**

RANUNCULACEÆ.

F. B. I. i. 8.

Himalaya,

12-15,000 ft.

Kashmir.

like the last species, but rootstock long, slender, woody, lobes more or less stalked, sharply toothed or cut, flowers large, achenes in an oval head.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS NONE.

- Anemone vitifolia**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Anemone Falconeri**, like the last described species, but rootstock short, stout, floral leaves oblong, small, entire or bluntly 3-lobed, united, flowers white, solitary, achenes oblong, not imbedded in wool.  
 RANUNCULACEÆ.  
 F. B. I. i. 8.  
 Himalaya,  
 Kashmir.
- Anemone obtusiloba**, like the last species, but rootstock clothed with old leaf sheaths, leaf lobes broad-sessile, floral leaves un-united, flowers white, purplish or golden. The root and seeds are used as a domestic medicine, the juice of the root acts as a blister, the seeds cause vomiting and purging.  
 RANUNCULACEÆ.  
 F. B. I. i. 8.  
 Himalaya,  
 8-15,000 ft.  
 Fagu, Hattu  
 (Collett).
- Anemone rupestris**, very like the last species, but more slender, less hairy, lobes narrower, flowers golden-yellow.  
 RANUNCULACEÆ.  
 F. B. I. i. 9.  
 Himalaya,  
 10-15,000 ft.  
 Kashmir.
- Anemone polyanthes**, large, densely silky, rootstock stout, woody, leaves 5-7-lobed, 2-4 in. across, floral leaves 1-2 in., flowers 1-1½ in. diam., white, in many-flowered simple and compound umbels on main stalks, achenes broadly oval with a sharp short beak.  
 RANUNCULACEÆ.  
 F. B. I. i. 9.  
 Himalaya,  
 10-12,000 ft.  
 Hattu (Collett).  
 Marali.
- Anemone narcissiflora**, very like the last species, but generally smaller in height of stem, size of leaves and flowers, umbels simple, achenes nearly round with an incurved beak.  
 RANUNCULACEÆ.  
 F. B. I. i. 10.  
 Kashmir.
- Anemone tetrasepala**, very like *Anemone polyanthes*, but with 4 sepals, achenes with a hooked, not a straight beak.  
 RANUNCULACEÆ.  
 F. B. I. i. 10.  
 Himalaya,  
 8-11,000 ft.  
 Murree, Kashmir.  
 Changlagalli  
 (Douie).

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS NONE.

**Caltha palustris**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Amorphophallus  
campanulatus**

*Jangli-saran.*

ARACEÆ OR

AROIDEÆ.

F. B. I. vi. 513.

The Plains.

large, perennial, root tuberous, 8-10 in. diam.; leaves 1 to 2, 12-36 in. broad, 3-lobed, lobes pinnately divided, lobules oblong, short-pointed, leaf stalk dark green with pale patches; flowers male and female contiguous on a very stout spadix (rod) in a spathe (sheath) 6-9 in. across, orbicular, obovate, leathery or fleshy, green, usually with white spots, greenish-purple above, rough, dark purple within, towards the base, spadix very stout, exerted or included, dirty red and yellow with fetid smell, anthers 2-4, sessile, oblong, and ovaries globose or obovoid, style short or long, stigma entire or 2-4-lobed; berries obovoid. This plant is widely cultivated for its tuberous root (*zamin kund*) which is cooked and eaten, as a medicine it is uncooked, dried and sliced (*saran*).

## COMPOUND LEAVES.

## PETALS UNUNITED.

**Biophytum  
sensitivum**,

GERANIACEÆ.

F. B. I. i. 436.

The Plains to  
6,000 ft.

small, annual, stem long or short, stout or slender; leaves 1½-5 in. long, in a circle on the top of the stem, pinnate, leaflets 6-15 pairs, ¼-½ in., oblong, nearly straight except the terminal one, opposite, main leaf stalks swollen at the base; flowers small, yellow, in umbels, main flower stalk ½-5 in., bracts rigid, bristly, minor flower stalks usually shorter than the sepals, sepals 5, lanceolate, rigid, grooved, glandular, bristly, petals 5, twice the length of the sepals, stamens 10, 5 outer smaller, styles 5, stigmas notched or divided; capsule oblong with rounded ends, shining, splitting into 5 valves, seeds few in each cell, minute, with broken ridges.

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Viola biflora**,

VIOLACEÆ.

F. B. I. i. 132.

Himalaya,

6-11,000 ft.

Hattu (Collett).

Kashmir.

small, perennial, smooth or velvety, rootstock slender, stem 3-12 in., erect or prostrate; leaves 1-2 in. diam., kidney-shaped, round-toothed, stipules ovate or oblong, stem leaves 2-3; flowers yellow, 1 or 2 on the same stalk, some large petalled which ripen a few seeds, others small petalled or without petals with many seeds, 2-bracteolate, sepals 5, persistent, linear-obtuse, produced at the base, petals 5, erect or spreading, lower largest, base

HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

PETALS UNUNITED.

produced in a hollow spur, streaked with black, the other 4 petals flat, nearly equal, stamens 5, anthers sessile, erect, united in a ring, each tipped with a small triangular lobe, the two lower produced at the base in short spurs enclosed within the petal spur, stigma 2-lobed; capsule ovoid, opening by 3 valves whose sides press on the smooth ovoid seeds, ejecting them successively with some force.

**Viola Patrinii**,  
VIOLACEÆ.  
F. B. I. i. 183.  
Himalaya,  
4-8,000 ft.  
Simla (Collett).  
Kashmir.

stemless, without runners, rootstock woody, leaves 3-4 by  $\frac{1}{2}$ -2 in., triangular, ovate, oblong or linear-round or sharp-toothed, base arrow-heart- or wedge-shaped, stipules linear, flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., lilac, sepals lanceolate, spur swollen, stigma 3-lobed, margined, capsule  $\frac{1}{4}$ - $\frac{1}{2}$  in., straight; for other characters see the last species.

**Viola serpens**,  
or **canescens**,  
VIOLACEÆ.  
F. B. I. i. 184.  
Himalaya,  
5-7,000 ft.  
Simla, Mahasu,  
Narkanda, in woods.

smooth or with scattered white hairs, stems short with long runners, leaves 1-2 in., ovate-heart-shaped, blunt or sharp-pointed, round and sharp-toothed, stipules toothed or fringed, flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in., lilac, spur swollen, sepals short-pointed, capsules round, few-seeded, stigmas 3-lobed, sometimes with a lateral hooked beak; for other characters see the last species. *Banafsha*—an Indian medicine—is made from the flowers.

**Viola odorata**,  
**Sweet violet**,  
*Banafshah*.  
VIOLACEÆ.  
F. B. I. i. 184.  
Kashmir,  
5-6,000 ft.

rootstock stout, stemless, runners slender, leaves  $\frac{1}{2}$ -1 in. diam., tip rounded, tufted, broadly ovate-heart-shaped, round-toothed, stipules lanceolate, awl-shaped, entire or toothed, sepals rounded at the tip, spur nearly straight, short, almost cylindric, style thickened above, stigma curved down; for other characters see the last species. The dried flowers are used in Muhammadan medicine extensively especially as diaphoretics and diuretics.

**Viola canina**,  
**Dog violet**,  
VIOLACEÆ.  
F. B. I. i. 185.  
Kashmir,  
4-8,000 ft.

very like the last species, but stipules leafy, fringed, sepals short- or long-pointed.

**Viola Falconeri**,  
VIOLACEÆ.  
F. B. I. i. 185.  
Kashmir.

like the last species, but leaves covered with black glands, flowers much larger,  $\frac{3}{4}$  in. diam.

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Viola cinerea**,  
VIOLACEÆ.  
F. B. I. i. 185.  
The Salt Range.  
Baluchistan.

small, slightly powdery, smooth, stem 1-6 in., sometimes branched, leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in. oblong-ovate or lanceolate, stipules leafy, fringed, flowers  $\frac{1}{4}$  in. diam., axillary, sepals lanceolate, bristle-pointed, spur very short, stigma lateral of 2 oblong disks; for other characters see the last species.

**Monsonia  
heliotropioides**,  
GERANIACEÆ.  
F. B. I. i. 428.  
The Plains west of  
the Chenab.  
The Salt Range.  
Multan.

small, annual, or with a woody rootstock, covered with white hairs; leaves  $\frac{1}{2}$ -1 in. long, chiefly radical, ovate, heart-shaped or rhomboid, minutely toothed, sometimes almost lobed, leathery, densely silky, stalk longer than the blade, covered with long white hairs; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., violet or pink in umbels on erect slender main stalks, 2-8 in. long, sepals 5, overlapping, oblong, ultimately ovate with a broad tip and enlarged in fruit, petals 5, ovate with a broad tip, alternating with 5 glands, not longer than the sepals, stamens 15, 5 opposite the petals; capsule 3 in. with a very long beak of 5 one-seeded carpels, carpels with 5 elastic tails, bearded on the inner side, separate from the beak.

**Crotalaria  
sessiliflora**,

see Herbs, Erect, Alternate, Exstipulate, Simple.

**Tephrosia tenuis**,  
LEGUMINOSÆ.  
F. B. I. ii. 111.  
The Plains.

small, annual, stems thread-like, many from the base, with a few short hairs lying flat on the stem; leaves 1-2 in. long, linear, narrowed suddenly and gradually at the apex, nearly sessile, smooth above, somewhat silky beneath, stipules minute, bristly, ascending; flowers  $\frac{1}{6}$  in., 1 to 2 together in the axils of the leaves, stalks thread-like, calyx bell-shaped, teeth lanceolate, much shorter than the tube, nearly equal, petals 5, dissimilar, long-stalked, upper one (standard) broad, nearly round, side ones 2 (wings) oblong, keel petals 2, curved in, not beaked, stamens 10, style short, smooth, thread-like; pod  $\frac{1}{2}$ -1 in. long, linear, covered with a few flat-lying hairs, 6-10-seeded.

**Drosera Burmanni**,  
**Sundew**,  
*Mukha-jali*.  
DROSERACEÆ.  
F. B. I. ii. 424.  
The Plains.

small, perennial, covered with sticky hairs; leaves  $\frac{1}{3}$ - $1\frac{1}{2}$  in. long, all radical, wedge-shaped; flowers white or pink, in racemes on 1 to 3 main stalks, 3-8 in. high, the minor flower stalks erect in fruit, calyx of 4-8 persistent lobes, minutely dotted with prominences, petals 4-8, withering, persistent, stamens as many as the petals,

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

styles 5, undivided ; capsule 2-5-valved, seeds many, black, ovoid with a broad top. This is an insectivorous plant, the sticky hairs capture the insect and then dissolve its soft parts.

***Drosera peltata*,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

***Begonia picta*,**

BEGONIACEÆ.

F. B. I. ii. 638.

Himalaya,

3-6,000 ft.

Simla, on damp rocks (Collett).

small, perennial, succulent, rootstock tuberous, stem 6-12 in., slender, velvety ; leaves 3-5 by 2-3 in., ovate, long-pointed, nearly equally heart-shaped, doubly finely toothed, upper surface roughly hairy, green, blotched with pink, lower surface velvety, blotched with purple, nerves prominent, stipules lanceolate, hairy ; flowers 1-1½ in. diam., pale pink, in axillary stalked cluster, male flowers, sepals 2, orbicular, coloured, velvety, petals 2, smaller, oblong, stamens about 30, anthers ovoid with a broad top, female flowers, sepals 2, large, velvety, petals 3, small, styles 3, nearly separate, divided half way up into 2 tortuous branches, persistent ; capsule 1 in., velvety till ripe, 3-sided, angles-produced into 3 flat wings, one wing ¼ in. broad, the other ½ in., the third 1 in., seeds many, minute, light brown.

***Begonia amœna*,**

BEGONIACEÆ.

F. B. I. ii. 642.

Himalaya,

5-7,000 ft.

Simla (Collett).

Dalhousie.

smaller than the last species, smooth, stem shorter, often producing runners, leaves 3 by 2 in., smooth, round and sharp-toothed, leaf stalk 2-3 in., stipules ovate, smooth, flowers ¾-1 in. diam., female flowers sepals 2, large, opposite, ovate, one smaller lateral, all persistent, enlarged on fruit, the branches of the styles are curved, capsule ¾ by ¾ in., including the wings, seeds smooth, netted, longer than those of the last species ; for other characters see the last species.

## PETALS NONE.

***Polygonum islandicum*,**

POLYGONACEÆ.

F. B. I. v. 24.

Himalaya,

12,000 ft.

Kashmir, in marshy places.

very small, annual, smooth, stems very slender, jointed, forming tufts, 1-6 in. high ; leaves ½-¾ in., ovate with a broad blunt tip, stalked, often opposite, stipules short, 2-lobed ; flowers very minute, in terminal or axillary clusters, bracts not tubular or sheathing, calyx 3-5-cleft, stamens usually 1 or nearly 2, stigmas 2-3, nearly sessile ; nut flattened, rather longer than the calyx lobes.



HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

PETALS NONE.

- Polygonum delicatulum**, small, annual, very slender, smooth, tufted, stem 4-12 in., thread-like, jointed, leaves  $\frac{1}{6}$ - $\frac{1}{4}$  in., ovate or ovate-heart-shaped, short-pointed, leaf-stalk  $\frac{1}{10}$  in., flowers  $\frac{1}{20}$  in. long, in axillary clusters, scarcely longer than the bracts, stamens 2-3, nut 3-angled, usually much longer than the calyx lobes; for other characters see the last species.  
POLYGONACEÆ.  
F. B. I. v. 24.  
Himalaya,  
10-16,000 ft.  
Kashmir, on wet rocks.
- Polygonum filicaule**, small to medium size, annual, somewhat bristly, stem very slender, 4-18 in., leaves  $\frac{1}{3}$ - $\frac{2}{3}$  in., ovate or ovate-lanceolate, blunt or short-pointed flowers  $\frac{1}{20}$  in. long, white, in axillary and terminal sessile clusters, calyx lobes rounded, 2 outer smaller, stamens 3-4, nut 3-angled, slightly longer than the calyx lobes; for other characters see the last species.  
POLYGONACEÆ.  
F. B. I. v. 25.  
Himalaya,  
9-16,000 ft.  
Kashmir, Hattu (Collett).
- Polygonum viviparum**, small, perennial, rootstock woody, stem 4-12 in., slender; leaves 1-6 in., linear or linear-oblong, short-pointed or blunt, minutely round-toothed, base sharp, blunt, or heart-shaped, leathery, stipules tubular, without bristles; flowers pink, nearly erect, lower ones replaced by bulbils in solitary erect slender spikes, 1-4 in. long, bracts ovate, long-pointed, calyx lobes 4-5, not enlarged in fruit, stamens 4-10 protruding or not beyond the calyx lobes, styles 2-3, long, thread-like, stigma simple; nutlet very small, 3-angled or biconvex. The root is very astringent and is used to cure gleet, diarrhœa and sore-throat.  
*Maslun, mamech, bilauri.*  
POLYGONACEÆ.  
F. B. I. v. 31.  
Himalaya,  
9-15,000 ft.  
Kashmir.
- Polygonum sphærostachyum**, very like the last species, but differs in its dense spike of bright crimson drooping flowers.  
POLYGONACEÆ.  
F. B. I. v. 32.  
Himalaya,  
11-15,000 ft.  
Scinde Valley,  
Kashmir.
- Polygonum amplexicaule**, large, perennial, smooth, tufted, rootstock woody, stout, stems 2-3 ft., green, almost leafless; lower leaves 3-6 in. long, long-stalked, ovate-heart-shaped, long-pointed, minutely round-toothed, upper leaves stem-clasping, stipules 1-2 in., narrow, tips torn; flowers red or white,  $\frac{1}{6}$ - $\frac{1}{4}$  in. diam., sometimes  $\frac{1}{3}$  in. diam., in 1 to 2 erect long-stalked racemes, 2-6 in. long, bracts ovate, calyx lobes 5, stamens 8, styles 3, long, free; nut 3-angled, smooth, shining.  
POLYGONACEÆ.  
F. B. I. v. 32.  
Himalaya,  
6-8,000 ft.  
Simla, Mahasu (Collett).  
Murree.

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Polygonum affine,** like the last species, but very much smaller, stems  
POLYGONACEÆ. 4-12 in., leaves sessile or very shortly stalked, 2-4 in. long,  
F. B. I. v. 33. flowers pink.  
Himalaya,  
8-14,000 ft.  
Kashmir.

**Polygonum  
rumicifolium,** small to medium size, green, root perennial, stout,  
POLYGONACEÆ. stems 6-18 in., stem thick, grooved; leaves 3-5 by  $1\frac{1}{2}$ -3  
F. B. I. v. 51. in., broadly ovate, or ovate-heart-shaped, blunt or nearly  
Himalaya, short-pointed, wavy or even, stalk  $\frac{1}{2}$ -1 in., stout, stipules  
10-14,000 ft. large, loose, smooth; flowers green,  $\frac{1}{8}$ - $\frac{1}{4}$  in. diam., in small  
Kashmir. axillary and terminal dense-flowered branching racemes,  
calyx lobes 5, orbicular, spreading, stamens 5-8, with  
alternate glands, styles 2-3, free, stigmas round; nut 3-  
angled, broadly ovate, about as long as the calyx lobes.  
The young parts are acid and eaten as rhubarb.

**Polygonum minus,** see Prostrate Herbs, Alternate, Stipulate, Simple.

**Elatostemma  
pusillum,** annual, stem 1-6 in., slender, weak; leaves  $\frac{1}{3}$  in., ovate,  
URTICACEÆ. few, sessile, entire, sometimes with a small opposite leaf;  
F. B. I. v. 568. flowers and other characters like *Elatostemma surculosum*,  
Himalaya, see Herbs, Unbranched, Opposite, Stipulate Simple.  
7-8,000 ft.  
Simla, on damp  
rocks in shade, often  
in moss (Collett).

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS NONE.

**Thalictrum  
saniculæforme,** see Herbs, Unbranched, Alternate, Stipulate, Com-  
pound.

**Monsonia  
hielotropioides,** see Herbs, Unbranched, Alternate, Stipulate, Simple.

## HERBS, UNBRANCHED, WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS NONE.

**Geum urbanum,**  
**Herb-Bennet,**  
**Common Avens,**  
 ROSACEÆ.  
 F. B. I. ii. 342.  
 Himalaya,  
 6-11,000 ft.  
 Simla (Collett).

large, perennial, somewhat softly hairy, stems 1-3 ft., rootstock woody; leaves radical large, 4-6 in., pinnately divided, lateral segments 6-12, nearly sessile, uppermost pair large, others all small but alternate pairs larger, end segment stalked, nearly circular, 1-3 in. diam., often lobed, upper stem-leaves 3-lobed, lateral lobes sometimes merged in the end one, lower stem leaves similar to the radical but smaller, stipules broad, toothed, often lobed, joined to the stalk; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., pale yellow in few-flowered long-stalked terminal clusters, calyx persistent, tube cup-shaped, lobes 5, alternating with 5 small bracteoles, lobes reflexed, petals 5, broadly ovate, stamens many; fruit a round head of densely hairy dry achenes, each tipped with the hooked style,  $\frac{1}{4}$  in. long. This plant, was much used in Europe by herbalists as an astringent, the clove-like flavour of the root caused its use as a flavouring to ale.

**Geum elatum,**  
 ROSACEÆ.  
 F. B. I. ii. 343.  
 Himalaya,  
 9-12,000 ft.  
 Kashmir, Hattu  
 (Collett).

like the last species, but stems smaller, radical leaves larger, segments round- or sharp-toothed, stem leaves few, small, pinnately lobed, flowers much larger, bright yellow, calyx lobes spreading, achenes tipped with a straight style  $\frac{1}{3}$  in. long.

**Alchemilla vulgaris,** see Herbs, Unbranched, Opposite, Stipulate, Lobed.

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Guldenstædtia**  
**mirpourensis,**  
 LEGUMINOSÆ.  
 F. B. I. ii. 118.  
 Hazara (Stewart).

small, perennial, spineless, rhizome slender, branched, leaves and flower stalks in a rosette at the surface, stemless; leaves  $1\frac{1}{2}$ -2 in. long, stalk  $\frac{1}{2}$ -1 in., leaflets 3-7,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, oblong, blunt, slightly velvety; flowers  $\frac{3}{4}$  in., almost sessile, 1-3 on stalks as long as the leaves, calyx  $\frac{1}{4}$  in., tube bell-shaped, not oblique, teeth 5, distinct lanceolate, long-pointed, upper broader, finely silky, as long as the tube, corolla  $\frac{1}{2}$  in., petals 5, dissimilar, upper one (standard) outermost, largest, round, wing petals 2, oblong,

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

keel petals 2, united, half the length of the other petals, straight, blunt, stamens 10, in 2 bundles, style incurved, very short, stigma round; pod  $\frac{1}{2}$  in. long, linear, finely silky.

**Astragalus rhizanthus,**

LEGUMINOSÆ.

F. B. I. ii. 131.

Himalaya,

9-16,000 ft.

Kashmir. Lahul.

small, perennial, stemless, rootstock woody, tufts 1 or 2 on the top of the rootstock; leaves 2-4 in. long, pinnate, leaflets 31-41,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, oblong, blunt, densely silky, stipules  $\frac{3}{8}$ - $\frac{1}{2}$  in., lanceolate, united to the leaf stalk; flowers  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long, yellow, in dense many-flowered nearly sessile heads at the top of the rootstock, bracts  $\frac{1}{8}$ - $\frac{1}{2}$  in., long, linear, densely silky, calyx  $\frac{1}{2}$ - $\frac{5}{8}$  in. long, tubular, silky, teeth 5, linear, half as long as the tube, corolla half as long again as the calyx, wings shorter than the standard, keel shorter than the wings, stamens 10, upper free, others united; pod  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, oblong, swollen, densely silky, narrowed suddenly into a beak, 15-20-seeded.

**Astragalus bakuensis,**

LEGUMINOSÆ.

F. B. I. ii. 132.

The Salt Range

(Stewart).

like the last species, but leaves much larger, 5-12 in. long, leaf stalks 2-6 in. long, densely hairy, leaflets  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, linear, stipules  $\frac{1}{2}$ - $\frac{3}{4}$  in., flowers yellow tinged with purple, larger in long-stalked loose many-flowered racemes.

**Oxytropis lapponica,**

LEGUMINOSÆ.

F. B. I. ii. 137.

Himalaya,

9-17,000 ft.

Kashmir.

small, perennial, stemless or short-stemmed; leaves 1-3 in. long, pinnate, leaflets 13-25,  $\frac{1}{8}$ - $\frac{1}{3}$  in., lanceolate, green with a few flat-lying white silky hairs, stipules  $\frac{1}{8}$ - $\frac{1}{4}$  in., leaf-opposed, united towards the base; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in., purple, 6 to 20 in dense rounded heads on flower stalks,  $\frac{1}{4}$ - $\frac{1}{2}$  ft. long, bracts minute, linear, calyx  $\frac{1}{6}$ - $\frac{1}{4}$  in., nearly sessile, covered with flat-lying nearly black silky hairs, teeth 5, linear, shorter than the tube, corolla  $\frac{3}{8}$ - $\frac{1}{2}$  in. long, standard longest, keel shortest, pointed with a distinct tip; pod  $\frac{3}{8}$ - $\frac{1}{2}$  in. long, linear-oblong, 5-6-seeded, deflexed, covered with a few black or white hairs.

**Oxytropis mollis,**

LEGUMINOSÆ.

F. B. I. ii. 137.

Himalaya,

10-12,000 ft.

Lahul.

like the last species, but in tufts 6-12 in. high, crowded at the top of a woody rootstock, leaves long-stalked, 2-3 in. long, leaflets densely white silky, oblong, flower stalks much longer than the leaves, heads finally 2-3 in. long, calyx longer, densely covered with black and white hairs, corolla half as long again as the calyx, pod longer, 6-8-seeded, ascending.

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

- Oxytropis Thomsoni**, very like the last species, but leaves longer, 4-6 in.,  
 LEGUMINOSÆ. leaflets  $\frac{3}{4}$ -1 in. long, 13-5, not so densely silky, flowers in  
 F. B. I. ii. 138. racemes 3-4 in. long, flower stalks equal to or a little  
 Himalaya, longer than the leaves, corolla twice as long as the calyx,  
 7-15,000 ft. pod 4-6-seeded.  
 Kashmir, Lahul.
- Oxytropis tatarica**, like the last species, but very small, only 3-4 in.  
 LEGUMINOSÆ. high, leaves  $\frac{1}{2}$ -1 in. long, leaflets  $\frac{1}{3}$ - $\frac{3}{8}$  in. long, stipules minute,  
 F. B. I. ii. 138. flowers yellow, rarely tipped with purple, 20-40, in very  
 Himalaya, dense long-stalked heads, calyx  $\frac{1}{6}$ - $\frac{1}{4}$  in., densely white silky,  
 13-17,000 ft. corolla half as long again as the calyx, pod  $\frac{1}{4}$ - $\frac{3}{8}$  in. sessile,  
 Ladak, Spiti. swollen, round-oblong, 5-6-seeded, shaggy with dense  
 loose white silky hairs.
- Oxytropis microphylla**, small, perennial, stemless, 3-8 in. high, tufts at the  
 top of a woody rootstock, the triangular, interlacing sti-  
*Niargal, taksha.* pules covered with dense tufts of long white silky hairs,  
 LEGUMINOSÆ. leaf  $1\frac{1}{2}$ -3 in. long, short-stalked, leaflets  $\frac{1}{3}$ - $\frac{1}{4}$  in. long, linear-  
 F. B. I. ii. 139. oblong, crowded, 2 pairs often opposite each other, form-  
 Himalaya, ing a circle, edges much reflexed, flowers  $\frac{1}{2}$  in. long, purple,  
 11-16,000 ft. 4-15, in heads, at first close, then becoming 2-3 in. long,  
 Spiti. on flower stalks equal to or longer than the leaves, calyx  
 covered with large sessile glands, pod linear, sessile, swollen,  
 recurved, seeds 20-30; for other characters see the last  
 species. This plant is browsed by yaks and sheep.
- Geum urbanum**, see Herbs, Unbranched, Alternate, Stipulate, Lobed.
- Geum elatum**, see Herbs, Unbranched, Alternate, Stipulate, Lobed.
- Fragaria indica**, small, perennial, silky hairy, rootstock stout with  
**The Indian** many long slender prostrate stems; leaves mostly radical,  
**Strawberry**, tufted, long-stalked, digitately compound, leaflets  $\frac{1}{2}$ - $1\frac{1}{2}$  in.,  
*Paljor, musrini.* sessile, ovate, toothed, teeth small, often blunt, stipules  
 ROSACEÆ. joined to the leaf stalk, broad, toothed, stem leaves few,  
 F. B. I. ii. 343. often simple; flowers  $\frac{1}{2}$ -1 in. diam., yellow, nodding, axillary  
 Himalaya, or few in terminal clusters on slender naked stalks 1-5 in.,  
 3-8,000 ft. equalling the leaf stalks, calyx persistent, tube spreading,  
 Simla, Mashobra bearing on its outer margin, 5 bracteoles alternating  
 (Collett). with 5 calyx lobes, bracteoles large, 3-lobed, lobes ovate or  
 Kashmir. lanceolate, petals 5, broadly ovate with a broad tip, heart-  
 shaped, stamens many; achenes many, minute, sunk in  
 the surface of a succulent red convex receptacle.

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Fragaria vesca,**  
**Wild Strawberry,**  
*Kanzars, tarwai,*  
*banaphal.*

ROSACEÆ.  
F. B. I. ii. 344.  
Himalaya,  
5-8,000 ft.  
Simla, Mahasu  
(Collett).  
Kashmir.

very like the last species, but flowers white,  $\frac{3}{4}$ -1 in. diam., bracteoles small, not lobed, leaf stalks sometimes bear an extra minute pair of leaflets, leaflets larger, sharply and deeply toothed, teeth tipped with tufts of hairs. stipules narrow, not toothed. The fruit is edible, but generally almost flavourless. This plant is cultivated in the plains as well as in the hills, but is the English variety with possibly some of the Indian strain.

**Potentilla Sibbaldi,**

ROSACEÆ.  
F. B. I. ii. 345.  
Himalaya,  
9-15,000 ft.  
Bhagi, Hattu  
(Collett).

small, perennial, hairy, rootstock woody, stems tufted, 2-12 in.; leaves mostly radical, digitately compound, leaf-stalk  $\frac{1}{2}$  in. long, slender, leaflets 3,  $\frac{1}{4}$ - $\frac{1}{2}$  in., wedge-shaped, ovate with a broad 3-5-toothed tip, stipules large, thin; flowers  $\frac{1}{4}$  in. diam., yellow, in terminal flat-topped clusters on main flower stalks,  $\frac{1}{2}$ -6 in. long, calyx persistent, tube shallow, bowl-shaped, on its outer margin 5 linear bracteoles alternating with 5 triangular lanceolate lobes, erect in fruit, petals 5, narrowly ovate with a broad tip, hardly longer than the calyx lobes, stamens 5, alternate with the petals, sometimes 1-5 opposite to them, styles lateral short, persistent on the achenes; fruit consists of a head of many hard ovoid smooth achenes on a flat hairy receptacle.

**Potentilla albifolia,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Potentilla ambigua,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Potentilla fulgens,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Potentilla anserina,**  
**Silver weed,**

ROSACEÆ.  
F. B. I. ii. 350.  
Himalaya,  
7-16,000 ft.  
Balti, Kashmir  
(Clarke).  
Spiti (Thomson).

rootstock very short, sending out long runners, leaves forming a spreading tuft 2-10 in., green above, silky beneath, lanceolate, pinnate, leaflets  $\frac{1}{4}$ -2 in., sessile, 6-10 pairs with minute alternating ones, ovate with a broad tip, or oblong, deeply sharply toothed, silvery with white hairs beneath, stipules thin, flowers  $\frac{1}{2}$ -1 in. diam., yellow, on slender one-flowered, naked stalks, 1-6 in. long, calyx lobes lanceolate, long-pointed, bracteoles lobed, petals round, achenes many on a hairy raised receptacle; for other characters see the last species.

HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

**Potentilla  
Leschenaultiana,**  
ROSACEÆ.  
F. B. I. ii. 350.  
Himalaya,  
6-12,000 ft.  
Kashmir.

rootstock short, stout, hairy, hairs long, spreading, silky, leaves 1-10 in., pinnate without alternating minute leaflets, leaflets 5-7,  $\frac{1}{4}$ -1 in., usually 5, ovate with a broad tip, coarsely toothed, white beneath, leaf stalk slender, stipules lower thin, entire, upper leafy, toothed, flowers  $\frac{1}{3}$ - $\frac{2}{3}$  in., yellow, rarely white, in flat-topped clusters on stalks 2-18 in. long, calyx hairy or silky, lobes triangular, bracteoles linear, petals heart-shaped with the broad end outwards, achenes minutely wrinkled; for other characters see the last species.

**Potentilla  
fragarioides,**  
ROSACEÆ.  
F. B. I. ii. 350.  
Himalaya,  
4-7,000 ft.  
Simla (Collett).  
Kashmir.  
Baluchistan.

very like the last species, but leaflets not white beneath.

**Potentilla Clarkei,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Potentilla  
microphylla,**  
ROSACEÆ.  
F. B. I. ii. 352.  
Himalaya,  
10-14,000 ft.  
Marali near Baghi.

very small, forming dense moss-like tufts, dotted with bright yellow star-like flowers, leaves very small and crowded, only easily differentiated by a magnifying glass, silky or nearly smooth, leaves  $\frac{1}{4}$  in., leaflets  $\frac{1}{16}$ - $\frac{1}{10}$  in., divided into 3-5 lobes, leaf stalk thread-like, stipules comparatively large, blunt, thin, flowers  $\frac{1}{4}$ - $\frac{2}{3}$  in., bright-yellow, 1 or 2 on a flower stalk, slightly longer than the leaves, calyx lobes sharp- or blunt-pointed, bracteoles oblong, petals projecting much beyond the calyx, round or ovate with a broad tip, stamens 30-40, achenes in a round head on a woolly receptacle, many, minute, smooth, styles very short, ventral; for other characters see the last described species.

**Potentilla multifida,**  
ROSACEÆ.  
F. B. I. ii. 353.  
Kashmir,  
10-16,000 ft.

stems many, rootstock short, leaves  $\frac{1}{2}$ -2 in. diam., digitately compound with 5 leaflets or pinnate with longer leaf stalk, leaflets linear-oblong or ovate with a broad tip, pinnately divided with linear or lanceolate segments, margins recurved, white felted beneath, flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., yellow in close or open flat-topped clusters or solitary, calyx silky, lobes ovate, short-pointed, bracteoles linear, oblong, blunt, petals circular-ovate with a broad tip, notched, achenes many, smooth, minute on a hairy receptacle, style terminal; for other characters see the last described species.

HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

- Potentilla sericea**, see Herbs, Erect, Alternate, Stipulate, Compound.
- Potentilla desertorum**, softly hairy or glandular, stems tufted on a woody rootstock, leaves radical 4-8 in. long-stalked leaflets, 5, digitate, 1-2 in., sessile, thin, ovate with a broad tip, coarsely round-toothed, stem leaves shortly stalked or sessile with 3 leaflets, stipules  $\frac{1}{2}$ - $\frac{3}{4}$  in., lanceolate, uncut; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., dark yellow in round leafy heads, flower stalk lengthening in fruit, straight, stout, calyx  $\frac{1}{3}$  in. long, lobes lanceolate, short-pointed, bracteoles entire or 3-fid, petals projecting slightly beyond the calyx, achenes very minute, very many, wrinkled on a round woolly receptacle, styles nearly terminal; for other characters see the last described species.
- Potentilla nepalensis**, see Herbs, Erect, Alternate, Stipulate, Compound.
- Potentilla kashmirica**, see Herbs, Erect, Alternate, Stipulate, Compound.
- Potentilla argentea**, see Herbs, Erect, Alternate, Stipulate, Compound.
- Potentilla reptans**, rootstock woody, slightly hairy, runners long, slender, rooting and leafy at the knots, leaves digitately compound, Cinquefoil, leaflets 3 or 5, hardly sessile, 1-2 in., ovate with a broad tip or lanceolate with a broad tip, round and sharp-toothed, ROSACEÆ. leaf stalks 1-6 in., slender, stipules small, oblong, entire, F. B. I. 356. flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., yellow, solitary on axillary naked Kashmir. stalks, 1-4 in. long, calyx lobes broad or narrow, sharp-pointed, bracteoles ovate, entire, petals heart-shaped with the tip broad, achenes many, smooth, dark brown, styles nearly terminal; for other characters see the last described species.
- Potentilla argyrophylla**, see Herbs, Erect, Alternate, Stipulate, Compound.
- Potentilla gelida**, slightly velvety or glandular, usually small, rootstock generally small, leaves radical digitately compound, leaflets 3,  $\frac{1}{3}$ - $\frac{1}{4}$  in. long, ovate with a broad tip or wedge-shaped, ROSACEÆ. deeply round-toothed, stem leaves few, small with broad, F. B. I. ii. 357. Himalaya, 13-17,000 ft. Kashmir. ovate, large, entire stipules,  $\frac{1}{4}$ - $\frac{1}{3}$  in., leaf stalks  $\frac{1}{2}$ -1 in., rarely 2 in., flowers  $\frac{1}{2}$ -1 in. diam., yellow, on slender minor stalks, 1-4 on slender main stalks, calyx lobes sharp-pointed, longer than the blunt-pointed oblong bracteoles, petals heart-shaped with a broad tip, achenes many, smooth, on a raised woolly receptacle, styles nearly terminal; for other characters see the last described species.



HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

PETALS UNUNITED.

**Potentilla  
doubjougiana,**  
ROSACEÆ.  
F. B. I. ii. 357.  
Kashmir,  
9-10,000 ft.

very like the last species, but stipules wedge-shaped with a broad divided tip, bracteoles divided into three at the tip.

**Potentilla  
monanthes,**  
ROSACEÆ.  
F. B. I. ii. 358.  
Himalaya,  
10-15,000 ft.  
Kashmir.

glandular or slightly velvety, large tufts of leaves and flower stalks 2-12 in. from a small rootstock, leaves radical and stem shortly stalked, stalks rarely 1 in., leaflets  $\frac{1}{2}$ - $\frac{2}{3}$  in., broadly wedge-shaped with a broad coarsely round-toothed tip, stipules  $\frac{1}{4}$ - $\frac{1}{2}$  in., rarely cut, stem stipules broadly ovate, short-pointed, flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., yellow, on axillary or nearly terminal stalks, sessile and shortly stalked on the top of the flowering stem, calyx lobes broad, blunt, bracteoles round-oblong, often larger than the calyx lobes, petals ovate-round with a broad tip, not projecting much beyond the calyx, achenes very many, minute, smooth, on a round woolly receptacle; for other characters see the last described species.

**Potentilla curviseta,**  
ROSACEÆ.  
F. B. I. ii. 358.  
Kashmir at Tilail  
(C. B. Clarke).

small, rigid, thinly silky, rootstock slender, crowned with stiff recurved, almost woolly, leaf bases; leaves 2-3 in. long, few, stipules forming a narrow wing to the leaf-stalk for half its length, flowering stalks 2-3 in. long, 2-3-flowered, wiry, slender, minor flower stalks incurved after flowering, calyx  $\frac{1}{4}$  in., silky, lobes lanceolate, long-pointed, longer than the oblong bracteoles, achenes 5-6, hairy, large, ovoid on a flat woolly receptacle, styles terminal; for other characters see the last species. This is the only Himalayan species with hairy achenes.

**Potentilla nivea,**  
ROSACEÆ.  
F. B. I. ii. 358.  
Himalaya,  
10-17,000 ft.  
Dry region.

very like small forms of *Potentilla multifida*.

**Potentilla Kleiniana,**  
ROSACEÆ.  
F. B. I. ii. 359.  
Himalaya,  
3-7,000 ft.  
Valleys below  
Simla (Collett).

small, annual, silkily hairy, stems many, long, spreading, zigzag, leaves digitately compound, leaflets 3 or 5, ovate or narrowly oblong, unequal, the longest  $\frac{1}{2}$ - $1\frac{1}{2}$  in., teeth blunt or sharp, flowers  $\frac{1}{4}$  in. diam., yellow, in terminal flat-topped clusters, achenes minute, deeply wrinkled; for other characters see the last described species.

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED

**Potentilla supina,**

ROSACEÆ.

F. B. I. ii. 359.

The Plains to  
8,500 ft.Sutlej Valley  
(Collett).

Rawalpindi.

small, annual, hairy, stems spreading, leafy, leaves  $\frac{1}{2}$ -3 in., stalks  $\frac{1}{2}$ -2 in., pinnate, leaflets 3-9, oblong, blunt, lobulate or toothed, stipules ovate, entire, flowers  $\frac{1}{4}$  in. diam., yellow, solitary, axillary, calyx lobes and bracteoles blunt or sharp-pointed, petals do not project beyond the calyx, achenes minute, smooth or ridged on a round woolly receptacle; for other characters see the last species.

**Agrimonia****Eurpatorium,****Common Agrimony,**

ROSACEÆ.

F. B. I. ii. 361.

Himalaya,  
3-10,000 ft.

Simla (Collett).

large, perennial, hairy, stems 2-3 ft., rootstock woody, short or long; leaves pinnate, lower ones 4-7 in., leaflets 6-21, larger ones 5-9, ovate,  $\frac{1}{2}$ -1 $\frac{1}{2}$  in., coarsely toothed, very unequal, alternating with a number of smaller ones, upper leaves gradually smaller with fewer leaflets, stipules large, leafy,  $\frac{1}{2}$ -lunate, entire or toothed, united to the base of the leaf; flowers  $\frac{1}{4}$  in. diam., yellow, in terminal spike-like racemes, each flower in the axil of a small, 3-cleft bract, with 2 smaller 3-toothed bracteoles at the top of its own stalk, calyx tube  $\frac{1}{3}$  in., top-shaped, grooved, woolly, bearing outside its mouth a ring of small spines, hooked in fruit, calyx lobes 5, petals 5, oblong-ovate with a broad tip, stamens 5-15, styles 2, protruding from the calyx; achenes 1 or 2, enclosed in the hard spinous calyx. The root is a strong astringent used by European herbalists, unknown to Indians.

**Agrimonia pilosa,**

ROSACEÆ.

F. B. I. ii. 361.

Kashmir,  
6-8,000 ft.

very like the last species, but less hairy, calyx tube almost smooth, spines not hooked.

**Trachydium Roylei,**

UMBELLIFERÆ.

F. B. I. ii. 672.

Kashmir,  
11-14,000 ft.

small, perennial, smooth or minutely hairy, stemless or stem 2 in. long, thick, grooved, often hollow; radical leaves 3 in. including leaf stalk, doubly pinnate, oblong-lanceolate, ultimate segments lanceolate-linear, leaf stalk sheathing at the base; flowers minute, white or pink, in a solitary sessile umbel, bracts leaflike, bracteoles 6-10, single- or double-pinnate, calyx margins obsolete or prominent, petals 5, oblong with rounded ends, notched, stamens 5, styles 2; fruit  $\frac{1}{8}$ - $\frac{1}{6}$  in., oblong with rounded ends, primary ridges, swollen, spongy, tubercled, 2 oil-canals between the ridges, seeds 2 half round, nearly 5-angled.

## HERBS, UNBRANCHED, WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Elæosticta meifolia,** see Herbs, Erect, Alternate, Exstipulate, Compound.

**Apium graveolens,** see Herbs, Erect, Alternate, Exstipulate, Compound.

## PETALS NONE.

**Thalictrum  
saniculæforme,** small, perennial, stiff, wiry, smooth, root fibrous, stem 6-12 in., leaf solitary, equal to the stem, radical, long-stalked, pinnules with 3 leaflets, leaflets  $\frac{1}{2}$ -1 in. diam., circular or ovate with a broad tip, 3-lobed, entire or coarsely round-toothed, stem leaves sometimes a few, small, stipules almost free; flowers small, white, in wide-spreading branching racemes, sepals 4-5,  $\frac{1}{3}$  in., ovate, petal-like, overlapping, soon falling off, petals none, stamens many, shorter than the sepals, anthers  $\frac{1}{20}$  in., pointed, carpels many, sessile; fruit is a small head of ribbed, oblong, sessile achenes,  $\frac{1}{8}$  in. long, including the long straight beak hooked at the tip.  
RANUNCULACEÆ.  
F. B. I. i. 13.  
Himalaya,  
east of the Sutlej,  
7-8,000 ft.  
Simla (Collett).

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Arabis glabra,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Arabis auriculata,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Arabis alpina,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Arabis  
amplexicaulis,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Arabis nuda,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Draba alpina,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Draba muralis,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Erophila vulgaris,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Sisymbrium strictum**, medium size to large, annual, rough with star-shaped short hairs, stem 9-24 in., stiff; leaves 1-1½ in., linear-oblong, gap-toothed, lower narrowed into a short stalk, upper sessile; flowers small, pale pink on short stalks in racemes, at first short then lengthening in fruit, sepals 4, erect, petals 4, with long bases, stamens 6, 2 short opposite the lateral sepals, 4 longer in pairs opposite the other 2 sepals, styles short, stigma round, 2-lobed; pods 1-2 in., erect, curved, narrow, slender, smooth, seeds many, in one row, not margined.  
**CRUCIFERÆ.**  
 F. B. I. i. 149.  
 Himalaya,  
 5-10,000 ft.  
 Narkanda (Collett).  
 Kashmir.
- Erysimum hieraciifolium**, small to large, perennial, covered with short flat-lying forked, star-shaped and simple hairs, stems 6-24 in., stout or slender angled, leaves 1-4 in., oblong, gap-toothed, upper sessile, flowers ¼-½ in. diam., orange-yellow, crowded in racemes, sepals erect, lateral slightly pouched, pods 1¼-2 in., nearly square; for other characters see the last species.  
**CRUCIFERÆ.**  
 F. B. I. i. 153.  
 Himalaya,  
 6-13,000 ft.  
 Matiana, Narkanda (Collett).  
 Sangri, Murree.
- Erysimum odoratum**, like the last species, but less hairy, flowers larger, ½-¾ in. diam., hairs on the upper leaf surface flat-lying, fixed by the middle, with a few 3-pronged ones.  
**CRUCIFERÆ.**  
 F. B. I. i. 154.  
 Kashmir,  
 5-7,000 ft.
- Lepidium strictum**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Thlaspi arvense**, see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Thlaspi alpestre**, see Herbs, Alternate, Exstipulate, Simple, Entire.
- Silene tenuis**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Drosera peltata**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Bupleurum Candollii**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Bupleurum jucundum**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

- Conyza japonica**, small, annual, hairy or woolly, rarely smooth, stem  
 COMPOSITÆ. 6-12 in., often branched; leaves 1-3 in., ovate with a broad  
 F. B. I. iii. 258. tip, spoon-shaped, oblong or lanceolate, coarsely toothed,  
 The Plains to base of upper leaves sometimes dilated; flowers minute,  
 7,000 ft. pale yellow, all tubular, in round heads  $\frac{1}{2}$  in. diam., in termi-  
 Simla (Collett). nial crowded flat-topped clusters, bracts of receptacle  
 Lahore. many, narrow, short-pointed, receptacle flat or convex,  
 naked, outer corollas 2-3-toothed, inner 5-toothed, pappus  
 hairs  $\frac{1}{8}$  in., reddish, style-arms flattened; achenes  $\frac{1}{4}$  in.,  
 flattened, velvety.
- Blumea lacera**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed.
- Blumea hieracifolia**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed.
- Laggera flava**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed.
- Laggera alata**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed.
- Laggera pterodonta**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed.
- Laggera aurita**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Toothed.
- Leontopodium** see Herbs, Erect, Alternate, Exstipulate, Simple,  
**alpinum**, Toothed.
- Anaphalis nubigena**, small, perennial, softly woolly or cottony, stems 1-8  
 COMPOSITÆ. in., tufted; leaves one-nerved,  $\frac{1}{4}$ - $\frac{3}{4}$  in., lanceolate or oblong,  
 F. B. I. iii. 279. with rounded ends, short-pointed or with a naked point,  
 Himalaya, base contracted; flowers minute, white, all tubular, solitary  
 9-16,000 ft. or in clusters of 3-5 heads,  $\frac{2}{3}$ -1 in. diam., receptacle bracts  
 Theog, Hattu round, lanceolate, blunt, or almost sharp-pointed,  $\frac{1}{4}$ - $\frac{1}{2}$  in.  
 (Collett). long, spreading in flower, outer woolly, receptacle  
 naked, pappus hairs slender, soon falling off, corollas, outer  
 very slender, 2-4-toothed, inner, 5-toothed; achenes (seeds)  
 minute, oblong, smooth.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Anaphalis cuneifolia,** like the last species, but larger, often bearing runners,  
COMPOSITÆ. bracts white.

F. B. I. iii. 279.  
Himalaya,  
8-12,000 ft.  
Kashmir.

**Anaphalis triplinervis,** like the last species, but with a more leafy, some-  
COMPOSITÆ. times zigzag stem, leaves larger, 3-nerved, often stem-  
claspings.

F. B. I. iii. 281.  
Himalaya,  
6-10,000 ft.  
Jalouri Pass in  
Kulu (Collett).  
Kashmir.

**Anaphalis cinnamomea,** large, stout, leafy with dense white or brown wool  
COMPOSITÆ. beneath the leaves, leaves 2-4 in., 1-3-nerved, narrowly  
F. B. I. iii. 281. lanceolate, short-pointed, usually forked at the base, almost  
Himalaya, stem-clasping, heads very many; for other characters see  
5-9,000 ft. the last species.

Simla, Shali  
(Collett).  
Kashmir.

**Anaphalis adnata,** like the last species, but leaves larger without the  
COMPOSITÆ. brown wool beneath.

F. B. I. iii. 282.  
Himalaya,  
6-8,000 ft.  
Simla, Shali  
(Collett).

**Gnaphalium Stewartii,** like the last species, but very small, stems 2-4 in.,  
COMPOSITÆ. flowers yellow, heads  $\frac{1}{4}$  in. diam., in loose or leafy racemes  
or spikes, bracts chestnut brown.

F. B. I. iii. 289.  
Kashmir,  
10,000 ft.  
(Aitchison).

HERBS, UNBRANCHED WITH ALTERNATE EXSTIPULATE, SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Gnaphalium  
Thomsoni,**

COMPOSITÆ.

F. B. I. iii. 290.

Kashmir,  
5-7,000 ft.

like the last species, but heads  $\frac{1}{8}$  in. diam., in sessile round clusters, 1 in. in diam., with slender spreading leaves immediately beneath them, bracts brown, shining with a strong green central nerve, half-way down.

**Centipeda  
orbicularis,**

see Prostrate Herbs, Alternate, Exstipulate, Simple.

**Carduus nutans,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Unicus arvensis,  
Creeping Thistle,***Bhur-bhur.*

COMPOSITÆ.

F. B. I. iii. 362.

The Plains to  
5,000 ft.Valleys below  
Simla (Collett).  
Choa Saidan Shah  
(Douie).

large, perennial, spiny or prickly, rootstock creeping, stems many, 2-4 ft., not winged, upper cobwebby-felted; leaves 3-6 by  $\frac{3}{4}$ -1 in., oblong, sessile, spinous, margin wavy or divided, upper surface pale, rough, lower white-felted; flowers minute, dingy purple, all tubular in round and ovoid solitary or clustered heads, 1-1 $\frac{1}{2}$  in. diam., male and female heads on different plants, receptacle bracts smooth or cobwebby in several rows, outermost leafy, outer short, ovate or triangular-ovate, ending in a short spine, inner gradually longer with undulate, often recurved tips, innermost narrow linear-lanceolate, pappus hairs copious, in many rows, stiff, simple or barbed, corollas slender, 5-fid, in male heads anther-bases forked, tails slender, in female heads, style-arms short, blunt; achenes smooth, bluntly 4-angled, smooth or 5-10-ribbed, linear-oblong.

**Saussurea obvallata,***Kanwal,**birm-kanwal.*

COMPOSITÆ.

F. B. I. iii. 365.

Himalaya,  
10-15,000 ft.  
Kashmir.

small to large, perennial, smooth, root very thick, crowned with the balckened remains of old leaf stalks, stem 6-18 in., leafy, stout, terminated by the incurved bladdery veined translucent head of leaves 3-6 in. diam.; leaves 4-8 in., lower leaves long-ovate with a broad tip, smooth, blunt, toothed, stem leaves oblong, concave, half stem-clasping, floral leaves boat-shaped, thin, enclosing; 2-6 sessile or shortly stalked smooth heads of flowers flowers  $\frac{1}{2}$  in. long, purplish, in heads,  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., bracts of receptacle lanceolate, in many rows, not spinous, tipped and often margined with black, receptacle (floor of head) densely bristly, pappus of hairs  $\frac{1}{3}$  in., brown, outer bristles rough or none, corollas  $\frac{1}{2}$  in., tubular, slender, 5-toothed, anther tails very short, divided, style-arms linear; achenes ovoid with a broad top, flattened, smooth, ribbed. The root is applied to cuts and bruises.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

- Saussurea Schultzii**, like the last species, but leaves radical linear-oblong, short-pointed, narrowed into a very stout stalk, stem leaves long-pointed, heads many, silkily woolly, bracts long-pointed, pappus white.  
 COMPOSITÆ.  
 F. B. I. iii. 866.  
 North Kashmir,  
 14-17,000 ft.
- Saussurea Atkinsoni**, see Prostrate Herbs, Opposite, Exstipulate, Simple.
- Saussurea Roylei**, small to large, perennial, smoothish or cottony, root stock stout, with old broad leaf stalk sheaths, stem 6-18 in., stout, thickened under the head of flowers, leaves radical 8-10 in., stalked, erect, long-lanceolate, long-pointed, quite entire, or round-toothed and round-gapped, or pinnately divided at the base, stem leaves sessile, few, half stem-clasping, heads  $1\frac{1}{2}$ -2 in., usually solitary, rarely 2-3 felled, bristles of receptacle as long as the achenes, anther tails woolly, achenes  $\frac{1}{4}$  in., narrow, angled; for other characters see the last described species.  
 COMPOSITÆ.  
 F. B. I. iii. 870.  
 Himalaya,  
 11-14,000 ft.  
 Kashmir.
- Saussurea Candolleana**, large, stem 1-3 ft., stout, leafy, deeply grooved, winged more or less by the prolongation of the leaves or their stalks, leaves 3-6 by  $1-3\frac{1}{2}$  in., oblong or ovate-lanceolate, short- or long-pointed, abruptly narrowed below the middle, smooth above, cobwebby or cottony beneath, heads  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., or smaller in dense flat-topped clusters; shortly stalked, bracts of receptacles ovate; blunt or sharp-pointed, smooth or silky, achenes  $\frac{1}{5}$  in. long, narrow, shining, angled, pappus  $\frac{1}{3}$  in. long, pale brown; for other characters see the last species.  
 COMPOSITÆ.  
 F. B. I. iii. 872.  
 Himalaya,  
 8-10,000 ft.  
 Kashmir.
- Saussurea piptathera**, very like the last species, but stem not winged, leaf bases forked.  
 COMPOSITÆ.  
 F. B. I. iii. 872.  
 Himalaya,  
 9-12,000 ft.  
 Chamba.
- Saussurea Lappa**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Saussurea sorocephala**, very small, densely tufted, densely woolly, rootstock perennial, branching, stem none or very short, leaves  $\frac{1}{2}$ -1 in., lanceolate-ovate with a broad tip, slightly toothed, heads very many,  $\frac{1}{2}$ -1 in., sessile, densely crowded, surrounded by woolly leaves, in the hollow dilated top of the stems, if there are any, corolla  $\frac{1}{3}$ - $\frac{1}{2}$  in., bracts lanceolate, silky; achenes 5-angled.  
 COMPOSITÆ.  
 F. B. I. iii. 877.  
 Lahul.  
 14-18,000 ft.



## HERBS, UNBRANCHED WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

- Jurinea ceratocarpa**, small to large, perennial, slightly rough, stemless or stem up to 2 ft., with stout branches; leaves 2-5 in., linear-oblong or lanceolate, entire or pinnately divided, green on both sides, or white beneath, radical and lower stem leaves often have the lobes pointing back, stalked, upper stem leaves sessile, base forked; flowers  $\frac{1}{2}$  in., purple in sessile or stoutly stalked heads, 1-1 $\frac{1}{2}$  in. diam., with linear leaves as bracts, receptacle bracts lanceolate, long-pointed, in many rows, overlapping each other, innermost slender, erect, or recurved, outer shorter, linear green, receptacle (floor of head) flat, densely bristly, bristles longer than the achenes, anther-bases forked, anther tails long, divided, style-arms short; pappus hairs in several rows, outer bristly rough, inner  $\frac{1}{3}$  in., very slender, white; achenes  $\frac{1}{5}$  in., rough, brown, 4-5-angled, angles ending in erect spines.
- Serratula pallida**, large, perennial, smooth or slightly rough, sometimes branched from below, branches ending in long leafless one-headed stalks; leaves chiefly radical, stalked, broadly ovate or oblong, 3-12 by 2-6 in., toothed, all of this character in the autumn, or 1-6 in. long, deeply pinnately lobed, stem leaves few or none; flowers  $\frac{3}{4}$  in. long, purple, violet or whitish, in discoid heads 1-1 $\frac{1}{2}$  in. diam., on long stalks, receptacle bracts smooth, in several rows, inner narrow, long with blunt tips, outer ovate, short-pointed, receptacle bristly, bristles longer than the achenes, anther-bases forked, tails short, undivided, styles hairy, pappus hairs  $\frac{1}{3}$  in., brown, stiff; achenes  $\frac{1}{5}$  in., oblong-ovoid, broad, flattened, pale, quite, smooth.
- Ainsliea pteropoda**, medium size, perennial, felted, cottony or hairy, the flowering leafless stems appear in March and April, 1-2 ft. high, bearing many heads in spikes, after fruiting the stems disappear, in June the leaves appear 2-5 by 1 $\frac{1}{2}$ -3 in., ovate or heart-shaped, short- or long-pointed, narrowed into a broadly winged stalk, finely toothed, during July to September a new stem bearing leaves, many closed heads and buds appear, at the end of October the heads open and shed many seeds, but the corollas are concealed in the pappus, the leaves drop off in the winter and the buds produce perfect flowers in the spring; heads are discoid,
- Jurinea ceratocarpa**,  
COMPOSITÆ.  
F. B. I. iii. 378.  
Kashmir,  
9-15,000 ft.
- Serratula pallida**,  
COMPOSITÆ.  
F. B. I. iii. 379.  
Himalaya,  
6-8,000 ft.  
Simla (Collett).  
Kashmir.
- Ainsliea pteropoda**,  
COMPOSITÆ.  
F. B. I. iii. 388.  
Himalaya,  
east of the Sutlej,  
5-6,000 ft.  
Valleys below Simla  
(Collett).  
Kasauli.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

sessile, narrow,  $\frac{3}{4}$ - $\frac{1}{2}$  in. long, in spikes, bracts of heads many; erect, smooth, stiff, short-pointed, inner long, outer shorter; flowers 1-4, white or pinkish, 3 in a head as a rule, pappus feathery brownish, corolla tube slender, unequally 5-lobed; achenes  $\frac{1}{2}$  in., softly silky, 10-ribbed.

**Ainsliæa aptera,**  
**Aaron's Rod,**

COMPOSITÆ.  
F. B. I. iii. 388.  
Himalaya,  
6-8,000 ft.  
Simla, Mahasu  
(Collett).  
Kashmir.

very like the last species but in habit as well as appearance, but radical leaves not winged, flowering stalks longer, heads in clusters.

## INNER TUBULAR, OUTER LIGULATE.

**Solidago**  
**Virga-aurea,**  
**Golden rod,**  
COMPOSITÆ.  
F. B. I. iii. 245.  
Himalaya,  
5-9,000 ft.  
Simla (Collett).  
Kashmir.

small to large, perennial, smooth or velvety, stem stout, rarely branched; leaves lanceolate, lower 4-5 in., stalked, toothed, upper smaller, sessile, entire; flowers all yellow, ray flowers few in one row, strap-shaped, disk flowers tubular, 5-fid, in many heads,  $\frac{2}{3}$  in. long, crowded in a long, leafy terminal branching raceme, bracts of receptacle unequal, narrow, short-pointed, receptacle naked, pappus long, rough, style-arms flattened; achenes 8-12-ribbed, smooth or slightly velvety.

## FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

**Aster**  
**diplostephioides,**  
COMPOSITÆ.  
F. B. I. iii. 251.  
Himalaya,  
8-11,000 ft.  
Kashmir.

medium size to large, stout, stem 12-18 in., leafy, leaves 2-3 in., lanceolate or oblong-lanceolate, sessile, erect, short-pointed, entire, lower narrowed at the base; flowers inner yellow, tubular, 5-cleft, outer blue, long, strap-shaped, in solitary heads 3 in. diam., bracts of receptacle lanceolate, leafy, outer long up to 1 in., pappus reddish, outer very short, white, style-arms flattened; achenes  $\frac{1}{3}$  in., flattened, silky.

° HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

- Aster Laka,** small perennial, rootstock woody, felted, stem 6-8 in., short, stout, leaves ovate or heart-shaped, short-pointed, coarsely toothed, stalks broad, sheath-like, heads large, solitary on stout stalks, bracts of receptacle very large, ovate, blunt, leafy, achenes hairy, pappus hairs white or reddish equal to the corollas; for other characters see the last species.  
COMPOSITÆ.  
F. B. I. iii. 253.  
Himalaya,  
10-11,000 ft.  
Laka above  
Dharmsala  
(Edgeworth).
- Erigeron  
multiradiatus,** see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Inula racemosa,** see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Inula Royleana,** see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.
- Inula grandiflora,** large, perennial, stem bristly or hairy above, leafy; leaves 2-3 by  $\frac{3}{4}$  in., lanceolate, dilated at the base, sessile, glandular-toothed, fringed with long hairs; flowers  $\frac{3}{4}$ -1 in. long, all yellow, in large solitary heads, 2-2 $\frac{1}{2}$  in. diam.; bracts of receptacle toothed, inner narrow, short, outer long, leaf-like, inner corollas tubular, 5-toothed, outer strap-shaped, very slender,  $\frac{3}{4}$ -1 in. long, 3-toothed, pappus  $\frac{1}{6}$  in., dirty white, anther-tails forked, style-arms linear, blunt; achenes  $\frac{1}{4}$  in., angled, nearly smooth.  
COMPOSITÆ.  
F. B. I. iii. 294.  
Himalaya,  
8-12,000 ft.  
Matiana (Collett).  
Jalowri Pass in  
Kulu.  
Kashmir.
- Inula acuminata,** small, annual, stem 10-14 in., shining; leaves 1-4 in., base broad forked tapering to a long-pointed tip, sessile, heart-shaped, base slightly toothed, smooth, heads  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., few in clusters, bracts of receptacle narrow, linear, long-pointed, green, erect, ligulate flowers recurved, achenes  $\frac{1}{2}$  in. long with a few short hairs, pappus  $\frac{1}{8}$  in., pale red; for other characters see the last species.  
COMPOSITÆ.  
F. B. I. iii. 294.  
Himalaya,  
8,000 ft.  
Kashmir.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS. MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

**Tussilago Farfara,**  
**Colt's foot,**

COMPOSITÆ.

F. B. I. iii. 330.

Himalaya,  
6-11,000 ft.

Kashmir.

small, perennial, white, woolly, rootstock bearing runners; leaves all radical coming after the flowers, 3-10 in., long-stalked, circular-heart-shaped, toothed, cobwebby above, white felted beneath; flowers bright yellow, in solitary heads 1-1½ in. diam., on radical felted scaly leafless stalks 4-10 in. long, in the centre are about 40 tubular male flowers, surrounded by 300 female ligulate flowers, the female flowers are ripe before the male to prevent self-fertilisation, bracts of receptacle in one row, equal, with a few small outer ones, receptacle flat, naked, style-arms entire, blunt, pappus soft, very white; achenes slender, 5-10-ribbed.

**Cremanthodium**  
**Decaisnei,**

COMPOSITÆ.

F. B. I. iii. 331.

Himalaya,  
11,000 ft.

Kashmir.

small, perennial, more or less velvety; leaves chiefly radical, kidney-shaped, round-toothed, leathery, smooth or white-felted beneath, leaf stalk stout; flowers yellow, in solitary nodding heads, 1½-2½ in. diam. on leafless radical stalks, bracts of receptacle oblong, broad, long-pointed, inner corollas tubular, 5-cleft, ligulate, outer ligules broad, 3-toothed, style-arms blunt, entire, linear; achenes ½ in. long, slender, 5-10-ribbed, pappus copious, white, rough.

**Doronicum**  
**Falconeri,**

COMPOSITÆ.

F. B. I. iii. 333.

Kashmir.

18,000 ft.

medium size, perennial, slightly velvety or smooth, stout, stem 12-18 in. high, nearly naked above; leaves 5-6 in. long, ovate with a broad tip or spoon-shaped, stalked, slightly toothed; flowers yellow, in 1-2 glandular-hairy heads, 2-3 in. diam., base top-shaped, bracts of the receptacle linear-lanceolate, long-pointed, in 2 rows, green, receptacle naked, corollas inner tubular, 5-fid, outer ligulate, ligules very many, longer than the bracts, entire or 2-3-toothed, style-arms linear, no pappus in ligulate corollas, pappus of tubular corollas short, reddish; achenes oblong-top-shaped, 10-to many-ribbed.

**Senecio nudicaulis,**  
COMPOSITÆ.

F. B. I. iii. 340.

Himalaya,  
5-10,000 ft.

Simla (Collett),  
Dharmpur, Sakesar,  
Salt Range.

medium size, annual or biennial, stems 12-24 in., smooth, grooved; leaves 2-3 in. ovate with a broad tip, or spoon-shaped, round- or sharp-pointed, smooth above, white or purple-felted beneath, radical leaves spreading, narrowed into a winged stalk, stem leaves few, sessile, base stem-clasping; flowers yellow, in many-flowered heads ½ in. diam., forming terminal flat-topped clusters, bracts of the receptacle 10-14, in one row, ovate, pointed, 3-nerved,

HERBS, UNBRANCHED WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

margins broad, thin, receptacle flat, naked, corollas, inner tubular, bell-shaped, 5-fid, outer ligulate, ligules conspicuous, long, narrow, 3-toothed, style-arms blunt, tips minutely hairy, pappus white copious, soft; achenes nearly cylindrical, 5-10-ribbed

**Senecio alatus,**

COMPOSITÆ.

F. B. I. iii 353

Himalaya,

6-9,000 ft

Narkanda (Collett).

The Chor.

medium size to large, smooth, velvety or cottony, stem short or long, stout, 1-4 ft., leaves 5-12 by 4-6 in., ovate-heart-shaped, or ovate-lanceolate, long-pointed, toothed, thin, stalk long with broad toothed wings, stem beyond the leaves long, simple or branched; flowers yellow in 4-6-flowered slender, cylindrical, shortly stalked heads  $\frac{1}{2}$ - $\frac{1}{2}$  in. diam., in short racemes, forming large, ovate, terminal branched clusters, bracts of receptacles 4-7, linear, blunt, velvety, corollas, inner tubular, 5-fid, outer 2 ligulate, ligules broad, conspicuous, minutely 3-toothed; achenes  $\frac{1}{10}$  in. long, slender, smooth, or slightly velvety, ribbed, pappus white, much shorter than the tubular corollas.

**Senecio Kunthianus,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Centaurea Cyanus,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Centaurea depressa,**

see Herbs, Erect, Alternate, Exstipulate, Lobed

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Koelpinia linearis,**

COMPOSITÆ.

F. B. I. iii. 392.

The Plains, west of the Jhelum, to 14,000 ft.

Rawalpindi (Douie)

Kashmir.

small, annual, smooth, or slightly velvety, root slender, stem 6-12 in., leafy, sometimes branched; leaves 2-6 by  $\frac{1}{10}$ - $\frac{1}{4}$  in., chiefly radical, linear, gradually narrowed at both ends, quite entire; flowers yellow, all ligulate in small stalked heads  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., bracts of receptacle 5-7, narrow, nearly equal, thin, base keeled, outer very few, small, receptacle naked, corollas all ligulate, ligules 5-toothed, anther-bases forked; achenes  $\frac{1}{3}$ - $\frac{2}{3}$  in. longer than the bracts, narrowly linear, incurved like birds' claws, ribbed, dorsal ribs with hooked spines, terminal spines star-shaped.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Crepis sibirica**,  
COMPOSITÆ.  
F. B. I. iii. 394.  
Himalaya,  
6-10,000 ft.  
Kashmir.

small to medium size, perennial, more or less rough, root spindle-shaped, very stout, stem 6-18 in., sometimes branched; leaves 6-12 in., lowest stalked, lanceolate with a broad long-pointed tip, toothed or pinnately divided, end lobe largest, minutely toothed, stem leaves heart-shaped, half stem-clasping; flowers yellow, all strap-shaped, in few stalked heads 1 in. diam., in terminal clusters, bracts of receptacle blunt, bristly, velvety; outer broadly ovate, inner linear, pappus  $\frac{1}{4}$  in., scanty, soft; achenes  $\frac{1}{2}$  in., slender, ribbed, smooth, pale brown, gradually narrowed into a slender beak.

**Crepis blattaroides**,  
**Hawk's Beard**,  
COMPOSITÆ.  
F. B. I. iii. 394.  
Kashmir.  
Sonemarg,  
11,500 ft.

like the last species, but larger, leaves 2-4 by 1-2 in., oblong-ovate with a broad short tip, entire or toothed, stem leaves few, large, sessile, bracts of receptacle lanceolate, sharp-pointed, achenes  $\frac{1}{3}$  in., red-brown, outer curved.

**Crepis acaulis**,  
COMPOSITÆ.  
F. B. I. iii. 396.  
Himalaya,  
east of the Chenab,  
1-3,000 ft.

small, perennial, stemless, smooth, root woody, straight, cylindric; leaves chiefly radical, 2-12 in. long, lanceolate, linear, blunt or short-pointed, entire, toothed or pinnately divided; flowers yellow, in few heads, 1 in. long. 10-12-flowered on bracteolate stalks, 3-10 in., shorter than the leaves, outer bracts of receptacle very small, inner linear; achenes  $\frac{1}{4}$  in., oblong with rounded ends, flattened, ribs 10-20, smooth, pappus soft, silvery, longer than the achenes.

**Crepis Stoliczkae**,  
COMPOSITÆ.  
F. B. I. iii. 396.  
Himalaya,  
10-13,000 ft.  
Kashmir, Tilail,  
Lahul.

like the last species but hairy, leaves long-stalked, heads  $\frac{1}{2}$  in. long, achenes  $\frac{1}{3}$  in., red-brown, pappus shorter than the achenes.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Pterotheca**

**Falconeri,**

COMPOSITÆ.

F. B. I. iii. 399.

Himalaya,

5-9,000 ft.

Matiana, Baghi

(Collett).

Kashmir.

small to medium size; annual, stems many, rough, or glandular or smoothish; leaves radical, 2-8 in., nearly sessile, ovate with a broad tip or long and spoon-shaped, toothed or pinnately divided; flowers yellow, in heads  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., on slender stalks, bracts of receptacle velvety, inner ones 8-10, equal, linear, short-pointed, outer few, small, usually spreading, receptacle flat, hairy, ligules long, broad, spreading, 5-toothed; achenes  $\frac{1}{3}$  in., linear, prominently ribbed, minutely wrinkled, narrowed to both ends, not beaked, red when ripe, pappus very short, soft, white, not feathery.

**Hieracium crocatum,**

**Hawk's weed,**

COMPOSITÆ.

F. B. I. iii. 400.

Himalaya,

west of the Sutlej,

6-8,000 ft.

Dalhousie.

Kashmir.

medium size, perennial, smooth or hairy, juice milky, stem 12-24 in., straight, sometimes branched, leafy; leaves radical none, stem leaves 1-5 in., sessile, oblong with round ends, linear-oblong or lanceolate, waxy beneath, base rounded, or heart-shaped, entire or toothed; flowers yellow, in heads  $\frac{3}{4}$  in. diam., few or many and erect on downy, hairy, or smooth stalks, bracts of receptacle smooth, flat-lying, blunt, outer often slender, recurved, ligules 5-toothed, long, spreading, pappus copious, rough, rigid, brittle, tawny; achenes  $\frac{1}{6}$  in., cylindric, faintly ribbed, black, shining, not beaked.

**Hieracium virosum,**

COMPOSITÆ.

F. B. I. iii. 400.

Kashmir.

7-8,000 ft.

Srinagar.

medium size, perennial, smooth or very little hairy waxy green, stem stout, leafy, stiff, leaves 1-3 in., sessile, short, leathery, oblong-ovate, base heart-shaped, toothed, crowded, smooth above, slightly bristly on the margins and beneath, flowers yellow, in many heads,  $\frac{2}{3}$  in. diam., in short terminal bracteate umbellate flat-topped clusters, stalks short, stout, bracteolate, bracts of receptacle smooth, outermost small, spreading, achenes  $\frac{1}{10}$  in., red-brown; for other characters see the last species.

**Lactuca**

**rapunculoides,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca Lessertiana,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca**

**sagittarioides,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Lactuca polycephala,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Frenanthes**

**Brunoniana,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Prenanthes  
violæfolia,**  
COMPOSITÆ.  
F. B. I. iii. 412.  
Himalaya,  
9-12,000 ft  
Hattu (Collett).  
Kashmir.

small, very slender, juice milky, smooth except a few hairs on the leaf stalk, stem 12 in., sometimes sparingly branched; leaves 1-2 in. long and broad, long-stalked, ovate-heart-shaped, triangular or forked, tip and basal lobes blunt or short-pointed, entire or obscurely toothed, waxy bluish-green beneath, leaf stalk sometimes winged, or dilated at the base, rarely with a pair of oblong lobes; flowers 3-8, purple, in few, nearly solitary, pendulous heads,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, in racemes, bracts of receptacle  $\frac{1}{2}$  in., inner linear, blunt, outer very small, receptacle flat, naked, pappus white, ligules 5-toothed, long, spreading, style-arms long; achenes  $\frac{1}{8}$  in., oblong with rounded ends, contracted at both ends, smooth, angled, not beaked. The achenes differentiate it from *Lactuca*.

**Pieridium  
tingitanum,**  
COMPOSITÆ.  
F. B. I. iii. 413.  
The Plains.  
The Salt Range,  
Tilla.  
Baluchistan.

small to medium size, annual, juice milky, smooth, stem 6-18 in., stout; leaves 1-5 in., radical long, ovate with a broad tip, or spoon-shaped, blunt, toothed, or pinnately divided, stem leaves half stem-clasping, base forked into 2 lobes; flowers yellow, in heads  $1\frac{1}{2}$  in. diam., stalk thickened under the head, bracts of receptacle heart-shaped, very broad, thin margins thickened, tips inner oblong, receptacle flat, naked; achenes  $\frac{1}{10}$  in. long, pale corky, 4-angled or 4-ribbed, pappus  $\frac{1}{2}$  in., very soft and white, united at the base into a ring.

**Tragopogon gracile,**  
COMPOSITÆ.  
F. B. I. iii. 417.  
Himalaya,  
6-10,000 ft.  
Simla (Collett).  
Hazara.  
Baluchistan.

small to medium size, biennial or perennial, quite smooth, juice milky; leaves 3-10 by  $\frac{1}{8}$ - $\frac{1}{4}$  in., very narrow, linear, keeled, zig-zag, stem clasping, base dilated, radical often equalling the flower stalk; flowers yellow, in terminal large long-stalked heads, stalk not thickened above, bracts of receptacle 5-8,  $\frac{1}{2}$ - $1\frac{1}{4}$  in. long, shorter than the flowers, green, receptacle pitted; achenes  $\frac{1}{2}$  in., smooth, slender, 5-angled, 5-10-ribbed, ribs smooth, beak short, not slender, pappus feathery, united in a basal ring.

**Tragopogon  
pratense,  
Goat's beard,**  
COMPOSITÆ.  
F. B. I. iii. 418.  
Himalaya,  
12-14,000 ft.

like the last species, but stem often branched, leafy, flower stalk hardly thickened above, bracts sometimes longer than the flowers, achenes  $\frac{3}{4}$ -1 in., beak long, rough with short projections.



HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Tragopogon  
porrifolium,**

COMPOSITÆ.

F. B. I. iii. 418.

Himalaya,  
6-10,000 ft.

Simla (Collett).

like the last species, but flowers purple, flower stalk much thickened above.

**Scorzonera  
Stewartii,**

COMPOSITÆ.

F. B. I. iii. 419.

The Plains, west of  
the Jhelum, Harru,  
Peshawar.

small, annual, stemless; leaves 3-8 by  $\frac{1}{10}$ - $\frac{1}{6}$  in., grass-like, linear or slightly dilated beyond the middle, woolly or almost smooth below; flowers yellow, in solitary, felted or almost smooth heads  $\frac{1}{2}$ -1 in. long. on naked stalks, usually shorter than the leaves, bracts of receptacle shorter than the flowers, outer ovate, short-pointed, inner oblong-lanceolate; achenes  $\frac{1}{3}$  in. long, linear-oblong with 3 broad or 3 narrower white wings, ribbed, ribs with an irregular row of spinules, pappus reddish, as long as the achenes.

**Epilasia ammophila,**

COMPOSITÆ.

F. B. I. iii. 419.

The Plains, west of  
the Jhelum.

Sat Range.

Rawalpindi.

Baluchistan.

small, annual, smooth, stemless or with stout leafy stem 6 in. high; leaves 1-4 by  $\frac{1}{6}$ - $\frac{1}{3}$  in., very narrowly linear or dilated about the middle, tip blunt, hard; flowers bluish, in solitary bell-shaped heads,  $\frac{1}{3}$ - $\frac{1}{2}$  in., on stout naked hollow stalks, one or more, 2-6 in. long, bracts of receptacle few, inner ovate-lanceolate, blunt, outer leafy, spreading, often projecting far above the heads; achenes  $\frac{1}{3}$  in. long, short, 10-20-ribbed, ribs minutely toothed, pappus dark brown, silky, hairs mostly feathery.

FLOWERS NOT IN HEADS.

**Wahlenbergia  
gracilis,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Sphenoclea  
zeylanica,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Toothed.

**Phyteuma  
Thomsoni,**

CAMPANULACEÆ.

F. B. I. iii. 438.

Himalaya, west of  
the Chenab,

6-8,000 ft.

Kashmir.

small to large, perennial, nearly smooth, stems 6-48 in.; leaves, lower nearly circular stalked, stem leaves 3 by  $1\frac{1}{2}$  in., stalked, ovate-lanceolate, slightly round-toothed; flowers blue, small, many in loose branching racemes, branches 6-12 in., naked, minor flower stalks  $\frac{1}{8}$ - $\frac{1}{4}$  in., calyx teeth,  $\frac{1}{4}$  in., 5, awl-shaped, corolla wheel-shaped, lobed nearly to the base, lobes 5,  $\frac{1}{4}$ - $\frac{1}{3}$  by  $\frac{1}{10}$ - $\frac{1}{8}$  in., linear-oblong, stamens 5, very short, velvety, stigma 2-lobed; capsule 2-celled, seeds minute, oblong with rounded ends.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Campanula aristata**, small to medium size, annual, smooth, stem 8-24 in. ;  
 CAMPANULACEÆ. leaves, radical oblong, tapering equally at base and tip,  
 F. B. I. iii. 441. long-stalked, nearly entire, stem leaves  $1\frac{1}{2}$  by  $\frac{1}{10}$ - $\frac{1}{6}$  in.,  
 Himalaya, linear ; flowers  $\frac{1}{3}$  in., deep blue, solitary, on a main stalk,  
 11-16,000 ft.  $\frac{1}{2}$ - $\frac{1}{10}$  in., calyx teeth 5,  $\frac{1}{3}$  in. linear, corolla cone-shaped,  
 Kashmir. lobes 5, lobed half way down, stamens 5 ; capsule  $\frac{3}{4}$  by  $\frac{1}{6}$   
 in., narrowly oblong or nearly linear, contracted near the  
 top, opening by valves close to the top, seeds very small,  
 oblong with rounded ends.
- Pyrola rotundifolia**, small, perennial, with short leafy stems and with  
 Larger Wintergreen, annual flower stalks, smooth ; leaves 1-2 in. diam., cir-  
 ERICACEÆ. cular, or broadly ovate, or ovate with a broad tip, or nar-  
 F. B. I. iii. 475. rowed at both ends, stalk about equal to the blade in length ;  
 Himalaya, flowers  $\frac{1}{3}$  in. diam., white and pink, drooping, in many-  
 9-10,000 ft. flowered racemes on stalks 6-8 in. long, calyx deeply 5-  
 Kashmir. lobed, persistent, lobes broadly ovate, or ovate-lanceolate,  
 petals 5,  $\frac{1}{4}$  in. long, circular or ovate with a broad tip,  
 concave, sessile, stamens 10, style equal to or longer than  
 the petals, stigma 5-lobed ; capsule  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., 5-celled,  
 crowned by the persistent style, seeds minute.
- Acantholimon** small, prickly, densely tufted ; leaves 1 by  $\frac{1}{2}$  in.,  
**lycopodices**, linear-lanceolate, crowded, needle-pointed ; flowers  $\frac{1}{2}$  in.  
 PLUMBAGINACEÆ. diam., rose-red, in branching spikes on many-flowered  
 F. B. I. iii. 479. radical stalks, bracts 3, leathery with transparent mar-  
 North Kashmir, gins, calyx-tube  $\frac{1}{6}$ - $\frac{1}{5}$  in., cylindric, 10-ribbed, smooth,  
 11-14,000 ft. mouth widely funnel-shaped, petals 5, oblong or ovate with  
 a broad tip, united at the base with the stamens, stamens  
 5, opposite the petals, styles 5, distinct ; capsule within  
 the calyx, oblong or 5-angled, thin, seeds cylindric.
- Statice cabulica**, small to medium size, annual ; leaves  $1\frac{1}{2}$  by  $\frac{2}{3}$  in., all  
 PLUMBAGINACEÆ. radical, oblong, spoon-shaped ; flowers small, pink, nearly  
 F. B. I. iii. 480. sessile, scattered along the branches of a branching raceme  
 The Plains, west of on a solitary, erect, radical flower-stalk, 12-36 in. long,  
 the Jhelum. bracts  $\frac{1}{4}$  in., ovate or oblong, blunt with a large stiff point,  
 to 4,000 ft. leathery, margin thin, calyx with soft scattered hairs  
 Baluchistan. without, calyx tube  $\frac{1}{4}$ - $\frac{1}{3}$  in., very narrow, smooth at first,  
 funnel-shaped, with 5 ribs, in fruit only the 5 recurved  
 ribs remain, petals 5, oblong spoon-shaped, united below  
 with the stamens, stamens 5 opposite the petals, styles 5,  
 distinct ; capsule within the calyx, oblong, spindle shaped.
- Eritrichium** see Herbs, Erect, Alternate, Exstipulate, Simple,  
**strictum**, Entiro.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Onosma echioides**,  
*Ratanjot, laljari,*  
*koame.*

BORAGINACEÆ.  
F. B. I. iv. 178.  
Kashmir,  
5-9,000 ft.

small to medium size, biennial, hairy, stems 8-20 in., leaves oblong, stem leaves  $2\frac{1}{2}$  by  $\frac{1}{2}$  in.; flowers  $\frac{3}{4}$  in., yellow, in one-sided, often forked, racemes, 1-6 in., bracts  $\frac{1}{2}$ -1 in., leaf-like, calyx 5-lobed, lobes  $\frac{1}{3}$  in., narrowly oblong, in fruit 1 in. long sometimes, corolla  $\frac{1}{4}$  in. diam. at the top, smooth without, tubular, lobes 5, very short, stamens 5, attached near the middle of the corolla tube, linear, style longer than the stamens; nutlets 4,  $\frac{1}{5}$ - $\frac{1}{4}$  in. long, stony, shining, white, smooth, often speckled. The root supplies a red dye for wool and is used for skin diseases, the leaves are used as alteratives, the flowers as a cardiac tonic.

**Onosma Thomsoni**,

BORAGINACEÆ.  
F. B. I. iv. 178.  
Kashmir,  
6,000 ft.  
Banahal (Thomson).

like the last species, but perennial, leaves linear, white-woolly beneath, racemes small, bracts  $\frac{1}{3}$  in., linear, calyx not enlarged in fruit, nutlets smaller.

**Onosma bracteatum**,

*Gaozaban.*  
BORAGINACEÆ.  
F. B. I. iv. 178.  
Himalaya,  
5-9,000 ft.  
Kashmir.

like the last species, but stems much shorter, leaves much larger, lanceolate, rough above, silky white beneath, racemes short, round, calyx lobes enlarged in fruit to 1 in., flowers purple, nutlets rough. There is some doubt whether the *gaozaban* of the bazaars which comes from Persia is obtained from this plant, possibly the leaves are from one species and the flowers from another, it is much used in Indian medicine as a demulcent and alterative.

**Verbascum Thapsus**,  
**Great Mullein**,

SCROPHULARIACEÆ.  
F. B. I. iv. 250.  
Himalaya,  
6-11,000 ft.  
Simla, Mashobra  
(Collett).  
Kashmir.

large, densely covered with soft, yellow-grey star-shaped hairs, stem 3-6 ft., stout, winged with the prolonged leaf-bases; leaves, radical and lower 4-12 in., stalked, ovate, upper 6-18 in., sessile, oblong-lanceolate; flowers  $\frac{3}{4}$ -1 in. diam., yellow, nearly sessile, crowded in terminal woolly spikes, bracts longer than the flowers, calyx 5-lobed, lobes overlapping, corolla concave, woolly outside, tube very short, lobes 5, spreading, nearly equal, broad, blunt, stamens 5, 3 short, hairy, 2 longer, smooth, style-top dilated, stigma simple; capsule ovoid, felted, seeds many, wrinkled, not winged.

**Striga lutea**,

see Herbs, Erect, Opposite, Exstipulate, Simple,  
Corolla 2-lipped, Stamens 4.

**Striga euphrasioides**,

see Herbs, Erect, Opposite, Exstipulate, Simple,  
Corolla 2-lipped, Stamens 4.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES,

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

**Microstylis Walichii**, small, root perennial, annual flowering stalk swollen at the base, 6-10 in., ribbed, stem 2-3 in., leaves 2-4, usually 3, 4 by 2 in., ovate-lanceolate, short-pointed, sheathing at the base; flowers  $\frac{1}{2}$  in. long, yellow-green, more or less tinged with purple, in terminal racemes, bracts lanceolate, shorter than the capsule, sepals oblong, 2 lateral rather shorter than the dorsal, petals linear, longer than the sepals, margins recurved, lips shield-like, broadly ovate, tip notched, basal lobes straight, short-pointed, sometimes slightly overlapping, spur none, column very short, anther sessile, stigma concave with short arms, just below the anther; capsule ovoid, ribbed, seeds very many, minute.

ORCHIDACEÆ.  
F. B. I. v. 686.  
Himalaya,  
east of the Sutlej,  
4-7,000 ft.  
Simla, in woods  
(Collett).

**Microstylis muscifera**, see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Microstylis cylindrostachya**, like the last species, but leaf only one, oblong or ovate, flowers  $\frac{1}{8}$  in., crowded, sepals broadly lanceolate, petals shorter than the sepals, lip ovate, abruptly pointed, margin thickened, column without arms.

ORCHIDACEÆ.  
F. B. I. v. 689.  
Himalaya,  
east of the Sutlej,  
7-8,000 ft.  
Simla (Collett).

**Liparis rostrata**, see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Liparis paradoxa**, smooth to medium size, perennial, roots fibrous, stem swollen at the base; leaves 3-5, broadly lanceolate, 5 by 2½ in., sessile, sheathing, long-pointed; flowers  $\frac{1}{3}$  in. across, yellow-green, striped with purple, in a terminal raceme on a stout angular naked main flowering stalk, 4-10 in. long, bracts  $\frac{1}{2}$  in. below to  $\frac{1}{6}$  in. above, triangular, sepals linear, yellow-green, margins reflexed, tip thin, short-pointed, petals oblong, striped yellow and purple, shorter than the sepals, tip inrolled, lip dull purple, 2 small conical glands at its base, flat, broad reflexed, notched, column long, curved, upper half winged, spur none; capsule club-shaped.

ORCHIDACEÆ.  
F. B. I. v. 694.  
Himalaya,  
east of the Sutlej,  
6-8,000 ft.  
Mahasu (Collett).

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

**Oreorchis foliosa**,  
ORCHIDACEÆ.  
F. B. I. v. 709.  
Himalaya,  
east of the Suttlej,  
Mashobra, Mahasu,  
(Collett).

small, perennial, root tuberous, leaf one, 3-6 in., linear-lanceolate, narrowed down into a stalk, nerves prominent; flowers  $\frac{1}{2}$  in long, red, shortly stalked in a terminal raceme on a slender main stalk 6-12 in., bracts  $\frac{1}{4}$  in. lanceolate, sepals linear-oblong, upper one straight, blunt, side ones curved, pointed, petals broadly oblong, blunt, lip 3-lobed, side lobes short, turned up, mid-lobe large, spreading, notched, lip attached to the foot of the column by a narrow recurved claw, spur none, column long, curved.

**Oreorchis indica**,  
ORCHIDACEÆ  
F. B. I. v. 709.  
Himalaya,  
8-9,000 ft.  
Hattu (Collett).

like the last species, but stouter, flowers larger, petals curved.

**Oreorchis micrantha**,  
ORCHIDACEÆ.  
F. B. I. v. 709.  
Himalaya,  
8-10,000 ft.  
Mashobra, Mahasu  
(Collett).

like the last species, but leaves longer, 12 by  $\frac{1}{2}$  in., flowers white spotted with purple,  $\frac{1}{3}$  in. across, mid-lobe of lip crumpled, as well as notched.

**Calanthe tricarinata**,  
ORCHIDACEÆ.  
F. B. I. v. 847  
Himalaya,  
5-9 000 ft.  
Mahasu, Narkanda  
(Collett).  
Kashmir.

medium size, perennial, root fibrous, stem swollen at the base; leaves 2-3, ovate, plaited, narrowed to the sheathing base, 8-15 by 2-3 in.; flowers  $\frac{3}{4}$  in. across, green outside, edged with white, yellow-green inside, sepals and petals nearly equal, lanceolate, spreading, lip at the base joined to the side of the column, 3-lobed, side lobes small, rounded, erect, mid-lobe large, spreading, broad, with 3 large, purple, fleshy ridges along the middle, margin crumpled, tip rounded, spur none, column short, thick, obliquely abruptly cut at the top, anther purple, conical, sessile on the top of the column; capsule drooping.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

**Calanthe puberula**,  
ORCHIDACEÆ.  
F. B. I. v. 848.  
Himalaya,  
east of the Sutlej,  
4-6 000 ft.  
Below Narkanda  
(Collett).

like the last species, but leaves 5-7, 4-6 by  $1\frac{3}{4}$ -2 in., ovate-lanceolate, narrowly pointed, flowers 1 in. across, pale lavender, mid-lobe of lip with 2 ridges at the base between the flat side-lobes, margin toothed, tip pointed, anther lavender.

**Calanthe plantaginea**,  
ORCHIDACEÆ.  
F. B. I. v. 853.  
Himalaya,  
east of the Sutlej,  
6-9,000 ft.  
Simla, the waterfall  
below Elysium  
(Collett).

like the last species, but leaves many, 10 by 2 in., narrowly lanceolate, flowers  $1\frac{1}{4}$  in. across, pale pink, mid-lobe of lip with 3 small ridges at the base, tip wedge-shaped, spur long, slender.

**Eulophia campestris**,

see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Anætochilus  
Roxburghii**,

see Herbs, Unbranched, Opposite, Exstipulate, Simple

**Spiranthes australis**,

see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Zeuxine sulcata**,  
ORCHIDACEÆ.  
F. B. I. vi. 106.  
The Plains, Mari-  
Ravalpindi.

small to medium size, perennial, stem 2-6 in. high, smooth, leafy to the top; leaves 1-2 in., few or many, sessile, linear-lanceolate, erect, long-pointed, margins usually turned in, reddish; flowers  $\frac{1}{3}$  in. across, white, yellowish or pale pink, sweet-scented on spikes  $\frac{1}{2}$ -2 in., dense-flowered, bracts  $\frac{1}{4}$ - $\frac{1}{2}$  in., erect, lanceolate, long-pointed, transparent, sepals  $\frac{1}{6}$  in., oblong, blunt, thin, petals oblong, blunt, transparent, lip yellow, equal to the sepals, boat-shaped, ending in a short velvety claw-tipped extremity with 1 or 2 lobes, column short, 2-keeled in front, stigmatic lobes 2 marginal, anther ovate, short; capsule  $\frac{1}{4}$  in. long, oblong with rounded ends.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

**Cephalanthera ensifolia**,  
**Narrow Helleborine**,  
 ORCHIDACEÆ.  
 F. B. I. vi. 125.  
 Himalaya,  
 6-12,000 ft.  
 Mahasu, Fagu,  
 Matiana in forests  
 (Collett).  
 Narkanda, Jaku,  
 Kashmir.

small to medium size, perennial, nearly or quite smooth, rootstock creeping, fibres many, long, thick, stem 6-18 in., grooved, leafy, lower part often has long sheathing scales; leaves 2-6 in., sessile, short-pointed, folded, lower lanceolate, upper almost linear-lanceolate; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, white or lip spotted yellow, almost erect, bracts ovate, upper ones smaller than the ovaries, lower usually long, sepals and petals  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, tips converging, sepals lanceolate, short-pointed, petals ovate, blunt, lip erect, deeply 3-lobed, base hollow, embracing the base of the column side-lobes erect, rounded, mid-lobe broadly triangular, ridged and marked with a yellow spot, tip bluntly toothed, recurved, spur none, anther terminal, stigma broad, below the anther; capsule erect.

**Epipactis latifolia**,  
**Broad Epipactis**,  
 ORCHIDACEÆ.  
 F. B. I. vi. 125.  
 Himalaya,  
 6-10,000 ft.  
 Simla, Jaku  
 (Collett).  
 Dalhousie.

medium size to large, perennial, rootstock creeping, fibrous, stem 12-36 in., stout, slightly velvety above, leafy, leaves  $2\frac{1}{2}$ -6 by 2-3 in., stem-clasping, lower orbicular, upper ovate-lanceolate, 4 by 2 in.; flowers  $\frac{1}{2}$  in. diam., dingy purple, crowded, bracts leafy, lanceolate, short-pointed, lower 2- $2\frac{1}{2}$  in., upper  $\frac{1}{2}$ -1 in., sepals and petals  $\frac{3}{8}$  in., lanceolate, short-pointed, ultimately spreading, smooth or nearly so, lip  $\frac{1}{4}$  in. long, jointed to the base of the column, base bowl-shaped, margins rounded, terminal part shorter, flat, triangular with 2 protuberances at the base, margins crumpled, almost toothed, spur none, column short, anther terminal, lobes 4, above the broad stigma.

**Epipactis consimilis**,  
 ORCHIDACEÆ.  
 F. B. I. vi. 126.  
 Himalaya,  
 3-5,000 ft.  
 Sutlej Valley  
 (Collett).  
 Peshawar, Kashmir.

stem 12-24 in., slender, leaves 6 by  $1\frac{1}{4}$  in. lanceolate, narrow, long-pointed, flowers 1 in. diam., orange-green, sometimes spotted, distant, sepals and petals  $\frac{1}{2}$  in., velvety, lip  $\frac{1}{2}$  in., base narrow, boat-shaped, terminal part 3-lobed, side-lobes turned up, tip lanceolate, spreading; for other characters see the last species.

**Epipactis Royleana**,  
 ORCHIDACEÆ.  
 F. B. I. vi. 126.  
 Himalaya,  
 7-8,000 ft.  
 Kashmir.

like the last species, but more robust, lower leaves 3 by  $1\frac{3}{4}$  in., orbicular, upper lanceolate, flowers 1 in. diam., red with yellow centre, lip longer than the sepals.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

**Orchis latifolia,**  
**Marsh orchis,**  
*Salap, salab.*  
ORCHIDACEÆ.  
F. B. I. vi. 127.  
Himalaya,  
8-12,000 ft.  
Hattu, on wet  
ground (Collett).  
Kadrala, Kashmir.

medium size to large, perennial, smooth, root tuberous, flattened, divided into 2 or 3 lobes; stem 12-36 in., stout, hollow, leafy or bearing below sheathing scales; leaves 2-6 in., oblong lanceolate, blunt, base sheathing; flowers  $\frac{2}{3}$  in. long, dull purple, crowded, lip spotted, on a cylindric crowded spike 1-6 in. long, bracts green, narrowly lanceolate, lower much longer than the flowers, upper slightly so or shorter, sepals and petals nearly equal, lateral sepals spreading, dorsal one with the petals forming a hood over the very short column, lip joined to the column, turned down, round, almost 3-lobed, margins minutely toothed, spur straight, cylindric, nearly equal to the ovary, anther united to the column, cells separating, lobes 2, united to 2 round sticky glands above the broad 2-lobed stigma. *Salap* in the bazaars is imported; the drug is much esteemed by Indians as a nervine tonic and aphrodisiac.

**Herminium**  
**monorchis,**  
**Musk orchis,**  
ORCHIDACEÆ.  
F. B. I. vi. 128.  
Himalaya,  
10-13,000 ft.  
Kashmir.

small, perennial, root of an oblong tuber, undivided; leaves 2, rarely 3, 1-4 in., linear-oblong, flower stalk naked, rarely 2-leaves or 1-sheathed; flowers  $\frac{1}{2}$  in. diam., yellow-green, musky at night, curved down, nearly all on one side of the spike, 1-2 in., bracts equalling or shorter than the ovary, sepals and petals almost forming a hood, sepals oblong, blunt, petals unequal-sided towards the base, tips fleshy, ovate, hardly longer than the sepals, spur none, lip hardly longer than the sepals, 3-lobed, lobes narrow, base concave, column very short, stigma 2-lobed, anther joined to the face of the column, cells 2, attached to 2 round sticky glands; in young flowers these are hidden in a minute shiny brown pouch.

**Herminium**  
**angustifolium,**  
ORCHIDACEÆ.  
F. B. I. vi. 129.  
Himalaya,  
4-8,000 ft.  
Simla (Collett).

medium size to large, stout or slender, root of 2 small ovoid tubers, stem 12-28 in., slender, leafy, leaves 4-8 in., few, linear, short-pointed, sheathing, flowers  $\frac{1}{4}$  in. long, green in crowded spike 2-10 in. long, bracts equal to the ovary, sepals oblong, blunt, petals linear, thin, short pointed, lip linear, equal to or longer than the sepals, narrow, trifid beyond the middle, side-lobes thread-like, mid-lobe very short, capsule  $\frac{1}{4}$  in., oblong, swollen; for other characters see the last species.



HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

**Herminium  
pugioniforme,**  
ORCHIDACEÆ.  
F. B. I. vi. 130.  
Himalaya,  
12-14,000 ft.  
Kashmir.

small, 2-5 in. high, leaf solitary, long-spoon-shaped, blunt, shorter than the flower spike, flowers  $\frac{1}{12}$  in. diam., on a few-flowered spike, bracts minute, orbicular, dorsal sepal orbicular, lateral very broad, blunt, petals smaller, oblong-ovate, lip dagger-shaped, not divided, hardly longer than the sepals, base dilated; for other characters see the last species.

**Herminium  
gramineum,**  
ORCHIDACEÆ.  
F. B. I. vi. 131.  
Himalaya,  
5-8,000 ft.  
Simla (Douie).

small, perennial, very slender, 1-leaved, 2-6 in. high, leaf linear, 1-4 in., short-pointed, flowers  $\frac{1}{10}$ - $\frac{1}{6}$  in. diam., greenish, facing one way, nearly erect, in a loose-flowered spike, 1-3 $\frac{1}{2}$  in. long, bracts awl-shaped, equal to the ovary, dorsal sepals oblong or broadly ovate, lateral ovate, blunt, spreading, petals erect, linear, almost sword-shaped, equal in length to the sepals, blunt, lip ovate, long-pointed, flat with a hollow base, slightly pouched beneath, equal to or shorter than the sepals, undivided, rostellum very large, equal to the anther, recurved, fleshy; for other characters see the last species.

**Habenaria  
stenopetala,**  
ORCHIDACEÆ.  
F. B. I. vi. 134.  
Road to Kashmir  
(Roy'e).

medium size, perennial, root tuberous, fibres fleshy stem leafy; leaves 6-8 in., oblong or ovate-lanceolate, stem-clasping, base narrowed or broad, stalked or sessile; flowers 1 in. diam., greenish, in many flowered short racemes 4-6 in. long, bracts thin, equal to the ovaries, sepals  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, oblong-lanceolate, thin, 3-nerved, tips thread-like, as long as or shorter than the blade, petals deeply lobed, lobes slender, equal, or lower shorter, sometimes absent, lip divided into 3 thread-like segments, spur long, slender, equal to the ovary, anther-cells narrow, stigmatic processes long, club-shaped, rostellum large, triangular, erect; capsule  $\frac{1}{2}$ - $\frac{2}{3}$  in., linear-oblong.

**Habenaria digitata.**  
ORCHIDACEÆ.  
F. B. I. vi. 134.  
Kashmir  
(Falconer).

like the last species, but leaves ovate or ovate-oblong, bracts larger than the flowers, spur nearly clubbed with a minute erect tongue at mouth, capsule spindle-shaped, ribs thick,

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## STAMENS NONE

## ANTHER ONE.

- Habenaria Susannæ**, large, perennial, tubers 3-4 in. long, stem 2-4 ft., stout, ORCHIDACEÆ. leafy; leaves 2-6 in., ovate-oblong, upper hooded, sheathing; flowers 2-4 in. diam., white, fragrant, nearly sessile, F. B. I. vi. 137. erect, in a 3-5-flowered raceme, bracts leafy, sepals spreading, lateral oblong, ascending, blunt, dorsal very broad, Himalaya, petals small, linear, short-pointed, lip not longer than east of the Sutlej. the sepals, 3-lobed, side-lobes broad, margins cut into comb-like fringes, segments unequal, often forked, mid-lobe Simla below 6,000 ft. narrowly lanceolate, entire spur green, slender, 4-5 in. long, (Collett). no stigmatic processes, rostellum very little marked. Brogh, Sanawar.
- Habenaria pectinata**, medium size, perennial, root tuberous, stem 12-24 in., ORCHIDACEÆ. very leafy, stout; leaves 4-6 in. long, ovate-lanceolate, F. B. I. vi. 137. rarely linear, upper or all sheathing, flowers 1-2 in. diam., Himalaya, white or yellowish-green, on a dense-flowered spike, 3-8 in. east of the Sutlej, long, bracts leafy, equalling or longer than the flowers, 5-8,000 ft. sepals 5-nerved, dorsal lanceolate, erect, lateral ovate-lanceolate, petals linear, sword-shaped, smooth, blunt, Simla (Collett). slightly dilated on the outer margin, 3-5-nerved, lip as long as the sepals, side-lobes fringed, comb-like, mid-lobe linear, entire, spur  $\frac{1}{2}$ - $\frac{2}{3}$  in., tip almost clubbed, anther very large, stigmatic processes long, tips often sword-shaped, dilated, upcurved, rostellum just visible; capsule  $\frac{2}{3}$  in., sessile, spindle-shaped, ribs thick. This plant becomes black when dry.
- Habenaria arietina**, very like the last species, but petals velvety, not ORCHIDACEÆ. smooth, broader than the dorsal sepal, pouched on the lower F. B. I. vi. 138. margin, spur hardly clubbed at the tip. This plant Himalaya, becomes black when dry. east of the Sutlej, 5-8,000 ft.
- Habenaria intermedia**, small, perennial, root tuberous, stem 8-10 in.; leaves ORCHIDACEÆ. 2-4 in., ovate or oblong, long-pointed, 5-7-nerved, base F. B. I. vi. 138. rounded or heart-shaped; flowers 2 in. diam., white or Himalaya, greenish, in few-flowered racemes, bracts broad, lower 5-7,000 ft. longer than the flowers, upper equal to the ovary, dorsal Simla (Collett). sepal recurved, white within, lateral reflexed, lanceolate, long-pointed, 5-nerved, petals strongly 5-nerved, lip 3-lobed to  $\frac{2}{3}$  of its length, greenish-yellow except the Kashmir. narrow white base, side-lobes deeply fringed, segments

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

long, narrow, mid-lobe linear, entire, as long as the side-lobes, spur  $2\frac{1}{4}$  in., pale green, curved, swollen at the tip, stigmatic-arms spreading, tips recurved; capsule  $1\frac{1}{2}$ -2 in., stalked, spindle-shaped, beaked.

**Habenaria ensifolia,**

ORCHIDACEÆ.

F. B. I. vi. 137.

Himalaya,  
east of the Sutlej,  
5-6,000 ft.

Syree (Collett).

Wrongly placed  
under *H. pectinata*  
in F. B. I.

large, smooth, stem 23-36 in., stout, leafy; leaves 3-6 in., oblong-lanceolate, white-margined, pointed, base, sheathing; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. across, white, bracts narrow, long-pointed, slightly bristly on the margins, as long as the flowers, lip  $1\frac{1}{4}$  in. long, 3-lobed, lobes linear, entire, spreading, mid-lobe shortest, thickest, edges recurved, spur  $1\frac{1}{2}$  in., green, curved, swollen at the tip, stigmatic arms long, incurved.

**Habenaria  
marginata,**

ORCHIDACEÆ.

F. B. I. vi. 150.

Himalaya,  
5-7,000 ft.

Simla (Collett).

small, perennial, smooth, stem 4-10 in., sheaths many, erect, lanceolate, broad or narrow; leaves 3 or 4 near the base of stem,  $1\frac{1}{2}$  in., ovate, sessile, oblong or linear-oblong, margins yellow, base sheathing; flowers  $\frac{1}{2}$  in. diam., yellow, crowded on a spike 2-6 in. long, bracts equalling the ovary, lanceolate, short-pointed, slightly bristly, sepals green, equal, dorsal sepal broadly ovate, lateral sepals deflexed, petals yellow, ovate, sword-shaped, equal in length to the sepals, lip longer than the sepals, divided nearly to the base, lobes 3, linear, entire-spreading, side-lobes having thread-like points, mid-lobe shortest and broadest, spur as long as the ovary, swollen below the middle, stigmatic arms long, joined to the lip, rostellum triangular; capsule  $\frac{1}{2}$  in., spindle-shaped, swollen, curved, doubtfully beaked.

**Habenaria  
Aitchisoni,**

see Herbs, Unbranched, Opposite, Exstipulate, Simple.

**Habenaria latilabris,  
or Edgeworthii,**

ORCHIDACEÆ.

F. B. I. vi. 153.

Himalaya,  
5-10,000 ft.

Simla (Collett).

Kashmir.

small to medium size, perennial, smooth except the sepals, stem 6-18 in., stout or slender, leafy; leaves 3-5 in., usually sheathing, sessile, ovate or oblong, long-pointed; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., yellow-green, on many-flowered, not crowded spikes, 3-10 in. long, bracts lanceolate, lower shorter, upper longer than the ovary, sepals smooth or slightly bristly, dorsal sepal circular, concave, lateral spreading or bent-down, ovate, petals yellow, as long as

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

the lateral sepals, fleshy, lower base pouched, lip yellow, longer than the sepals, linear or lanceolate, undivided broadest at the base, spur yellow-green, much longer than the ovary, slender, turned upwards, tip curved, stigmatic arms short, oblong, almost round, rostellum short, triangular, blunt; capsule  $\frac{1}{3}$  in., sessile, spindle-shaped, shortly beaked, curved.

**Habenaria densa,**

ORCHIDACEÆ.

F. B. I. vi. 153.

Himalaya,  
east of the Sutlej,  
5-9,000 ft.

Simla (Collett).

medium size, perennial, smooth, stout, stem 12-24 in., leafy; leaves  $2\frac{1}{2}$ -4 in., many, ovate or oblong, long-pointed, base sheathing; flowers  $\frac{1}{4}$  in. diam. yellow-green, on a spike, 4-10 in., bracts  $\frac{1}{2}$ - $\frac{2}{3}$  in., long-pointed, lower longer than and upper equal to the ovary, sepals green, thick, petals yellow-green, fleshy, lip green, a little longer than the sepals, undivided, linear, thick, spur club-shaped, shorter than the ovary, turned downwards, stigmatic arms large, oblong.

**Habenaria  
goodyeroides,**

ORCHIDACEÆ.

F. B. I. vi. 161.

Himalaya,  
east of the Sutlej,  
2-5,000 ft.

Simla (Collett).

medium size, perennial, smooth, stem 12-24 in., stout; leaves about 4,  $3-3\frac{1}{2}$  in., close together in the middle of the stem, ovate, base sheathing; flowers  $\frac{1}{3}$  in. diam., yellow-green, crowded on a spike, 6-10 in. long, bracts lanceolate, thin, equal in length to the ovary, sepals  $\frac{1}{3}$ - $\frac{1}{6}$  in., lateral sepals linear or ovate-oblong, petals ovate, pouched, lip broad, recurved, longer than the sepals, tip 3-lobed, mid-lobe broadest, spur small, bag like, narrowed at the mouth, stigmatic arms short, oblong; capsule  $\frac{1}{2}$  in., sessile, spindle-shaped, short-pointed.

**Habenaria  
Elizabethæ,**

ORCHIDACEÆ.

New species not in

F. B. I.

Himalaya,  
8-10,000 ft.

Simla

(Lady Elizabeth  
Babington Smith).

small, perennial, smooth, tubers  $1\frac{3}{4}$  in., ovoid, stem 6 in., smooth, furrowed; leaves  $2\frac{1}{2}$ -4 by  $\frac{1}{3}$ - $\frac{2}{3}$  in., lanceolate, long-pointed or blunt, stem-clasping; flowers very small, green, crowded on a slender spike, 4 in. long, bracts lanceolate, long-pointed, equal to or longer than the ovaries, sepals erect, dorsal ovate, blunt, hollowed out, lateral obliquely ovate, petals ovate-lanceolate, blunt, rather longer than the sepals, lip 3-lobed, longer than the sepals: mid-lobe straight, broader than the lateral, lateral lobes linear, spreading, spur short, club-shaped.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS UNITED.

STAMENS NONE.

ANTHER ONE.

**Habenaria galeandra**,  
ORCHIDACEÆ.  
F. B. I. vi. 163.  
Himalaya,  
6-7,000 ft.  
Simla,  
on grassy sunny  
slopes (Collett).

small, perennial, smooth or almost so, tubers round or oblong, small, stem 6-10 in., slender, leafy; leaves 1-2 in., oblong, blunt or nearly short-pointed, sessile, base contracted, bracts ovate, lower much longer than the flowers, upper shorter; flowers  $\frac{1}{2}$  in. diam., purple, in a spike, 2-4 in. long, dorsal sepal narrowly lanceolate, erect, lateral as long, lanceolate, curved, long-pointed, spreading, petals shorter, lanceolate, curved, blunt, lip broadly triangular, spreading, or the sides recurved, base shortly stalked, terminal margin notched, spur conical, hollow, short, blunt, stigma below the anther on the column.

**Habenaria Griffithii**  
or **decipiens**,  
ORCHIDACEÆ.  
F. B. I. vi. 165.  
Lahul, 4-5,000 ft.  
(Thomson).  
Kurram Valley  
(Aitchison).

small, perennial, tube, small, oblong, stem 5-8 in., slender, erect, or zig-zag, loosely leafy; leaves 1-2 $\frac{1}{2}$  in., linear-oblong, short-pointed or blunt, thin, lower almost stalked, upper sessile, base sheathing; flowers  $\frac{1}{3}$  in. diam., crowded, bracts ovate-lanceolate, thin, longer than the ovary, sepals  $\frac{1}{3}$ - $\frac{1}{6}$  in., dorsal ovate-lanceolate, blunt, lateral linear-oblong, tip rounded, petals as long as the sepals, narrowly lanceolate, lip as long as the sepals, narrowed upwards, terminal, teeth short-pointed, middle one longest.

**Hemipilia cordifolia**,  
ORCHIDACEÆ.  
F. B. I. vi. 167.  
Himalaya,  
east of the Sutlej,  
5-7,000 ft.  
Simla, Mashobra,  
Mahasu, on rocks  
(Collett).

small, perennial, smooth, tuber oblong; leaf one, 2-4 in., stem-clasping, ovate-heart-shaped, radical, broad, net-veined, dotted with purple; flowers  $\frac{1}{2}$ - $\frac{2}{3}$  in. diam., pink-purple, in a few- or many-flowered terminal raceme, 4-10 in. long, bracts shorter than the ovary, dorsal sepal oblong, blunt, lateral oblong curved, petals almost short-pointed, erect, nearly forming a hood, lip ovate-oblong, 3-lobed, side lobes rounded, mid-lobe almost round-toothed, broad, spur curved, shorter than the ovary, tip 2-lobed, upturned, column very short, prolonged upwards in a broad, thin process, folded in the middle, projecting from between the anther cells, stigma on the column below the anther.

**Satyrion nepalense**,  
ORCHIDACEÆ.  
F. B. I. vi. 168.  
Himalaya,  
4-6,000 ft.  
Simla (Collett).  
Kashmir,

small to medium size, perennial, root tuberous, stem 5-24 in., stout, sheathed; leaves 4-10 by 2-4 in., few, oblong to linear-oblong, fleshy, sessile, base sheathing; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., pink, fragrant, crowded in a spike, 1-6 in. long, bracts tinged with pink, larger than the flowers, oblong or lanceolate, sepals narrowly oblong, lateral ones spreading, upper one recurved, petals smaller than the

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## STAMENS NONE.

## ANTHER ONE.

sepals, recurved, lip superior, sessile on the base of the column, erect, hoof-like, margins turned back, spurs 2, pointing downwards, slender, rarely stout, about as long as the ovary, column short with 2 ear-like projections, stigma large, concave.

## ANTHERS TWO.

**Cypripedium cordigerum,**  
**Lady's Slipper,**  
ORCHIDACEÆ.  
F. B. I. vi. 170.  
Himalaya,  
9-11,000 ft.  
Masohbra, Mahasu,  
Fagu, Narkanda  
(Collett).  
Jaku,  
Kashmir.

medium size, perennial, smooth, root fibrous, stem 12-24 in., leafy; leaves 5 by 3 in., ovate or lanceolate, short- or long-pointed, plaited; flower one, green and white, 3 in. across, terminal bracts 1-4 in., leaf-like, sepals green, longer than the lip, ovate-lanceolate, long-pointed, two lateral united under the lip, the third erect, above it, petals green or white, spreading, lanceolate, lip 1-1 $\frac{1}{4}$  in., white, sessile, forming an oval inflated open-mouthed pouch, column yellow, short, turned over, almost shutting the posterior part of the mouth, terminating in a shield-like projection, anthers 2, round, on each side of the base of the column; capsule 1 $\frac{1}{2}$  in., erect, club-shaped.

## STAMEN ONE.

**Roscoëa alpina,**  
SCITAMINEÆ.  
F. B. I. vi. 207.  
Himalaya,  
6-11,000 ft.  
Simla (Collett).  
Kashmir.

small, smooth, stem 4-8 in., leafy, slender; leaves 2 to 4, 3-6 in., oblong-lanceolate, much enlarged after flowering, sessile; flowers 1 in. long, dark purple, in a terminal few-flowered spike, only one flower appearing at a time, calyx tube slit on one side, 2-toothed, corolla tube much longer than the calyx, upper lobe  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., orbicular, slightly concave, lateral lobes linear-oblong, 3 petal-like staminodes within the corolla, the two lateral erect, the lower  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, 2-lobed, stamen one, short, grooved, inserted on the mouth of the corolla tube, produced at the base in a fork; capsule oblong-ovoid, opening by 3 valves, seeds many, small.

**Roscoëa procera,**  
SCITAMINEÆ.  
F. B. I. vi. 207.  
Himalaya,  
east of the Sutlej,  
7-10,000 ft.  
Simla, Mahasu,  
(Collett).

medium size, smooth, stem 12-24 in., stout, leaves 3 to 6, 6 by 1 $\frac{1}{2}$  in., lanceolate, flowers several, 2 $\frac{1}{2}$  in. long, lilac, in terminal spikes, only one flower appearing at a time, corolla tube hardly longer than the calyx, upper lobe 1 $\frac{3}{4}$  in. long, margin turned in, forming a narrow flattened, pointed hood, lateral lobes linear-lanceolate, lower staminode 1 $\frac{3}{4}$  by 1 $\frac{1}{2}$  in., almost 3-lobed, spreading, notched at the tip; for other characters see the last species.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## STAMEN ONE.

**Cautleya lutea**,  
SCITAMINEÆ.  
F. B. I. iii. 208.  
Himalaya,  
6-8,000 ft.  
Simla, Jaku,  
Mahasu (Collett),  
Kashmir.

medium size, perennial, stem leafy, 12-18 in., slender; leaves 6-9 by  $\frac{1}{2}$ - $1\frac{1}{2}$  in., usually purple beneath, sessile, long-pointed, lanceolate or oblong-lanceolate; flowers 1 in., yellow, in drooping terminal 6-12 loose-flowered spikes, sheaths red-striped, bracts oblong, green, one-flowered, much shorter than the red calyx, which is slit on one side, minutely toothed, corolla tube long, slender, longer than the calyx, upper lobes erect,  $\frac{1}{2}$ - $\frac{3}{4}$  in., narrow, concave, 2 lateral lobes broader, reflexed, lateral staminodes nearly as long as the corolla lobes, erect tips forming a hood over the anther, lower deeply 2-lobed, reflexed, anther notched at the top, produced at the base in a fork; capsule  $\frac{1}{3}$  in., red, round, valves 3, ovate, reflexed, red inside, seeds black, angular, top flat.

**Cautleya spicata**,  
SCITAMINEÆ.  
F. B. I. vi. 209.  
Himalaya,  
east of the Sutlej,  
6-8,500 ft.  
Simla, Jaku, Mahasu  
(Collett).

like the last species, but leaves larger, spike erect, bracts red, as long as the calyx, flowers many, crowded, corolla tube hardly longer than the calyx.

## PETALS NONE.

**Celosia argentea**,

see Herbs, Erect, Alternate, Exstipulate, Simple.

**Acroglochin  
chenopodioides**,

see Herbs, Unbranched, Alternate, Exstipulate,  
Lobed.

**Beta vulgaris**,

see Herbs, Erect, Alternate, Exstipulate, Simple.

**Atriplex hortensis**,  
**Orache** or **Mountain  
spinach**,

*Korake, suraka*.  
CHENOPODIACEÆ.  
F. B. I. vi. 6.  
The Plains to  
12,000 ft.

medium size, annual, stout; leaves triangular-heart-shaped, upper ovate-lanceolate, not mealy; flowers minute, green, in axillary spikes and in terminal branching racemes, male flowers bractless, sepals 3-5, oblong, blunt, stamens 3-5, female flowers with 2 bracts, bracts flat, orbicular, increasing in size in fruit, forming a 2-valved covering to the fruit, petals none, stigmas 2, seed erect. The leaves are eaten as a pot herb.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Polygonatum multiflorum,** *Solomon's Seal,*  
LILIACEÆ.  
F. B. I. vi. 319.  
Himalaya,  
6-9,000 ft.  
Mahasu, Narkanda  
(Collett).  
Kashmir.  
large, perennial, rootstock creeping, stem 24-36 in.,  
arched, leafy, cylindrical; leaves 3-6 in., oblong-ovate,  
sessile many, nearly in 2 rows, all directed to one side;  
flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in., white and green, in solitary 2-5-flowered  
axillary racemes, calyx tubular, white with 6 green lobes,  
petals none, stamens 6, inserted in the tube, style linear,  
straight, stigma small; berry  $\frac{1}{2}$  in. diam., round, blue-  
black, enclosed partially in the withered calyx, seeds few,  
nearly round.
- Smilacina pallida,**  
LILIACEÆ.  
F. B. I. vi. 323.  
Himalaya,  
east of the Sulej,  
8-11,000 ft.  
Hattu (Collett).  
Between Narkanda  
and Baghi.  
large, perennial, rootstock creeping, stem 24-36 in.,  
stout, naked below, leafy above; leaves 4-9 by  $1\frac{1}{2}$ -3 in.,  
oblong-lanceolate, nearly sessile, velvety beneath, short-  
pointed; flowers  $\frac{1}{6}$  in., white, in terminal, velvety, more or  
less crowded, simple or branched racemes 2-6 in. long,  
calyx  $\frac{1}{6}$  in., spreading, lobes 6, oblong, petals none, sta-  
mens 6 at the base of the calyx lobes; berry  $\frac{1}{4}$  in. diam.,  
blue-black, round, seeds few.
- Lilium giganteum,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.
- Lilium nepalense,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.
- Lilium polyphyllum,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.
- Lilium Thomsonianum,** see Herbs, Unbranched, Opposite, Exstipulate, Simple.
- Gagea lutea,**  
*Star of Bethlehem,*  
LILIACEÆ.  
F. B. I. vi. 355.  
Himalaya,  
6-13,000 ft.  
Narkanda (Collett).  
Kashmir.  
small, perennial, smooth, bulb solitary, about the size  
of a hazel nut, leaf one, radical, 3-8 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., lanceolate,  
overtopping the flowers; flowers  $\frac{1}{2}$  in. long, yellow, in a  
3-6-flowered umbel on the top of the stem, calyx star-  
shaped when open, lobes 6, linear-oblong, usually short-  
pointed, green on the back, stamens 6, at the base of and  
shorter than the lobes; capsule  $\frac{1}{6}$  in., oblong, 3-grooved,  
seeds many, flat. Collett calls this plant Star of Bethel-  
hem, but Bentham and Hooker give this name to  
*Ornithogalum umbellatum,*



## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Gagea persica**,  
LILIACEÆ.  
F. B. I. vi. 355.  
Himalaya,  
8,000 ft.  
Kashmir.  
like the last species, but leaf narrower, flowers many in a cluster, bracts many, very short, linear, each bearing a flower or bulbil in its axil, calyx smaller, lobes linear, blunt.
- Gagea reticulata**,  
LILIACEÆ.  
F. B. I. vi. 356.  
The Plains to  
6,000 ft.  
Salt Range,  
Kashmir.  
like *Gagea lutea*, but leaf grass-like, bracts several, leaf-like, very unequal, whorled, calyx lobes linear, finely pointed.
- Commelina  
cœlestis**,  
see Herbs, Erect, Alternate, Exstipulate, Simple,
- Juncus bufonius**,  
**The toad rush**,  
JUNCACEÆ.  
F. B. I. vi. 392.  
The Plains to  
13,000 ft.  
small, annual, pale-coloured, tufted, stems 1-10 in., slender, often branching from near the base; leaves flat, few, chiefly radical, stem leaves shorter; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in. long, solitary or in small clusters, sessile on the stem or branches, pale green, calyx inferior, lobes 6 in 2 rows, 3 outer lobes keeled, lanceolate, long-pointed with broad membranous margins, stamens 6, half as long as the calyx lobes; capsule oblong, minutely pointed, shorter than the calyx.
- Juncus glaucus**,  
**Hard rush**,  
JUNCACEÆ.  
F. B. I. vi. 393.  
Himalaya,  
6-9,000 ft.  
Matiana, Theog  
(Collett).  
Kashmir.  
medium size to large, perennial, rootstock creeping, tufted, stems 12-36 in., many, tufted, pale green, stiff, cylindric, finely grooved, leafless, produced beyond the flower, bases closed with a leafless sheath; leaves none or cylindric like the stems; flowers minute, brown, sessile solitary, stamens 6, shorter than the calyx lobes; capsule ovoid, pointed, equal to or rather longer than the calyx.
- Juncus compressus**,  
JUNCACEÆ.  
F. B. I. vi. 393.  
Himalaya,  
Kashmir.  
7,000 ft.  
(Jacquemont).  
small to medium size, perennial, rootstock creeping, stems 6-24 in., tufted, rigid, slender, 1-2-leaved, hollow, somewhat flattened, striated; leaves shorter than the stem, slender, grooved, nearly flat, tip awl-shaped, sheath with ear-shaped processes; flowers almost solitary in terminal clusters, shorter than the thread-like lower bracts, compound, calyx lobes  $1\frac{1}{2}$  in. long, linear-oblong, blunt, with green or brown thin margins about equal to the broad ovoid capsule, stamens much shorter or less than the the calyx lobes; capsule 3-celled, shining, with a small point.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS NONE.

**Juncus lampocarpus,**  
**The Jointed Rush,**  
 JUNCACEÆ.  
 F. B. I. vi. 395.  
 The Plains up to 13,000 ft.  
 Simla (Collett).  
 Lahore, banks of the Jhelum.

small, perennial, rootstock horizontal, stems 4-10 in., densely tufted, leafy upwards, rather stout, soft, ultimately hollow, rounded or flattened, leaves linear-awl-shaped, strongly partitioned, division showing externally, tubular; flowers small, sessile, 2-5-flowered, heads on branches of an umbel, lower bracts leafy, floral ovate-lanceolate, heads  $\frac{1}{6}$ - $\frac{1}{4}$  in., calyx lobes  $\frac{1}{8}$  in. long, green or brown, margins thin, stamens enclosed; capsule green or brown, seeds netted, not tailed.

**Juncus prismatocarpus,**  
 JUNCACEÆ.  
 F. B. I. vi. 395.  
 The Plains to 10,000 ft.  
 Sutlej Valley,  
 Rampur (Collett).

medium size, perennial, tufted, rootstock very short, stems 18-24 in., rounded or flattened, sometimes lying down, rooting at the knots; leaves 2-10 by  $\frac{1}{10}$ - $\frac{1}{8}$  in., thread-like or broader, soft, flattened or rounded of one or many tubes with indistinct distant partitions; flowers green or brown, sessile, densely crowned in 6-10-flowered heads forming irregularly compound flat-topped clusters, lower bracts leafy, erect, shorter than the clusters, floral thin, lanceolate, long-pointed, calyx lobes  $\frac{1}{8}$ - $\frac{1}{6}$  in. long, stamens very short; capsule much longer than the calyx, prismatic or cone-shaped, seeds ovoid with a broad top or oblong with rounded ends.

**Juncus triglumis,**  
 JUNCACEÆ.  
 F. B. I. vi. 396.  
 Himalaya,  
 12-15,000 ft.  
 Kashmir.

small, perennial, tufted, stems 2-6 in., stiff, slender, naked; leaves short, solitary or few, awl-shaped, stiff near base of stem, 2-tubular; flowers large, brown sessile in a solitary terminal 3-4-flowered sessile head, no clusters, outer bracts dark brown, spreading, usually shorter than the flowers, calyx lobes  $\frac{1}{6}$ - $\frac{1}{5}$  in., seeds  $\frac{1}{10}$  in. long, including the long white tails.

**Juncus leucomelas,**  
 JUNCACEÆ.  
 F. B. I. vi. 397.  
 Himalaya,  
 12-16,000 ft.  
 Kashmir.

small, perennial, tufted, stem 2-6 in., thread-like, naked, hollow; leaves 1-2, very short, thread-like, 1-2-tubular; flowers white, sessile, in a 3-8-flowered head, bracts brown, lower usually produced, calyx lobes  $\frac{1}{5}$ - $\frac{1}{3}$  in. long, stamens exerted; capsule ovoid-oblong, seeds long-tailed.

**Juncus membranaceus,**  
 JUNCACEÆ.  
 F. B. I. vi. 397.  
 Himalaya,  
 6-13,000 ft.  
 Kashmir.

small to medium size, perennial, stems 5-20 in., tufted, ultimately hollow, bearing runners, basal sheaths membranous, 1-3-leaved above the middle; leaves thread-like, short-pointed, slender, flattish or grooved, tubular, sheath long, with ear-shaped processes; flowers white, shortly stalked in a solitary sessile head, lower bracts longer or shorter than the head, floral ovate-lanceolate, transparent,

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS NONE.

calyx lobes  $\frac{1}{2}$  in. long, oblong-lanceolate, blunt, thin, inner longer, stamens 6, protruding, style and stigma short; capsule far protruding, long-beaked, seeds  $\frac{1}{10}$  in. long-tailed.

**Juncus himalensis,**

JUNCACEÆ.

F. B. I. vi. 398.

Himalaya,

7-14,000 ft.

Hattu (Collett).

Kashmir.

small to medium size, perennial, stems 8-20 in., tall, stout, stiff, leafy below, one-leaved above, hollow, bearing runners; leaves thread-like or margins rolled inwards, tubular, grooved above, barely partitioned, ear-like processes, small; flowers  $\frac{1}{2}$  in., brown, in 3-8-flowered heads forming a cluster of several heads with branches sometimes one inch long, spreading, lower bract long, floral bracts  $\frac{1}{2}$ - $\frac{2}{3}$  in. diam., calyx lobes  $\frac{1}{2}$  in. long, lanceolate, short-pointed, inner linear-oblong, with broad thin margins, tip longer than the stamens; capsule nearly twice as long as the calyx lobes, tip conical, beaked, shining, dark brown, seeds  $\frac{1}{2}$  in. long, tails very slender.

**Juncus concinnus,**

JUNCACEÆ.

F. B. I. vi. 399.

Himalaya,

7-13,000 ft.

Simla (Collett).

Kashmir.

small to medium size, perennial, rootstock tuberous, stems tufted, not bearing runners, 4-18 in., hollow, furrowed, slender, more or less leafy; leaves thread-like or with margins turned in, flat or furrowed, sheath thin; flowers  $\frac{1}{6}$  in., white, 10-12, in sessile heads  $\frac{1}{3}$  across, sometimes solitary, usually 2-5 in the fork and at the ends of one or two short branches, spreading from the top of the stems, lowest bracts long, slender or short, thin like the floral, calyx lobes  $\frac{1}{6}$  in. long, oblong-lanceolate, short-pointed, thin, inner shorter, blunt; capsule very pale, shining, ovoid, beak stout, protruding, seeds minute, long, brown, pointed at one end.

**Luzula campestris,**

**Wood Rush,**

JUNCACEÆ.

F. B. I. vi. 401.

Himalaya,

10-14,000 ft.

Kashmir.

small to medium size, perennial, grass-like, hairy, rootstock creeping, stem 6-18 in., slender, tufted; leaves 2-3 by  $\frac{1}{8}$ - $\frac{1}{3}$  in., smooth or with bristles long and white, near the base of the stem; flowers minute, dark brown, sessile in stalked ovoid heads  $\frac{1}{4}$  in. long in the forks and at the ends of very unequal branches of an erect terminal branching raceme, calyx lobes 6,  $\frac{1}{12}$ - $\frac{1}{10}$  in. long, ovate-lanceolate, long-pointed, stamens 6, shorter than the calyx; capsule shorter than the calyx, broadly oblong or almost round, blunt or with a stiff point, seeds 3.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES,

## PETALS NONE.

**Luzula spicata,**  
JUNCAEÆ.  
F. B. I. vi. 401,  
Himalaya,  
12-14,500 ft.  
Kashmir,

like the last species, but smaller, 2-10 in. high, flowers larger in a solitary oblong drooping bracteate head.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES,

## PETALS UNUNITED.

**Ranunculus  
falcatus,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Ranunculus  
muricatus,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Delphinium  
uncinatum,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Delphinium  
incanum,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Delphinium  
vestitum,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Delphinium  
cashmirianum,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Aconitum Napellus,**

**Monk's hood,**  
*Bikh or Bish.*

RANUCULACEÆ.

F. B. I. i. 28.

Himalaya,  
10-13,000 ft.

east of the Sutlej.

small to large, perennial, smooth or slightly velvety; leaves deeply palmately divided, segments linear, much divided; flowers  $\frac{3}{4}$ -1 in. long, bright or dull greenish-blue, in simple or compound few- or many-flowered racemes, bracts entire or divided into three, sepals 5, petal-like, posterior (helmet) three times as long as high, shallow, tapering to a slender beak, the rest flat, 2 anterior narrower than the lateral, petals 2-5, 2 posterior stalked, hooded, enclosed in the helmet, 3 lower small or none, stamens many; follicles 3-5, sessile, hairy, seeds many, smooth. The root contains a deadly poison, it is used in medicine.

**Aconitum  
heterophyllum,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Podophyllum Emodi**, small to medium size, perennial, smooth, succulent, *Papri, banbakri*.  
 BERBERIDACEÆ.  
 F. B. I. i. 112.  
 Himalaya,  
 6-12,000 ft.  
 Matiana, Narkanda  
 (Collett).  
 The Chor, Hazara,  
 Murree, Kashmir.  
 rootstock creeping, scaly, 2-leaved, flower stalk 6-18 in., leafy above; leaves 2, 6-10 in. across, circular, long stalk joined to middle of leaf, divided deeply into 3 parts, each part lobed, sharply toothed, often blotched with purple; flower solitary, rarely 2, 1½ in. diam., white, rarely pink, sepals 3-6, petal-like, soon falling off, petals 6, stamens 6, style short, stigma crest-like, ridged; berry 1-2 in., scarlet, ovoid, edible, seeds small, many, ovoid with a broad top, immersed in pulp. Closely allied to *Podophyllum peltatum*, L. May Apple—Podophyllin, an alkaloid extracted from the root of a *Podophyllum*, is used as a purgative.

**Papaver somniferum**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Meconopsis aculeata**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Cardamine hirsuta**, small, annual, smooth, stem 3-12 in.; leaves 2-6 in., stalked, pinnately lobed, lobes 7, of the lower leaves broadly ovate or circular with a few large, lobe-like teeth, of the uppermost often narrowly oblong, end lobe largest, blunt or rounded, stem leaves not lobed at the base; flowers  $\frac{1}{10}$  in., white, in racemes, sepals 4, very small, equal at the base, petals 4, stalked, narrow, erect, twice as long as the sepals, stamens 6, 2 outer short, opposite the lateral sepals, 4 inner longer in pairs, opposite the other two sepals, stigma almost sessile; pods  $\frac{1}{2}$ -1 in., erect, blunt linear, long, flat, seeds flattened, in one row, without a margin. This plant is sometimes eaten as a pot herb.

**Cardamine impatiens**, like the last species, but the base of the stem leaves divided with 2 long stem-clasping lobes, lobes of radical leaves 7-15, ovate, obtusely lobed, stem leaves longer, lanceolate, entire, pods pointed, when ripe they burst elastically, jerk out the seeds and curl up.  
**Narrowleaved Bitterress**,  
 CRUCIFERÆ.  
 F. B. I. i. 138.  
 Himalaya,  
 5-12,000 ft.  
 Simla (Collett).  
 Kashmir.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Cardamine macrophylla**,  
CRUCIFERÆ.  
F. B. I. i. 139.  
Himalaya,  
7-12,000 ft.  
Sangri near  
Narkanda (Collett).  
Murree, Kashmir.  
medium size, perennial, rootstock creeping, stems 12-18 in., stout, smooth, streaked, leaves 6 in., radical few, soon falling off, lobes 9, 1½-3 in., irregularly, sharply, deeply toothed, ending in a long nearly entire, tail-like point, sometimes all pinnate, lobes of stem leaves smaller, more numerous, flowers white, ½ in. long, crowded, pods ¾-1 in., first erect, afterwards spreading, with very thick margins; for other characters see the last species.
- Arabis glabra**,  
see Herbs, Unbranched, Opposite, Exstipulate, Simple.
- Arabis taraxicifolia**,  
see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Sisymbrium Wallichii**,  
CRUCIFERÆ.  
F. B. I. i. 149.  
Himalaya,  
5-7,000 ft.  
Kashmir,  
Salt Range.  
small to medium size, perennial, rough, hairy with forked and star-shaped hairs, stem 6-18 in., slender, erect; leaves radical 1-3 in., lobed, side-lobes pointing back, end lobe large, stem leaves ½-1½ in., few, linear-lanceolate, alternate, pinnately divided or almost entire; flowers small, white, changing to pink, sepals 4, petals 4, with long stalks, stamens 6, 2 outer shorter, 4 inner longer, in opposite pairs, style short, tapering, stigma 2-lobed; pod 2-3½ in. long, very slender, spreading, curved, smooth.
- Sisymbrium Irio**,  
**London Rocket**,  
*Naktru a, jangli*  
*karson*.  
CRUCIFERÆ.  
F. B. I. i. 150.  
The Plains.  
like the last species, but much taller, smooth, leaves pinnately divided but lobes not pointing back, end-lobe large but often arrow-headed, flowers yellow, pods shorter, erect. The seeds, *khubkalan*, are used as stimulant and expectorant in Muhammadan medicine.
- Raphanus sativus**,  
**Radish**,  
*Muli*.  
CRUCIFERÆ.  
F. B. I. i. 166.  
The Plains to  
16,000 ft.  
medium size, annual or biennial, rough or smooth, root fleshy, spindle-shaped or round, sometimes 12 in. long; leaves pinnately divided, end-lobes largest, rough with loose scattered hairs; flowers large, white or lilac with purple veins, in long bractless racemes, sepals 4, lateral ones pouched at the base, petals 4, stamens 6, 2 outer short, 4 inner longer in opposite pairs, style long; pod 1 to 12 in., cylindric, thick, continuous with a long tapering beak filled with pith separating the seeds, seeds round, hanging. This plant is widely cultivated.
- Chorispora sabulosa**,  
see Herbs, Unbranched, Opposite, Exstipulate, Simple.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

**Saxifraga  
odontophylla,**  
SAXIFRAGACEÆ.  
F. B. I. ii. 390.  
Himalaya,  
10,000 ft.  
Kulu, Lahul.

small, perennial, hairy, stem 6-10 in., leafy; leaves radical kidney-shaped, stalked, with 7-12 shallow rounded lobes, stem leaves triangular, short-pointed; flowers 3-6, white, clustered on a main stalk, bracts 2, unequal, at the base of the main flower stalk, calyx lobes 5, joined to the base of the ovary, overlapping, calyx tube short, bell-shaped, calyx lobes ovate-linear approaching each other, petals 5, longer than the calyx lobes, stamens 10, carpels 2, united below, narrowed upwards into a style, stigma internal, almost round, ripe carpels dry, opening at the top, seeds small, oblong with rounded ends.

**Saxifraga sibirica,**  
SAXIFRAGACEÆ.  
F. B. I. ii. 390.  
Himalaya,  
9-14,000 ft.  
Hazara, Kashmir,

very like the last species, but the flowers and the carpels are smaller, stem leaves usually entire.

**Adoxa  
Moschatellina,  
The Moschatel,**  
CAPRIFOLIACEÆ.  
F. B. I. iii. 2.  
Kashmir (Falconer).  
Pir Panjal  
(C. B. Clarke).

small, perennial, rootstock short, creeping, stem 3-6 in., simple, terminating in a solitary flower stalk; leaves radical  $\frac{1}{2}$ -2 in. diam., divided into 3 portions, each portion divided again into segments, stem leaf usually solitary, divided into three; flowers small, green, inodorous, in a stalked head  $\frac{1}{2}$  in. diam., calyx lobes 5, corolla lobes 5 in the central flower of the head with 4 or more lateral flowers with 6 calyx lobes and 6 corolla lobes, calyx tube united to the ovary, stamens 8-12, in pairs on the corolla, alternating with the lobes, styles 3-5; drupe  $\frac{1}{6}$  in. diam., nearly round, pyrenes 4-5, flattened, seeds ovate, with a broad top, flattened. The plant in England has a musky scent.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Tanacetum  
senecionis,**  
*Purkar.*  
COMPOSITÆ.  
F. B. I. iii. 319.  
Himalaya,  
11-14,000 ft,  
Lahul.

small, perennial, felted or woolly, root stout, woody stems few or many, 4-10 in.; leaves radical 1-3 in., palmately divided, segments short or long, linear blunt; flowers yellow, in heads  $\frac{1}{4}$ - $\frac{3}{8}$  in., forming a flat-topped woolly cluster, bracts of the head broadly ovate with a woolly disk, margins broad, dry, brown, floor of head convex naked, corollas stout, cylindric, 5-toothed, anther-bases blunt, entire; achenes flattened, 5-angled, ovoid with a broad top, pappus hairs none. The roots are sometimes used for fuel. The English representative of this genus is *Tanacetum vulgare*—Common Tansy.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE IN HEADS, ALL TUBULAR.

**Tanacetum  
Falconeri,**

COMPOSITÆ.

F. B. I. iii. 320.

Kashmir.

10,000 ft.

like the last species, but much larger, 12-24 in., leaves more oblong, lobes slender, sharp-pointed.

**Tanacetum  
longifolium,**

COMPOSITÆ.

F. B. I. iii. 320.

Himalaya,

10-13,500 ft.

Hattu,

The Chor

(Collett).

Kashmir.

like the last species in head of flowers, but differing in foliage, leaves radical, 5-10 in., linear, slender, segments thread-like, bracts of the head with purple margins instead of brown, heads with 50-60 flowers instead of 20 as in the last species.

**Emilia sonchifolia,**

COMPOSITÆ.

F. B. I. iii. 336.

The Plains to

6,000 ft.

Valleys below Simla

(Collett).

small to medium size, annual, smooth or rough, very variable, stems 10-24 in., sometimes branched; leaves radical 2-4 in., spreading, stalked, more or less pinnately divided, lobes entire or coarsely toothed, end lobe much the largest, stem leaves few, 1-4 in., sessile or stalked, base often lobed, stem-clasping, pinnately divided, lanceolate or ovate; flowers purple, in long-stalked clustered heads,  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., bracts of heads in one row, narrow, equal, edges often united, turned back after flowering, floor of head flat, naked, corollas slender, 5-toothed, pappus white, abundant; achenes 5-angled, angles bristly.

**Cnicus arvensis,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Saussurea  
taraxicifolia,**

COMPOSITÆ.

F. B. I. iii. 368.

Himalaya,

east of the Sutlej,

12-15,000 ft.

Hattu (Collett).

small, perennial, smooth or cottony, rootstock stout, with old black bases of leaf stalks, stem 1-6 in., usually 2 or 3 in., slender; leaves stalked, spreading, linear, long, pinnately divided with lobes pointing back, smoothish above, white-felted beneath, lobes many, oblong or bluntly triangular, rarely toothed or lobulate, tips and teeth with a large stiff point on a nearly straight edge; flowers  $\frac{1}{2}$  in., purple, in a solitary smooth rather cottony head, 1-1 $\frac{1}{2}$  in. diam., bracts of head lanceolate, not spine-tipped,



HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE IN HEADS, ALL TUBULAR.

sometimes curved back, floor of head densely bristly, corollas slender, deeply 5-lobed, anther-tails short, woolly, pappus hairs  $\frac{1}{2}$  in., pale brown, outer hairs few, rough; achenes oblong, 4-ribbed, wrinkled.

**Saussurea  
Kunthiana,**  
COMPOSITÆ.  
F. B. I. iii. 369.  
Himalaya,  
14-16,000 ft.  
Kashmir.

like the last species, but stemless, lobes of the leaf  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, broader, more square, lobulate, upper surface never smooth, achenes rough with short firm excrescences.

**Saussurea Falconeri,**  
COMPOSITÆ.  
F. B. I. iii. 369.  
Kashmir,  
13,000 ft.  
(Clarke).

like the last species, but woolly, stem stout, corolla  $1\frac{1}{4}$  in.

**Saussurea candicans,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Saussurea  
hypoleuca,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Saussurea Lappa,  
The Costus,**  
*Kut, kust-talk,  
patchak.*  
COMPOSITÆ.  
F. B. I. iii. 376.  
Kashmir,  
8-12,000 ft.

large, perennial, velvety above, very tall, robust, stem 6-7 ft.,  $\frac{1}{2}$  in. diam.; leaves radical with the leaf stalk 24-36 in. long, triangular with a long-lobed winged stalk, terminal-lobe of leaves 12 in. diam., stem leaves 6-12 in. long, including the stalk when present, base half stem-clasping with ear-shaped lobes; flowers  $\frac{3}{4}$  in. long, dark purple in nearly hard round axillary sessile or in a terminal cluster of 2-5 heads, bracts of the head ovate-lanceolate, numerous, long-pointed, stiff, recurved, smooth, bristles of the floor of head  $\frac{2}{3}$  in. long, pappus hairs in 2 rows, outer also feathery,  $\frac{2}{3}$  in., brown, anther-tails fringed; achenes  $\frac{1}{3}$  in., curved, flattened, margins thickened, one rib on each face, top cupped, contracted. The plant is much used in Indian medicine, it was much valued by the ancients, it supplies a perfume and is used as a stimulant and an aphrodisiac.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Jurinea  
ceratocarpa,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

**Jurinea  
macrocephala,**  
*Dhup, gugal,*  
*shangar.*

COMPOSITÆ.  
F. B. I. iii. 378.  
Himalaya,  
11-14,000 ft.  
Kashmir.

medium size, perennial, root woody, stemless; leaves 6-18 by  $1\frac{1}{2}$ -7 in., oblong-lanceolate, pinnate or pinnately divided, lobes contiguous, lobulate or pinnately divided, sometimes crisped, finely toothed, teeth short-pointed or with a large stiff point on a nearly straight margin, cobwebby or cottony above, white-felted beneath, flowers 1- $1\frac{1}{4}$  in., purple, in many sessile or shortly stalked heads 3-30,  $\frac{2}{3}$ -1 in. diam., stalks of head stout, cottony or felted at the base, bracts of the head  $\frac{3}{4}$ - $1\frac{1}{2}$  in., outer ovate-lanceolate, inner oblong-lanceolate, long-pointed, rough or smooth, erect, bristles of floor of head short, very stiff, united into cups; achenes  $\frac{1}{4}$ - $\frac{1}{3}$  in., curved, flattened, 4-5-angled, ashy grey, tubercled, pappus hairs abundant, 1 in., brown, united at the base. The roots called *Dhup* are used as incense in Thibet, and exported to the Plains as a medicine.

**Serratula pallida,**

see Herbs, Unbranched, Alternate, Exstipulate, Simple.

INNER TUBULAR, OUTER LIGULATE.

**Tridax procumbens,**

see Prostrate Herbs, Alternate, Exstipulate, Lobed.

**Achillea Millefolium,**  
**Milfoil or Yarrow,**

*Momadru*  
*chopandiga*  
(Kashmir).  
*Buimaderan*  
(Pushlu).

COMPOSITÆ.  
F. B. I. iii. 312.  
Himalaya,  
6-11,000 ft.  
Mahasu, Hattu  
(Collett).  
Kashmir.

small to medium size, perennial, velvety, root bearing runners, stems 6-18 in., grooved, leafy; leaves 2-6 in., narrowly oblong-lanceolate, pinnately divided and re-divided, segments close set, linear, short-pointed, radical stalked, stem leaves sessile; flowers, inner yellow, outer white or pinkish, in ovoid, shortly-stalked heads  $\frac{1}{4}$  in. diam., crowded in compound flat-topped branching racemes, bracts of head few, erect, outer shorter, floor of head flat, covered with thin oblong scales, nearly equal to the corollas, inner flowers 5-toothed, outer ligules rounded, reflexed, anther-bases blunt, style-arms tipped with long brushes of hairs, pappus none; achenes oblong, flattened with 2 hard wings, shining. This plant was used in Europe as an aromatic, stimulant and is still used in India.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, INNER TUBULAR, OUTER LIGULATE.

- Anthemis odontostephana,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Centaurea Cyanus,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Centaurea depressa,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Gerbera lanuginosa,** see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- ALL LIGULATE.
- Gerbera Kunzeana,** see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Crepis sibirica,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Crepis acaulis,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Crepis tenuifolia,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Crepis Stoliczkai,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Pterotheca Falconeri,** see Herbs, Unbranched, Alternate, Exstipulate, Simple.
- Lactuca Scariola,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Lactuca undulata,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Lactuca dissecta,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Lactuca rapuncuoides,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Lactuca sagittarioides,** see Herbs, Erect, Alternate, Exstipulate, Lobed.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNITED.

FLOWERS, MINUTE, IN HEADS, ALL LIGULATE.

**Launæa secunda**,  
COMPOSITÆ.  
F. B. I. iii. 416.  
Himalaya,  
4-8,000 ft.  
Sutlej Valley  
(Collett).  
Hazara.

medium size to large, annual or perennial, smooth, juice yellow, stems nearly solitary, leafless, stiff, unbranched or sparingly so; leaves radical many, 4-8 by 1-3 in., oblong, pinnately divided, margins of old leaves set with minute sharp hard teeth, stem leaves none or few; flowers yellow, in narrow heads  $\frac{1}{3}$ - $\frac{2}{3}$  in. long, shortly stalked, solitary or in small clusters of 2 or 3, forming long one-sided racemes, bracts of the head many, green, margins white, inner long, narrow, equal, outer shorter, floor of head flat naked, pappus soft, white, not feathery, united below; achenes narrowly oblong, strongly ribbed.

FLOWERS NOT IN HEADS.

**Androsace rotundifolia**,  
PRIMULACEÆ.  
F. B. I. iii. 496.  
Himalaya,  
5-11,000 ft.  
Simla, Mashobra  
(Collett).  
Murree, Kahuta,  
Sakesar (Douie).

small, perennial, velvety-glandular or hairy; leaves all radical,  $\frac{1}{2}$ - $1\frac{1}{2}$  in. diam., stalk 1-4 in., rounded-heart-shaped, lobed, lobes very shallow, round-toothed, blade shorter than the stalk; flowers deep to pale pink, in umbels at the end of slender erect stalks, bracts round, umbels wedge-shaped, toothed, sessile or stalked, calyx tubular, 5-lobed, lobes short-pointed, enlarged and spreading in fruit, corolla salver-shaped,  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., tube shorter than the calyx, narrowed, wrinkled at the mouth, lobes 5, spreading, entire or slightly notched, stamens 5, included; the corolla, style short, stigma round; capsule ovoid, splitting from the top in 5 valves, smaller than the calyx, seeds few, usually 2, minute, rounded, granulate.

PETALS UNITED.

**Cortusa Matthioli**,  
PRIMULACEÆ.  
F. B. I. iii. 501.  
Kashmir,  
Lahul, 7-9,000 ft.

small, perennial, velvety; leaves 1-4 in. diam., rounded-heart-shaped, 7-9-lobed, lobes shallow, round-toothed, leaf stalk 4-6 in.; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., purple, in 6-10-flowered umbels at the end of slender stalks much longer than the leaf stalks, bracts  $\frac{1}{8}$ - $\frac{1}{4}$  in., lanceolate, calyx bell-shaped, 5-lobed, small, lobes ovate, corolla tube very short, deeply cleft into 5 lobes, throat naked, lobes oblong, blunt, anthers 5, nearly sessile at the base of the corolla, forked, nearly meeting above, style thread-like, protruding; capsule ovoid, 5-valved, many-seeded.

**Celsia coromandeliana**,

see Herbs, Erect, Alternate, Exstipulate, Lobed.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

- Mazus surculosus,** see Prostrate Herbs, Opposite, Exstipulate, Lobed.
- Pedicularis pectinata,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Pedicularis tenuirostris,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Pedicularis porrecta,** see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Pedicularis brevifolia,** see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Pedicularis verticillata,** see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Pedicularis pyenantha,** see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Pedicularis megalantha,** medium size, velvety or hairy, stem 12-24 in., stout, erect, leafy; leaves radical 2-10 in., pinnately divided and re-divided, oblong-lanceolate, lobes short or long, round-toothed, stalk slender, stem leaves sometimes as long; flowers  $2\frac{1}{4}$  in. long, yellow, in bracteate racemes 4-10 in. long, at length loose-flowered, bracts pinnately divided, lower ones longer than the flowers, calyx tubular, hairy, teeth 5, irregularly cut, crested, corolla 2-lipped, tube nearly cylindrical, twice as long as the calyx, upper lip erect, flattened laterally, sickle-shaped, enclosing the stamens and style, abruptly bent, produced, beak long, incurved, tip toothed, lower lip large, 1 in. broad, spreading, 3-lobed, stamens 4, in unequal pairs, anthers covering in pairs, style long, slender, stigma round, often projecting from the tip of the beak; capsule  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long, oblong, short-pointed, half protruding from the calyx, short-pointed, seeds  $\frac{1}{6}$  in. long, finely netted, often few.
- SCROPHULARIACEÆ.  
F. B. I. iv. 312.  
Himalaya,  
7-14,000 ft.  
Matiana, Hattu,  
Baghi (Collett).  
Dungagalli.  
Kashmir.
- Pedicularis bicornuta,** like the last species, but stemless or stem short, stout, 6-24 in., bracts round-toothed, corolla yellow as in the last species, tip of upper lip divided into two, capsule finely long-pointed, twice as long as the calyx.
- SCROPHULARIACEÆ.  
F. B. I. iv. 312.  
Himalaya,  
9-13,000 ft.  
Kashmir.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Pedicularis  
siphonantha,**

see Herbs, Unbranched, Opposite, Exstipulate, Lobed.

**Pedicularis  
rhinanthoides,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 314.  
Himalaya,  
11-13,000 ft.

small, perennial, smooth below, stem one or more, 4-10 in., stout, curved, radical leaves 2-3 by  $\frac{1}{3}$ - $\frac{1}{2}$  in., linear or oblong, pinnately divided deeply or not, lobes oblong, short, bluntly lobulate, round-toothed; flowers 1-1 $\frac{1}{2}$  in. long, pale or bright pink in short racemes, bracts leaflike, calyx  $\frac{1}{2}$  in., thin, shortly cleft with 2 short teeth, slightly hairy, corolla tube 2 or 3 times as long as the calyx, upper lip sickle-shaped, swollen in the middle with a slender incurved or S-shaped beak, lower lip  $\frac{2}{3}$ -1 in. diam., lateral lobes large, rounded, mid one small; capsule  $\frac{3}{4}$  in. long, oblong-lanceolate, straight or curved, blunt with a lateral point,  $\frac{1}{3}$ - $\frac{1}{2}$  of it projecting from the calyx, seeds  $\frac{1}{12}$  in. long, oblong, blunt; for other characters see the last described species.

**Pedicularis tubiflora,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 314.  
Himalaya,  
11-16,000 ft.  
Kashmir.

small, perennial, smooth, stem 3-6 in., many from the root, short, leafy, stout, often branched; leaves 1-3 by  $\frac{1}{4}$ - $\frac{1}{2}$  in., radical leaves very many, stalked, linear, pinnately divided, deeply or not, lobes many, short, round-toothed; flowers 1 $\frac{1}{2}$ -2 $\frac{1}{2}$  in. long, yellow with dark spots on the lower lip, axillary in the very short racemes, bracts leaflike, longer than the calyx, stalks of the axillary flowers up to  $\frac{3}{4}$  in., calyx  $\frac{1}{3}$  in., smooth, with large crested lobes, corolla tube slender, up to 2 in. long, upper lip erect, swollen, with a slender deflexed twisted beak, lower lip  $\frac{1}{2}$ - $\frac{3}{4}$  in. broad; capsule  $\frac{2}{3}$ - $\frac{3}{4}$  in. long, oblong-lanceolate, short-pointed,  $\frac{1}{3}$ - $\frac{1}{2}$  of it projecting from the calyx, seeds  $\frac{1}{24}$  in., minute, narrow, black; for other characters see the last species.

**Pedicularis fissa,**

see Herbs, Unbranched, Opposite, Exstipulate, Lobed.

**Pedicularis  
versicolor,**

see Herbs, Unbranched, Opposite, Exstipulate, Lobed.

## PETALS NONE.

**Anemone biflora,**

see Herbs, Unbranched, Opposite, Exstipulate, Lobed.

**Anemone rupicola,**

see Herbs, Unbranched, Opposite, Exstipulate, Lobed.

HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES,

PETALS NONE.

- Anemone vitifolia**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Anemone Falconeri**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Anemone obtusiloba**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Anemone rupestris**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Anemone polyanthes**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Anemone tetrasepala**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Anemone elongata**, see Herbs, Unbranched, Opposite, Exstipulate, Lobed.
- Caltha palustris**, see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Aeroglochin chenopodioides**,  
CHENOPODIACEÆ,  
F. B. I. v. 2,  
Himalaya,  
5-8,000 ft.  
Kashmir.  
medium size, annual, smooth, stem 12-24 in., stiff, straight; leaves 1-2½ in., stalk ¼-1 in., lobulate, slightly irregularly toothed; flowers  $\frac{1}{10}$  in. diam., minute, green, sessile, clustered in the axils of short axillary groups, shorter than the leaves, ½ in. long and broad, branches rigid, spreading, sepals 5, almost short-pointed, petals none, stamens 1-3, dilated below, style short, stigmas 2, awl-shaped; capsule shaped like a disc, depressed, opening circularly, seed black, shining, horizontal.
- Typhonium diversifolium**,  
ARACÆ OR AROIDEÆ.  
F. B. I. vi. 510.  
Himalaya,  
6-8,000 ft.  
Rampore, Sutlej  
Valley (Collett).  
small, perennial, root tuberous, round, stems 3-9 in., slender, leaf solitary, rarely 2, appearing with the flowers, 3-6 in. long and broad, forked at the base, triangular like an arrow head, divided into 3-7 oblong to narrowly linear lobes, stalk 3-12 in., slender; flowers fetid, male and female minute, clustered on a rod (spadix), female purple in a green sheath (spathe) 2-8 in. long, striped and tinged with purple, on a main stalk, 2-9 in. long, spathe tube short, margins free, overlapping, blade lanceolate, finely pointed, spadix terminating in a columnar, blunt, smooth, dark purple process, 1½ in. long, protruding from or enclosed in the spathe, female flowers purple, crowded round the base of the spadix, sepals and petals none,

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PEARLS NONE.

ovary ovoid or round, stigma sessile, neutral flowers consisting of scales above the female for a distance of  $\frac{3}{4}$  in. on the spadix then the male flowers consisting merely of almost sessile anthers; berries ovoid, 1-2-seeded, seeds round.

**Amorphophallus campanulatus,** see Herbs, Unbranched, Opposite, Exstipulate, Lobed.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Cardamine hirsuta,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Cardamine impatiens,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Cardamine macrophylla,** see Herbs, Unbranched, Alternate, Exstipulate, Lobed.

**Cleome viscosa,** see Herbs, Erect, Alternate, Exstipulate, Compound.

**Oxalis Acetosella,** see Herbs, Unbranched, Opposite, Stipulate, Compound.

**Trachydium Roylei,** see Herbs, Unbranched, Alternate, Exstipulate, Compound.

**Elæosticta meifolia,** see Herbs, Erect, Alternate, Exstipulate, Compound.

**Apium graveolens,** see Herbs, Erect, Alternate, Exstipulate, Compound.

## PETALS UNITED.

**Menyanthes trifoliata,** perennial, roostock creeping or floating, stems covered by the loose sheaths of the leaf bases; leaves with 3 leaflets, leaf stalks 3-8 in. long, leaflets nearly sessile, 2 by 1 in., flowers  $\frac{1}{2}$ - $\frac{1}{2}$  in., white or bluish, in racemes 1-6 in. long, on stalks 3-6 in. long, sepals 5, oblong-lanceolate, corolla shortly funnel-shaped, divided half way down into 5 lobes, lobes fringed or crested within, stamens 5, on the corolla tube; capsule  $\frac{1}{4}$ - $\frac{1}{3}$  in., round, seeds  $\frac{1}{10}$  in., many, shining, yellow, smooth. This plant was once considered in Europe an excellent tonic.

**Buckbean or Boybean,**  
GENTIANACEÆ.  
F. B. I. lv. 130.  
Kashmir.

**Amphicome arguta,** see Herbs, Erect, Alternate, Exstipulate, Compound.



## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES,

## PETALS UNITED.

**Amphicome Emodi**, see Herbs, Erect, Alternate, Exstipulate, Compound.

## PETALS NONE.

**Arisæma utile**,

ARACEÆ OR

AROIDÆÆ.

F. B. I. vi. 499.

Himalaya,

,500-9,000 ft.

Kashmir.

small to medium size, perennial, root tuberous, 3-5 in. diam., depressed above; leaf solitary, stalk 8-10 in., thick, smooth, green, base sheathing, digitately compound, leaflets 3, sessile, oblong-ovate or ovate with a broad tip, margins wavy, golden, round-toothed; flowers small, one sexual, crowded on a fleshy, erect rod or spadix, terminating the stem more or less enclosed in a sheath, or spathe; lower portion of spathe (tube) folded round the spadix, upper portion of spathe (limb) open, spreading, male flowers scattered, consisting of a shortly stalked head of 3 anthers, female flowers crowded, consisting of an one-celled ovary, spathe-limb 4 in. broad, red-brown or purplish, netted, oblong or ovate with a broad end, broadly notched or 2-lobed with a short purple tail that bends round the long thread-like tail of the spadix, lobes of limb forming 2 dull violet flaps which overhang the tube, spadix stout, tail purple, suddenly narrowed from a broad disc-shaped lobed base into the twisted thread-like extremity, fruiting spike naked; berries red, usually one-seeded.

**Arisæma****intermedium**,

ARACEÆ OR

AROIDÆÆ.

F. B. I. vi. 500.

Himalaya,

7-9,000 ft.

Simla, Mashobra,

Mahasu (Collett).

rootstock oblique or shortly creeping and rooting, leaf usually solitary, sometimes two, leaflets ovate, long-pointed, lateral oblique, middle one longest, spathe green, striped with purple and white, limb gradually narrowed into a long point, spadix tail green, base only purple, male and female flowers on different plants; otherwise like the last species.

**Arisæma****Wallichianum**,

ARACEÆ OR

AROIDÆÆ.

F. B. I. vi. 500.

Himalaya,

east of the Sutlej,

6-8,000 ft.

Mashobra, Mahasu

(Collett).

Jaku, Baghi,

Nathiagali (Douie).

root tuberous, depressed, leaf solitary, leaflets broadly ovate, shortly-pointed, middle one circular, spathe-tube ribbed, dark green on a pale ground, limb broad, abruptly contracted in a short tail-like tip, centre dark purple-striped, margins chequered with pale green veins, extremity of spadix purple; otherwise like the last species.

## HERBS, UNBRANCHED, WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS NONE.

- Arisæma tortuosum**, rootstock tuberous, spheroidal up to 5 in. diam.,  
*Kiriki kukri*.  
ARACEÆ OR  
AROIDEÆ.  
F. B. I. vi. 500.  
Himalaya,  
east of the Sutlej,  
6-8,000 ft.  
Simla (Collett).  
leaves 2-3, pedately compound that is palmate with the lateral leaflets on a common stalk, leaflets 9 up to 15, unequal, most of them stalked, ovate-lanceolate, long-pointed, spathe tube narrow, mouth contracted, limb green, broad, ending on a long-pointed tip, spadix prolonged into a far protruding, tail-like extremity, first erect then curved down and again erect, purple or the end green, male and female flowers usually on the same plant, anthers white or pale yellow or blue or purple; otherwise like the last species. In Collett's *Flora Simlensis* *A. helleborifolium* and *A. curvatum* take the place of this species. The root is used to kill the worms which infest cattle in the rains.
- Arisæma flavum**, rootstock round, leaves usually 2, sometimes only  
one, pedately compound, leaflets 9 to 11, unequal, nearly sessile, lanceolate-long-pointed, spathe purple inside, tube very short, green, limb short-pointed, yellow spadix short, thick conical, yellow, club-shaped, enclosed in the spathe, male and female flowers on the same plant, male sessile, anthers united, forming a continuous layer; otherwise like the last species.
- Arisæma Jacquemontii**, rootstock tuberous, nearly round, stems 12-24 in.,  
sometimes mottled, a much more elegant plant than any of the other species, leaves usually two, sometimes one, digitately compound, leaflets 5-7, unequal, lanceolate, 3-8 by 1-2 in., spathe green-striped with fine white lines, longitudinal tube long, narrow, limb fairly broad tapering into a slender long, green or purple thread-like, erect or drooping tail, spadix prolonged into a thin tapering extremity, much shorter than the tail of the spathe, the tip curved forwards and protruding to one side; otherwise like the last species.
- ARACEÆ OR  
AROIDEÆ.  
F. B. I. vi. 503.  
Himalaya,  
5-9,000 ft.  
Simla, Mashobra  
(Collett).  
Kashmir.
- ARACEÆ OR  
AROIDEÆ.  
F. B. I. vi. 505.  
Himalaya,  
7-8,000 ft.  
Simla (Collett).  
Murree (Douie).  
Kashmir.

## PROSTRATE PLANTS.

## PROSTRATE SHRUBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Lonicera parvifolia*, see Shrubs, Opposite, Exstipulate, Simple.  
*Thymus Serpyllum*, see Shrubs, Opposite, Exstipulate, Simple.  
*Micromeria biflora*, see Shrubs, Opposite, Exstipulate, Simple.  
*Ephedra vulgaris*, see Leafless Plants, Petals None.

## PROSTRATE SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Capparis spinosa*, see Shrubs, Alternate, Stipulate, Simple.  
*Alysicarpus vaginalis*, see Prostrate Herbs, Alternate, Stipulate, Simple.

- Desmodium triquetrum*, var. *pseudotriquetrum*, (D. C. Prod, ii. 326).  
 LEGUMINOSÆ.  
 F. B. I. ii. 163.  
 Himalaya, along the base, east of the Ravi to 4,000 ft.  
 Kangra.  
 small, branches prostrate, grooved, triangular, almost smooth, leaflet one, 4-5 in. long, narrowly oblong-lanceolate, short-pointed, base rounded or almost heart-shaped, green, smooth, netted on both sides, 2 stipels small, united to the upper margin of the wing of the leaflet stalk, stalk 1 in., broadly winged, stipules  $\frac{1}{2}$ - $\frac{3}{4}$  in., persistent; flowers  $\frac{1}{3}$  in., purple, in narrow axillary and terminal racemes, 6-10 in. long, consisting of solitary clustered flowers in the axils of thin stipule-like bracts with similar but smaller ones at their base, calyx  $\frac{1}{3}$  in., bell-shaped, teeth 5, upper 2 teeth triangular, lower 3 linear, corolla  $\frac{1}{3}$  in., upper petal (standard) broad, outermost, 2 lateral (wing) petals more or less adherent to the two united lower petals (keel) blunt, stamens 10, in two bundles of 9 and of 1, style incurved, stigma minute, round; pod 1-2 in. long, joints 6-8, thin, a little broader than long, smooth, except for a few flat-lying hairs along the sutures.

- Flemingia strobilifera*, var. *fruticulosa*,  
 LEGUMINOSÆ.  
 F. B. I. ii. 227.  
 Himalaya, 4-9,000 ft.  
 Simla (Collett).  
 Dalhousie.  
 small, branches prostrate, 6-18 in., spreading from the root; leaves  $1\frac{1}{2}$ -3 in., ovate or nearly circular, dark green-reddish when young, folded into plaits, nerves prominent below, stipules  $\frac{1}{4}$  in., linear; flowers  $\frac{1}{3}$  in. long, pink or white, in small clusters enclosed by folded, transparent, dry, circular bracts, nearly  $\frac{3}{4}$  in. across, arranged in 2 rows in short racemes, with zigzag central stalk, bracts shortly stalked,  $\frac{1}{2}$  in. long, deeply heart-shaped, calyx  $\frac{1}{4}$  in., finely hairy, teeth 5, lanceolate, lowest longest, corolla

## PROSTRATE SHRUBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

hardly protruding from the calyx, petals nearly equal, upper petal (standard) broadly ovate, spreading, keel (lower) petals incurved, blunt, stamens 10, upper one free, others united, style incurved, thicker in the middle, tip smooth, stigma small; pod  $\frac{1}{4}$  in., short, oblong, swollen, seeds 1 or 2.

**Prunus prostrata**, see Shrubs, Alternate, Stipulate, Simple.

**Cotoneaster, nummularia**, see Shrubs, Alternate, Stipulate, Simple.

**Cotoneaster microphylla**, small, dense, intricately branched; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., ovate, short-pointed or blunt, dark green, shining above, velvety or felted beneath, margins recurved, stipules bristle-like, soon falling off; flowers  $\frac{1}{2}$  in., white, usually solitary, axillary, calyx tube bell-shaped, lobes 5, short, persistent, petals 5, round, stamens many, styles 2-5, stigmas round; berry  $\frac{1}{4}$  in., round, bright red, containing 2-5 bony one-seeded nutlets.  
 ROSACEÆ.  
 F. B. I. ii. 387.  
 Himalaya,  
 4-10,000 ft.  
 Simla (Collett).  
 Narkanda, Hattu,  
 Kashmir.

## PETALS NONE.

**Ficus foveolata**, see Climbing Plants, Alternate, Stipulate, Simple.

## PROSTRATE SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Flemingia congesta**, see Prostrate Herbs, Alternate, Stipulate, Compound.  
 var. **semialata**,

**Rubus macilentus**, nearly smooth, without glands, prickly, trailing, stems stout, red brown, bluntly angled, shining, prickles  $\frac{1}{8}$ - $\frac{1}{4}$  in., much flattened, stout, straight or hooked; leaves compound, leaflets 3,  $\frac{1}{2}$ -2 in., rigidly leathery, brown when dry, smooth on both sides, terminal leaflet ovate-lanceolate, long-pointed, lateral ones sessile, smaller, sometimes circular, mid-rib beneath with hooded prickles, stalk stiff sometimes velvety along the grooved upper surface, doubly round-toothed, stipules bristly; flowers  $\frac{1}{3}$  in. diam., in flat-topped branching 1-3-flowered racemes, main flower stalk  $\frac{1}{4}$ - $\frac{3}{4}$  in., velvety, axillary or almost terminal, calyx without bracteoles, persistent, silky outside, felted within tube spreading, 5-lobed, lobes tailed, erect in fruit, petals 5,  
 ROSACEÆ.  
 F. B. I. ii. 336.  
 Himalaya,  
 4-6,000 ft.  
 Hazara (Stewart).

## PROSTRATE SHRUBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

circular-ovate with broad tip, stalked, longer than the sepals, stamens many; fruit round, yellow or orange, enclosed in the calyx, drupes 20-30, smooth, on a columnar velvety receptacle, seed rugged. The fruit is eaten.

**Rubus ellipticus**,  
*Lal Anchhu, akhi*,  
ROSACEÆ.  
F. B. I. ii. 386.  
Himalaya,  
2-7,000 ft.  
Simla, Mashobra  
(Collett).

like the last species, but larger, shaggy, with long, tawny bristles, upper surface of leaflets green, velvety, lower grey-felted, carpels silky. The fruit which is golden yellow has a pleasant flavour like a raspberry.

**Rubus fruticosus**,  
var. **discolor**,  
**Bramble, Blackberry**,  
*Alish, kanachi*.  
ROSACEÆ.  
F. B. I. ii. 387.  
Himalaya,  
west of the Chenab,  
Jammu, Murree.

like the last species, but branches and under-surface of leaves white, felted with star-shaped hairs, flowers pink in large ovate dense branching racemes, calyx lobes short, reflexed in fruit, carpels quite smooth, fruit black, seed pitted. The fruit is eaten.

**Rubus antennifer**,

see Prostrate, Herbs, Alternate, Stipulate, Compound.

**Rubus purpureus**,  
var. **subinermis**,  
ROSACEÆ.  
F. B. I. ii. 387,  
Kashmir,  
8-10,000 ft.

common in water channels, straggling over the banks, branches stout, shining, pale or dark yellowish, purple, glandular hairs few, scattered, prickles replaced by strong bristles, leaflets 3-5, 2-4 in. long, smooth above, white beneath, broad ovate or circular heart-shaped, coarsely sharply doubly round-toothed, lateral leaflets sessile, smaller, leaf stalk 1-3 in., stout, pale coloured like the branches, stipules bristly, glandular, flowers  $\frac{1}{2}$  in. diam., drooping, solitary in the lower axils, 2-4 in., clusters on one stalk in the upper, calyx velvety, bristly, lobes ovate-lanceolate, finely long-pointed, erect in fruit, petals smaller than the calyx, circular-oblong, fruit red, round, enclosed in the calyx, of many felted drupes on a columnar velvety receptacle; for other characters see the last described species.

## PROSTRATE SHRUBS WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Rubus pungens,**

ROSACEÆ.

F. B. I. ii. 341.

Kashmir,

7-8,000 ft.

Kagan.

stems very long, slender, not glandular except sometimes the leaf and flower stalks, prickles many, slender, straight, branches long, cylindric, trailing, green, smooth except the velvety tips, leaves 2-4 in., stalk very slender, sometimes glandular, unarmed or with faintly hooked prickles, leaflets 5-7, 1-1½ in., sessile, bright green on both sides, thin, ovate, deeply sharp-toothed, terminal leaflet broader, heart-shaped, 3-lobed, stipules narrow, lanceolate or bristle-like, flowers about 1 in. diam., erect, solitary or 2-3 on an axillary long stalk, fruit round, small, drupes few; for other characters see the last species.

**Potentilla fruticosa,**

see Shrubs, Alternate, Stipulate, Compound.

**Potentilla Salessovii,**

see Shrubs, Alternate, Stipulate, Compound.

## PROSTRATE SHRUBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Capparis spinous,**

see Shrubs, Alternate, Stipulate, Simple.

## PETALS UNITED.

**Gaultheria nummularioides,**

ERICACEÆ.

F. B. I. iii. 457.

Himalayas,

5-9,000 ft.

The Chor, Marali

(Collett).

small, prostrate, much branched, leafy, stems creeping over banks, hairy; leaves ½ by ⅓ in., ovate from a rounded base, short-pointed, minutely stalked, smooth above, bristly beneath, flowers reddish-white, minute on stalks ⅓ in., covered with leathery, smooth, ovate bracts, calyx teeth ⅓ in., lanceolate, corolla ⅓ by ⅓ in. wide, tubular, lobes minute, stamens 10; capsule ⅓ in. diam., succulent, blue black.

**Gaultheria trichophylla,**

ERICACEÆ.

F. B. I. ii. 457.

Himalayas,

10-13,000 ft.

Lahul (Jaëchke).

small stems, wiry, prostrate, much branched; leaves ¼ by ⅓ in., oblong from a narrow base, nearly sessile, margin even or minutely toothed, smooth on both surfaces, margins usually with long hairs; flowers red or white, on stalks ⅓ in., densely clothed with ovate bracts ⅓ in. long, calyx teeth ⅓ in., ovate-oblong, corolla ⅓ in. long and wide, bell-shaped, stamens 10; capsule ⅓ in. diam., calyx succulent, blue black.

## PROSTRATE HERBS WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Portulaca  
quadrifida,**  
*Chounlayi, lunak.*  
PORTULACÆÆ.  
F. B. I. i. 247.  
The Plains.

annual, succulent, widely spreading, stems thread-like, rooting at the joints; leaves  $\frac{1}{5}$ - $\frac{1}{3}$  in., ovate or ovate-lanceolate, flat, very shortly stalked, very fleshy, stipules formed by a ring of long white hairs; flowers small, yellow, solitary, terminal surrounded by a circle of 4 leaves, calyx of 2 sepals united below, free part soon falling off, embracing lower half of ovary, petals 4, soon falling off, stamens about 8, style thread-like, divided to the middle into 4; capsule brittle, splitting transversely, seeds flattened, kidney-shaped, minutely studded. A common weed. It is used as a pot herb and sometimes cultivated, the flower opens only for 2 hours at midday.

**Zygophyllum  
simplex,**  
*Alethi.*  
ZYGOPHYLLACÆÆ.  
F. B. I. i. 424.  
Southern Sandy  
Plains.  
Multan (Edgeworth).  
Baluchistan  
(Hughes-Buller).

annual, small, smooth, prostrate, slender, much branched; leaves small, cylindric, fleshy, blunt, sessile, stipules lanceolate, short-pointed; flowers white or yellow with red or purple spots at the base, 1 or 2 on short stalks among the stipules, calyx 4-5-lobed, hooded, ovate with a broad tip, persistent or deciduous, overlapping, petals 4-5-stalked, spoon-shaped, overlapping, twisted, stamens 8-10, longer than the petals with a divided scale at the base; capsule 4-5-angled, 5 cells containing 2-3 spindle-shaped smooth seeds, which are eaten by the nomad tribes of the Punjab.

## PETALS UNITED.

**Hedyotis hispida,** see Herbs, Erect, Opposite, Stipulate, Simple,

**Hedyotis stipulata,**  
RUBIACÆÆ.  
F. B. I. iii. 63.  
Himalaya,  
east of the Ravi,  
3-8,000 ft.  
Valleys below  
Simla (Collett).  
Dalhousie.

perennial, widely spreading, smooth, stems 12-24 in., rooting at the joints, cylindrical, smooth; leaves  $\frac{1}{2}$ -2 in., ovate or lanceolate, thin, short-pointed, stalk  $\frac{1}{8}$ - $\frac{1}{3}$  in., stipules fringed deeply with long bristles; flowers small, white, in short stalks forming closely crowded sessile or shortly stalked axillary or terminal clusters,  $\frac{1}{2}$ - $\frac{1}{4}$  in. diam.; calyx lobes 4, shortly pointed, persistent, lanceolate recurved, longer than the fruit, corolla funnel- or bell-shaped, lobes 4, ovate or linear, stamens 4 in the tube or throat of the corolla, style thread-like, stigma 2-lobed; fruit thin, broadly globose, seeds many, small, angular, pitted.

**Oldenlandia  
corymbosa,**

see Herbs, Erect, Opposite, Stipulate, Simple, Entire,

## PROSTRATE HERBS WITH OPPOSITE STIPULATE SIMPLE LEAVES,

## PETALS UNITED.

**Oldenlandia diffusa**, very like the spreading form of the last species, but  
 RUBIACEÆ. smoother, flower stalks shorter, stouter, capsules larger.  
 F. B. I. iii. 65.  
 The Plains.

**Oldenlandia crystallina**, very like the last species, but leaf margins not re-  
 RUBIACEÆ. curved, calyx teeth much larger, triangular, lanceolate, not  
 F. B. I. iii. 65. awl-shaped.  
 The Plains to  
 6,000 ft.  
 Annandale in Simla,  
 on gravel walks  
 (Collett).

**Spermacoe hispida**, root annual or perennial, stems prostrate, branches  
*Madanaghanti*. ascending, 6-14 in., stout, 4-angled, bristly hairy or smooth ;  
 RUBIACEÆ. leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  by  $\frac{1}{2}$ - $\frac{2}{3}$  in., ovate or spoon-shaped, short-pointed  
 F. B. I. iii. 200. or blunt, stiff, rough, margins thickened, hard, bristly,  
 The Plains to stipules thin, short, broad, united to the leaf base, fringed  
 3,000 ft. with long bristles ; flowers  $\frac{1}{6}$ - $\frac{1}{2}$  in., blue or white, 4-6, shortly  
 stalked in a circle, axillary or terminal, bracteoles as long  
 as the calyx, thread-like, transparent, calyx ovoid, teeth  
 4, linear-lanceolate, corolla  $\frac{1}{6}$ - $\frac{1}{2}$  in. long, funnel-shaped,  
 4-lobed, stamens 4, on the throat or tube of the corolla,  
 style slender, stigma 2-lobed ; capsule hairy or velvety,  
 rounded at the base, seeds  $\frac{1}{16}$ - $\frac{1}{8}$  in., oblong, granulate,  
 opaque. The root like that of sarsaparilla is given as an  
 alterative.

## PETALS NONE.

**Mollugo hirta**, woolly with star-shaped hairs, stems much branched,  
*Posprang, gandibuti*. leafy ; leaves  $\frac{1}{2}$ -1 in., ovate with a broad tip, usually but  
 FICOIDEÆ. rarely round to narrowly lanceolate, stalk to  $\frac{1}{4}$  in., stipules  
 F. B. I. ii. 662. soon falling off ; flowers  $\frac{1}{4}$ - $\frac{1}{2}$  in., greenish, usually sessile,  
 The Plains. axillary, clustered or in racemes, sepals 5,  $\frac{1}{8}$ - $\frac{1}{4}$  in., oblong,  
 short-pointed, persistent, petals none, stamens 5-10, styles  
 3-5, linear, short ; capsule a little shorter than the sepals,  
 oblong, thin, 3-5-celled, seeds many, covered with raised  
 points, a membranous scale attached with a linear tip curl-  
 ing half round the seed. A weed of cultivation. It is  
 used as a purgative.



## PROSTRATE HERBS WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Euphorbia thymifolia,**  
*Chota dudhi.*  
EUPHORBIACEÆ.  
F. B. I. v. 252.  
The Plains to  
4,000 ft.  
Valleys below Simla  
(Collett).

annual, juice milky, much branched from the root, leafy, velvety; leaves  $\frac{1}{4}$  in., oblong, blunt, fleshy, teeth short-pointed or rounded, stipules fringed with a long point; flowers very minute, almost solitary, greenish, axillary, especially in the crowded terminal branchlets, top-shaped, velvety, sepals 4, short, bristly, petals none, glands green 5, horizontal, almost concealing the sepals, smooth, fleshy, male flowers many, consisting of one stamen with a round anther, female flowers, one surrounded by several males, consisting of a 3-celled, stalked ovary, styles 3, branched; tips short, straight or recurved; capsule  $\frac{3}{10}$  in. broad, velvety, keeled, seeds wrinkled. The seeds, *hazardana*, are aromatic and astringent, the juice is purgative.

**Euphorbia granulata,**  
EUPHORBIACEÆ.  
F. B. I. v. 252.  
The Plains.

like the last species, but perennial, woolly, smaller, leaves  $\frac{1}{10}$ - $\frac{1}{8}$  in. not toothed, capsule hairy, not keeled, seeds faintly pitted.

**Euphorbia Clarkeana,**  
*Canal weed,*  
EUPHORBIACEÆ.  
F. B. I. v. 253.  
The Plains, Lahore,  
Ferozepore.

annual, smooth, reddish, stems thread-like, many, spreading from the annual root, leaves  $\frac{1}{8}$ - $\frac{1}{4}$  in., linear-oblong, entire or toothed at the rounded tip, leathery, base almost lobed on one side, leaf stalks very short. stipules large, bristly, from a toothed base, flowers  $\frac{1}{30}$  in., axillary, bell-shaped, chiefly seen towards the tips of lateral branches, smooth, lobes lanceolate, toothed, longer than the glands, styles very short, capsules  $\frac{1}{8}$  in. broad, quite smooth, keeled, seeds acutely 4-angled, slightly wrinkled transversely; for other characters see *Euphorbia thymifolia* just above. This plant always appears on lawns especially where canal irrigation is used, it is almost impossible to eradicate it.

**Lecanthus Wightii,**  
URTICACEÆ.  
F. B. I. v. 559.  
Himalaya,  
east of the Ravi,  
4-12,000 ft.  
Simla on old walls  
(Collett).

succulent, velvety; stems prostrate, rooting below then ascending, 1-4 in., weak; leaves  $\frac{1}{2}$ -1 in., obliquely ovate, 3-nerved at the base, stalked, toothed, stipules thin, united, entire or toothed; flowers minute, pink, bracteolate, crowded on axillary, stalked heads  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., stalks barely 1 in. long, male and female in different heads on the same or different plants, male calyx 4- or 5-lobed, lobes nearly equal, stamens 4 or 5, female calyx 3-lobed, lobes very unequal, one large hooded above, two flat, persistent, ovary straight, stigma divided into a tuft of hair-like branches, not persistent; achenes narrow, oblong, red, longer than the calyx.

## PROSTRATE HERBS WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Lecanthus Wallichii**,  
URTICACEÆ.  
F. B. I. v. 559.  
(See under *L. Wightii*).  
Himalaya,  
east of the Ravi,  
4-10,000 ft.  
Simla, the Glen,  
in damp places.  
(Collett).  
Jaku.  
stems 12-24 in., stout, leaves 2-4 in., tip long, tail-like, heads  $\frac{1}{2}$ - $1\frac{1}{2}$  in. diam., on stalks 2-12 in. long, calyx of female flowers 4-lobed, lobes nearly equal, hooded at the tip, achenes ovoid, purple-brown, shorter than the calyx; for other characters see the last species.
- Elatostemma sessile**, see Prostrate Herbs, Alternate, Stipulate, Simple.
- Elatostemma sureculosum**, see Herbs, Unbranched, Opposite, Stipulate, Simple.
- Pouzolzia indica**,  
var. *alienata*,  
URTICACEÆ.  
F. B. I. v. 581.  
The Plains to  
5,000 ft.  
Valleys below Simla,  
on dry rocky slopes  
(Collett).  
Koti.  
small, roughly velvety, stems half prostrate, branches slender, spreading; leaves  $\frac{1}{2}$ -1 in., ovate, long-stalked, thin, entire, pointed, base rounded, 3-nerved; flowers minute, pale green, one sexual, in small axillary clusters, male and female in the same or different clusters on the same different plants, male calyx shortly stalked, 4-lobed, stamens 4, female calyx sessile, tubular, enclosing the ovary, style long, linear, protruding, soon falling off; achenes enclosed in the ribbed, sometimes winged calyx.
- Pouzolzia pentandra**,  
*Pippira-sari*.  
URTICACEÆ.  
F. B. I. v. 583.  
The Valleys below  
3,000 ft.  
East of Kangra  
(Collett).  
annual, smooth, stem prostrate below, diffusely branched, leaves sessile, or nearly so, lanceolate or linear-oblong, entire, pointed, lower ones 1-4 in., opposite, upper ones alternate, crowded, smaller gradually upwards, stipules short; flowers in small clusters, sometimes of only 2 or 3 flowers, male calyx usually 5-lobed, stamens 5, achene enclosed in the broadly 3-winged calyx; for other characters see the last species. The fibre is used for cordage.
- Pouzolzia hirta**,  
URTICACEÆ.  
F. B. I. v. 586.  
The valleys below  
5,000 ft.  
East of Chamba  
(Collett).  
almost prostrate, stems smooth, velvety or slightly hairy, 6-26 in., slender, often branched; leaves 1-4 in., ovate or lanceolate, entire, pointed, sessile or nearly so, stipules broad, long-pointed, flowers in small rounded dense clusters, male calyx usually 5-lobed, stamens 5, achene enclosed in a strongly ribbed, sometimes winged calyx; for other characters see the last species.

## PROSTRATE HERBS WITH OPPOSITE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Fagonia Brugueri,***Damahan, dhama.*

ZYGOPHYLLACEÆ.

F. B. I. i. 425.

Peshawar

(Falconer).

Baluchistan

(Hughes-Buller).

like *Fagonia arabica* but lower leaves 3-lobed, upper simple, branches prostrate, leaflets ovate, fleshy, young branches almost 4-angled, grooved, spines longer than the leaflets. This plant is used locally as a febrifuge and tonic.

**Geranium nepalense,***Bhanda.*

GERANIACEÆ.

F. B. I. i. 430.

Himalaya,

5-9,000 ft.

Simla (Collett).

perennial, velvety or softly hairy, not glandular stems 6-18 in., prostrate, spreading, branches rooting at the swollen joints, rising; leaves  $1\frac{1}{2}$ -3 in. diam., circular, palmately 3-5-lobed, lobes equal or nearly so, irregularly lobed, toothed, stipules  $\frac{1}{2}$  in., narrowly lanceolate; flowers  $\frac{1}{3}$ - $\frac{2}{3}$  in., pale purple in pairs on axillary stalks, reflexed after flowering, sepals 5, free, ending in a bristle-like tip, almost as long as the petals, usually silky, petals 5, free, slightly notched, stalked, alternating with 5 glands, stamens 10, 5 long alternating with 5 short, united at the base, base of flower prolonged upwards in a persistent 5-grooved, tapering column, styles 5, united to the column, stigmas linear, simple, terminal; capsule 5-lobed, 5-celled, cells 1-seeded, at the base of the column, when ripe the cells and the lower part of the styles separate from the column, the styles coiling up with a jerk, ejecting the seeds, seeds small, smooth. This plant is used as an astringent, the root supplies a red dye.

**Geranium pusillum,****Small-flowered****Geranium,**

GERANIACEÆ.

F. B. I. i. 432.

Kashmir

(Falconer)

annual, very slender, velvety, prostrate, much branched, leafy, glandular above, leaves  $\frac{1}{2}$ -1 in. diam., round, kidney-shaped, deeply 5-9-lobed, lobes wedge-shaped, 3-lobed, stipules short, flowers  $\frac{1}{4}$  in., blue-purple, petals heart-shaped with a broad tip, hardly longer than the hard point on the straight margin of the sepal, bristly at the base, as are the stamens, capsule  $\frac{1}{3}$  in. long, seeds smooth; for other characters see the last species.

**Geranium****rotundifolium,****Round-leaved****Geranium,**

GERANIACEÆ.

F. B. I. i. 432.

Himalaya,

6-9,000 ft.

Kashmir, Peshawar,

Hoshiarpur,

Baluchistan.

almost erect with very slender spreading branches, glandular-hairy, leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. diam., kidney-shaped, 7-lobed, lobes broad, bluntly lobulate, leaf stalks very slender, flowers  $\frac{1}{3}$  in. diam., red, petals wedge-shaped, entire, larger than the calyx, fruit  $\frac{2}{3}$  in. long, seeds deeply pitted; for other characters see the last species.

## PROSTRATE HERBS WITH OPPOSITE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Geranium molle,** like the last species, but flowers purple, petals bristly  
**Dove's foot** at the base, carpels wrinkled, seeds smooth.  
**Gernanium,**  
 GERANIACEÆ.  
 F. B. I. i. 432.  
 Himalaya,  
 6-9,000 ft.  
 Kistwar (Thomson).
- Geranium lucidum,** annual, nearly smooth, shining, branches bright red,  
**Crane's Bill,** leaves  $\frac{3}{4}$ - $1\frac{1}{2}$  in. diam., circular 5-7-lobed, lobes 5-fid, wedge-  
 GERANIACEÆ. shaped, lobes short, broad, stipules  $\frac{1}{2}$  in., short-pointed,  
 F. B. I. i. 433. flowers  $\frac{1}{2}$  in. diam., pink, calyx 5-angled, sepals erect,  
 Himalaya, short-pointed minutely, tips converging, petals entire;  
 6-9,000 ft. for other characters see the last species.  
 Simla on old walls  
 (Collett).
- Geranium** annual, grey-velvety or hairy, glandular, much branch-  
**ocellatum,** ed, stems 12-18 in., prostrate or rising, leaves  $\frac{1}{2}$ -2 in., diam.  
**Bhand.** circular, palmately 5-7-lobed, lobes 3-lobulate, toothed,  
 GERANIACEÆ. petals pink, bases dark purple forming an almost black  
 F. B. I. i. 433. centre in the flower, sepals short-pointed with a minute  
 Low hills at bristle-tip, petals broad, entire; for other characters see  
 1,000-6,000 ft. the last species. This plant is used as an astringent.  
 Simla, Annandale  
 (Collett).  
 Madhopur.  
 Salt Range.  
 Kashmir.
- Erodium** annual, hairy, sticky-glandular, stems tufted, branches  
**cicutarium,** prostrate, 6-24 in. long, joints swollen, leaves  $1\frac{1}{2}$ -4 in.,  
**Stork's bill,** chiefly radical, pinnately divided, pinnules 14-22, pinnately  
 GERANIACEÆ. divided, lobes again divided, stipules ovate-lanceolate,  
 F. B. I. i. 434. long-pointed, thin, flowers small, purple, often spotted  
 The Plains to in stalked axillary, erect 2-10-flowered umbels, minor  
 8,000 ft. flower stalks grey, bracts small, ovate, united, transparent,  
 Simla (Collett). sepals 5, short-pointed, minute tip, petals 5, unequal,  
 Murree, Kashmir; entire, alternating with 5 glands, stamens 5, alternating  
 Baluchistan. with 5 staminodes; other characters like *Geranium nepalense*  
 except that the ripe carpels are pitted at the top, styles  
 silky on the inner side.

## PROSTRATE HERBS WITH OPPOSITE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Erodium malacoides**, see Herbs, Erect, Opposite, Stipulate, Lobed.
- Erodium stipaceum**, annual, grey, root woody, branches straggling, leaves  $\frac{1}{2}$ -1 in., oblong, round-toothed, lobed or pinnately divided, stalk slender, flowers  $\frac{1}{2}$  in. diam., in several flowered umbels, sepals concave, strongly 3-nerved, silky grey with a hard point, petals narrowly wedge-shaped, equal to the sepals, stamens bristly, inner much longer and broader, fruit 3-4 in. long, slender, rough with transverse wrinkles at the tip of the valves, beak very long, hairs yellow; for other characters see the last described species.
- GERANIACEÆ.  
F. B. I. i. 435.  
The Plains,  
west of the Indus,  
Bannu (Stewart).

## PROSTRATE HERBS WITH OPPOSITE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

- Tribulus terrestris**, annual or biennial, prostrate, silky branches 12-24 in.; leaves abruptly pinnate,  $\frac{1}{2}$ -1 in., leaflets 5-7 pairs, almost equal, tipped by a stiff point on a straight edge; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., yellow, solitary on stalks shorter than the leaves, sepals 5,  $\frac{1}{4}$ - $\frac{1}{2}$  in., long-pointed, silky, petals 5, soon falling off, spreading, stamens 10, alternately longer and shorter, the latter with a small gland outside, ovary sessile, hairy, 5-12-lobed, stigmas 5-12; fruit 5-angled of 5-12 cocci with 2 long and 2 short spines, smooth or hairy, seeds 2 or more in each cell. This plant is used much as a demulcent and diuretic, especially the seeds.
- Caltrops**,  
*Gokhru, lotak,*  
*bakhra.*  
ZYGOPHYLLACEÆ.  
F. B. I. i. 423.  
The Plains to  
11,000 ft.  
On sandy soil.  
Lahore, Nurpur,  
Kangra District.
- Tribulus alatus**, like the last species, but fruit broadly pyramidal, somewhat pointed, cocci hairy, 2-seeded, the spines united into toothed wings. This plant is used in the same way as the last species.
- Gokhri kalan.*  
ZYGOPHYLLACEÆ.  
F. B. I. i. 423.  
The Plains,  
Mulhan, Dera  
Ismail Khan.
- Flemingia vestita**, velvety or hairy, root tuberous, stem prostrate, trailing, 12-24 in.; leaves digitately compound, leaflets 3,  $1\frac{1}{4}$  by 1 in., almost sessile, minutely hairy, stipules  $\frac{1}{4}$ - $\frac{3}{8}$  in., lanceolate, persistent, leaf stalk  $\frac{1}{2}$ -1 in.; flowers  $\frac{3}{8}$ - $\frac{3}{4}$  in., bright red, in a close cluster of 3-6 on minutely hairy axillary stalks, longer than the leaves, bracts  $\frac{1}{2}$  in., oblong, silky, pointed, soon falling off, calyx  $\frac{1}{4}$ - $\frac{3}{8}$  in., densely brown-velvety, teeth 5, narrow, long-pointed, lower the longest, petals 5, hairy, nearly equal, longer by half
- LEGUMINOSÆ.  
F. B. I. i. 230.  
Himalaya,  
east of the Sutlej,  
4-7,000 ft.  
Simla, on grassy  
slopes (Collett).

## PROSTRATE HERBS, WITH OPPOSITE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

than the calyx standard (upper petal) broadly ovate, spreading, keel (lower petals) incurved, short-pointed. stamens 10, upper one free, others united, style incurved, tip hairy; pod  $\frac{1}{4}$  in., enclosed in the calyx, seed one. The root is edible, the plant is said to be cultivated for the root; it might be cultivated with advantage as it has a pleasant flavour like *Arachis hypogæa*.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Frankenia  
pulverulenta,**  
FRANKENIACEÆ.  
F. B. I. i. 212.  
The Plains  
on sola land.  
Baluchistan.

small, annual, slender, much branched, branches leafy, wiry, jointed, 6-18 in. long; leaves  $\frac{1}{6}$ - $\frac{1}{4}$  in., ovate with a broad tip, broadly notched, grey beneath, very shortly stalked; flowers minute, pink, solitary in the forks of the branches, calyx 4-6-fid, persistent, smooth, strongly ribbed, cylindrical, petals 4-6, small, stalk with a scale, stamens 4 or more, free or united at the base, style slender stigma 2-5-lobed; capsule enclosed in the persistent calyx, seeds many, oblong or ovoid.

**Gypsophila  
cerastioides,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 217.  
Himalaya,  
6-12,000 ft.  
Mashobra, Matiana  
Narkanda (Collett).  
Kashmir.

small, perennial, velvety, stems several, 4-8 in., slender, spreading; leaves  $\frac{1}{2}$ -2 in. by  $\frac{1}{4}$ - $\frac{3}{4}$  in., ovate with a broad tip or spoon-shaped, radical stalked, stem leaves sessile, all slightly bristly; flowers  $\frac{1}{6}$ - $\frac{1}{2}$  in., white with faint purple streaks, sessile or shortly stalked in branching clusters or rarely solitary in the forks, calyx  $\frac{1}{4}$  in., bell-shaped, velvety, 5-toothed, teeth blunt, with strong curved hairs, petals 5, spoon-shaped, notched, stalked, stamens 10, style 2-3; capsule 4-valved, seeds few or many, broad, black, rough.

**Cerastium trigynum,**  
CARYOPHYLLACEÆ.  
F. B. I. i. 227.  
Himalaya,  
11-17,000 ft.  
Kulu, Kashmir.

small, perennial, tufted, stems spreading with alternating hairy lines or smooth; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., oblong-lanceolate, smooth, scattered, blunt, often curved down; flowers  $\frac{1}{2}$  in. diam. white, in 1-3-flowered dividing clusters, bracts green with thin edges, sepals 5, rarely 4, linear-oblong, spreading, petals as many as the sepals, deeply 2-fid, stamens 10, styles usually 3; capsule cylindrical, seeds with 8 rows of knobs.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Stel'aria aquatica,**  
**Water Starwort,**  
 CARYOPHYLLACEÆ.  
 F. B. I. i. 229.  
 Himalaya,  
 4-8,000 ft.  
 Simla, Narkanda,  
 in wet places  
 (Collett).  
 Murree.
- large, perennial, velvety, stems 12-36 in., angular, trailing along the ground, angular, brittle, branched; leaves  $\frac{1}{2}$ -2 in., heart-shaped, ovate, thin, short-pointed, sometimes bristly, lower leaves long-stalked; flowers  $\frac{1}{2}$  in. diam., white, in leafy axillary or terminal clusters, sepals 4 or 5,  $\frac{1}{6}$  in., enlarged in fruit, sticky, lanceolate, free to the base, petals the same number as the sepals, and  $1\frac{1}{2}$  times as long, narrow, deeply 2-lobed, stamens 10, styles 5; capsule 1 in., ovoid, rather larger than the sepals, with five 2-fid valves, stalks turned down, curved at the tip, seeds many, round, rough with minute blunt projections.
- Stellaria media,**  
**Common Chickweed,**  
 CARYOPHYLLACEÆ.  
 F. B. I. i. 230.  
 The Plains to  
 14,000 ft.  
 Simla (Collett).  
 Kashmir.
- like the last species, but stem with one line of hairs, petals shorter than the sepals, or none, flowers smaller than those of the last species,  $\frac{1}{3}$  in., stamens 3-10, styles 3, seeds brown, rough with minute sharp projections.
- Stellaria latifolia,**  
 CARYOPHYLLACEÆ.  
 F. B. I. i. 231.  
 Himalaya,  
 east of the Sutlej,  
 6-10,000 ft.  
 Hattu.
- like the last species, but stems shorter felted when young, then smooth, shining, lower leaves nearly round, abruptly pointed, upper lanceolate, all sessile, flowers  $\frac{1}{2}$  in. diam., solitary, long-stalked, sepals 4, petals 4, twice as long as the sepals, stamens 8, styles 2, capsule much shorter than the sepals.
- Stellaria longissima,**  
 CARYOPHYLLACEÆ.  
 F. B. I. i. 232.  
 Himalaya,  
 east of the Sutlej,  
 8-12,000 ft.  
 Hattu.
- like the last species, but leaves  $\frac{1}{2}$ -1 in., narrowly oblong or lanceolate, flowers solitary or in small clusters, sepals united at the base, petals as long as the sepals, styles 3, stamens 10.
- Stellaria decumbens,**  
 var. **polyantha,**  
 CARYOPHYLLACEÆ.  
 F. B. I. i. 234.  
 Kashmir,  
 11-15,000 ft., in  
 rocky and gravelly  
 places.
- like the last species, but small, perennial, densely tufted, shining, stem stout, leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., ovate or lanceolate-awl-shaped, hairy or velvety, flowers white, minute, in sessile many-flowered clusters, sepals 5, petals 5, minute, capsule shorter than the sepals.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Arenaria serpyllifolia, Thyme-leaved Sandwort,**  
 CARYOPHYLLACEÆ.  
 F. B. I. i. 239.  
 The Plains at  
 1,000 to 12,000 ft.  
 Simla, Mashobra  
 (Collett).  
 Rawalpindi (Douie).

small, annual, branching from the root, many-flowered, branches 2-10 in., slender, leafy, hairs often recurved; leaves  $\frac{1}{4}$ - $\frac{1}{3}$  in., ovate, long-pointed, rather stiff with scattered bristles; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in. diam., white, in many-flowered terminal clusters, bracts leafy, sepals 5, free, ovate-lanceolate, short-pointed, 3-5-ribbed velvety, much longer than the petals, petals 5, ovate with a broad tip, not divided, stamens 10, styles 3; capsule cvoid, equal to the sepals, 6-valved, seeds many, rough.

**Arenaria neelgerrensis,**  
 CARYOPHYLLACEÆ.  
 F. B. I. i. 239.  
 Himalaya,  
 west of the Chenab,  
 5-10,000 ft.  
 Jammu, Kashmir.

very like the last species, but leaves short-pointed, sepals ovate, one-ribbed.

**Arenaria glanduligera,**  
 CARYOPHYLLACEÆ.  
 F. B. I. i. 240.  
 Kashmir,  
 10-14,000 ft.

small, perennial, densely velvety with glands, stems 1-2 in., many from the root, loosely tufted, rather stout, shining below; leaves  $\frac{1}{6}$ - $\frac{1}{4}$  in., ovate flat, short- or long-pointed, pale green, glandular on both surfaces, soft; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., pink, solitary on a short slender stalk, calyx rounded at the base, sepals spreading, recurved linear, short-pointed or blunt, glandular, much smaller than the petals, styles 3; capsule thin, shorter than the sepals, seeds few, pale.

**Sagina procumbens, Pearlwort,**  
 CARYOPHYLLACEÆ.  
 F. B. I. i. 242.  
 Himalaya,  
 7-10,000 ft.  
 Simla, Theog,  
 Narkanda, on walks  
 and roadsides  
 (Collett).

small, perennial, smooth, bright green, stems 2-6 in., slender, tufted, spreading; leaves  $\frac{1}{4}$ - $\frac{1}{3}$  in., cylindrical, united at the base into a thin sheath, short-pointed; flowers very small,  $\frac{1}{8}$  in. diam., white, solitary on axillary or terminal stalks, much longer than the leaves, sepals 4 or 5, free, blunt, petals 4 or 5, entire or none, stamens 4 or 5, styles 4 or 5; capsule projecting beyond the sepals, 4- or 5-valved to the base, seeds many, kidney-shaped.



## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Hypericum  
elodeoides,**

HYPERICACEÆ.  
F. B. I. i. 255.  
Himalaya,  
east of the Sutlej,  
6-12,000 ft.  
Simla, Narkanda,  
in shade (Collett).  
Sirmur.

medium size, perennial, stems 12-24 in., rounded, smooth, with runners; leaves 1-1½ in., oblong or ovate, short-pointed, stem-clasping, lower surface pale, margins black-dotted; flowers ¾ in. diam., yellow, in clusters, often many and in branching terminal racemes, sepals 5, ¼ in., narrowly lanceolate, black-dotted, streaked, fringed with stalked glands, petals 5, longer than the sepals, black-dotted, streaked, stamens many, in 3 bundles joined below, black-dotted, styles 3, ¼ in.; capsule ⅓ in. opening by 3 valves, seeds many, small.

**Hypericum  
napaulense,**

HYPERICACEÆ.  
F. B. I. ii. 256.  
Himalaya,  
7-8,000 ft,  
Kashmir.

like the last species, but stems more slender, doubtfully 2-edged, leaves ½-¾ in., ovate or ovate-lanceolate, blunt, flowers ⅓ in., sepals fringed with shorter glands, petals almost bare of glands, capsule ⅓ in.

**Saxifraga filicaulis,**

SAXIFRAGACEÆ.  
F. B. I. ii. 396.  
Himalaya,  
east of the Sutlej,  
9-12,000 ft.  
Matiana, Hattu  
(Collett).

small, perennial, no runners, stems very slender, 3-8 in., wiry, tufted, leafy, much branched, roughly velvety-glandular; leaves ¼-½ in., linear, sessile, stiff, usually scattered, fringed with glands, short-pointed; flowers ¼-½ in., yellow, solitary, terminal, calyx deeply 5-lobed, lobes glandular, erect in fruit, petals 5, stamens 10, styles 2; capsule 2-beaked, seeds many, minute.

**Tillæa pentandra,**

CRASSULACEÆ.  
F. B. I. ii. 412.  
Himalaya,  
3-6,000 ft.  
Simla on rocks, old  
walls (Collett).  
Kashmir.

small, annual, smooth, succulent, stems 2-4 in., several, slender, procumbent, leafy; leaves ¼ in., narrowly lanceolate, crowded, bases united, entire, short-pointed; flowers minute, pink or white, axillary, sessile, solitary or in small clusters, calyx 4-5-fid, segments lanceolate, long-pointed, petals 4-5, nearly equal in length to the calyx segments, stamens 4-5; follicles 4 or 5, 1-2-seeded, seeds oblong, almost triangular, pointed at the end.

**Tillæa  
pharnaceoides,**

CRASSULACEÆ.  
F. B. I. ii. 412.  
The Plains,  
Hoshiarpur  
(Aitchison).  
Peshawar (Vicary).

very like the last species, but smaller, leaves less crowded, flowers densely clustered, petals often united at the base, shorter than the calyx segments, petals very finely pointed, seeds blunt at the end.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Ammania  
peploides,**  
LYTHRACEÆ.  
F. B. I. ii. 566.  
The Plains in wet  
places.

small, annual, stems decumbent or erect, often rooting, 3-12 in., branches often squared; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., narrow, tapering at both ends, almost sessile, nerves prominent beneath, entire; flowers small, pinkish, axillary, solitary, nearly sessile in the axils of reduced floral leaves, bracteoles 2, lanceolate, minute, calyx bell-shaped, long, teeth 4; often pink, short-pointed, triangular in fruit, petals 4 or none, small, between the calyx, stamens 2-8, on the calyx tube; capsule oblong with rounded ends, longer than broad, thin, 2-valved, enclosed in the calyx, seeds many, pink, somewhat angular.

**Ammania  
rotundifolia,**  
LYTHRACEÆ.  
F. B. I. ii. 566.  
The Plains, in wet  
places.

like the last species, but more prostrate, forming patches, leaves circular, flowers sessile, bright pink in crowded terminal spikes, petals ovate with a broad tip, twice the length of the calyx teeth, capsule 4-valved.

**Circæa lutetiana,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

**Limeum indicum,**  
FICOIDEÆ.  
F. B. I. ii. 664.  
The Plains.

small to medium size, glandular, branches 8-18 in., much divided; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., round, prolonged into the short stalk; flowers  $\frac{1}{8}$  in., green, in bracteate sessile clusters at the nodes, sepals 5,  $\frac{1}{8}$  in., ovate, green with thin margins, petals 3-5, ovate with a broad tip, stalked, upper margin fringed, much shorter than the sepals, stamens 6-7; fruit separating into 2 leathery roundish cocci, as long as the sepals, seeds kidney-shaped, longer than broad, flattened, smooth, whitish.

## PETALS UNITED.

**Tillæa pentandara,**

see Prostrate Herbs, Opposite, Exstipulate, Simple, Petals Ununited.

**Wahlenbergia  
gracilis,**

see Herbs, Erect, Alternate, Exstipulate, Simple Toothed.

**Galium  
rotundifolium,**  
RUBIACEÆ.  
F. B. I. iii. 204.  
Himalaya,  
4-10,000 ft.  
Simla (Collett).

perennial, smooth or velvety, stems and branches trailing on the ground; leaves  $\frac{1}{2}$ -2 by  $\frac{1}{3}$ - $\frac{3}{4}$  in., ovate, or narrowed to each end, upper surface hairy or velvety, lower minutely prickly on the nerves and margins 3-nerved from the base; flowers minute, white tinged with green or yellow, in terminal branching racemes, longer than the leaves, calyx tube round or ovoid, corolla wheel-shaped,

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

lobes 4, spreading, stamens 4, styles 2, fruit dry, small, round, almost 2-lobed, covered with hooked bristles, seeds 2, small.

**Galium triflorum,** see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

**Galium Aparine,** see Climbing Plants, Opposite Exstipulate, Simple.

**Galium acutum,** small, perennial, smooth, stems 6-12 in., interlaced, RUBIACEÆ.  
very leafy; leaves  $\frac{1}{8}$ - $\frac{1}{4}$  in., sessile, in circles of 6, ovate-lanceolate, crowded, tip spiny, nerves none; flowers very minute, white, on solitary stalks, calyx ovoid, no teeth, corolla wheel-shaped, lobes 4, stamens 4, styles 2; fruit  $\frac{1}{10}$  in., dry, round, slightly 2-lobed, smooth, seeds 2, small.  
F. B. I. iii. 208.  
Himalaya, east of the Sutlej, 7-12,000 ft.  
The Chor, on rocks (Collett).

**Galium vernum,** like the last species, but softly hairy, leaves larger, RUBIACEÆ.  
ovate, shortly stalked, in circles of 4, nerves 3, prominent, flowers yellow or white, usually found only in the terminal circles of leaves.  
F. B. I. iii. 209.  
Himalaya, east of the Ravi, 7-11,000 ft.  
Narkanda (Collett).  
Chamba (C. B. Clarke).

**Androsace lanuginosa,** small, perennial, covered with long, silvery white, PRIMULACEÆ.  
silky hairs, branches runner-like, not rooting with tufts of leaves; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., lanceolate, sessile, entire, sometimes alternate, short- or long-pointed; flowers small, pale or dark purple, tinged with blue, yellow in the centre, in dense umbels on solitary stalks, 3-4 in. long, bracts short, narrowly lanceolate, entire, calyx tubular, 5-lobed, lobes blunt, corolla  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., flat-topped, tube shorter than the calyx, narrow, wrinkled at the mouth, lobes 5, spreading, entire or slightly notched, stamens 5 in the corolla tube, style short; capsule ovoid, 5-valved, seeds few, only 2, nearly round or angular.  
F. B. I. iii. 498.  
Himalaya, 6-10,000 ft.  
Simla (Collett).  
Kashmir.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Androsace villosa**,  
 PRIMULACEÆ.  
 F. B. I. iii. 499.  
 Himalaya,  
 12-17,000 ft.,  
 in dry regions, from  
 the Jumna to the  
 Indus, Kashmir.
- like the last species, but very small, in tufted masses of short naked stems with runners bearing at close intervals, hairy tufts,  $\frac{1}{2}$ -1 in. diam., leaves in small rounded tufts, sessile, lanceolate or spoon-shaped, corolla mouth with a prominent conical ring.
- Androsace muscoidea**,  
 PRIMULACEÆ.  
 F. B. I. iii. 499.  
 Kashmir,  
 12-17,000 ft.
- like the last species, but much smaller, forming patches 6-10 in. diam., of crowded stems and runners 2-6 in. long, naked below or covered with little balls of leaves the size of a pea, leaves linear or oblong, blunt, sessile, flowers  $\frac{1}{10}$  in. diam., on short stalks.
- Lysimachia japonica**,  
 PRIMULACEÆ.  
 F. B. I. iii. 505.  
 Himalaya,  
 4-8,000 ft.  
 Valleys below Simla.  
 The Glen  
 (Collett)  
 Kashmir.
- small, hairy or velvety, branches 6-10 in., rooting; leaves 1-1 $\frac{1}{2}$  in., ovate, short-pointed, gland-dotted, stalked; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., yellow, solitary or in pairs, axillary, stalks shorter than the leaf stalks, calyx deeply 5-lobed, lobes lanceolate, corolla wheel-shaped, 5-lobed nearly to the base lobes, entire, stamens 5, inserted at the base of the corolla, united below, style slender, persistent; capsule small, round, 5-valved, seeds many, minute.
- Anagallis arvensis**,
- see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.
- Gentiana venusta**,  
 GENTIANACEÆ.  
 F. B. I. iv. 116.  
 Himalaya,  
 11-14,000 ft.  
 Kashmir.
- small, perennial, stems none or 3 in. high; leaves  $\frac{1}{4}$ - $\frac{1}{3}$  in., narrowing to each end, or ovate with a broad blunt tip; flowers 1 in., blue, one to three nearly sessile on the short densely leafy annual shoots, calyx tube  $\frac{1}{4}$  in., lobes 5,  $\frac{1}{6}$ - $\frac{1}{4}$  in., linear, small, short-pointed, corolla 1 by  $\frac{1}{4}$ - $\frac{1}{3}$  in., tubular, 5-lobed, folds between the lobes, stamens 4-5, not protruding from the corolla; capsule  $\frac{1}{2}$ - $\frac{1}{3}$  by  $\frac{1}{4}$ - $\frac{1}{2}$  in., seeds very many, small, round, not winged, coat very loose, netted, white, glistening.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Mazus surculosus,**

SCROPHULARIACEÆ.

F. B. I. iv. 260.

Himalaya,  
east of the Sutlej,  
3-7,000 ft.

Simla, the Glen

(Collett).

Valley below the  
Convent.Garden at Barne;  
Court.

small, perennial, nearly smooth, stems often tufted with long leafy runners rooting at the joints; radical leaves 1-3 in., broadly ovate with a wide tip, narrowed to a stalk-like base, irregularly toothed, often pinnately divided at the base, stem leaves similar but smaller; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., pale blue or white in terminal racemes, calyx shortly 5-toothed, bell-shaped, corolla 2-lipped,  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, tube short, upper lip erect, 2-lobed, lower much larger, spreading, 3-lobed, with 2 prominent yellow glandular ridges at the base, stamens 4, in unequal pairs, enclosed, stigma flat, 2-lobed; capsule enclosed in the calyx, round or flattened, blunt, valves entire, seeds many, very minute, ovoid.

**Herpestis monniera,***Barambhi, safed  
chamni.*

SCROPHULARIACEÆ.

F. B. I. iv. 272.

The Plains to  
4,000 ft.Sutlej Valley, Suni  
(Collett).

In wet ground.

small, perennial, quite smooth, creeping, rather succulent, branching, 4-10 in. long, rooting at the joints; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in., oblong-ovate with a broad tip, blunt, sessile, entire; flowers nearly  $\frac{1}{2}$  in. diam., pale blue, purple veined, single on alternate axillary stalks, longer than the leaves, bracteoles 2, calyx  $\frac{1}{6}$ - $\frac{1}{5}$  in., deeply 5-lobed, lobes unequal, upper ovate, short-pointed, corolla tube cylindric, longer than the calyx, lobes 4, spreading, nearly equal, upper one notched, stamens 4, in unequal pairs, enclosed style linear, stigma round, 2-lobed; capsule 2-grooved, ovoid, short-pointed, seeds many, very minute. This plant is used by Hindus as a diuretic and aperient.

**Vandellia****pedunculata,**

SCROPHULARIACEÆ.

F. B. I. iv. 282.

The Plains in  
swamps.

small, annual, smooth, stem sometimes creeping, branches 4-10 in., slender, prostrate; leaves  $\frac{1}{2}$ -1 in., ovate, slightly round-toothed, blunt or nearly short-pointed, shortly stalked; flowers small, white or pale blue with a white spot, stalked, solitary, axillary or in racemes, sepals 5,  $\frac{1}{4}$  in., free, half as long as the linear-lanceolate capsule, corolla tube cylindric, 2-lipped, upper lip erect, broad, concave, notched, lower broad, spreading, 3-lobed, stamens 4, 2 posterior usually enclosed, 2 anterior arched with a small blunt tooth, stigma divided; capsule  $\frac{1}{3}$  in., seeds wrinkled.

**Bonnaya brachiata,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed.

**Bonnaya****veronicæfolia,**

SCROPHULARIACEÆ.

F. B. I. iv. 285.

The Plains.

like *Vandellia pedunculata*, but leaves oblong or oblong-lanceolate or ovate with a broad tip and toothed, flower violet, stamens 2, staminodes 2, capsule projecting far beyond the calyx.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Glossostigma  
spathulatum,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 288.  
The Plains.

very small, smooth, creeping, densely tufted, branches rooting; leaves  $\frac{1}{12}$ - $\frac{1}{4}$  in., narrowly spoon-shaped, tapering into a stalk; flowers minute, blue, axillary, solitary on slender stalks, shorter than the leaves, without bracteoles, calyx  $\frac{1}{24}$  in. long, 3-lobed, bell-shaped, corolla tube shorter than the calyx, lobes 5, nearly equal, stamens 2; capsule equal to calyx, seeds small, ovoid.

**Limosella aquatica,**

see Water Plants, Opposite, Exstipulate, Simple.

**Hemiphragma  
heterophyllum,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 289.  
Himalaya,  
east of the Sutlej,  
6-12,000 ft.  
Hattu (Collett).

small, velvety, stem 12-24 in., creeping, very slender, loosely tufted; leaves on the stem,  $\frac{1}{3}$ - $\frac{2}{3}$  in. diam., circular-heart-shaped, or ovate, or kidney-shaped, almost sessile, thin, hairy on both sides, those on the branches  $\frac{1}{20}$ - $\frac{1}{2}$  in., needle-like, forming tufts or heads, stiff, short-pointed, face deeply grooved, back convex, bristly; flowers  $\frac{1}{3}$  in. diam., pink, axillary, usually sessile in the tufts of the needle-like leaves, calyx lobes 5, narrow, corolla  $\frac{1}{3}$  in. diam., tube short, slender, lobes 5, rounded, spreading, nearly equal, stamens 4, on the base of the corolla, equal; fruit black,  $\frac{1}{3}$  in. diam., polished, ovoid, fleshy, seeds many, minute, ovoid, smooth.

**Veronica Angallis,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Stamens 2.

**Veronica  
Beccabunga,  
Brooklime,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 293.  
The Plains at  
1,500 to 6,000 ft.,  
in wet places.  
Rawalpindi,  
in wet places.

small, perennial, smooth or very slightly velvety, succulent, stem hollow, branches 6-18 in., spreading; leaves 1-2 in., narrowed at both ends or oblong blunt round and sharp-toothed, base rounded, sessile or shortly stalked; flowers  $\frac{1}{3}$  in. diam., blue or pink in few- or many-flowered axillary racemes, 2-4 in., bracts usually shorter than the flower stalks, calyx divided deeply into 4-5 lobes, ovate, oblong, almost sharp-pointed, corolla wheel-shaped, lobes 4-5, spreading, stamens 2, protruding; capsule 2-grooved, somewhat flattened laterally, swollen, round, seeds biconvex. This plant is used in Kashmir medicine; in Europe it was valued as an antiscorbutic and is now used locally as a styptic.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Veronica agrestis,**  
**Procumbent**  
**Speedwell,**  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 294.  
 The Plains to  
 6,000 ft.  
 Valleys below  
 Simla (Collett).  
 Kashmir,  
 Rawalpindi,  
 Murree (Douie).  
 Khanki,  
 Gujranwala  
 District.

small, annual, almost velvety, branches 6-18 in., many, leaves  $\frac{1}{3}$ -1 in. diam., ovate, heart-shaped or circular, coarsely round and sharp-toothed, shortly stalked, flowers  $\frac{1}{6}$ - $\frac{1}{3}$  in. diam., blue or white on slender drooping stalks in the axils of and as long as the upper alternate leaves, forming terminal racemes, calyx lobes blunt, calyx  $\frac{1}{4}$  in. diam., notched, lobes 2, round or flattened, 1-many-seeded, seeds oblong or round, cup-shaped, with minute projections; for other characters see the last species.

**Veronica persica,**  
**Buxbaum's**  
**Speedwell,**  
 SCROPHULARIACEÆ.  
 F. B. I. iv. 294.  
 Himalaya,  
 6-7,000 ft.  
 Kashmir.

like the last species, but is much larger in all its parts, flower stalks longer than the leaves, flowers larger, bright blue, lobes of the capsule broad, widely separating, capsule much broader than long.

**Nelsonia campestris,**

see Herbs, Erect, Opposite, Exstipulate, Simple, Entire.

**Hygrophila**  
**polysperma,**  
 ACANTHACEÆ.  
 F. B. I. iv. 406.  
 The Plains to  
 5,000 ft., in wet  
 places.

small, annual, 6-18 in., branches rooting; leaves  $\frac{1}{2}$ -1 $\frac{1}{2}$  in., narrowly oblong to ovate, narrowed into a short stalk, smooth, almost entire; flowers  $\frac{1}{3}$  in., pale blue or white, in terminal dense oblong or linear spikes, bracts  $\frac{1}{4}$ - $\frac{1}{3}$  in., broadly oblong narrowed to each end, overlapping, bracteoles  $\frac{1}{4}$  in., lanceolate, calyx tubular, 5-fid, hairy, teeth linear,  $\frac{1}{4}$  in., corolla tube swollen at the apex, 2-lipped, oblong, straight, stamens 2, style long, hairy; capsule  $\frac{1}{4}$ - $\frac{1}{3}$  in., linear or narrowly oblong, seeds 20-30, ovoid, flattened, white, hairy when wetted.

**Rungia repens,**  
 ACANTHACEÆ.  
 F. B. I. iv. 549.  
 The Plains.

small, perennial, much branched, branches rooting, 4-angled, nearly smooth when crushed, has a scent of thyme; leaves 2 by  $\frac{2}{3}$  in., oblong-lanceolate, nearly sessile; flowers  $\frac{1}{4}$  in., white with pink spots, in dense axillary or terminal one-sided spikes, 2 by  $\frac{1}{3}$  in., the 2 leaves

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

close to the base much smaller, bracts closely regularly in 4 rows, overlapping,  $\frac{1}{4}$  by  $\frac{1}{8}$ - $\frac{1}{4}$  in., white, margin broad, prominent, bracteoles  $\frac{1}{5}$  in. linear-lanceolate, calyx  $\frac{1}{8}$  in., 5-lobed, lobes linear-lanceolate, corolla 2-lipped, upper lip notched, short, lower lip 3-lobed, stamens 2, style thread-like, stigma minutely divided; capsule  $\frac{1}{4}$  in., ovoid or oblong, minutely thinly hairy, seeds 4,  $\frac{1}{16}$  in. diam., concentrically wrinkled, ovoid, flattened. This plant is used as a vermifuge and as a cure for ringworm.

**Lippia nodiflora,**  
*Bhwiokra, mokna,*  
*bukan.*

VERBENACEÆ.  
F. B. I. iv. 563.  
The Plains to  
3,000 ft.  
Sutlej Valley,  
Suni (Collett).  
Jallalabad,  
Ferozepore  
District.

small, perennial, prostrate, branches 6-30 in., rooting at the joints, making large patches; leaves 1 in., ovate, with broad tip or spoon-shaped narrowed to the sessile base, toothed near the top; flowers  $\frac{1}{10}$  in. long, pink or white, crowded in axillary, long-stalked oblong-ovoid, bracteate heads,  $\frac{1}{2}$  by  $\frac{1}{4}$  in., bracts  $\frac{1}{10}$  in., ovate, calyx minute, divided into 2, hairy, corolla  $\frac{1}{20}$ - $\frac{1}{10}$  in., tube slender, 2-lipped, upper lip 2-lobed, lower lip longer, 3-lobed, stamens 4, in unequal pairs, enclosed in the corolla, fruit dry, minute, dividing into two one-seeded nutlets. This plant is used as a demulcent and as a cooling drug.

**Calamintha umbrosa,**

see Herbs, Opposite, Exstipulate, Simple, Entire,  
Corolla 2-lipped, Stamens 4, Outer Pair Longest.

**Nepeta erecta,**

see Herbs, Erect, Opposite, Exstipulate, Simple,  
Toothed, Corolla 2-lipped, Stamens Four, Inner Pair  
Longest.

**Dracocephalum  
stamineum,**

LABIATÆ.  
F. B. I. iv. 666.  
Himalaya,  
west of the Chenab,  
11,000 ft.  
Kashmir.

small, stems many from the root, much-branched, green or purple, prostrate then rising, round, few-leaved; leaves  $\frac{1}{2}$ - $\frac{2}{3}$  in. diam., circular-heart-shaped or kidney-shaped, deeply round-toothed, wrinkled, smooth or felted, stalk of lower leaves 1-3 in., very slender; flowers small, dark blue, in felted crowded circles forming terminal heads and one or more on the stem, calyx  $\frac{1}{4}$ - $\frac{1}{3}$  in., nearly equally 5-cleft, sessile, felted, often coloured, teeth ovate-lanceolate, corolla small, 2-lipped, upper lip erect, notched, lower spreading, 3-lobed, mid-lobe largest, projecting but little beyond the calyx, stamens 4 in unequal pairs, inner pair longest, projecting from the corolla, ascending under the upper lip; nutlets 4, smooth.



## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES,

## PETALS UNITED.

- Scutellaria prostrata**,  
LABIATÆ.  
F. B. I. iv. 667.  
Himalaya,  
8-14,000 ft.  
Kashmir, Murree  
(Douie).  
Baluchistan (Lace).  
small, perennial, rootstock stout, stems 4-8 in., many, much branched, zigzag, felted; leaves  $\frac{1}{2}$ -1 in., ovate, base heart- or wedge-shaped, coarsely toothed, stalked; flowers 1 in., yellow, tipped with violet in short leafy terminal spikes, 4-angled in bud, bracts leafy, calyx 2-lipped, bell-shaped, lips short, broad, entire, closing after flowering, upper lip bearing on its back a small transverse scale-like protuberance; in fruit the upper lip falls off, lower lip closes the mouth, corolla 2-lipped, long, usually sharply curved, erect, not ringed within, upper lip entire or notched, erect, lower broad, 3-lobed, stamens 4, in unequal pairs, outer pair longest, ascending under the upper lip, anthers hairy; nutlets 4, very minute, with a few minute hairs.
- Scutellaria grossa**,  
see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed, Corolla 2-lipped, Stamens 4, Outer Pair Longest.
- Scutellaria repens**,  
LABIATÆ.  
F. B. I. iv. 669.  
Himalaya,  
1-6,000 ft.  
Välleys below Simla  
(Collett).  
Kashmir.  
like the last described species, but stems long, stout, bluntly 4-angled, base of leaves not heart-shaped, abrupt or short-pointed, flowers  $\frac{1}{2}$  in., yellow sometimes tinged with purple, in long narrow racemes, 6-10 in., curved, not leafy, glandular-hairy.
- Scutellaria linearis**,  
*Mastiara*.  
LABIATÆ.  
F. B. I. iv. 669.  
Himalaya,  
3-8,000 ft.  
Simla, Naldera  
(Collett).  
Kashmir.  
Salt Range.  
like the last species, but stems tufted, round, leaves linear, margins entire, recurved, flowers  $\frac{3}{4}$ -1 in., pale purple, tip of lower lip yellow, racemes very short,  $\frac{1}{2}$ -1 in., corolla tube nearly straight, throat much swollen. This plant though bitter is eaten on the Salt Range.
- Brunella vulgaris**,  
see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Corolla 2-lipped, Stamens 4, Outer Pair Longest.
- Lamium rhomboideum**,  
see Herbs, Erect, Opposite, Exstipulate, Simple, Toothed, Corolla 2-lipped, Stamens 4, Outer Pair Longest.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Lamium  
amplexicaule,  
Henbit,**  
LABIATÆ.  
F. B. I. iv. 679.  
The Plains to  
2,000 ft. to the  
Himalaya at  
10,000 ft.  
Simla on borders of  
fields (Collett).  
Baluchistan (Lace).

small, annual, hairy or nearly smooth, branched from the base, bending up from a prostrate base; leaves  $\frac{1}{4}$ - $\frac{3}{4}$  in., circular, deeply round-toothed, lower long-stalked; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in., purple-red in axillary circles, lower circles distant. uppermost often crowded in leafy head, floral leaves sessile, broader than long, calyx small, bell-shaped, velvety, teeth 5, as long as the tube, converging in fruit, corolla  $\frac{3}{4}$  in. or less, very slender, straight, velvety, tube slender at the base, much wider at the mouth, longer than the calyx, 2-lipped, upper lip erect, arching, hood-like; lower lip spreading, lateral lobes absent, mid-lobe circular, notched or 2-lobed, abruptly contracted at the base, stamens 4, in unequal pairs, ascending under the upper lip, outer pair longest; nutlets 3-angled, scaly.

**Lamium album,  
White dead nettle,**  
LABIATÆ.  
F. B. I. iv. 679.  
Himalaya,  
5-10,000 ft.  
Simla on roadsides  
(Collett).  
Murree (Douie).  
Kashmir.

like the last species, but perennial, rootstock creeping with runners, leaves larger, 1-3 in., ovate-heart-shaped, round or sharp-toothed, floral stalked, calyx teeth longer than the tube, teeth long, awl-shaped, spreading in fruit, flowers larger,  $\frac{3}{4}$ -1 in., white or pale pink, lateral lobes of corolla present, narrow, reflexed, corolla tube curved, nutlets naked.

**Teucrium  
Royleanum,**  
LABIATÆ.  
F. B. I. iv. 700.  
Himalaya,  
3-6,000 ft.  
Mahasu (Collett).  
Kashmir.

small, perennial, stem prostrate, rooting below, then rising, 12-18 in. with runners, velvety, felted or woolly; leaves  $1\frac{1}{2}$ -3 in., ovate or oblong-ovate, heart-shaped, short-pointed, toothed, stalk  $\frac{1}{2}$ -1 in., slender; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in., white or yellow, white in 2-flowered clusters forming terminal racemes 2-3 in., bracts lanceolate, longer than the minor flower stalks, calyx  $\frac{1}{6}$  in., bell-shaped, woolly, teeth 5, upper tooth broad-rounded, short-pointed, 2 lower lanceolate, long-pointed, lateral shorter, corolla one-lipped, lower lip 5-lobed, long, spreading, lateral lobes tooth-like, terminal lobe broad, concave, tube twice the length of the calyx, stamens 4, in unequal pairs, outer pair longest, protruding from the back of the corolla mouth; nutlets 4, minute, netted, almost wrinkled, enclosed in the calyx teeth.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Teuerium**  
**Scordium,**  
**Water Germander,**  
 LABIATÆ.  
 F. B. I. iv. 702.  
 Kashmir  
 (Jacquemont), in  
 wet places.
- fetid, glandular, leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., oblong, blunt, sessile, coarsely toothed, base wedge-shaped, flowers  $\frac{1}{3}$  in., rose-purple in 2-6-flowered axillary racemes, calyx  $\frac{1}{8}$  in., shortly bell-shaped, base pouched, teeth triangular, nearly equal; for other characters see the last species.

## PETALS NONE.

- Stellaria media,** see Prostrate Herbs, Opposite, Exstipulate, Simple, Petals Ununited.
- Ammania peploides,** see Prostrate Herbs, Opposite, Exstipulate, Simple, Petals Ununited.
- Trianthema monogyna,**  
*Swet, sabuni,*  
*bishkapra.*  
 FICOIDEÆ.  
 F. B. I. ii. 660.  
 The Plains.  
 Lahore.
- small; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., ovate, with a broad tip, stalk  $\frac{1}{8}$  in., dilated, membranous at the base; flowers small, solitary, axillary, sessile, calyx tube short, thin, closely sheathed by the base of the leaf, lobes 5, blunt with a hard point, coloured within, petals none, stamens about 15; capsule  $\frac{1}{5}$  in., mitre-shaped, beak projecting, lower part 3-5-seeded, style one, seeds kidney-shaped, black, with undulating lines.

- Trianthema crystallisna,**  
*Alettie.*  
 FICOIDEÆ.  
 F. B. I. ii. 660.  
 The Plains.
- like the last species, but leaves rather smaller, narrowly lanceolate with a broad tip or narrowed to both ends, flowers densely clustered, calyx tube green with many ribs not sheathed by the base of the leaf stalk, stamens 5, capsule smaller, beak a circular corky flat disc with a central depression, seeds 2, discoid, black.

- Trianthema pentandra,**  
*Bishkapra, itsit,*  
*narma.*  
 FICOIDEÆ.  
 F. B. I. ii. 660.  
 The Plains.  
 Baluchistan  
 (Stocks).
- like the last species, but perennial, woody, leaves larger, flowers in sessile clusters, calyx lobes ovate, stamens 5, beak of the fruit mitre-shaped, separating into 2 one-seeded parts. This plant is used locally as an abdominal astringent and as ecboic.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Trianthema  
hydaspica,**

FICOIDEÆ.

F. B. I. ii. 661.

The Plains,

Multan (Edgeworth).

like the last species, but capsule larger,  $\frac{1}{4}$  in., seeds 10-15, dull black with undulating lines radiating from the centre, flowers separated or clustered.

**Orygia decumbens,**

FICOIDEÆ.

F. B. I. ii. 661.

The Plains.

Baluchistan

(Stocks).

small to medium size, smooth, stems 6-18 in., triangular; leaves  $\frac{3}{4}$ -1 in., also alternate, ovate with a broad tip, fleshy, entire, tipped with a rigid point, stalk  $\frac{1}{8}$  in.; flowers  $\frac{1}{3}$  in. diam., purplish-green in few-flowered loose terminal or leaf opposed clusters, with small lanceolate bracts at their divisions, sepals 5, ovate with dry thin edges, petals none, stamens 12 or more, staminodes many, small, styles 5, thread-like; capsule  $\frac{1}{8}$  in. diam., round, papery, enclosed in the persistent sepals, cells 5, opening dorsally, seeds many, dull black, kidney-shaped, with many concentric raised lines.

**Gisekia  
pharnaceoides,**

FICOIDEÆ.

F. B. I. ii. 664.

The Plains.

Baluchistan

(Stocks).

small, succulent, smooth, branches prostrate or ascending; leaves  $\frac{3}{4}$ -1 $\frac{1}{2}$  in., oblong, prolonged into the stalk, fleshy, abounding in raphides; flowers  $\frac{1}{8}$  in., greenish or purplish, in axillary dense clusters, sepals 5, oblong-oval with thin margins, petals none, stamens 5, dilated below; fruit of 5, free, thin, carpels, one-seeded, seeds blackish, rounded on the back, almost kidney-shaped, covered with glandular dots. This plant, when fresh, is said to be a specific against tape worm.

**Boerhaavia repens,**

NYCTAGINACEÆ.

F. B. I. iv. 709.

The Plains to

7,000 ft.

Valleys below Simla  
(Collett).

Bewal, Kullar

(Douie).

Lahore, Koti.

Baluchistan

(Stocks).

medium size, perennial, root spindle-shaped, branches 6-24 in., creeping along the ground, or ascending, smooth or slightly velvety; leaves  $\frac{1}{2}$ -2 in. linear, ovate-oblong or rounded, blunt or short-pointed, base rounded or heart-shaped, thick, usually white beneath, stalk often as long as the blade; flowers minute, reddish in head-like clusters forming long slender stalked branching racemes, calyx 5-lobed, funnel-shaped, petals none, stamens 2-3; fruit  $\frac{1}{3}$  in. long, shortly wedge-shaped, 5-ribbed, sticky all over, top rounded.

**Boerhaavia repanda,**

see Climbing Plants, Herbs, Opposite, Exstipulate Simple.

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Boerhaavia verticillata,** see Climbing Plants, Herbs, Opposite, Exstipulate, Simple.

**Peperomia reflexa,** small, perennial, velvety, stem 3-10 in., stout, densely  
 PIPERACEÆ. branched, tufted, leafy, branches rooting at the joints,  
 F. B. I. v. 99. creeping over rocks and trees; leaves  $\frac{1}{3}$  in., broadly ovate,  
 Himalaya, nearly sessile in circles of four; flowers minute, green,  
 east of the Sutlej, half sunk in the stem of the spikes,  $\frac{1}{2}$ -1 in., stalked, erect,  
 4-6,000 ft. calyx none, stamens 2, stigma sessile minutely 2-lobed;  
 Simla, below berries one-seeded, not splitting.  
 Annandale  
 (Collett).

## PROSTRATE HERBS WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Tridax procumbens,** medium size, perennial, hairy, weak, staggling;  
 COMPOSITÆ. leaves 1-2 in. long, ovate or lanceolate, pinnately divided,  
 F. B. I. iii. 311. deeply irregularly toothed; flowers minute in heads,  $\frac{3}{4}$  in.  
 The Plains. diam., on long solitary stalks, inner flowers tubular, outer  
 ligulate, bracts of head few, outer short, broad, green,  
 floor of head flat or convex, scales thin, shining, pappus  
 hairs short or long, feathery, shining, style-arms hairy;  
 achenes top-shaped or oblong, silky, brown.

**Mazus surculosus,** see Prostrate Herbs, Opposite, Exstipulate Simple,

## PETALS NONE.

**Alternanthera sessilis,** small to medium size, nearly smooth, branching from  
 AMARANTACEÆ. the base; leaves 1-3 in., ovate or narrowly oblong, blunt,  
 F. B. I. iv. 731. rather fleshy, sometimes almost toothed; flowers  $\frac{1}{18}$ - $\frac{1}{12}$  in.,  
 The Plains to white, in axillary, often clustered, heads  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, sepals  
 4,000 ft. 5, unequal, smooth, stiff, anterior and 2 posterior flattened,  
 Valleys below Simla, 2 lateral innermost, concave, petals none, stamens 5,  
 in wet places anthers 2-3; fruit is an utricle, dry, flattened, winged,  
 (Collett). enclosed by the persistent sepals, seed one.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Portulaca oleracea,** small, annual, smooth, succulent; leaves  $\frac{1}{4}$ - $1\frac{1}{2}$  in.,  
**Indian purslane,** flat, oblong-wedge-shaped or spoon-shaped, thick, pale,  
*Kulfa, lunak.* and glistening beneath, stalk very short, tip abruptly  
 PORTULACÆ. terminated or notched, stipules minute, thin, or none;  
 F. B. I. i. 246. flowers small, yellow, solitary or clustered, terminal with  
 The Plains to a circle of leaves, sepals 5, united below, petals 5, as long  
 5,000 ft. as the sepals, very delicate, soon falling off, stamens 8-12,  
 Sargodha. style 3-5-fid; capsule brittle, splitting transversely, seeds  
 many, dark brown, kidney-shaped. This plant is used  
 as a cooling, a demulcent, and a diuretic medicine.
- Sida humilis,** small, perennial, trailing, with star-shaped hairs;  
 MALVACÆ. leaves  $\frac{1}{2}$ -2 in., broadly ovate or nearly circular, heart-  
 F. B. I. i. 323. shaped, toothed, slightly hairy, stalks 1-2 in., stipules  
 The Plains to soon falling off; flowers  $\frac{1}{2}$  in. diam., pale yellow, axillary,  
 5,000 ft. solitary or in pairs, distant or in loose racemes, stalks joint-  
 Valleys below Simla ed at or above the middle, calyx 5-angled, valvate, tubular  
 (Collett). below, segments triangular, acute, petals 5, free above,  
 Koti. united below, longer than the calyx, broad, abruptly ter-  
 minated, staminal tube dividing into many anther-bearing  
 processes; fruit enclosed in the persistent calyx, carpels 5,  
 shortly pointed with 2 horns, one seed in each carpel.
- Corechorus** small, perennial, velvety with star-shaped hairs, root-  
**Antichorus,** stock woody, branches tortuous, interlacing, 6-7 in. long;  
*Baphuli, kurand.* leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, roundish, pleated, toothed, base 3-nerved,  
 TILIACÆ. shortly stalked, stipules free; flowers small, yellow, on 1-2-  
 F. B. I. i. 398. flowered short stout stalks, opposite to the leaves, sepals  
 The Plains to 4-5, petals 4-5, usually shorter than the sepals, stamens  
 3,000 ft. many, style short, stigma shortly lobed; capsule 1- $1\frac{1}{2}$  in.,  
 Valleys below Simla cylindric, 4-valved, beak entire, seeds many. This plant  
 (Collett). is used as a demulcent.
- Reinwardtia trigyna,** see Shrubs, Alternate, Stipulate, Simple.
- Crotalaria prostata,** see Prostrate Herbs, Alternate, Exstipulate, Simple.
- Crotalaria humifusa,** small, perennial, hairy, stems slender, prostrate, 6-12  
 LEGUMINOSÆ. in.; leave  $\frac{1}{2}$ -1 in., circular-ovate, nearly sessile, lower  
 F. B. I. ii. 67. surface densely red hairy, stipules small, awl-shaped;  
 Himalaya, flowers  $\frac{1}{8}$  in. long, yellow, in loose 3-6-flowered racemes on  
 east of the Sutlej, curved stalks 2-3 times as long as the leaves, calyx  $\frac{1}{8}$  in.,  
 4-6,000 ft. 2-lipped, densely silky, teeth 5, linear, very long, the two  
 Simla (Collett). upper more or less united, petals hardly longer than the  
 calyx, upper petal (standard) circular notched, often with

## PROSTRATE HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

a small hard knob just above the short stalk, two lateral wing petals shorter than the standard, the lower petal (keel) strongly curved, pointed, stamens 10, all united in a tube split along the upper side, 5 stamens long, 5 short, style strongly curved, bearded on the inner side below the stigma; pod  $\frac{1}{4}$  in. long, oblong, smooth, shortly stalked, 6-8-seeded.

**Crotalaria hirsuta,**

LEGUMINOSÆ.

F. B. I. ii. 68.

The Plains to  
4,000 ft.

Simla (Collett).

small, perennial, hairy, trailing over the ground or other plants, leaves 1-2 in., ovate, sessile, short-pointed, stipules linear, minute, flowers  $\frac{1}{2}$  in. long, yellow, sometimes spotted with purple, in 2-3-flowered racemes on stalks shorter than the leaves, calyx hairy, petals  $1\frac{1}{2}$  times as long as the calyx, pod  $\frac{3}{4}$  in., oblong, densely hairy, seeds 8-10; for other characters see the last species.

**Indigofera linifolia,***Torki.*

LEGUMINOSÆ.

F. B. I. ii. 92.

The Plains.

small, perennial, procumbent, silvery velvety with laterally attached hairs, stems many, much-branched; leaves  $\frac{1}{2}$ -1 in. long, linear, pointed at both ends, silvery above and below, stipules minute, bristly; flowers  $\frac{1}{2}$  in. long, bright red or white, in 6-12-flowered copious dense nearly sessile racemes, calyx  $\frac{1}{12}$  in., bell-shaped, silvery, teeth 5, long, linear, bristle-like, corolla 2-3 times as long as the calyx, soon falling off, standard petal ovate with a broad tip, keel straight, blunt, stamens 10, upper free, others united, style smooth, curved in; pod minute, round, unarmed, one-seeded, seeds round, shining. The seeds are eaten as bread in times of famine, and used medicinally in febrile eruptions.

**Alysicarpus****monilifer,**

LEGUMINOSÆ.

F. B. I. ii. 157.

The Plains.

small, perennial, hairy, stems densely tufted; leaves  $\frac{1}{2}$  in., oblong, blunt, often heart-shaped, smooth, stalked; flowers  $\frac{1}{12}$ - $\frac{1}{8}$  in., pale pink, in close 4-8-flowered racemes, calyx obscurely hairy, teeth 5, very narrow, rigid, corolla not longer than the calyx, stamens 10, upper stamen free, others united, pod  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, necklace-shaped, 2-6-jointed, densely covered with hooked hairs.

**Alysicarpus****hamosus,**

LEGUMINOSÆ.

F. B. I. ii. 157.

The Plains.

small, stem densely covered with short spreading hairs, branches many, spreading, half erect, leaves  $\frac{1}{2}$ - $1\frac{1}{4}$  in., circular, blunt, shortly stalked, flowers in 4-6-flowered racemes, calyx  $\frac{1}{24}$  in., pod  $\frac{1}{2}$ - $\frac{5}{8}$  in., flattened, 3-5-jointed-netted, velvety; for other characters see the last species

## PROSTRATE HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Alysicarpus rugosus**, small to medium size, nearly smooth, stems 6-24 in.,  
 LEGUMINOSÆ. leaves  $\frac{1}{2}$ -1 in., ovate or oblong, stipules  $\frac{1}{4}$ - $\frac{1}{2}$  in., thin, lance-  
 F. B. I. ii. 159. olate, longer than the leaf stalk, flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., pale pink,  
 The Plains to crowded in terminal racemes, 1-4 in. long, pod sessile,  $\frac{1}{4}$  in.,  
 4,000 ft. joints 3-5, hairless, wrinkled, 1-seeded, enclosed within  
 Valleys below Simla the calyx; for other characters see the last species.  
 (Collett).  
 Dharpur.

**Flemingia strobilifera**, see Prostrate Shrubs, Alternate, Stipulate, Simple.

**Hydrocotyle asiatica**, small, perennial, succulent, very slightly velvety,  
*Brahmamduki*, stems prostrate, rooting at the joints, branches zigzag,  
*khulakhudi*. erect; leaves  $\frac{1}{2}$ - $2\frac{1}{2}$  in., kidney-shaped or circular, round,  
 UMBELLIFERÆ. toothed, long-stalked, shining, stipules small, thin, united  
 F. B. I. ii. 669. to the leaf stalk; flowers minute, purplish-white, sessile,  
 The Plains to 3-4, in small umbels, on stalks shorter than the leaves,  
 2,000 ft. bracts ovate, few, small, embracing the flowers, calyx  
 Sutlej Valley, Suni, teeth none, petals 5, minute, ovate, pointed, slightly over-  
 in wet places. lapping, stamens 5; fruit  $\frac{1}{8}$ - $\frac{1}{6}$  in., carpels 2, oblong, almost  
 (Collett). cylindric, curved, slightly flattened, netted, wrinkled,  
 each with 9 curved ridges, coat white, thick, woody. This  
 plant is supposed to be of use in leprosy, as it is a cutaneous  
 stimulant and alterative. The leaves are sometimes  
 used as a pot herb.

**Hydrocotyle javanica**, see Prostrate Herbs, Alternate, Stipulate, Lobed.

**Hydrocotyle roytundifolia**, see Prostrate Herbs, Alternate, Stipulate, Lobed.

## PETALS NONE.

**Polygonum recumbens**, small to medium size, thickened at the joints, root  
 POLYGONACEÆ. stock perennial, stems stout, woody, long, much-branched,  
 F. B. I. v. 25. grooved, prostrate and ascending; leaves  $\frac{1}{2}$ - $\frac{2}{3}$  in., broadly  
 Himalaya, ovate, shortly stalked, rough, especially on the margins  
 4-8,000 ft. and under surface, stipules  $\frac{1}{6}$ - $\frac{1}{2}$  in., tubular, with 2 long  
 Simla (Collett). bristles; flowers small, white or pink, in axillary clusters,  
 Kashmir. calyx 4- or 5-lobed, stamens 4 or 5, styles 3, free, minute;  
 nut  $\frac{1}{8}$  in., 3-angled, black, smooth, shining, enclosed in  
 the calyx.



## PROSTRATE HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Polygonum  
cognatum,**

POLYGONACEÆ.

F. B. I. v. 25.

Himalaya,  
11-14,500 ft.

Kashmir.

like the last species, but stems short, little branched, calyx very thick, lobes round with white margins, nut  $\frac{1}{10}$  in., ovate, flattened.

**Polygonum  
aviculare,****Knot grass,***Machoti, kesra,*  
*banduke.*

POLYGONACEÆ.

F. B. I. v. 26.

Himalaya,  
6-10,000 ft.

Simla (Collett).

Kashmir,  
Baluchistan  
(Boissier).

medium size, annual, smooth, stem and branches prostrate, 12-24 in., leafy, finally grooved, leaves  $\frac{1}{2}$ -1 in., narrowly lanceolate, almost sessile, sometimes glandular-dotted, stipules long, tubular, nerves several, strong, straight, flowers small, green with white or red tips, in axillary clusters, nut minutely wrinkled; for other characters see the last species. This plant is applied externally as an anodyne, the seeds are emetic and cathartic.

**Polygonum  
tubulosum,**

POLYGONACEÆ.

F. B. I. v. 27.

Himalaya,  
6-7,000 ft.

Lahul.

like the last species, but branches angular not grooved, leaves linear, margins recurved, flowers sessile, calyx with short teeth, not distinctly 3-sided, smooth, shining.

**Polygonum  
plebejum,**

POLYGONACEÆ.

F. B. I. v. 27.

The Plains to  
5,000 f.Valleys below Simla  
(Collett).

Kashmir.

Indus Valley.

like *Polygonum aviculare*, but entirely prostrate, stipules few, nerved or nerveless, not rhombic, smooth, not wrinkled. A very variable plant.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Polygonum vaccini-  
folium**,  
POLYGONACEÆ.  
F. B. I. v. 33.  
Himalaya,  
9-14,000 ft.  
Kashmir.

small, perennial, smooth, tufted, rootstock sometimes  $\frac{3}{4}$  in. thick, twisted, branches trailing, creeping leafy, leaves  $\frac{1}{2}$ - $\frac{2}{3}$  in., circular, or narrowed at each end or long-pointed, shortly stalked, stipules  $\frac{1}{3}$ - $\frac{1}{2}$  in., rigid, with long segments, with many, long, strong, far-projecting nerves, flowers  $\frac{1}{3}$  in. diam., rose red, in nearly sessile spike-like racemes without glands, bracts long-pointed, stamens 4-10, projecting beyond the calyx ultimately, styles 2-3, thread-like, free, nuts 3-angled, or biconvex; for other characters see the above species.

**Polygonum Emodi**,  
POLYGONACEÆ.  
F. B. I. v. 33.  
Himalaya,  
8-11,000 ft.  
Simla, Jaku,  
Matiana, Narkanda,  
on dry rocks.  
(Collett).

like the last species, but not tufted, leaves larger,  $1\frac{1}{2}$ -2 in. linear-lanceolate, long-pointed at both ends, stipules long, flowers  $\frac{1}{6}$  in., red, flowers stalked, racemes shorter, few-flowered, stamens not protruding.

**Polygonum  
amphibium**,

see Water Plants, Alternate, Stipulate, Simple.

**Polygonum  
lanigerum**,  
POLYGONACEÆ.  
F. B. I. v. 35.  
The foot of the  
Himalaya,  
east of the Beas, in  
wet places.

large, perennial, white-felted, much branched, stems 24-60 in., prostrate, creeping with erect branches, branches slender, much divided, white, deep red at the joints, leaves 4-8 in., narrowly lanceolate-long-pointed, thickly felted beneath, stipules short, thin, without bristles, mouth unequal, flowers small, red or white without glands in slender crowded racemes 1-2 in., on branching felted stalks, bracts very small, crowded, blunt, or pointed, smooth or felted, without bristles, calyx deeply divided into 4-5 lobes, stamens 6, styles 2, nut round, small, flat, black, shining; for other characters see the above species.

**Polygonum minus**,  
**Slender Polygonum**,  
POLYGONACEÆ.  
F. B. I. v. 36.  
The Plains to  
6,000 ft.

small, annual or perennial, slender, erect or standing, smooth, stems sometimes creeping, 6-10 in., high or long, much branched, or simple, leaves linear or oblong-lanceolate, almost  $\frac{1}{2}$ -2 in., short-pointed, sessile, stipules  $\frac{1}{4}$ - $\frac{1}{2}$  in., with closely lying stiff bristles, flowers minute, pink or red, in slender, erect, terminal racemes,  $\frac{1}{2}$ -1 in. long, bracts tubular, short, fringed with bristles, calyx deeply divided into 5 lobes, stamens 5, styles 2 united for half their length, nut round, flattened, smooth, shining; for other characters see the above species.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Polygonum serrulatum,**

POLYGONACEÆ.  
F. B. I. v. 38.  
The Plains to  
4,000 ft.

small, perennial, smooth, stem prostrate, rooting below, leaves 2-4 in. linear, or narrowed at each end, oblong or lanceolate, short- or long-pointed, base rounded, heart-shaped or short-pointed, stipules bristly, bristles as long as the tube, racemes  $\frac{1}{2}$ - $1\frac{1}{2}$  in., slender, erect, calyx without glands, stamens 5-8, nut 3-angled, polished; for other characters see the last species.

**Polygonum alatum,**

see Herbs, Erect, Alternate, Stipulate, Simple, Entire.

**Polygonum capitatum,**

POLYGONACEÆ.  
F. B. I. v. 44.  
Himalaya,  
east of the Ravi,  
4-6,000 ft.  
Chamba, Simla,  
on rocks and walls.  
(Collett).

small, perennial, stem and branches creeping, branches rooting, trailing, 6-10 in. long, red-brown, hairs brown; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in., narrowed at both ends, short-pointed, in 2 rows, shortly stalked, stalk  $\frac{1}{8}$ - $\frac{1}{6}$  in., 2 small round flaps, stipules short, cuplike; flowers minute, red, in dense heads,  $\frac{1}{4}$ - $\frac{1}{2}$  in. diam., on hairy-glandular stalks, usually 2 together, bracts flat, short-pointed, calyx 5-cleft, stamens 8, styles 3, partly united; nut 3-angled, dull black, enclosed in the calyx.

**Polygonum sagittatum,**

see Prostrate Herbs, Alternate, Stipulate, Lobed.

**Polygonum strigosum,**

POLYGONACEÆ.  
F. B. I. v. 47.  
Himalaya,  
east of the Ravi, to  
5,000 ft.  
Kulu in wet places.

large, perennial, prickly, nearly erect, stem 1-3 ft., leaves 1-5 in.; linear or linear-oblong, long-pointed, stiff, base abrupt or shortly heart-shaped, shortly stalked, stipules 1 in., bristly, tubular, base with a ring of recurved prickles, flowers minute, pink, in small racemes,  $\frac{1}{6}$ - $\frac{1}{3}$  in., densely or few-flowered, bracts ovate-oblong, bristly, calyx lobes blunt, stamens 6-8, styles 2-3, united below, nut round, 3-angled, included in the calyx, black; for other characters see the last described species.

**Polygonum sibiricum,**

see Herbs, Erect, Alternate, Stipulate, Lobed,

**Polygonum nummularifolium,**

POLYGONACEÆ.  
F. B. I. v. 53.  
Kashmir,  
13,400 ft.  
(Clarke).

very small, perennial, stems 1-2 in. long, creeping, forming matted tufts, nodes hairy, leaves  $\frac{1}{10}$ - $\frac{1}{6}$  in., circular, stalked, bristly, fleshy, brown when dry, stipules hairy, abruptly ended, flowers minute, many, white or pink in many flowered clusters, calyx lobes round, stamens 5, stigmas 2, nearly sessile, nut round, biconvex, included, smooth, pale; for other characters see the last described species.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES,

## PETALS NONE.

**Polygonum dumetorum,**

see Climbing Herbs, Alternate, Stipulate, Simple.

**Rumex scutatus,**

POLYGONACEÆ.

F. B. I. v. 60.

Himalaya,

1-8,000 ft.

Simla, in fields

(Collett).

medium size, perennial, stem creeping below, branched, branches slender; leaves 1-2½ by ¾-2 in., broadly triangular, long-pointed, base sometimes forked, lobes narrow or almost linear, stipules tubular, not fringed; flowers small, green often turning red, in small circular distant clusters, forming terminal branching racemes, often dense in fruit, calyx 6-parted, stamens 6, fruiting, calyx-lobes circular, pink, not fringed, notched at both ends, styles 3, stigmas fringed; nut brown, sharply 3-angled, enclosed in 3 enlarged finely net veined fruiting sepals.

**Elatostemma sessile,**

URTICACEÆ.

F. B. I. v. 563.

Himalaya,

4-8,000 ft.

Simla, the Glen

(Collett).

root perennial, stems unbranched, 12-24 in. long, rooting towards the base, often bent at the joints, creeping; leaves 6 by 3 in., ovate-lanceolate, sessile or nearly so, sides unequal, coarsely toothed, tip ending in a slender tail-like point, stipules lateral or intrapetiolar; flowers green, minute, one sexual, mixed with minute bracteoles, on the surface of axillary fleshy saucer-like heads, ¼-½ in. diam., sometimes 2 or 3 together, male flower sessile with bracts, calyx 4-5-parted, stamens 4-5, female flowers stalked, no bracts, calyx 3-parted, lobes unequal, persistent stigma of a sessile tuft of hairs.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Geranium rotundifolium,**

see Prostrate Herbs, Opposite, Stipulate, Lobed.

**Hydrocotyle javanica,**

UMBELLIFERÆ.

F. B. I. ii. 667.

Himalaya,

2-6,000 ft.

Valley below Simla

(Collett).

small, perennial, growing in wet places, stems prostrate, rooting at the joints; leaves 1-3 in across, circular, rough, bristly, deeply notched at the base, 7-lobed, round-toothed margin, long-stalked, stipules small, thin; flowers yellow-green, minute, 30-40 in a round umbel, bracts none, calyx teeth none, petals 5, stamens 5; fruit orbicular or oblong, flattened, very small.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Hydrocotyle rotundifolia,**  
UMBELLIFERÆ.

F. B. I. ii. 668.  
The Plains to  
7,000 ft.  
Valleys below Simla  
(Collett).

like the last species, but leaves  $\frac{1}{4}$ -1 in., smooth, shining, 5-7-lobed, umbels small, bracts few, small, flowers green-white, about 10 in an umbel.

## PETALS UNITED.

**Althaea Ludwigii,**  
MALVACEÆ.  
F. B. I. i. 319.  
The Plains.

small, annual, hairy, prostrate or ascending, leaves deeply 5-7-lobed, lobes 3-fid, stipules free, soon falling off; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., whitish, shortly stalked, few or tufted, calyx 5-lobed, with a circle of 6-9 bracteoles, petals 5, twisted in bud, united to the staminal tube, staminal tube with many filaments, styles as many as the carpels, carpels many, 1-seeded, seeds small.

**Hibiscus surattensis,**  
MALVACEÆ.  
F. B. I. i. 334.  
The Plains, Delhi  
(Royle).

small, stem weak, trailing, with soft hairs, scattered recurved prickles; leaves palmately 3-5-fid, roundish, long-stalked, lobes toothed, stipules leafy, broad ear-shaped; flowers yellow with a dark centre, on stalks equaling the leaf stalks, bracteoles 5, linear with a spoon appendage, calyx persistent, 5-cleft, petals 5, united at the base, with staminal tube; capsule hairy, ovoid, seeds downy.

## PETALS NONE.

**Polygonum sinuatum,**  
POLYGONACEÆ.  
F. B. I. v. 44.  
Himalaya,,  
8-10,500 ft.  
Kulu.

small, annual, stem creeping, smooth, branches short, erect, leafy; leaves  $\frac{1}{2}$ -1 in., pinnatifid, with lobes pointing back, end lobe smallest, oblong, short-pointed, leaf stalk short with stem-clasping lobes, stipule short, tubular; flowers in solitary heads on axillary smooth stalks, bracts ovate, blunt, calyx 5-cleft, petals none, stamens 7-8, styles 3, slender, united below; nut minute, opaque, rounded, 3-angled.

**Polygonum capitatum,**

see Prostrate Herbs, Alternate, Stipulate, Simple.

**Polygonum sagittatum,**  
POLYGONACEÆ.  
F. B. I. v. 47.  
Himalaya,  
7-8,000 ft.  
Kulu in rice fields.

stems 1-3 ft., prostrate or nearly erect, smooth, squares with small, sharp, recurved prickles along the angles; leaves 1-2 in., stalked, linear-oblong, pointed, forked at the base, stipules tubular, very short, smooth, flowers pink, in a few small heads on slender distinctly prickly stalks, bracts oblong, blunt, smooth; nut 3-angled, enclosed in the calyx.

## PROSTRATE HERBS, WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS NONE.

**Polygonum sibiricum**,  
POLYGONACEÆ.  
F. B. I. v. 52.  
Himalaya,  
11-12,000 ft,  
Kangra.

small, smooth, root long, stem decumbent or erect, branches many; leaves 1-3 by  $\frac{1}{10}$ - $\frac{1}{4}$  in., narrow, linear, blunt, forked at the base, stipules short, thin; flowers pink, in clusters of heads,  $\frac{1}{6}$ - $\frac{1}{2}$  in. diam., shorter than the leaves, bracts minute, calyx  $\frac{1}{10}$  in. long, nearly round, lobes broadly oblong, stamens 5-8; nut oblong-ovate, 3-angled, black, shining.

**Rumex scutatus**,

see Prostrate Herbs, Alternate, Stipulate, Simple.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Oxalis corniculata**,  
*Amboti, amlika*.  
GERANIACEÆ.  
F. B. I. i. 436.  
The Plains to  
8,000 ft.  
Simla (Collett).  
Baluchistan  
(Lacc).

small, annual or perennial, creeping, branches ascending, hairy, stems much branched, rooting at the joints; leaves  $\frac{1}{2}$ -1 in. across, long-stalked, stipules united at the stalk, leaflets 3, pale green, narrow at the base, broad at the tip; flowers yellow, in small long-stalked clusters, sepals 5, free, overlapping, petals 5, tip broadest, twice as long as the sepals, notched, stamens 10, styles 5, distinct; capsule 5-celled,  $\frac{1}{2}$ -1 in., tipped with the styles, nearly cylindrical, felted, seeds many, small. The leaves are considered to be cooling and the juice removes warts.

**Argyrolobium roseum**,

see Herbs, Erect, Alternate, Stipulate, Compound.

**Crotalaria medicaginea**,  
*Gulabi*.  
LEGUMINOSÆ.  
F. B. I. ii. 81.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).  
Suni.  
Dharpur.  
Baluchistan  
(Stocks).

small, perennial, green, branches many, slender, thinly covered with flat-lying silky hairs; leaves with 3 leaflets, leaflets  $\frac{1}{4}$ - $\frac{3}{4}$  in., nearly sessile, broadly wedge-shaped or narrowly ovate with a broad tip, stipules minute; flowers  $\frac{1}{4}$  in. long, yellow, in 2-6 flowered racemes, calyx 2-lipped, teeth 5, long, linear, 2 lower united, velvety, corolla twice as long as the calyx, standard orbicular, wing petals shorter than the standard keel, strongly incurved, pointed, stamens 10, all united in a tube, style strongly curved, bearded on the inner side below the stigma; pod  $\frac{1}{7}$  in., globose, velvety, seeds 2.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

- Trifolium pratense,**  
**Purple clover,**  
*Treparta, chitbatta.*  
 LEGUMINOSÆ.  
 F. B. I. ii. 86.  
 Himalaya,  
 4-8,000 ft.  
 Simla (Collett).  
 small perennial, hairy, stems reclining; leaves of 3 leaflets, leaflets ovate or oblong, entire or toothed, tip blunt or notched, end leaflet sessile, stipules united to the leaf stalk, large, ovate, veined, long-pointed, much shorter than the leaf stalks; flowers small, purple, many in long-stalked ovoid or round heads,  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. diam., with 1 or 2 leaves at the base, calyx bell-shaped, teeth 5, nearly equal, or 3 lower longest, narrow, longer than the tube, petals narrow, persistent, keel blunt, stamens 10, upper free, petals united, style lightly curved, smooth; pod very small in the withered corolla, seed one. This plant supplies good fodder.
- Trifolium repens,**  
**Dutch clover,**  
**Shamrock,**  
*Shaftal, shotul.*  
 LEGUMINOSÆ.  
 F. B. I. ii. 86.  
 Himalaya,  
 20,000 ft.  
 Simla (Collett).  
 Baluchistan  
 (Stocks).  
 like the last species, but stipules narrow, oblong, flowers white or tinged with pink, pod 3-4-seeded.
- Trifolium fragiferum,**  
**Strawberry clover,**  
 LEGUMINOSÆ.  
 F. B. I. ii. 86.  
 Kashmir,  
 Baluchistan (Duke).  
 very like the last species, but flowers pinker, calyx enlarged in fruit forming a red bladder round the small, 1-2-seeded pod.
- Trifolium minus,**  
**Lesser clover,**  
 LEGUMINOSÆ.  
 F. B. I. ii. 86.  
 Simla (Collett).  
 annual, nearly smooth, stem trailing, stipules broadly lanceolate, nearly as long as the leaf stalk, heads  $\frac{1}{4}$  in. diam., ovoid, flowers yellow, pod obovoid, 1-seeded, calyx not enlarged in fruit; for other characters see the last species.
- Parochetus**  
**communis,**  
 LEGUMINOSÆ.  
 F. B. I. ii. 86.  
 Himalaya,  
 east of the Sutlej,  
 4-13,000 ft.  
 Matiana in grass  
 (Collett).  
 perennial, hairy, stems long, fine, rooting at the joints; leaves of 3 leaflets, leaflets heart-shaped with the pointed end inwards, entire or minutely toothed, stipules lanceolate, nearly free; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, deep violet blue, solitary or in pairs at the end of a stalk longer than the leaves, calyx tube 5-toothed, bell-shaped, petals free, standard erect, stalked, keel shorter than the wing petals, stamens 10, upper stamen free, others united, style smooth, turned in; pod  $\frac{3}{4}$ -1 in., straight, tipped with the style, seeds many.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Trigonella polycerata**,  
*Sainji, chini*.  
LEGUMINOSÆ.  
F. B. I. ii. 87.  
The plains to  
6,000 ft.  
Simla (Collett).  
Lahore.  
Baluchistan  
(Stocks).

small, annual, slender, covered with flat-lying velvety felt; leaves with 3 leaflets, leaflets  $\frac{1}{4}$ - $\frac{1}{2}$  in., small, ovate with a broad tip, upper half toothed, lower half entire, wedge-shaped, nearly sessile, end one stalked, sharp teeth, stipules joined to the leaf stalk, lanceolate, long-pointed; flowers pale yellow, 2-4 in an umbel, umbel stalk without bristle, calyx bell-shaped, hairy, teeth 5, distinct, nearly equal, shorter than the tube, petals narrow, rather longer than the calyx, standard and wings nearly equal, keel shorter, blunt, stamens 10, upper free or nearly so, others united, style smooth, slightly incurved; pod 1-2 by  $\frac{1}{10}$  in., slightly flattened, curved, net-veined, smooth, 10-20-seeded.

**Trigonella gracilis**,  
LEGUMINOSÆ.  
F. B. I. ii. 88.  
Himalaya,  
5-9,000 ft.  
Naldera (Collett).

smooth, or nearly so, stems 6-18 in., trailing, slender, leaflets  $\frac{1}{3}$ - $\frac{1}{2}$  in., stipules linear, faintly toothed, flowers 1-3 in an umbel, umbel stalk tipped with a bristle, calyx slightly hairy, petals a little longer than the calyx, pod  $\frac{1}{2}$  by  $\frac{1}{3}$  in., flat, straight, marked with transverse veins, 6-8-seeded; for other characters see the last species.

**Trigonella pubescens**,  
LEGUMINOSÆ.  
F. B. I. ii. 88.  
Kashmir,  
5-7,000 ft.

like the last species, but stouter, downy, umbel-stalk not ending in a bristle, pod linear-oblong, 10-12-seeded.

**Medicago falcata**,

see Herbs, Erect, Alternate, Stipulate, Compound.

**Medicago lupulina**,  
**Black Medick**,  
**Trefoil**,  
LEGUMINOSÆ.  
F. B. I. ii. 90.  
The Plains to  
10,000 ft.  
Baluchistan (Lace).

biennial, stem 12 in., trailing, finely downy; leaves with 3 leaflets, leaflets  $\frac{1}{4}$ - $\frac{1}{2}$  in., ovate with the tip broad, upper part toothed, lower entire, lateral nearly sessile, end one stalked, veins running out into sharp teeth, stipules narrowly lanceolate, long-pointed, united to the leaf stalk; flowers very small, bright yellow, many in round or ovoid heads,  $\frac{1}{4}$  in. diam., calyx bell-shaped, teeth 5, distinct, petals twice as long as the calyx, slightly projecting from the calyx, standard sessile, keel shorter than the wing petals, blunt, stamens 10, upper one free, others united, style smooth, incurved; pod  $\frac{1}{2}$  in., smooth, minute, sickle-shaped, black when ripe, tip coiled, seed solitary. This plant forms good pasture with clover and grass.



## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Medicago orbicularis**,  
LEGUMINOSÆ.  
F. B. I. ii. 90.  
Kashmir,  
Baluchistan (Duke).

like the last species, but annual, stipules cut deeply into lobes, heads 2-3-flowered, petals projecting far out of the calyx, pod  $\frac{1}{2}$ - $\frac{3}{4}$  in. broad, with 4-5 flattened spirals, unarmed.

**Medicago laciniata**,  
LEGUMINOSÆ.  
F. B. I. ii. 90.  
The Plains.  
Baluchistan  
(Stocks).

like the last species, but flowers in 1-2-flowered heads, stalk with bristle, pod  $\frac{1}{8}$  in., nearly round with 4-5 sharply armed spirals.

**Medicago denticulata**,  
**Toothed Medick**,  
LEGUMINOSÆ.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).  
Peshawar.  
Baluchistan  
(Stocks).

like the last species, but rather longer, pod with 2-4 spirals, the veined face  $\frac{1}{6}$ - $\frac{1}{4}$  in. broad without the spines which are hooked,  $\frac{1}{4}$ - $\frac{1}{8}$  in. long.

**Medicago minima**,  
**Bur Medick**,  
LEGUMINOSÆ.  
F. B. I. ii. 91.  
Kashmir,  
5-6,000 ft.

like the last species, but stipules entire, stems less than 6 in. long, pod  $\frac{1}{8}$  in. broad, nearly round, formed of 2-4 spirals, with 2 rows of hooked prickles.

**Lotus corniculatus**,  
**Birds' foot trefoil**,  
LEGUMINOSÆ.  
F. B. I. ii. 91.  
Himalaya,  
2-10,000 ft.  
Simla, Matiana,  
Hatu (Collett),  
Murree.

perennial, smooth, stem slender, decumbent; leaves with 5 leaflets, leaflets  $\frac{1}{4}$ - $\frac{3}{4}$  in. ovate with broad tip or oblong, almost sessile, stipules of minute glands; flowers  $\frac{1}{2}$  in. long, yellow, often streaked with pink, 5-10 in a long-stalked axillary umbel, with a leaf of 3 leaflets beneath, calyx bell-shaped, teeth 5, corolla twice as long as the calyx, standard longer than the wings, keel incurved, pointed, stamens 10, upper free, others united, 5 alternate ones longer; pod 1-1 $\frac{1}{2}$  in., straight, cylindrical, seeds several, divided by pith.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Indigofera  
enneaphylla,**

LEGUMINOSÆ.  
F. B. I. ii. 94.  
The Plains to  
4,000 ft.  
Lahore.

annual or perennial, rootstock woody, stems many in a bunch from the root, trailing, with scattered white flat-lying hairs; leaves 1-1½ in., with 5-9 nearly sessile leaflets, leaflets small, firm, lanceolate with a broad tip, notched, tipped with an abrupt point, stipules ovate, tipped with a hard sharp point, thin; flowers red, small, nearly sessile, in oval dense shortly stalked spike-like heads, bracts lanceolate, long-pointed, thin, calyx hairy, teeth long, bristle-like, petals projecting slightly from the calyx, standard ovate with a broad tip, keel straight, not beaked, spurred on each side near the base, stamens 10, upper stamen free, others united; pod ½ in., oblong cylindrical, covered with white flat-lying hairs, seeds 2 with a division.

**Indigofera trifoliata,**

LEGUMINOSÆ.  
F. B. I. ii. 96.  
The Plains to  
4,000 ft.

perennial, stems much branched, trailing, covered with flat-lying white hairs, leaflets 3, sessile, ½-1 in. long, oblong, gland-dotted, flowers small, red, crowded in small sessile racemes, calyx ¼ in., teeth long, bristle-like, corolla 3-4 times the calyx, pod ½ in., linear, straight, rather angled with 2 narrow wings one each side of either suture, 6-8-seeded; for other characters see the last species.

**Indigofera  
anabaptista,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Astragalus  
amherstianus,**

LEGUMINOSÆ.  
F. B. I. ii. 119.  
Himalaya,  
6-10,000 ft.  
Simla (Collett).  
Chamba.  
Baluchistan  
(Lace).

annual, thickly covered with shining white hairs, stems 6-18 in., tufted, slender, trailing; leaves 1-1½ in., odd pinnate, leaflets 13-17, narrowly oblong, ¼ in.; flowers ¼ in. long, pale yellow or pink, in stalked axillary racemes, ½-¾ in. long, bracts minute, bristle-like, calyx ⅙-⅓ in., teeth bristle-like, as long as the tube, petals narrow, stalked, standard erect, wings equal to the incurved blunt keel, stamens 10, upper free, others united; pod ½ in., sessile, curved, almost divided lengthwise by the lower suture, seeds 10-12.

**Astragalus  
subumbellatus,**

LEGUMINOSÆ.  
F. B. I. ii. 119.  
The Plains to  
6-7,000 ft.  
Hazara, Kashmir,  
Rawalpindi  
(Douie).

like the last species, but petals more than twice as long as the calyx, pod longer, 20-24-seeded.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Astragalus  
tribuloides,***Ogai.*

LEGUMINOSÆ.

F. B. I. ii. 122.

The Plains,  
Rawalpindi.

Fatehjang (Douie).

Baluchistan

(Stocks).

like the last species, but flowers in dense sessile heads, pods  $\frac{3}{8}$  in. long, very little recurved, velvety in clusters often sticking out like spokes of a wheel. The seeds are used locally as medicine

**Astragalus hamosus,***Akhil-ul-malik.*

LEGUMINOSÆ.

F. B. I. ii. 122.

The Plains,  
Lahore, Peshawar.

like the last species, but stouter, heads stalked, pod long, cylindrical, smooth, much recurved. This plant is used as an emollient and demulcent.

**Astragalus  
contortuplicatus,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Astragalus  
himalayanus,**

LEGUMINOSÆ.

F. B. I. ii. 126.

Himalaya,  
5-13,000 ft.

Lahul, Kulu.

Kashmir.

like the last described species, but stems very slender, 12-24 in., with distant internodes, flowers lilac, in stalked rounded heads, pods linear-oblong, stalked, almost one-celled, 5-6-seeded.

**Astragalus  
leucocephalus,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Zornia diphylla,**

LEGUMINOSÆ.

F. B. I. ii. 147.

The Plains to  
5,000 ft.Valleys below Simla  
(Collett).

annual, almost erect, tufted, wiry; leaves stalked of one or two opposite pairs, leaflets  $\frac{1}{2}$ -1 in. long, lanceolate, smooth, leathery, dotted with black glands, stipules lanceolate with a long spur; flowers yellow,  $\frac{1}{4}$  in., nearly sessile, in erect axillary loose racemes, 1-3 in. long, bracts in pairs, leaf-like fringed, almost hiding the flowers, calyx thin, half the length of the petals, teeth 5, 2 upper united, 2 lateral very short, lowest equal to the upper, standard round, keel incurved, blunt, stamens 10, united, alternately long and short bearing round or oblong anthers, style incurved, smooth; pod of 2-5 one-seeded joints, prickly, projecting beyond the bracts.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Lathyrus Aphaca**

see Leafless Plants, Herbs, Petals Ununited.

**Lathyrus sativus,**  
*Kisari.*LEGUMINOSÆ.  
F. B. I. ii. 180.  
The Plains to  
4,000 ft.  
Kalabagh,  
Indus Valley.annual, smooth, much branched, trailing, stems 4-angled, winged; leaves ending in a 3-fid tendril, leaflets 2, linear-lanceolate, long-pointed, entire, stipules broad, entire, long-pointed, partly forked; flowers blue purple, pink or white,  $\frac{3}{4}$  in., solitary, stalk longer than the leaf stalks, calyx teeth spreading, lanceolate, twice as long as the tube, standard blue purple, broad, keel pink; pod  $1\frac{1}{2}$  in., upper margin 2-winged, seeds 4 or 5. A prolonged diet of this pulse is supposed to cause paralysis.**Lathyrus sphæricus,**LEGUMINOSÆ.  
F. B. I. ii. 180.  
The Plains to  
5,500 ft.  
Simla (Collett).

like the last species, but stem wingless, flowers reddish, as long as the calyx, pod linear, wingless, many-seeded.

**Lathyrus pratensis,**  
**Meadow pea,**LEGUMINOSÆ.  
F. B. I. ii. 180.  
Himalaya,  
6-8,000 ft.  
Mahasu, Fagu,  
(Collett).  
Kashmir.

like the last species, but perennial, the 2 leaflets lanceolate, flowers yellow, many in long-stalked racemes, 3 times the calyx.

**Lathyrus**  
**inconspicuus,**LEGUMINOSÆ.  
F. B. I. ii. 180.  
The Plains to  
6,000 ft.  
Simla (Collett).  
Baluchistan  
(Stocks).like *Lathyrus Sphæricus*, but leaf stalk not winged, leaf ending in a bristle not a tendril.**Phaseolus trilobus,***Mungani,*  
LEGUMINOSÆ.  
F. B. I. ii. 201.  
The Plains to  
7,000 ft.annual, or perennial, stems slender, trailing not twining, smooth or slightly hairy; leaves of 3-leaflets, stipules large, oval, leaflets 1-2 in. long, deeply 3-lobed, central division spoon-shaped, lateral nearly sessile, end one long-stalked; flowers  $\frac{1}{4}$  in. long, pale yellow, in short head-like axillary racemes, bracteoles ovate, calyx bell-

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES,

## PETALS UNUNITED.

shaped, teeth 5, 2 upper united, lowest tooth longest, petals much longer than the calyx, standard round, spreading, keel narrow, long, blunt, twisted in a complete spiral, stamens 10, upper free, others united, style spirally twisted, bearded below the oblique stigma; pod 1-2 in., curved, cylindric, smooth, seeds 6-12. This plant is sometimes cultivated, chiefly for fodder or the food of the poor.

**Phaseolus  
aconitifolius,***Moth.*

LEGUMINOSÆ.

F. B. I. ii. 202.

The Plains to

4,000 ft.

Baluchistan } }

(Hughes-Buller).

like the last species, but stipules lanceolate, much smaller, central division of leaflets strap-shaped, not spoon-shaped, bracteoles linear, pods stouter. The whole plant forms excellent fodder, the pulse is not much eaten or liked.

**Phaseolus Mungo,**

see Climbing Herbs, Alternate, Stipulate, Compound.

3

**Phaseolus calcaratus,**

see Climbing Plants, Alternate, Stipulate, Compound.

**Desmodium  
triflorum,***Kudaliya.*

LEGUMINOSÆ.

F. B. I. ii. 173.

The Plains to

6,000 ft.

Giri Valley

(Collett).

Kashmir.

perennial, hairy, much branched, stems tufted, prostrate, sometimes rooting at the joints, 6-18 in.; leaves of 3 leaflets,  $\frac{1}{2}$  in. long, stalk  $\frac{1}{2}$  in., stipules lanceolate, persistent, leaflets  $\frac{1}{2}$ - $\frac{1}{4}$  in., ovate with a broad base, wedge-shaped, thin, smooth above, sparsely covered with flat-lying hairs beneath; flowers  $\frac{1}{6}$  in. long, bright blue, solitary on hairy drooping, thread-like stalks in leaf-opposed clusters of 2-6, calyx densely hairy, teeth 5, very long, 2 upper united, 3 lower distinct, equal, petals longer than the calyx, standard broad, erect, keel nearly straight, blunt, stamens 10, upper nearly or quite free, others united, style incurved, smooth; pod  $\frac{1}{3}$ - $\frac{1}{2}$  in., sessile, slightly curved, net-veined, upper margin straight, lower slightly indented, joints 3-5, joints one-seeded. This plant is common in pastures and forms good fodder.

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Desmodium  
parvifolium,**  
*Khetsunsuni.*  
LEGUMINOSÆ.  
F. B. I. ii. 174.  
The Plains to  
6,000 ft.  
Simla, Summer Hill  
(Collett).

like the last species, but stems trailing, not rooting at the joints, stipules as long as the leaf-stalks, corolla purple, pod straight, both margins deeply indented. This is also a good fodder plant.

**Vigna vexillata,**

see Climbing Plants, Alternate, Stipulate, Compound,

**Rhynchosia aurea,**

see Climbing Plants, Alternate, Stipulate, Compound.

**Rhynchosia minima,**

see Climbing Plants, Alternate, Stipulate, Compound.

**Rhynchosia  
Falconeri,**

see Climbing Plants, Alternate, Stipulate, Compound.

**Rhynchosia  
himalensis,**

see Climbing Plants, Alternate, Stipulate, Compound,

**Flemingia congesta,**  
var. **semialata,**  
*Bara salpan.*  
LEGUMINOSÆ.  
F. B. I. ii. 229.  
Himalaya,  
3-5,000 ft.  
Chamba.

perennial, stems slender, triangular, trailing; leaves of 3 leaflets, leaf stalks winged, leaflets lanceolate, stipules  $\frac{1}{2}$  in. long, lanceolate, soon falling off, end one wedge-shaped, lateral ones obliquely rounded at the base, lower surface with a few minute red glands and silky hairs on the veins; flowers white with purple in long loose branching racemes, often longer than the leaves, bracts  $\frac{1}{2}$ - $\frac{1}{4}$  in., silky on the back, soon falling off, calyx  $\frac{1}{4}$ - $\frac{3}{8}$  in., densely covered with silky brown hairs, teeth linear-lanceolate, lowest longest, corolla hardly protruding from the calyx; pod  $\frac{5}{8}$  in., oblong, slightly downy, 2-seeded, seeds small, round, black, smooth, shining. *Waras*, the yellow dye, is obtained from the glands on the pods of a variety of this species.

**Flemingia vestita,**  
LEGUMINOSÆ.  
F. B. I. ii. 230.  
Himalaya,  
4-7,000 ft.  
Simla, on grassy  
slopes (Collett).

perennial, root tuberous, edible, said to be sometimes cultivated, stems trailing, 12-24 in., branched, densely covered with short grey hairs; leaves 2 in. long, leaflets 3, closely touching,  $\frac{1}{2}$ -1 in. across, ovate with a broad tip, base wedge-shaped, minutely hairy on both sides, stipules  $\frac{1}{4}$ - $\frac{3}{4}$  in., persistent, lanceolate; flowers  $\frac{3}{4}$  in., bright red, in small dense 3-6-flowered heads on long axillary stalks

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

bracts  $\frac{1}{3}$  in., silky, oblong roundish, with a short hard point, calyx  $\frac{1}{4}$ - $\frac{3}{8}$  in., densely brown velvety, teeth almost equal, corolla projecting far out of the calyx, keel much incurved, distinctly beaked; pod  $\frac{1}{4}$  in., enclosed in the calyx, oblong, finely hairy, one-seeded.

**Cassia mimosoides,**

LEGUMINOSÆ.

F. B. I. ii. 266.

The Plains to  
5,000 ft.Valleys below Simla  
(Collett).

Dharmpur.

perennial, stems several, hairy, spreading, branches slender, downy; leaves 1-2 in., leaflets 40-100,  $\frac{1}{4}$  in., midrib close to the upper margin, a small circular sessile gland between or below the lowest pair; flowers  $\frac{1}{4}$  in., yellow, axillary, solitary or in clusters of 2-3, calyx 5-parted, lobes  $\frac{1}{8}$ - $\frac{1}{4}$  in., lanceolate-long-pointed, overlapping, petals 5, nearly equal, spreading, upper one innermost, stamens 10, all free, nearly equal; pod  $1\frac{1}{2}$  by  $\frac{1}{8}$  in., flat, hairy, seeds 15-20. Var. *dimidiata*, Stamens 5.

**Rubus saxatilis,**

ROSACEÆ.

F. B. I. ii. 333.

Himalaya,  
10-11,000 ft.

Kashmir.

perennial, woody, rhizome, short, erect, stems annual, slender, prostrate or erect, smooth or slightly velvety, no glands, prickles few, slender, straight; leaves of 3 leaflets, 5-8 in. long, leaf stalk 3-5 in., very slender, stipules linear or linear oblong, leaflets 2-3 in., thin, lateral almost sessile with wedge-shaped bases, outer margin often lobed; flowers  $\frac{1}{2}$  in. diam., white, 1-4, shortly stalked on the top of a slender main stalk, calyx without bracteoles, persistent, tube spreading, lobes 5, petals 5, small, slender, stamens many, fruit with few large scarlet drupes, stone net-veined.

**Rubus nutans,**

ROSACEÆ.

F. B. I. ii. 334.

Himalaya,  
8-10,000 ft.

Simla (established).

rootstock perennial, stems annual, slender, 12-24 in. long, covered with stiff red-brown hairs; leaves  $3\frac{1}{2}$ -7 in. long, leaf stalk 2-4 in., stipules large, broadly ovate or oblong, entire or toothed, leaflets  $1\frac{1}{2}$ -3 in. diam., round, almost lobed, doubly sharp-toothed, thin, dark green, base wedge-shaped; flowers  $1\frac{1}{2}$  in. diam., white, usually solitary, axillary, stalk stout, calyx tube woolly, lobes  $\frac{3}{4}$ - $1\frac{1}{2}$  in., large, long-pointed, pinnately cut towards the tip, shorter than the ovate, broad-tipped petals, fruit of a few scarlet drupes, stone smooth.

**Rubus Clarkei,**

ROSACEÆ.

F. B. I. ii. 337.

Kashmir, Sonamerg,  
9,250 ft.

(C. B. Clarke).

stems very slender, covered with slender straight sharp prickles, loosely covered with spreading hairs; leaves 3-6 in., with 3 leaflets, stalk 1-3 in., stipules persistent, oblong, green, velvety, blunt or short-pointed, entire or toothed, leaflets 2-3 in. across, round, blunt-toothed; flowers  $\frac{1}{3}$  in., drooping, solitary in the lower axils

## PROSTRATE HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES,

## PETALS UNUNITED.

clustered in the upper ones, bracts green, small, oblong, calyx tube not bristly, lobes narrow-lanceolate, fruit of a few smooth drupes, stone pitted.

**Rubus antennifer,**

ROSACEÆ.

F. B. I. ii. 337.

Kashmir, Sonamerg,

9,250 ft.

(C. B. Clarke).

like the last species, but stouter, leaflets round with a long tip, lobulate, stipules linear-lanceolate, long-pointed, flowers  $\frac{3}{4}$  in. across, erect, calyx-lobes with long filiform tips.

**Rubus foliolosus,**

ROSACEÆ.

F. B. I. ii. 340.

Himalaya,

5-8,000 ft.

Mahasu (Collett).

small, perennial, like a small prostrate variety of *Rubus lasiocarpus*, see Erect Shrubs, Alternate, Stipulate, Compound,

**Fragaria indica,**

see Herbs, Unbranched, Alternate, Stipulate, Compound.

**Fragaria vesca,**

see Herbs, Unbranched, Alternate, Stipulate, Compound.

**Potentilla fulgens,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Potentilla reptans,**

see Herbs, Unbranched, Alternate, Stipulate, Compound.

**Potentilla kleiniana,**

see Herbs, Unbranched, Alternate, Stipulate, Compound.

**Potentilla supina,**

see Herbs, Unbranched, Alternate, Stipulate, Compound.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Malcomia strigosa;**

CRUCIFERÆ.

F. B. I. i. 146.

Salt Range,

Baluchistan

(Stocks).

small, annual, rough, hairy, with a few stiff branches 6-18 in. long, like *Malcomia Africana*, and *Malcomia torulosa*, see Herbs, Erect, Alternate, Exstipulate, Simple; leaves 2 or 3 in. long, long-stalked, flat on the ground, oblong-lanceolate, toothed; flowers purple, 1 in. diam., pods 1-1 $\frac{1}{2}$  in. long, cylindrical, stout, thicker at the base,



## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

gradually narrowing to a blunt point, seeds almost in two series at the base of the pod, one series towards the tip.

- Sisymbrium foliosum,** see Herbs, Erect, Alternate, Exstipulate, Simple,
- Portulaca oleracea,** see Herbs, Erect, Alternate, Stipulate, Simple.
- Heylandia latebrosa,** annual, silky, much branched; leaves  $\frac{1}{4}$ - $\frac{3}{4}$  in., ovate-heart-shaped, unequal at the base, close set, almost sessile; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in., yellow, solitary, nearly sessile in the axils of most of the leaves, calyx top-shaped, teeth 5, lanceolate, 3 lowest deepest, corolla projecting far out of the calyx, standard large, round, wings smaller, ovate, with a broad tip, keel petals narrow, united behind, lessening into an incurved beak, stamens 10, united in a tube, slit on the top; pod  $\frac{1}{6}$ - $\frac{1}{4}$  in. long, silky, oblong, 1-2 seeded.
- Crotalaria prostrata,** perennial, stems zigzag, trailing, covered with silky brown hairs, slender, 6-12 in.; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, oblong-ovate, with a broad tip, sessile, blunt, pale, stipules none or small; flowers  $\frac{1}{5}$  in., yellow, in 2-4-flowered racemes, twice the length of the leaves, calyx  $\frac{1}{12}$ - $\frac{1}{16}$  in., densely red, hairy, teeth 5, linear long, petals 5, hardly longer than the calyx, standard streaked with red, stamens 10, all united in a tube with a slit along the upper side; pod  $\frac{1}{2}$  in. oblong, smooth, seeds 12-18.
- Bupleurum jucundum,** see Herbs, Erect, Alternate, Exstipulate, Simple.
- Hedera, Helix,** see Climbing Plants, Alternate, Exstipulate, Simple.
- Commelina nudiflora,** perennial, succulent, stems slender, creeping, rooting at the nodes; leaves  $1\frac{1}{2}$ -3 by  $\frac{1}{3}$ - $\frac{2}{3}$  in., lanceolate, nerves parallel, bases sheathing; flowers blue and white, in 2 clusters, branches 1-3-flowered, stalk  $\frac{1}{2}$ - $\frac{3}{4}$  in., emerging one at a time from a terminal complicate green spathe, ovate-lanceolate,  $\frac{2}{3}$ -1 in., sepals 3, thin, 2 inner often united at the base, petals 3, longer one larger, white or pale blue, often stalked, stamens 3 perfect, 2-3 imperfect; capsule 3-celled, 2 anterior cells 2-seeded, posterior one-seeded.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Commelina benghalensis**,  
*Kanshura, kannu.*  
COMMELINACEÆ.  
F. B. I. vi. 370.  
The Plains to  
6,000 ft.  
Valleys below Simla  
(Collett).

like the last species, but leaves a little broader, blunt, spathes 2-3 together, base auricled on one side.

**Commelina obliqua**,

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Aneilema spiratum**  
COMMELINACEÆ.  
F. B. I. vi. 377.  
The Plains.

small, perennial, stems tufted, branches 6-10 in.; leaves small, sessile, flat, oblong, sheaths bearded, flowers blue, crowded in a small branching leafy raceme, bracts ovate, persistent, sepals 3, free, thin, petals 3, ovate with a broad tip, equal, stamens 3, staminodes 3; capsule oblong or almost round,  $\frac{1}{6}$  in., 3-angled, seeds 3-7 in each cell, straw-coloured, smooth, or minutely roughened.

**Aneilema nudiflorum**,  
COMMELINACEÆ.  
F. B. I., vi. 378.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).

like the last species, but larger, seeds wrinkled, pitted, 2 in each cell.

**Aneilema Hamiltonianum**,  
COMMELINACEÆ.  
F. B. I. vi. 380.  
The Plains, in  
marshy ground.

like the last species, but smaller, stem rooting, creeping, branches few, leaves  $1\frac{1}{2}$ -2 in., linear-oblong, flowers white or pink, capsule  $\frac{1}{4}$ - $\frac{1}{3}$  in., seeds 16 in each cell, in two series.

## PETALS UNITED.

**Polygala crotalarioides**,

see Herbs, Erect, Alternate, Exstipulate, Simple.

**Polygala Hohenackeriana**,

see Herbs, Erect, Alternate, Exstipulate, Simple.

**Polygala erioptera**,

see Herbs, Erect, Alternate; Exstipulate, Simple.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Polygala chinensis,** small, annual, stout, leafy, stems usually lying along  
**Common Indian** the ground, 3-10 in. long; leaves  $\frac{1}{2}$ -2 in. long, round-oblong  
**Milkwort,** to narrow-linear, thick, leathery, stalks very short; flowers  
*Meradu.*  $\frac{1}{3}$ - $\frac{1}{4}$  in., long, yellow, straight or drooping, in short crowded  
 POLYGALACEÆ. axillary racemes, bracts 3, sepals 5, unequal, outer sepals  
 F. B. I. i. 204. ovate, small, green, 2 inner (wings) very oblique, much  
 The Plains to larger, short-pointed, yellow, finely veined, petals 3, un-  
 5,000 ft. equal, united at the base, 2 upper small, lowest (keel)  
 Simla, in valleys longest, concave, tip lobed, crested with a finely divided  
 (Collett). fringe, stamens 8, united in 2 sets of 4 each, joined  
 to the petals, style long, incurved; capsule ovate, notched,  
 fringed, narrowly winged, 2-celled, enclosed in the calyx,  
 seeds appendaged, one in each cell.
- FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.
- Filago germanica,** see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Entire.
- Anaphalis cuneifolia,** see Herbs, Unbranched, Alternate, Exstipulate, Simple,  
 Petals United.
- Anaphalis contorta,** see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Entire.
- Lasiopogon lanatum,** minute, annual, densely woolly, much branched,  
 COMPOSITÆ. branches from the root filiform, lying flat on the ground,  
 F. B. I. iii. 287. whole plant 1-2 in. diam., looks like a cluster of woolly  
 The Plains west of balls, leaves and flowers hidden in the wool; leaves  $\frac{1}{10}$ - $\frac{1}{4}$  in.,  
 the Indus. linear-oblong or spoon-shaped; flowers very minute in  
 Peshawar. heads, round, woolly clusters surrounded by the floral  
 leaves, bracts of heads linear, blunt, thin, floor of head  
 small, naked, pappus feathery.
- Gnaphalium** small, annual, woolly, branches many, spreading from  
**pulvinatum,** the root, lying on the ground; leaves small, spoon-shaped,  
 COMPOSITÆ. narrowed into a short stalk; flowers yellow, minute, in  
 F. B. I. iii. 289. heads  $\frac{1}{12}$  in. diam., buried in the wool in the axils of crowded  
 The Plains. terminal leaves, bracts of heads linear, slender, recurved,  
 Baluchistan (Lace). green with sharp transparent tips, corollas outer 3-4-tooth-  
 ed, inner 5-toothed; achenes slender, oblong, pappus hairy  
 in one series, soon falling off.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## FLOWERS, MINUTE, IN HEADS, ALL TUBULAR.

**Cæsulia axillaris,**

COMPOSITÆ.

F. B. I. iii. 291.

The Plains to  
3,000 ft.Sutlej Valley, in rice  
fields (Collett).

small, annual, smooth, stems 6-12 in., stout, branched, prostrate or almost erect; leaves 2-6 in., sessile, narrowly lanceolate, long-pointed, tapering to the forked base, teeth small, far apart; flowers blue, in axillary sessile round heads,  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., each head consisting of minor heads with one flower, bracts 2 to each flower, opposite, surrounding it, keeled and winged at the back, tips erect, free pappus scales with a sharp point, corolla tubular, 5-toothed; achenes  $\frac{1}{10}$ - $\frac{1}{8}$  in., flattened, a prominent ridge down the centre of each face, with scattered hairs.

**Pulicaria angustifolia,**

see Herbs, Erect, Alternate, Exstipulate, Simple, Entire, Flowers in heads, Inner Tubular, Outer Ligulate.

**Cotula aurea,**

see Prostrate Herbs, Alternate, Exstipulate, Lobed,

**Centipeda orbicularis,**  
*Nakkchikni,*  
*pachittie.*

COMPOSITÆ.

F. B. I. iii. 317.

The Plains, in moist  
places.

very small, annual, smooth or rather woolly, stems spreading from the root, very many, 4-8 in. long, slender, leafy; leaves  $\frac{1}{6}$ - $\frac{1}{2}$  in. long, oblong-ovate with a broad tip, teeth few; flowers yellow, very minute in round solitary axillary almost sessile heads,  $\frac{1}{10}$ - $\frac{1}{6}$  in. diam., corollas bell-shaped, 4-fid, floor of head naked, bracts of the head in 2 series, spreading in fruit, pappus none; achenes 4-angled, tip blunt, angles hairy, hairs simple.

**Saussurea Atkinsoni,**

COMPOSITÆ.

F. B. I. iii. 367.

Himalaya,  
10-13,000 ft.  
Kashmir.

stemless, rootstock undivided, smooth, or mid-ribs of leaves beneath velvety, leaves 3-5,  $2\frac{1}{2}$ -4 by  $1\frac{1}{2}$ -3 in., stalked or sessile, spreading flat on the ground, broadly ovate with a broad tip, or oblong with rounded ends, thin, toothed, net-veined; flowers  $\frac{1}{2}$  in. long, bluish purple in a sessile solitary head,  $\frac{3}{4}$ -1 in. long, inner bracts of head linear-oblong, thin, outer ovate-lanceolate, erect or recurved, smooth, or margins velvety, corollas all tubular; achenes smooth pappus  $\frac{1}{2}$  in., brown, outer bristles few, roughish.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

## FLOWERS NOT IN HEADS.

*Ipomæa aquatica*, see Water Plants, Alternate, Exstipulate, Simple,

**Convolvulus****Aitchisoni**,

CONVOLVULACEÆ.

F. B. I. iv. 218.

The Plains,  
east of the Jhelum,  
Rawalpindi.The Salt Range to  
5,500 ft.

Sakesar.

perennial, rootstock woody, annual, flowering stems  $\frac{1}{2}$ - $\frac{1}{4}$  in., covered with yellowish-brown hairs; leaves lower 2 in., lanceolate or oblong, upper linear; flowers 1 in., white, hairy, in pairs on stalks 1 in. long, bracts  $\frac{2}{3}$  in., narrowly lanceolate, sepals 5,  $\frac{1}{2}$  in., linear-lanceolate, very hairy, corolla widely funnel-shaped, hairy on the 5 plaits without, stamens 5, included, style thread-like, stigmas 2, distinct; capsule round, 2-celled, 4-seeded, seeds smooth.

**Convolvulus****microphyllus**,

CONVOLVULACEÆ.

F. B. I. i. 218,

The Plains,  
east of the Jhelum,  
Bhera, Sargodha.

Kahura

(Douie).

Baluchistan (Lace),

like the last species, but yellowish wool instead of hairs, flowers rose yellow, axillary or on short branches, 1-4 together, smaller, barely  $\frac{1}{2}$  in.

**Convolvulus****pluricaulis**,var. **maera**,*Porprang*, *dodak*.

CONVOLVULACEÆ.

F. B. I. iv. 218.

The Plains to

5,000 ft.

Delhi, Kashmir.

like the last species, but flowers larger, pale pink,

**Convolvulus****glomeratus**,var. **volubilis**,

CONVOLVULACEÆ.

F. B. I. iv. 219.

The Plains.

like the last species, but larger, twining, flowers closely crowded on to one stalk summit, corolla larger,  $\frac{1}{2}$  in., tubular, mouth narrow.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Evolvulus alsinoides**, small, perennial, hairy, annual branches 4-12 in.,  
*Sanikhpushpi*. many, wiry; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., lanceolate or ovate, entire,  
 CONVULVULACEÆ. sessile or so; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., pale blue or white, solitary  
 F. B. I. iv. 220. or 2 or 3 together in a terminal raceme, bracts small,  
 The Plains to linear, persistent, hairy, sepals  $\frac{1}{3}$ - $\frac{1}{6}$  in., lanceolate, hairy,  
 6,000 ft. corolla widely funnel-shaped, tube very short, obscurely  
 Valleys below Simla 5-lobed, folding at the angles, stamens 5, rising from the  
 (Collett). base of the corolla, styles 2, ending in 2 linear stigmas;  
 Kalka. capsule 2-celled, round, seeds 4, smooth. This plant is  
 Baluchistan used as a tonic and febrifuge. Muhammadans think that  
 (Stocks). it has an especial action on the brain and memory.
- Wahlenbergia** see Herbs, Erect, Alternate, Exstipulate, Simple,  
*gracilis*, Toothed.
- Campanula** annual, covered with flat-lying, needle-like hairs,  
*argyrotricha*, stems many, 4-8 in., weak, curved; leaves  $\frac{1}{2}$  by  $\frac{1}{3}$  in., ovate,  
 CAMPANULACEÆ. entire or toothed, thin; flowers  $\frac{1}{2}$  by  $\frac{1}{3}$  in., blue, long-stalked,  
 F. B. I. iii. 441. solitary or in racemes, calyx teeth 5,  $\frac{1}{3}$ - $\frac{1}{4}$  in., oblong, corolla  
 Himalaya, bell-shaped, 5-fid, slightly hairy without, stamens 5, free;  
 8-11,000 ft. capsule  $\frac{1}{2}$  in. diam., base rounded, seeds minute, little  
 Hattu (Collett). flattened.  
 Common on rocks.
- Androsace** see Herbs, Unbranched, Opposite, Exstipulate, Simple,  
*sempervivoides*, Petals United.
- Androsace** see Prostrate Herbs, Opposite, Exstipulate, Simple,  
*lanuginosa*, Entire.
- Lysimachia** see Herbs, Erect, Alternate, Exstipulate, Simple,  
*chenopodioides*, Entire.
- Lysimachia** small, smooth, branches 2-8 in., prostrate, leafy;  
*alternifolia*, leaves 1- $\frac{1}{2}$  in., sessile or stalked, oblong-lanceolate or  
 PRIMULACEÆ. ovate, short-pointed; flowers yellow, solitary, axillary,  
 F. B. I. iii. 504. stalks slender, as long as the leaves, calyx lobes lanceolate,  
 Himalaya, longer than the corolla, gland-dotted, corolla  $\frac{1}{4}$  in. diam.,  
 2-6,000 ft. wheel-shaped, stamens 5, united at the base; capsule small,  
 Valleys below Simla round, splitting from the top by 5 valves, seeds many,  
 (Collett). minute.
- Samolus Valerandi**, see Herbs, Erect, Alternate, Exstipulate, Simple,  
 Entire.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Goldenia  
procumbens,**  
*Tripungkhi.*BORAGINACEÆ.  
F. B. I. iv. 144.  
The Plains.

small, annual, flat on the ground, rough, hairy; leaves 1-1½ in., oblong with rounded ends and ovate with a broad tip, coarsely toothed, or almost pinnately divided; flowers ½ in., white, axillary, sessile, upper sometimes in a one-sided leafy spike, calyx 4-lobed, lobes narrow, corolla tube open, short, 4 lobes overlapping in bud, stamens 4, on the corolla tube; fruit an almost dry drupe consisting of 4 pyrenes almost united, forming a pointed 4-ribbed pyramid, one seed in each pyrene.

**Heliotropium  
supinum,**BORAGINACEÆ.  
F. B. I. iv. 149.  
The Plains.

annual, prostrate, softly hairy, many branches, forming a patch 12 in. diam.; leaves ½-1½ in., oblong with rounded ends or ovate; flowers small, white, on short woolly spikes, calyx ½ in., ovate, woolly, 5-lobed, corolla tubular, throat not hairy, tube ½ in., ovate, lobes 5, spreading, very small, round, stamens 5, on the corolla tube enclosed within it; fruit dry, 2-4-lobed, of 4 or less nutlets, ⅙ by ⅙ in., margins broad, smooth.

**Heliotropium  
strigosum,**  
*Safed bhanga,*  
*chitiphul, gorakh*  
*panu.*BORAGINACEÆ.  
F. B. I. iv. 151.  
The Plains to  
5,000 ft.  
Valleys below Simla  
(Collett).  
Lahore, Dunera,  
Baluchistan  
(Stocks).

like the last species, but perennial, covered with white flat-lying hairs, stems tufted, spreading, leaves linear-lanceolate. This plant is used locally to cure poisonous bites and stings. it is also used as a diuretic and laxative.

**Heliotropium  
indicum,**see Herbs, Erect, Alternate, Exstipulate, Simple,  
Toothed.**Cynoglossum  
Wallichii,**see Herbs, Erect, Alternate, Exstipulate, Simple,  
Toothed.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Asperugo procumbens**,  
BORAGINACEÆ.  
F. B. I. iv. 166.  
The Plains to  
7,000 ft.  
Rawalpindi.  
Baluchistan  
(Stocks).  
rough, hairy, spreading, stem angled, angles beset with minute recurved prickles; leaves 1-2½ in., oblong, spoon-shaped, nearly entire; flowers ½ in. diam., purplish blue or white, axillary, almost sessile, solitary or paired, calyx bell-shaped, 5-fid, stiff, lobes in flower  $\frac{1}{20}$  in., oblong, calyx in fruit ½ in. diam., net-veined, lobes large, triangular, corolla tube short, mouth closed with 5 scales, lobes 5, overlapping in bud, blunt, spreading, stamens 5; nutlets 4,  $\frac{1}{8}$ - $\frac{1}{6}$  in., erect, laterally flattened, smooth, stony.
- Bothriospermum tenellum**,  
BORAGINACEÆ.  
F. B. I. iv. 167.  
The Plains to  
4,000 ft.  
weak, annual or biennial, rough, hairy, prostrate, 12-24 in.; leaves 1 by  $\frac{1}{4}$ - $\frac{3}{4}$  in., ovate-lanceolate, lower stalked; flowers small, white, axillary, stalked, the upper passing into a raceme with bracts, calyx 5-partite, lobes narrow, hardly enlarged in fruit,  $\frac{1}{8}$ - $\frac{1}{6}$  in., lanceolate or linear, corolla  $\frac{1}{6}$  in. diam., tube short, throat with 5 scales, lobes 5, blunt, spreading, stamens 5, enclosed in the tube; nutlets 4,  $\frac{1}{20}$ - $\frac{1}{16}$  in., no angles, roughly granular, scar on the inner face, nearly half the length.
- Gastrocotyle hispida**,  
see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Arnebia hispidissima**,  
see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Arnebia Griffithii**,  
see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Arnebia Thomsoni**,  
see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Ipomæa Batatas**,  
see Climbing Plants, Alternate, Exstipulate, Simple.
- Ipomæa aquatica**,  
see Water Plants, Alternate, Exstipulate, Simple.
- Calystegia hederacea**,  
CONVOLVULACEÆ.  
F. B. I. iv. 217.  
The Plains.  
annual, smooth, prostrate in cultivation, climbing in bushes; leaves 1-3 in., heart-shaped or arrow-head-shaped, entire or lobed; flowers 1 in., pink purple, nearly bell-shaped, on one-flowered stalks, 2 in. long, bracts 2,  $\frac{1}{3}$  in. ovate, enclosing the calyx, persistent, calyx deeply 5-lobed, lobes  $\frac{1}{3}$  in., oblong, blunt, smooth, inner smaller, corolla 5-lobed, lobes 5-plaited, almost entire, stamens 5, on the tube and enclosed in it, style thread-like, stigmatic lobes 2, oblong; capsule  $\frac{1}{3}$  in., ovoid, smooth, almost pointed, seed smooth.



## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Convolvulus arvensis**, see Climbing Plants, Alternate, Exstipulate, Simple,
- Evolvulus alsinoides**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.
- Cyanotis cristata**, stems 6-18 in., slender, creeping, rooting, smooth or hairy, branches leafy; leaves 2-4 by  $\frac{1}{3}$ - $\frac{2}{3}$  in., ovate, oblong, sessile; flowers blue, in short clusters within 2 series of overlapping green, sickle-shaped bracts, petals and stamens protruding, clusters terminal sessile, 2 or 3 together, sepals 3, green, lanceolate, almost equal, joined below, petals 3, spreading round, almost equal, stalks joined in a tube, stamens 6, bearded; capsule  $\frac{1}{4}$  in., blunt, 3-celled, 2 seeds in each cell, seeds pitted, streaked.  
 COMMELINACEÆ.  
 F. B. I. vi. 385.  
 Hilly districts to 4,000 ft.  
 Sutlej Valley (Collett).
- Cyanotis barbata**, like the last species, but often tufted, leaves linear-lanceolate, flowers dark blue, clusters hairy, axillary as well as terminal, capsule 4-angled.  
 COMMELINACEÆ.  
 F. B. I. iv. 385.  
 Himalaya, 5-8,000 ft.  
 Simla (Collett).  
 Kashmir,
- Cyanotis axillaris**, like the last species, but larger, stouter, flowers in the axils of the leaves.  
 Soltarj, bagha-nulla.  
 COMMELINACEÆ.  
 F. B. I. vi. 388.  
 The Plains.
- Andraichne telephoides**, small, perennial, root woody, stems very many, prostrate, 8-12 in., slender, leafy; leaves  $\frac{1}{6}$ - $\frac{1}{3}$  in., oblong with rounded ends, ovate with a broad tip, sessile, leathery; flowers  $\frac{1}{10}$  in. diam., on stalks shorter than the leaves, male flowers clustered in the axils, female solitary, males, calyx 5-6-lobed, petals 5-6, small, lanceolate, disk glands twice as many or as many, 2-lobed, alternating with the petals, females, calyx larger, petals minute or none, styles short, 2-fid; capsule  $\frac{1}{10}$ - $\frac{1}{8}$  in. diam., round, depressed, 3 cocci, seeds curved, wrinkled.  
 EUPHORBIACEÆ.  
 F. B. I. iv. 284.  
 The Plains, west of the Jhelum.  
 The Salt Range.  
 Baluchistan (Stocks),

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Chrozophora tinctoria**,  
EUPHORBIACEÆ.  
F. B. I. v. 408.  
The Plains.  
The Salt Range.  
Baluchistan  
(Lace).  
annual, prostrate, felted with star-shaped hairs, root stout, branches 6-10 in. ; leaves  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., long-stalked, from ovate gap-toothed or entire to rounded bluntly lobed, thick, softly felted on both sides ; flowers sessile, axillary, bracteate racemes, bracts one-flowered, male flowers crowded at the top of the raceme, female solitary, stalked, males, calyx round or ovoid, segments 5, petals 5, short, stamens 5-20, united below, females, calyx segments narrow, petals narrow or none, disk glands short, broad, styles 3, 2-fid ; capsules  $\frac{1}{3}$  in. diam., covered with silvery scales, 3 2-valved cocci, seeds one in each cell.

**Chrozophora obliqua**,  
EUPHORBIACEÆ.  
F. B. I. v. 409.  
The Plains to  
5,000 ft.  
Kashmir,  
Ferozepore.  
like the last species, but more erect bushy plant, stamens usually 5, leaves ovate, gap-toothed, not lobed.

**Chrozophora plicata**,  
EUPHORBIACEÆ.  
F. B. I. v. 409.  
The Plains.  
like *Chrozophora tinctoria*, but upper surface of leaves rough, no fringed silvery scales on the capsule, leaves larger.

## PETALS NONE.

**Orygia decumbens**, see Prostrate Herbs. Opposite, Exstipulate, Simple.

**Digera arvensis**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

**Amarantus tenuifolius**,  
AMARANTACEÆ.  
F. B. I. iv. 722.  
The Plains.  
small, smooth, branches 6-18 in., leafy, slender, many, spreading from the root, prostrate or ascending ; leaves  $\frac{1}{2}$ -1 in. long, linear-oblong, or widened to the rounded blunt or 2-lobed tip ; flowers small, green, in axillary clusters, bracts shorter than the sepals, sepals 2, oblong, concave, nearly as long as the round, flattened, thin utricle, petals none, stamens 2, utricle plicate when dry, seeds  $\frac{1}{40}$  in. diam., brown, border blunt.

**Ærua lanata**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Halocharis violacea**, small, annual, slightly hairy, hairs very long, prostrate, branched; leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in., linear, almost 3-angled, sessile, fleshy, tipped with rigid hairs, floral leaves oblong, equal to bracteoles; flowers minute, hidden by long bristles, axillary, solitary on almost head-like spikes, sepals 5, lanceolate, transparent, petals none, stamens 5, anthers produced into an ovoid violet appendage; urticule ovoid, flattened, thin, stigmas 2, slender.

**CHENOPODIACEÆ.**  
F. B. I. v. 19.  
The Plains,  
west of the Jhelum.  
The Salt Range.  
2,000 ft.  
Baluchistan  
(Stocks).

**Thesium himalense**, perennial, parasitic on the roots of other plants, straggling, stem 6-18 in., slender, prostrate or almost erect, often much branched; leaves 1-2 in., linear, sessile; flowers small, yellow or pale green, stalked, forming terminal racemes, simple or branched, bracts 3, leaflike, one much the longest, calyx lobes 5, blunt, stamens 5, styles short, linear, stigma round; nut  $\frac{1}{8}$  in., ovoid, wrinkled, topped by the calyx.

**SANTALACEÆ.**  
F. B. I. v. 229.  
Himalaya,  
5-10,000 ft.,  
east of the Chenab.  
The Salt Range.  
Sakesar.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Hypecoum procumbens**, small, annual, stems 3-12 in., many, slender, lying on the ground; leaves 2-4 in., pinnately divided, segments linear or oblong, cut, upper sessile, whorled; flowers  $\frac{1}{3}$  in. diam., yellow, few, stalked in racemes, sepals 2, small, scale-like, soon falling off, petals 4, spreading, 2 outer flat, blunt, 2 inner 3-lobed, middle toothed or divided, lateral lobes linear-oblong, blunt, stamens 4, free, opposite the petals; capsule  $1\frac{1}{2}$ - $2\frac{1}{2}$  in.,  $\frac{1}{8}$  in. wide, slender, curved, almost flattened, breaking up into one-seeded joints, seeds many, flattened. The juice is said to have the same effect as opium.

**Horned cumin**,  
**FUMARIACEÆ.**  
F. B. I. i. 120.  
The Plains.  
Peshawar, Multan.  
The Salt Range,  
Choa Saidan Shah,  
Rawalpindi,  
Bhera (Douie).

**Corydalis ramosa**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Corydalis cornuta**, see Herbs, Erect, Alternate, Exstipulate, Lobed.

**Citrullus colocynthis**, see Climbing Plants, Alternate, Exstipulate, Lobed.

## PETALS UNITED.

**Corallocarpus epigæa**, see Climbing Plants, Alternate, Exstipulate, Lobed.

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE LOBED LEAVES,

## PETALS UNITED.

**Grangea maderaspatana,**  
*Mustaru.*

COMPOSITÆ.  
F. B. I. iii. 246.  
The Plains.  
Baluchistan  
(Stocks).

small, perennial, softly hairy, prostrate, a weed, forming patches, 6-12 in. wide; leaves pinnately divided with gaps; flowers yellow, in almost round solitary leaf-opposed shortly stalked heads, corollas tubular, outer 4-5-cleft, bracts in few series, outer green, floor of head convex, naked; achenes flattened, pappus hairs united into a cylindrical fringed tube.

**Glossocardia linearifolia,**  
*Seri.*

COMPOSITÆ.  
F. B. I. iii. 308.  
The Plains,  
east of the Sutlej.  
Delhi.

small, annual, usually prostrate, smooth, smells like fennel, branches 3-10 in., grooved; leaves  $\frac{1}{2}$ -2 in. long, slender, pinnately divided on slender stalks, segments narrowly linear, with a small tip on a straight edge; flowers yellow, inner tubular, outer ligulate, on small terminal axillary heads,  $\frac{1}{3}$  in., ligule 2-fid, outer bracts of head small, usually 3 with a green midrib, thin, margin bristly, inner larger, oblong, blunt, smooth with thin margins; achenes  $\frac{1}{4}$  in., densely bearded with stiff hairs, pappus of 2 smooth spreading tufts of bristles. This plant is used sometimes for food and as a medicine.

**Chrysanthellum indicum,**

COMPOSITÆ.  
F. B. I. iii. 310.  
The Plains to  
4,000 ft.,  
in west sandy  
ground.

small, annual, lying on the ground, smooth, stems stiff, square, grooved, smooth, or rough; leaves 1-3 in. long, triangular pinnately divided, stalk dilated at the sheathing base, segments oblong or wedge-shaped with the broad end outwards, bluntly lobed or cut, with an abrupt point at the apex of each division, succulent, translucent; flowers yellow, inner tubular, outer ligulate in small stalked terminal axillary heads,  $\frac{1}{4}$  in. diam., enlarging in fruit, bracts in 1-2-series, equal to the achenes, oblong or narrow tapering to each end, ligules spreading, entire or 2-toothed, pappus of a minute crown; achenes  $\frac{1}{10}$  in. long, very thick, oblong, wedge-shaped with the broad end upwards, grooved, margin smooth.

**Tridax procumbens,**

COMPOSITÆ.  
F. B. I. iii. 311.  
The Plains.

small, perennial, weak, straggling along the ground; hairy, stems 12-24 in., a few leaves scattered along them; leaves 1-2 in. long, pinnately divided, ovate or lanceolate, segments few, narrow, deeply irregularly toothed; flowers yellow and white, inner tubular white, outer ligulate yellow in very long stalked heads,  $\frac{3}{4}$  in. diam., floor of head flat or convex, bracts of head few, outer short, broad, green, corollas inner tubular, 5-fid, outer 3-fid; achenes brown, topshaped or oblong, silky, pappus hairs  $\frac{1}{6}$  in. long, shining, feathery.

**Cotula anthemoides,**

see Herbs, Erect, Alternate, Exstipulate, Lobed,

## PROSTRATE HERBS WITH ALTERNATE EXSTIPULATE LOBED LEAVES,

## PETALS UNITED.

- Cotula aurea**,  
COMPOSITÆ.  
F. B. I. iii. 316.  
The Plains,  
Peshawar.                      small, annual, nearly smooth, stems 2-4 in., lying down from the root; leaves 1-3 in., pinnately divided, segments very finely divided and sub-divided or entire; flowers yellow, in axillary and terminal stalked heads,  $\frac{1}{6}$ - $\frac{1}{4}$  in. diam., bracts of the head broadly oblong, floor of head naked, corollas flattened, lobed at the base, walls very thick below, mouth 4-lobed, pappus none; achenes oblong, flattened, striated.
- Rhagadiolus**  
**Hedynpos**,                      see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Calystegia**  
**hederacea**,                      see Prostrate Herbs, Alternate, Exstipulate, Simple.
- Solanum**  
**xanthocarpum**,                      see Herbs, Erect, Alternate, Exstipulate, Lobed.
- Veronica**  
**hederæfolia**,  
**Ivy speedwell**,  
SCROPHULARIACÆ,  
F. B. I. iv. 294.  
Kashmir,  
6,000 ft.                      annual, hairy, branches many, 6-18 in.; leaves  $\frac{1}{3}$ - $\frac{2}{3}$  in. diam., circular ovate, 5-7-lobed, stalked, stalk short, widened upwards, lobes rounded; flowers  $\frac{1}{8}$  in. diam., pale blue, on solitary axillary stalks, opening one after the other as the branch lengthens, stalks equal to the leaves in length, calyx 4-5-partite, lower segments united, heart-shaped, bristly, long-pointed, extending beyond the corolla, thin, corolla wheel-shaped, lobes 4-5, spreading, stamens 2, projecting out of the corolla tube; capsule 2-grooved, lobes round or flattened, seeds one to many, large, black, wrinkled, nearly round with a deep pit on the inner side.

## PETALS NONE.

- Chrysosplenium**  
**tenellum**,  
SAXIFRAGACÆ.  
F. B. I. ii. 401.  
Himalaya,  
9-10,000 ft.  
Baghi, Marali,  
on wet rocks  
(Collett).                      annual, delicate, smooth, stems thread-like, 1-3 in., leafy, lying along the ground interlacing; leaves barely  $\frac{1}{4}$  in. broad, kidney-shaped, notched at the base, toothed, lobed, lobes 4-6, shallow; flowers  $\frac{1}{10}$  in. diam., green-yellow, stalked solitary, scattered, calyx tube joined to the ovary, lobes 4, overlapping, blunt, petals none, stamens 8, styles 2; capsule 2-beaked, splitting open cross-wise at the top, seeds small, smooth, shining.
- Amarantus**  
**tenuifolius**,                      see Prostrate Herbs, Alternate, Exstipulate, Simple.

## CLIMBING PLANTS.

## CLIMBING PLANTS WITH OPPOSITE STIPULATE SIMPLE LEAVES.

**Sageretia oppositifolia,** perennial, woody, spinous, young parts felted, branches long, slender, half climbing; leaves 2-4 in. long, lanceolate-ovate, short or long-pointed, toothed, leathery, dark green and smooth above, stalks  $\frac{1}{2}$  in., stipules small, soon falling off or changed into prickles; flowers very small, yellowish-green in large terminal branching racemes, velvety and often leafy, bracts leaflike, calyx 5-parted, lobes keeled within, persistent, tube cup-like, petals 5, hooded, stalked, stamens 5, style short, 3-grooved, stigmas 3, drupe  $\frac{1}{4}$  in. long, top-shaped, 3-celled, not lobed, black when ripe, seeds 3.

*Drange, girthan.*  
RHAMNACEÆ.  
F. B. I. i. 641.  
Himalaya,  
2-6,000 ft.  
Valleys below Simla  
(Collett).

**Sageretia theezans,** see Climbing Plants, Alternate, Stipulate, Simple.

**Piper brachystachyum,** see Climbing Plants, Alternate, Stipulate, Simple.

## LOBED LEAVES.

**Humulus lupulus,** perennial, rough, bristly, rootstock stout, branched, stems tall, twining, rough or prickly with reversed bristles; leaves 3-4 in. diam., dark green, upper ovate, lower 3-5-lobed, stalked, heart-shaped, toothed, stipules lateral, persistent; flowers green, males and females separate, males in branching racemes, 3-5 in. across, females in pairs in the axils of broad bracts of a catkin-like ovoid spike, male flowers  $\frac{1}{4}$  in. diam., sepals 5, overlapping, stamens 5, united to the sepals, female flowers in heads  $\frac{1}{2}$  in. diam., yellow, styles purple, fruiting  $1\frac{1}{2}$  in. diam., scales circular; fruit an ovoid spike of overlapping bracts, in the axils, 2 flattened achenes each in its sepal. The plant was cultivated in Kashmir, it has some sedative action, and is used in brewing beer.

**The Hop,**  
URTICACEÆ.  
F. B. I. v. 487.  
Himalaya,  
7,000 ft.  
Simla.  
Kashmir.  
Cultivated.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Hiptage Madablota,** tall, woody, perennial, smooth except young parts which are grey felted; leaves 4-6 in., ovate-lanceolate, shortly stalked, entire, smooth, thick; flowers  $\frac{3}{4}$  in., white with a yellow spot, fragrant, showy in axillary velvety racemes forming a leafy branching terminal raceme, 2 bracts near the middle of the stalks, calyx 5-parted, felted, a large smooth brown sticky vulva-shaped gland on the outer surface, petals 5, free, reflexed, silky, stalked, unequal, much longer than the calyx, upper petal with a large yellow spot, others white, margins wavy, fringed, stamens 10,

*Kampti, endra, chopar.*  
MALPIGHIACEÆ.  
F. B. I. i. 418.  
The Plains to  
3,000 ft.  
Sutlej Valley  
(Collett).  
Gurgaon.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

curved, united below, lowest twice as long as the others, style long, curved; fruit of 1-3 round, 3-winged nuts  $\frac{1}{8}$  in. diam., wings unequal, narrowly oblong up to 2 in., often a 4th shorter wing present. The juice is used as an insecticide, and as a cure for scabies (itch).

**Hydrangea altissima**,  
SAXIFRAGACEÆ.  
F. B. I. ii. 404.  
Himalaya,  
4-8,000 ft.  
Narkanda, in forest  
(Collett).

perennial, woody, climbing, branchlets smooth; leaves 3-6 in., ovate or lanceolate, sharply toothed, long-pointed, smooth along the nerves on the lower surface; flowers in rounded compound hairy clusters, 3-6 in. across, sterile flowers with white calyces, fertile flowers small, inconspicuous, sterile flowers calyx lobe petal-like, white,  $1\frac{1}{4}$  in. across, 4-lobed spreading, petals none, fertile flowers,  $\frac{1}{10}$  in. long, calyx tube joined to the capsule, 4-toothed, petals 4, white, falling off like a cup, stamens 10, styles 2, diverging; capsule 2-4-celled, crowned with the persistent calyx and styles, seeds minute, tailed at each end. The bark is used as a substitute for paper.

**Combretum  
decandrum**,  
*Punk*.  
COMBRETACEÆ.  
F. B. I. ii. 452.  
The Plains to  
2,000 ft.

large, perennial, woody, young parts silkily velvety, branches hanging down, and almost climbing, covered with white bracts in flower; leaves 4-5 in. long, oblong, suddenly long-pointed, smooth, stalks  $\frac{1}{3}$  in.; flowers  $\frac{1}{7}$  in. long, greenish-white, in dense very woolly branching racemes, bracts 2-3 in. long, woolly, bracteoles  $\frac{1}{4}$  in., linear, almost persistent, calyx urn-shaped, hairy, lobes 5, lanceolate, awl-shaped, almost erect, soon drooping off, petals 5, oblong, smooth, stamens 10; fruit about 1 in. long, oblong or narrowed to both ends, with 5 broad wings, seed one.

**Quisqualis indica**,  
*Rangun-ki-bel*.  
COMBRETACEÆ.  
F. B. I. ii. 459.  
The Plains.  
Cultivated.

large, perennial, woody, rambling climber; leaves 4 in., oblong, long-pointed, entire, almost smooth, stalks  $\frac{1}{4}$ - $\frac{1}{2}$  in., rusty woolly; flowers  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., rose or scarlet, in short spikes, axillary and terminal, bracteoles  $\frac{3}{8}$  in., lanceolate, almost persistent, calyx long, slender, 5-fid, teeth triangular, short-pointed, petals 5, oblong or almost round, stamens 10, short; fruit  $\frac{3}{4}$ - $1\frac{1}{4}$  in. by  $\frac{3}{8}$  in., dry, leathery, black, very sharp at the five sharp angles, seed one. A handsome climber.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Rubia cordifolia,**  
**Indian Madder,**  
*Manjit,*

RUBIACEÆ.  
F. B. I. iii. 202.  
Himalaya,  
2-8,000 ft.  
Simla, Mashobra  
(Collett).  
Baluchistan  
(Hughes-Buller).

rootstock perennial, roots long, cylindrical, stems stout, branches 4-angled, smooth or rough with bristles directed backwards; leaves 2-4 in., heart-shaped-ovate, long-pointed, long-stalked, in circles of four, nerves and margins prickly; flowers minute, dark red, in terminal crowded branching racemes, branches divided in threes with opposite sessile heart-shaped bracts, calyx tube round, smooth, no teeth, corolla tube very short, lobes 5, ovate, short-pointed, tips incurved, stamens 5, style 2-branched; fruit  $\frac{1}{8}$  in. diam., round, or almost 2-lobed, black, 2-celled or 1-celled, juice red, seeds 2, small. The red dye, *manjit*, is made from the roots.

**Rubia tinctorum,**  
**European Madder,**

RUBIACEÆ.  
F. B. I. iii. 203.  
Kashmir,  
cultivated  
(Falconer).  
Baluchistan  
(Lace).

very like the last species, but leaves narrower, corolla wheel-shaped, anthers linear-oblong, not round.

**Rubia himalayenese,**  
RUBIACEÆ.

F. B. I. iii. 203.  
Kashmir  
(Falconer).

like the last species, but not cultivated, more slender, broader, shorter, leaves long-stalked, corolla more funnel-shaped.

**Rubia albicaulis,**  
RUBIACEÆ.

F. B. I. iii. 204.  
The Plains  
from 2-8,000 ft.  
The Salt Range.  
Murree.

like the last species, but doubtfully climbing, branches often white, quite smooth, upper green with white thickened angles, leaves sessile, opposite, or 4 in a circle, linear-lanceolate, flowers yellow.

**Galium**  
**rotundifolium,**

see Prostrate Herbs, Opposite, Exstipulate, Simple.



## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Galium Aparine,  
Cleaver's Goose  
Grass,**

RUBIACEÆ.

F. B. I. iii. 205.

Himalaya,

8-12,000 ft.

Hattu (Collett).

annual, rough with reflexed hairs or prickles, branches 4-angled, climbing or trailing; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  by  $\frac{1}{8}$ - $\frac{1}{4}$  in., sessile, 6-8 in a circle, linear, bristles pointed, no nerves; flowers minute, white tinged with green, on axillary 3-flowered stalks, and in terminal leafy branching racemes, longer or shorter than the leaves, calyx tube ovoid or round, no teeth, corolla wheel-shaped, lobes 4, spreading, stamens 4, short, anthers just protruding, styles 2, short; fruit small, dry, round, almost 2-lobed, covered with hooked bristles, seeds 2, small.

**Galium mollugo,  
Hedge Goose Grass,**

RUBIACEÆ.

F. B. I. iii. 207.

Himalaya,

5-12,000 ft.

Simla (Collett).

like the last species, but perennial, leaf margins recurved, fruit smooth, granulate.

**Galium spurium,**

RUBIACEÆ.

F. B. I. iii. 208.

Kashmir.

very like the last species, but annual, leaves almost sessile, flower clusters slender, leaves larger, blunt, broader.

**Jasminum Sambac,  
Arabian Jasmine,***Motia, chambel,  
mugra.*

OLEACEÆ.

F. B. I. iii. 591.

The Plains to

2,000 ft.

Cultivated,

perennial, woody, branchlets velvety; leaves 1-5 in., ovate, shortly stalked, nearly smooth; flowers  $\frac{1}{2}$  in., white, fragrant, in 3-flowered clusters, bracts small, calyx teeth 5, velvety,  $\frac{1}{4}$  in. long, linear, corolla salver-shaped, tube narrow, lobes 5,  $\frac{1}{2}$  in. oblong, blunt, or sharp-pointed, stamens 2, included, stigmas 2; berry  $\frac{1}{4}$  in. diam., carpels 1-2, round, black, surrounded by the almost erect awl-shaped calyx teeth, seed one in each carpel. The fragrant oil is extracted from the flowers which are also used as votive offerings; they are used as a lactifuge.

**Jasminum  
pubescens,  
Kundphul, kunda.**

OLEACEÆ.

F. B. I. iii. 592.

The Plains to

3,000 ft.

Cultivated,

like the last species, but covered with yellowish brown silky hairs, leaves  $2\frac{1}{2}$  by 1 in., ovate-lanceolate, flowers in dense clusters longer than the highest leaves.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Vallisneria Heynei,**

*Ramsar,*  
*chamari-ki-vel.*

APOCYNACEÆ.  
F. B. I. iii. 650.

The Plains to  
5,000 ft.

Sutlej Valley  
(Collett).

Cultivated.

perennial, woody, twining, bark pale, axils of leaves glandular; leaves  $1\frac{1}{2}$ -4 by  $\frac{3}{4}$ - $1\frac{1}{2}$  in., narrowed to both ends or oblong or linear-oblong, long pointed, minutely dotted, stalk  $\frac{1}{3}$ - $\frac{2}{3}$  in.; flowers  $\frac{2}{3}$  in., white, fragrant, in axillary drooping velvety clusters, 3-10-flowered, calyx 5-partite, segments narrow, ovate-oblong, blunt, equal to the short corolla tube, corolla salver-shaped, tube  $\frac{1}{10}$  in., naked, lobes 5, broad, overlapping to the right, spreading, stamens 5, at the top of the tube, anthers protruding, meeting in a cone touching the stigma; fruit 6 by 2 in., of 2 straight follicles, tapering from a rounded base to a stiff point, seeds 1 in. ovate, beaked, with a tuft of very long hairs. A handsome white-flowered climber.

**Beaumontia grandiflora,**

APOCYNACEÆ.  
F. B. I. iii. 660.

The Plains.

Cultivated.

evergreen, stem stout, woody, a lofty climber, shoots rusty velvety; leaves 7-12 by 3-7 in., oblong-ovate with a broad tip ending in a long point, smooth above, rarely felted beneath, stalks  $\frac{1}{2}$ -1 in.; flowers 3-5 in. long in few- or many-flowered terminal clusters, bracts leafy, calyx lobes 5, 1-2 in. long, oblong-lanceolate, long-pointed, corolla tubular and bell-shaped, lobes 5, 1 in., rounded except the tip, broad, overlapping to the right, stamens 5, at the top of the tube, included in the throat; anthers  $\frac{2}{3}$  in., horny, forked, meeting over and touching the stigma; fruit very fleshy, long, woody, dividing into 2 horizontally spreading follicles, seeds  $\frac{3}{4}$  in. long, flattened, ovate or oblong, crowned with a tuft of hairs  $1\frac{1}{2}$  in. long.

**Trachelospermum fragrans,**

APOCYNACEÆ.  
F. B. I. ii. 667.

Himalaya,

2,6000 ft.

Valleys below Simla,

Lansdowne Falls.

(Collett).

perennial, woody, smooth, shoots and leaf stalks velvety, branches hanging down; leaves 3-5 by  $1-1\frac{1}{2}$  in., lanceolate, narrowed to both ends, long-pointed, stalks  $\frac{1}{6}$ - $\frac{1}{3}$  in.; flowers  $\frac{1}{2}$  in. long and 1 in. diam., white, fragrant, in axillary and terminal loose branching racemes, major and minor stalks slender, calyx small, lobes 5, lanceolate,  $\frac{1}{8}$ - $\frac{1}{4}$  in. long, corolla tube  $\frac{1}{3}$ - $\frac{1}{2}$  in., with constricted mouth, lobes 5, spreading, oblong, overlapping to the right, twisted to the left, stamens as in the last species, anthers included but not horny; fruit of 2 follicles, 4-8 in. long, separated from below, curved and almost touching at the tips, seeds  $\frac{3}{4}$  in. long, many, slender, white, with a tuft of long hairs.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Ichnocarpus frutescens**,  
 APOCYNACEÆ.  
 F. B. I. iii. 669.  
 The Plains to  
 2,000 ft.,  
 east of the Sutlej.  
 Sirmur  
 Hathni Khund.

perennial, woody, a closely, clinging climber, smooth, or branches and lower surface of leaves softly felted; leaves 2-3 by  $\frac{3}{4}$ - $1\frac{1}{2}$  in., narrowed at both ends, oblong or lanceolate; flowers very small, white or whitish purple, in axillary and terminal rusty velvety racemes, 1-3 in. long, calyx 5-fid, 8 in., lobes ovate, blunt, corolla  $\frac{1}{4}$  in. diam., twice as long as the calyx, salver-shaped, mouth and margins hairy, lobes narrowed to the long point, overlapping to the right, stamens at or below the middle of the tube; otherwise like the last species; follicles 3-6 by  $\frac{1}{8}$  in., very slender, curved, widely spreading, seeds  $\frac{1}{2}$  in., not beaked, tuft of white hairs.

**Cryptolepis Buchanani**,  
*Karanta*.  
 ASCLEPIADACEÆ.  
 F. B. I. iv. 5.  
 The Plains to  
 4,000 ft.  
 Giri Valley  
 (Collett).  
 Lahore.

perennial, smooth, twining, juice milky; leaves 3-6 by  $1-2\frac{1}{2}$  in. oblong or narrowed to both ends, leathery, shining above, stalk  $\frac{1}{2}$  in.; flowers  $\frac{2}{3}$  in. diam., yellow, in very loose, slender, short, many-flowered, axillary, branching racemes, calyx small, 5-lobed with 5 scales within, lobes short, sharp-pointed, corolla tube very short, lobes 5, lanceolate, scales 5, club-shaped at the top of the corolla tube closing its mouth, stamens 5, at the bottom of the tube, bases broad, united to the stigma, anther tips long, meeting over it, pollen glandular joined in masses in pairs in each anther cell, stigma conical; follicles 2-4 in., straight, stiff,  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., in the middle, gradually narrowed, smooth, separating, seeds  $\frac{1}{4}$  in. long, oblong-ovate, tuft of hairs 1 in. long.

**Cryptostegia grandiflora**,  
 ASCLEPIADACEÆ.  
 F. B. I. iv. 6.  
 The Plains, widely  
 found as an escape,  
 also cultivated.

perennial, woody, stout, smooth, juice milky, the latex contains much good rubber, but it is separated from the other constituents with difficulty; leaves 3-4 by  $1\frac{1}{2}$ -2 in., narrowed to both ends, blunt, leathery, shining above, stalks  $\frac{1}{2}$ - $\frac{2}{3}$  in.; flowers  $1\frac{1}{2}$  in. long, 2 in. diam., white tinged with pinkish purple, in terminal 3-branched short spreading clusters, bracts soon falling off, calyx 5-partite, lobes  $\frac{1}{2}$ - $\frac{2}{3}$  in. long, lanceolate, corolla funnel-shaped, tube short, throat bell-shaped, lobes 5, broad, overlapping and twisted to the left, short-pointed, scales 5 at the base of the throat, cleft into thread-like segments, stamens and anthers as in the last species, stigma convex; follicles 4-5 by  $1-1\frac{1}{2}$  in.; straight, thick, woody, widely separating, thickest at the base, seeds  $\frac{1}{4}$  in. long, oblong-ovate, flattened, tuft of hairs  $1\frac{1}{2}$  in. long, very fine.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

*Periploca Hydaspidis*, see Leafless Plants, Petals United.

**Oxystelma  
esculentum**,  
*Dudhlutta, gharote,*  
*gani.*

ASCLEPIADACEÆ.  
F. B. I. iv. 17.  
The Plains.

perennial, deciduous, very slender, smooth; leaves 4-6 by  $\frac{1}{8}$ -1 in., lanceolate or linear, finely long-pointed, thin, stalks  $\frac{1}{2}$  in., very slender; flowers white and rose-coloured, with purple veins, 1 in. diam., in few-flowered, slender, stalked clusters, calyx small, corolla 5-lobed, bristly, tips overlapping to the right, 2 rows of scales, one row at the bottom of the corolla, the other joined to the bottom of the stamens with dilated bases, 2-keeled within, pollen masses one in each cell, flattened, hanging down, waxy; follicles 2-3 in., oblong-lanceolate, seeds  $\frac{1}{8}$  in., very many, broad-ovate, flat with a tuft of hairs.

**Pentatropis spiralis**,  
*Ambar vel, vanveri,*  
*arkpushpi.*

ASCLEPIADACEÆ.  
F. B. I. iv. 19.  
The Plains.

annual, slender, smooth, twining herb, roots tuberous; leaves 1-1 $\frac{1}{2}$  in., ovate, lanceolate or oblong, leathery, stalk  $\frac{1}{8}$ - $\frac{1}{3}$  in.; flowers  $\frac{1}{2}$  in. diam., green, in axillary umbel-like clusters on very short stalks, calyx minute, 5-partite, corolla wheel-shaped, 5-fid, lobes ovate-lanceolate, long and fine-pointed, overlapping to the right, twisted to the left, scales 5 in the tube united vertically to the back of the anthers with free tips and spurred bases; follicles 2 $\frac{1}{2}$ -3 in., spindle shaped, smooth, seeds  $\frac{1}{4}$  in. long, ovate, flat with a tuft of hairs. The roots are eaten.

**Dæmia extensa**,  
*Karial, siali, trotu.*

ASCLEPIADACEÆ.  
F. B. I. iv. 20.  
The Plains to  
3,000 ft.  
Valleys below Simla  
(Collett).  
The Salt Range.  
Changa Manga.  
Baluchistan  
(Hughes-Buller).

perennial, slender, twining, hairy, juice milky; leaves 2-4 in. across, broadly ovate, long-pointed, deeply notched at the base, stalk 2-4 in., velvety beneath; flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam.; yellow-green, tinged with pink at the base, fetid, long stalked in axillary umbel-like clusters, calyx 5-fid, lobes small, ovate, velvety, corolla tube very short, lobes broad, fringed, scales in 2 rows, outer 10, minute, united to the base of the staminal tube, inner 5, white, laterally flattened, joined to the staminal tube, spurred behind, tips long, linear, spirally twisted over the stigma, stamen stalks joined, anther tips bent in, pollen masses waxy, stigma almost 5-angled; follicles 1 $\frac{1}{2}$ -2 in., lanceolate, long-pointed, covered with long soft prickles, seeds  $\frac{1}{4}$  in., velvety, ovate, with a tuft of hairs. The fibre is equal to flax, the juice is emetic and expectorant.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES,

## PETALS UNITED.

**Holostemma****Rheedei,**

ASCLEPIADACEÆ.

F. B. I. iv. 21.

Himalaya,  
3-5,000 ft.,  
east of the Sutlej.  
Valleys below Simla  
(Collett).

perennial, smooth, twining, juice milky; leaves  $2\frac{1}{2}$ -4 by  $1\frac{1}{2}$ -3 in., ovate, short- or long-pointed, base deeply notched, long-stalked, nerves red; flowers  $1-1\frac{1}{2}$  in. diam., purple, outer surface silvery white in axillary umbel-like few-flowered clusters, main stalks 1-2 in. long, minor stalks as long, calyx 5-partite, lobes not glandular, corolla cup-shaped, tube very short, lobes 5, broad, short-pointed, thick, overlapping to the right, a 10-lobed fleshy ring united to and round the staminal tube, anthers large, oblong, horny, shining, united in a 10-winged column, pollen masses waxy, stigma 5-angled; follicles 6 by  $1\frac{1}{2}$  in., smooth, short, thick, spindle-shaped, green, seeds with a tuft of hairs.

**Cynanchum****Dalhousiæ,**

ASCLEPIADACEÆ.

F. B. I. iv. 25.

Himalaya,  
east of the Sutlej,  
5-7,000 ft.  
Simla (Collett).

perennial, twining, smooth except for a line of hairs running between the joints; leaves 3-7 by  $\frac{1}{2}$ -1 in., linear-lanceolate, long-pointed, deeply notched at the base, stalk  $\frac{1}{3}$ - $\frac{3}{4}$  in.; flowers  $\frac{1}{3}$  in. diam., pale green in almost sessile smooth umbels, calyx 5-partite, lobes ovate, corolla tube very short, smooth, lobes 5, reflexed, a bell-shaped ring of 10 teeth nearly equal to the corolla with 10 small scales within near the base, staminal tube 10-winged, anther tips small, inflexed, pollen masses waxy, stigma 5-angled; follicles 2-4 in., slender, tapering, smooth, seeds with a tuft of hairs.

**Cynanchum**  
**auriculatum,**

ASCLEPIADACEÆ.

F. B. I. iv. 25.

Himalaya,  
6-12,000 ft.  
Mashobra, Mahasu  
(Collett).  
Murree (Douie).  
The Glen, Simla.

like the last species, but leaf stalks with a pair of leaf-like appendages, flowers long-stalked, corolla velvety within, yellow-greenish, the ring within the corolla is much smaller, 5-teeth and 5 scales instead of 10.

**Marsdenia Roylei,**

*Murkula, tar,*  
*kurang.*

ASCLEPIADACEÆ.

F. B. I. iv. 35.

Himalaya,  
3-7,000 ft.,  
east of the Sutlej.  
Simla, Jaku,  
Annandale.  
(Collett).

perennial, twining, woody, softly felted, juice milky; leaves 3-5 by  $1\frac{1}{2}$ -3 in., ovate-lanceolate, notched at the base, long-pointed, often velvety beneath, stalks  $1\frac{1}{2}$ -2 in.; flowers  $\frac{1}{3}$  in. diam., orange, collected densely in axillary umbel-like clusters, calyx 5-partite, about half as long as the corolla, hairy, corolla almost bell-shaped, fleshy, tube short, lobes 5, velvety within, hairy without, spreading throat smooth or hairy, 5 scales at the base of the staminal tube, flat, linear, erect, much longer than the tube, tips free, leaning towards each other, anther tips inflexed, pollen masses waxy; follicles 3 by 1 in., thick, straight,

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

beaked, deeply wrinkled, seeds  $\frac{1}{2}$  in. long, with a tuft of hairs. The fibre is very fine, and very strong, and makes good fishing lines.

**Pergularia pallida,**

ASCLEPIADACEÆ.

F. B. I. iv. 38.

The Plains to  
5,000 ft.Rawalpindi  
(Douie).

Below Murree.

perennial, almost smooth, twining; leaves 2-4 by  $1\frac{1}{2}$ -3 in., ovate, notched at the base, stalked, short-pointed; flowers  $\frac{3}{4}$  in. diam., yellow-green, in axillary umbel-like clusters, calyx 5-partite, corolla tube  $\frac{1}{4}$  in. long, dilated below, smooth, corolla salver-shaped, lobes narrow, much longer than the tube, scales and anthers as in the last species but the scales oblong, tips bearing a linear appendage on inner side; follicles 3 by  $\frac{3}{4}$  in., smooth, tapering, seeds ovate, concave.

**Pergularia****odoratissima,**

ASCLEPIADACEÆ.

F. B. I. iv. 38.

The Plains.

Cultivated.

like the last species, but flowers very sweet-scented, often orange coloured, throat of corolla hairy not smooth.

**Pergularia minor,**

ASCLEPIADACEÆ.

F. B. I. iv. 38.

The Plains.

Cultivated.

like the last species, but leaves often 2-lobed at the base, flowers smaller, corolla lobes shorter and broader.

**Tylophora hirsuta,**

ASCLEPIADACEÆ.

F. B. I. iv. 43.

The Plains to  
5,000 ft.Pathankote  
(Clarke).

perennial, twining, stems stout, densely felted, hairs reflexed; leaves  $2\frac{1}{2}$ -4 by  $1\frac{1}{2}$ -2 in., ovate or ovate-lanceolate, short- or long-pointed, velvety or felted on both surfaces, base round, blunt or notched, stalks  $\frac{3}{4}$ - $1\frac{1}{2}$  in., stout; flowers  $\frac{1}{6}$ - $\frac{1}{4}$  in. diam. white or pale green, in few-flowered umbels on long zigzag stalks, calyx 5-partite, lobes lanceolate, hairy, corolla wheel-shaped, lobes 5, broad, short, slightly overlapping to the right, scales fleshy, united to the very short column, other characters like the last species; follicle 2 by  $\frac{1}{3}$  in., tapering, long-pointed, smooth, seeds  $\frac{1}{4}$  in. long, ovoid, flat, winged with a tuft of hairs.

**Tylophora tenerrima,**

ASCLEPIADACEÆ.

F. B. I. iv. 44.

Himalaya,

3-6,000 ft.,

east of the Sutlej.

Simla, the Glen

(Collett).

like the last species, but less hairy, leaves only  $\frac{1}{4}$  in. broad, flowers purple.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Hoya longifolia**, perennial, smooth, stems climbing over trees and rocks, rooting, branches hanging down; leaves 2-6 by  $\frac{1}{2}$ -1 in., narrowly-lanceolate, short-pointed, fleshy, stalks  $\frac{1}{4}$ -1 in., very stout; flowers  $\frac{3}{4}$ -1 in. diam., white waxy tinged with pink, in axillary shortly stalked umbel-like clusters, stalks 2 in. long, calyx 5-partite, lobe ovate, smooth, corolla 5-lobed, lobes triangular, tube very short, scales thick, joined to the staminal tube, flat spreading in a star-shape, inner angle produced in a short point, back round, other characters like the last species; follicles 4-6 in. straight slender, seeds  $\frac{1}{8}$  in., lanceolate, tufted with long hairs.
- Asclepiadaceæ.**  
F. B. I. iv. 56.  
Himalaya,  
1-4,500 ft.,  
east of the Sutlej,  
Valley below Chota  
Simla (Collett).
- Leptadenia reticulata**, perennial, twining, leafy, bark corky, young part grey-felted; leaves 1-2 in., ovate-heart-shaped or narrowed at both ends, short-pointed, leathery, pale, stalks  $\frac{1}{4}$ - $\frac{1}{2}$  in.; flowers  $\frac{1}{4}$  in. diam., thick, velvety, in crowded axillary umbel-like grey clusters, which are solitary or in pairs,  $\frac{1}{2}$ -1 in. diam., calyx shortly 5-lobed, top-shaped, lobes blunt, corolla wheel-shaped, lobes 5, tips keeled on the face, tube smooth, shining from the scales which are continued half way down the lobes; follicles  $2\frac{1}{2}$ -3 by  $\frac{1}{2}$ - $\frac{3}{4}$  in., thick, straight, smooth, almost woody, beak thick, curved, seeds  $\frac{1}{2}$  in. long, narrowly ovoid, winged, flat, with a tuft of hairs.
- Asclepiadaceæ.**  
F. B. I. iv. 63.  
The Plains,  
east of the Sutlej.  
Ambala (Edgeworth).
- Ceropegia bulbosa**, perennial, root tuberous, stem very slender, twining; leaves various, 1-5 by  $\frac{1}{3}$ -1 in., linear-lanceolate, stalked or almost sessile, always fleshy; flowers  $\frac{3}{4}$ -1 in., greenish, in 3-5-flowered axillary umbel-like clusters on stalks  $\frac{1}{2}$ -1 in. long, calyx 5-partite, lobes  $\frac{1}{10}$  in. long, narrow, corolla straight, narrow, mouth slightly dilated, 5-angled, lobes 5,  $\frac{1}{3}$ - $\frac{1}{2}$  in., linear from a triangular base, hairy within, tube purple within, slender; follicles 4 in. long, slender, cylindrical, seeds  $\frac{1}{3}$  in. long, linear-oblong, winged, tufted.
- Asclepiadaceæ.**  
F. B. I. iv. 67.  
The Plains.  
Multan (Aitchison).
- Thunbergia fragrans**, perennial, climbing, stems slender, hairy or smooth; leaves 2-3 by  $\frac{1}{2}$ -1 $\frac{1}{2}$  in.; ovate, or oblong, short-pointed, base notched deeply, or forked, toothed, stalk  $\frac{1}{2}$ -1 $\frac{1}{2}$  in.; flowers 1 $\frac{1}{4}$  in., white, fragrant or not, axillary, one, rarely two, in an axil, stalks 1-3 in., bracts leaf-like at the base of the stalk, bracteoles  $\frac{3}{4}$  in., oblong, calyx  $\frac{1}{8}$  in. enlarging in fruit to  $\frac{1}{5}$ , divided into 12-16 long-lanceolate teeth, hardly longer than the tube, corolla 5-lobed, lobes rounded, tube curved, dilated, stamens 4, in unequal pairs, near the bottom of the tube, style funnel-shaped, 2-lipped; capsule  $\frac{3}{4}$ -1 in., smooth, shining, round, abruptly narrowed into a
- Acanthaceæ.**  
F. B. I. iv. 390.  
The Plains to  
4,000 ft.  
Cultivated.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

sword-like beak, seeds 4,  $\frac{1}{6}$ - $\frac{1}{5}$  in., ovoid or dorsally flattened, wrinkled.

**Bridelia stipularis,**

EUPHORBIACEÆ.

F. B. I. v. 270.

Himalaya,

2-4 000 ft.

Kashmir.

perennial, woody, half climbing, covered with yellowish-brown felt; leaves 2-8 by  $\frac{1}{2}$ -5 in., narrowed to both ends, ovate with a broad tip, or circular-oblong, base round or notched, slightly felted beneath, stalk  $\frac{1}{4}$ - $\frac{1}{3}$  in., stout, felted; flowers very small, green, in small axillary clusters or long spikes with long stipular bracts, male and female together, calyx  $\frac{1}{6}$  in. diam., lobes lanceolate, long-pointed, petals 5, circular, shortly stalked, male flowers sessile, stamens 5, united below in a column, female flowers stalked, styles 2, 2-branched; drupe  $\frac{1}{3}$  in. long, oblong, bluish-black in the calyx which is enlarged to  $\frac{1}{3}$  in., stones usually 2.

## PETALS NONE.

**Boerhaavia repanda,**

NYCTAGINACEÆ.

F. B. I. iv. 709.

The Plains,

east of the Sutlej.

perennial herb, half-climbing and straggling over things, branches pale, 6 ft. long, smooth or velvety; leaves 1-3 in., triangular-ovate or heart-shaped, short- or long-pointed, stalk  $\frac{1}{2}$ -1 $\frac{1}{2}$  in., slender; flowers minute, pink, in 2-6-flowered umbels on slender stalks 1-2 in., minor stalks  $\frac{1}{4}$ -1 in., hair-like, calyx 5-lobed,  $\frac{1}{6}$  in. diam., tube  $\frac{1}{4}$  in., petals none, stamens 1-5, projecting far out of the tube; fruit  $\frac{1}{4}$  in. long, slender, covered with large glands, slightly ribbed.

**Boerhaavia****verticillata,**

NYCTAGINACEÆ.

F. B. I. iv. 710

The Plains,

west of the Jhelum.

The Salt Range.

Mt. Tilla.

(Aitchison).

very like the last species, but leaves broader, blunter, flowers smaller, sometimes white, fruit smaller,  $\frac{1}{8}$  in., club-shaped, with large half round glands round the top.

**Ærua scandens,**

AMARANTACEÆ.

F. B. I. iv. 727.

The Plains to

5,000 ft.

Valleys below Simla

(Collett).

Koti.

perennial, climbing, grey-felted; leaves 1-4 in., ovate, stalked, hairy, short-pointed; flowers minute, silvery white, crowded in sessile ovoid or oblong axillary branching spikes  $\frac{1}{4}$ -1 in. long, calyx 5-partite, thin, hairy on side lobes lanceolate, finely pointed, stamens 5, or 4, alternating with staminodes, petals none; fruit dry ovoid utricle in the calyx, one-seeded



## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

- Ephedra peduncularis,**  
*Kuchan, lastuk.*  
GNETACEÆ.  
F. B. I. v. 641.  
The Plains,  
west of the Jhelum.  
The Salt Range.  
The Park,  
Rawalpindi.
- perennial, male and female flowers on different plants, jointed at the nodes, producing long runners, often with a bluish-green waxy gloss, branchlets often in tufts and thread-like, sometimes roughish, slender; leaves often wanting, consist of thread-like and linear scales at the nodes; flowers in the axils of opposite bracts on solitary or clustered catkins and cones, male catkins often on stalks 1-1½ in., rarely axillary, or sessile, 6-20-flowered, male flowers calyx of 2 sepals, anthers 2-10, sessile, female flowers 4 pairs of bristly bracts, lower pairs united, plate-like, uppermost shortly 2-fid, ovule naked with outer coat formed into a tube which is the style; fruit sometimes with fleshy red bracts which look almost like grapes and are juicy and edible, seeds oblong, convex on one side, flat on the other, coat dry.
- Dioscorea glabra,**  
**Chinese yam,**  
DIOSCOREACEÆ.  
F. B. I. vi. 294.  
The Plains to  
5,000 ft.  
Valleys below Simla,  
Fifth Waterfall  
(Collett).
- perennial, smooth, male and female flowers on different plants, root tuberous, stems stout, flattened, twining; leaves 3-8 by 1-4½ in., orbicular, ovate-oblong, base deeply notched, net-veined, stalk 1-3½ in., tip forming a long tail-like point; flowers minute, greenish on slender axillary spike; male spikes 1-1½ in., many, clustered, spreading, male flowers round, single or clustered, sepals 6 in 2 series, outer ovate-oblong, inner ovate with broad tip, stamens 6, all anther bearing, female spikes 6-8 in., usually solitary, female flowers sepals as before but on the ovary, styles 3; capsule 1½ in. diam., 3 wings, broadly rounded, seeds flattened, winged all round, scaly buds or bulbils grow in the axils of leaves or flower bracts, fall to the ground and take root.
- Dioscorea sativa,** see Climbing Plants, Alternate, Exstipulate, Simple.
- Polygonatum cirrifolium,** see Climbing Plants, Alternate, Exstipulate, Simple.
- Gloriosa superba,**  
*Kariari, mulim.*  
LILIACEÆ.  
F. B. I. vi. 358.  
The Plains to  
5,000 ft.  
Sutlej Valley,  
Subathu (Collett).
- perennial, rootstock consists of a series of tubers, stamens 10-20 ft., annual, green, leafy, climbing by means of its leaves; leaves 6-8 in., lanceolate, sometimes scattered or in circles of three, sessile or shortly stalked, tips linear, spirally twisting; flowers 3-4 in. across, yellow with scarlet tips changing to crimson, solitary or in clusters on stalks 4-6 in. in the axils of leaves, sepals 6, 2-3 in., lanceolate, separate, spreading at first, reflexed afterwards, margins wavy, curled, stamens 6, first green, then

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

yellow, finally red, pollen orange, style long, linear bent up at the base, green then red, tip 3-branched; capsule  $1\frac{1}{2}$ -2 in., oblong, blunt, seeds many, round. The root is supposed by Indians to be a powerful drug, and poisonous, it is used as an ecboic, but the only medicinal properties it possesses are stomachic and tonic.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

*Pergularia minor*, see Climbing Plants, Opposite, Exstipulate, Simple.

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNITED.

**Jasminum  
dispermum,**

CLEACEÆ.

F. B. I. iii. 602.

Himalaya,  
2-8,000 ft.Simla, Lansdowne  
Falls  
(Collett).Kiari Dâk  
Bungalow.

perennial, smooth, branches long; leaves 4-6 in., leaflets 3-5, lanceolate or ovate-lanceolate, long-pointed, end one 2-4 in., largest; flowers  $\frac{3}{4}$ -1 in., white, in crowded axillary clusters or terminal branching racemes, leaflike bracts  $\frac{1}{2}$  in., real bracts  $\frac{1}{10}$  in., calyx tube short, teeth 5, short, corolla salver-shaped, tube  $\frac{1}{2}$  in. cylindrical, lobes 5,  $\frac{1}{3}$  by  $\frac{1}{2}$  in., broad narrowed to both ends, stamens 2, short, included in the tube, style slender, stigma almost 2-lobed; berry 2-lobed, sometimes simple, seeds 2 or 1.

**Jasminum officinale,**

see Shrubs, Opposite, Exstipulate, Compound.

**Jasminum  
grandiflorum,**

see Shrubs, Opposite, Exstipulate, Compound.

## PETALS NONE.

**Clematis montana,**  
*Ghantiali.*

RANUNCULACEÆ.

F. B. I. i. 2.

Himalaya,  
4-12,000 ft.Simla (Collett).  
Bagi.

perennial, woody, smooth or silky, stem round, climbing by its leaflets; leaves with 3 leaflets, stalked, clustered at the nodes; leaflets ovate, toothed or deeply divided; flowers 2-3 in. diam., white, often scented, solitary on stalks longer than the leaves, sepals 4, oblong, flat, spreading, tip rounded, smooth or silky outside, petals none, stamens many, smooth; fruit is a head of almost sessile achenes, styles persist as long feathery tails.

## CLIMBING PLANT: WITH OPPOSITE EXSTIPULATE COMPOUND LEAVES,

## PETALS NONE.

**Clematis barbellata**, like the last species, but flowers dull purple, sepals long-pointed, stamens hairy.  
 RANUNCULACEÆ.  
 F. B. I. i. 3.  
 Himalaya,  
 5-12,000 ft.  
 Mashobra, Mahasu,  
 in forest (Collett).  
 Hatlu.

**Clematis grata**, like the last species, but stems hairy, furrowed, leaves pinnate, usually of 5 leaflets, leaflets lobed, deeply cut, flowers cream-coloured, fragrant, in long branching racemes, sepals oblong-ovate, felted outside, stamens smooth, achenes velvety.  
 RANUNCULACEÆ.  
 F. B. I. i. 3.  
 Himalaya,  
 2-8,000 ft.  
 Simla, Mashobra  
 (Collett).  
 Murree (Douie).

**Clematis Gouriana**, like the last species, but smooth, flowers smaller, pale yellow, achenes hairy. The juice causes blistering.  
 RANUNCULACEÆ.  
 F. B. I. i. 4.  
 Himalaya,  
 1-3,000 ft.  
 Valleys below Simla  
 (Collett).

**Clematis puberula**, like the last species, but downy, flowers few, larger in leafy branching racemes, achenes silky.  
 RANUNCULACEÆ.  
 F. B. I. i. 4.  
 Himalaya,  
 4-7,000 ft.  
 Simla, Mashobra  
 (Collett).

**Clematis graveolens**, like the last species, but smooth, stem not grooved, leaflets much divided, flowers strongly scented, upper flowers of raceme often solitary with a pair of pinnate leafy bracts on the stalk, achenes velvety.  
 RANUNCULACEÆ.  
 F. B. I. i. 4.  
 Himalaya,  
 6-11,000 ft.  
 Murree, Kulu,  
 Baluchistan  
 (Lace).

## CLIMBING PLANTS WITH OPPOSITE EXSTIPULATE COMPOUND LEAVES.

## PETALS NONE.

- Clematis orientalis**, like the last species, but smooth, with a waxy gloss,  
 RANUNCULACEÆ. leaflets circular to ovate-lanceolate, flower yellow with  
 F. B. I. i. 5. purple mottling, sepals ovate with a long point, achenes  
 Himalaya, hairy.  
 8-14,000 ft.  
 Baluchistan  
 (Stocks).
- Clematis nutans**, like the last species, but silkily velvety, stem deeply  
 RANUNCULACEÆ. grooved, leaflets 3-5-lobed, sepals pale yellow, erect with  
 F. B. I. i. 5. recurved tips, silky velvety without, achenes large.  
 Himalaya,  
 east of the Sutlej,  
 2-5,000 ft.
- Clematis connata**, like the last species, but stems faintly grooved, the  
 RANUNCULACEÆ. bases of the leaf stalks united round the stem, sepals felted  
 F. B. I. i. 6. on both surfaces.  
 Himalaya,  
 4-10,000 ft.  
 Simla, Mashobra  
 (Collett).
- Clematis Buchaniana**, very like the last species, but much rougher, more  
 RANUNCULACEÆ. hairy, leaflets broader, flowers larger, sepals ribbed, achenes  
 F. B. I. i. 6. densely hairy.  
 Himalaya,  
 5-10,000 ft.  
 Simla (Collett).

## CLIMBING PLANTS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Capparis sepiaria**, see Shrubs, Alternate, Stipulate, Simple.
- Capparis horrida**, perennial, woody, young parts brown-felted, armed  
*His, ardanda.* with recurved thorns, laterally flattened; leaves  $1\frac{1}{2}$ -4 in.  
 CAPPARIDACEÆ. long, ovate or oblong, blunt or sharp pointed, thinning  
 F. B. I. i. 178. above, stipules consist of 2 thorns; flowers  $1\frac{1}{2}$ -2 in.  
 The Plains, across, white turning to pink or purplish, solitary or 2-4  
 east of the Sutlej. in a vertical line on the branches on stalks  $\frac{1}{2}$ -1 in. long,  
 Hathni Khund. sepals 4 in 2 series, petals 4, sessile, overlapping, oblong,  
 Sirmur. bristly, shorter than the stamens, stamens many, purple,  
 ovary stalked, stigma sessile; fruit  $1-1\frac{1}{2}$  in. diam., on a  
 stout stalk, fleshy, almost round with 4 blunt angles, seeds  
 many. The fruit is eaten in pickle.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

- Celastrus paniculata,** perennial, woody, branches hanging down, bark  
*Malkangni, sankhu.* covered with small warts excrescence; leaves  $2\frac{1}{2}$ -5 in.  
CELASTRACEÆ. long, ovate or circular, toothed, abruptly pointed, stipules  
F. B. I. i. 617. minute, soon falling off or none; flowers  $\frac{1}{3}$  in., yellow-  
The Plains to green, in terminal branching racemes, that hang down,  
4,000 ft. bracts fringed, calyx 5-parted, lobes rounded, toothed,  
Koti below petals 5,  $\frac{1}{3}$  in., oblong, entire, stamens 5, style short-pointed;  
Dharpur, capsule  $\frac{1}{4}$  in. diam., round, cells 3, seeds 3 or 6, embedded  
near Kasauli. in a red fleshy substance. The seeds afford a yellow oil  
which is said to be a nervine tonic and to cure Beri beri;  
oleum nigrum is obtained from these seeds distilled with  
aromatics and in Indian medicine is much used as a  
diaphoretic, diuretic and nervine stimulant.
- Zizyphus Cœnolia,** see Shrubs, Alternate, Stipulate, Simple.
- Berchemia** perennial, woody, branches smooth, waxy when young;  
**floribunda,** leaves 2-4 in. long, ovate or oblong, short- or long-pointed,  
RHAMNACEÆ. stalks  $\frac{3}{4}$ -1 in., stipules within the axils, bifid; flowers  
F. B. I. i. 637. small, yellowish-green, 6 in a cluster, clusters forming large  
Himalaya, terminal branching racemes, calyx 5-parted, tube cup-  
3-6,000 ft., shaped, lobes lanceolate, petals 5, spoon-shaped, stamens 5,  
east of the Jhelum. stigma 2-lobed; fruit  $\frac{1}{2}$  in. long, purple, cylindrical, stone  
2-celled.
- Sageretia** see Climbing Plants, Opposite, Stipulate, Simple;  
**oppositifolia,**
- Sageretia theezans,** perennial, woody, spinous, branches long, slender,  
*Dargola, ankol,* scurfy on spines and flower branches; leaves  $1\frac{1}{2}$ -2 in.,  
*thum.* ovate or narrowing to both ends, minutely toothed, dark  
RHAMNACEÆ. green, smooth above, velvety beneath when young; flowers  
F. B. I. i. 641. very small, yellowish-green, sessile on long slender inter-  
Himalaya, rupted spikes, calyx 5-fid, lobes keeled within, short-  
6-8,000 ft. pointed, petals 5, hooded, stalked, stamens 5, style short,  
Valleys below Simla, 3-grooved, stigmas 3; fruit  $\frac{1}{4}$  in. round, 3-celled, 3-seeded,  
Naldera, Suni leathery, dark brown, edible, sweet. The leaves are  
(Collett). sometimes used as a substitute for tea in China, the fruit  
The Salt and is much eaten.  
Suleman Ranges,  
2-5,500 ft.  
Hazara.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE SIMPLE LEAVES,

## PETALS UNUNITED.

- Helinus lanceolatus**, perennial, woody, slender, smooth, branches grooved with terminal unbranched tendrils; leaves 1-2½ in., ovate or ovate-lanceolate, shortly stalked, entire, stipules small or soon falling off; flowers ⅙ in. across, pale yellow in umbels, each umbel with a bract ¼-½ in. long, at the top of the stalks ½-1 in. long, calyx 5-lobed, tube cup-shaped, petals 5, hooded, stamens 5, style short, 3-cleft, stigmas recurved; fruit ¼ in. diam., round, contained in the calyx, seeds 3, leathery, flattened.  
RHAMNACEÆ.  
F. B. I. i. 644.  
The Plains from 1-5,000 ft.  
Valleys below Sipi. (Collett).
- Vitis lanata**, perennial, woody, extensive climber, generally covered with red-brown wool or felt; leaves 3-6 by 2-3 in., ovate, deeply notched at the base, sometimes almost lobed, toothed, pointed, woolly above, becoming smooth with age, densely felted below, stipules membranous, often large; flowers small, yellow-green, in large branching racemes, flower stalk often bearing a simple or forked tendril, calyx 5-lobed, cup-shaped, petals 5, often joining at the tips, stamens 5; fruit ¼ in. diam, round, purple, 2-celled, 4-seeded, seeds ⅙ by ⅓.  
VITACEÆ.  
F. B. I. i. 651.  
Himalaya, to 6,000 ft.  
Valleys below Simla (Collett).
- Vitis latifolia**, like the last species, but quite smooth, stems hollow, leaves often 3-7-angled or lobed, flowers reddish-brown, fruit smaller, only 2-seeded.  
*Panibel*.  
VITACEÆ.  
F. B. I. i. 652.  
Himalaya, 2-3,000 ft., east of the Sutlej.
- Vitis vinifera**, like the last species, but often felted, flowers without tendrils, style very short, thick, fruit ½-¾ in. long, round or ovoid, white green or purple, succulent, juicy.  
**The Grape Vine**,  
*Angur*.  
VITACEÆ.  
F. B. I. i. 652.  
The Plains to 6,000 ft.  
Cultivated.  
Baluchistan.
- Vitis parvifolia**, like the last species, but quite smooth, stems solid, slender, leaves only 2-4 in., often 3-lobed, flowers in erect racemes, 1 in. long, fruit ¼ in., black, round.  
VITACEÆ.  
F. B. I. i. 652.  
Himalaya, 3-6,000 ft.  
Simla, Mahasu (Collett).
- Crotalaria hirsuta**, see Prostrate Herbs, Alternate, Stipulate, Simple.  
**Rosa paniculatus**, see Climbing Plants, Alternate, Stipulate, Lobed,

## CLIMBING PLANTS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Polygonum dumetorum,**

POLYGONACEÆ.

F. B. I. v. 54.

Himalaya,  
4-9,000 ft.

annual, stem twining or prostrate, cylindrical; leaves  $1\frac{1}{2}$ -4 in., broadly ovate, heart-shaped, long-pointed, stipules tubular, short; flowers minute, green or tinged with pink in short axillary, almost erect racemes, minor flower stalks hair-like and recurved, not winged to the base, usually jointed, calyx 5-partite, segment blunt, enlarging in fruit to  $\frac{1}{5}$  in., 3 outer segments bluntly keeled to broadly winged, calyx in fruit broadly oblong or ovate with a broad top, stamens 8, styles 3, very short; nut  $\frac{1}{8}$  in. long, 3-angled.

**Polygonum pterocarpum,**

POLYGONACEÆ.

F. B. I. v. 54.

Himalaya,  
5-9,000 ft.  
Simla, Annandale  
(Collett).  
Cherot Nullah.

very like the last species, but the fruiting calyx is much larger up to  $\frac{1}{2}$  in., or  $1\frac{1}{2}$  in., segments more broadly winged, nut  $\frac{1}{8}$  in.

**Piper brachystachyum,**

PIPERACEÆ.

F. B. I. v. 87.

Himalaya,  
2-5,000 ft.  
Valleys below Chota  
Simla (Collett).

perennial, woody, smooth, rambling, stems very long, scrambling over trees and rocks, swollen and rooting at the joints, branches slender, warted; leaves, lower leaves 1-2 in., circular, pointed, upper 2-5 by 1-2 in., ovate, long-pointed, narrowed to the base, stipules various; flowers minute, purple in the axil of a very small bract, crowded on catkin-like spikes, male and female flowers on separate plants, male spikes 2-3 in., slender, drooping, calyx none, petals none, stamens 2, female spikes  $\frac{1}{4}$  in. long, ovoid, stigmas 3, sessile, spreading, fruiting spike round; berries  $\frac{1}{10}$  in. diam., crowded, 1-seeded.

**Ficus foveolata,***Nagar jaman, grelu.*

URTICACEÆ.

F. B. I. v. 528.

Himalaya,  
2-7,000 ft.  
Simla, the Glen,  
Elysium (Collett).  
Valleys below  
Kasumpti.  
Chamba.

perennial, woody, stems, when creeping and prostrate over rocks or tree trunks, rooting at the nodes, velvety or hairy, in shady and damp places, when climbing in open ground, not rooting and smooth; leaves on creeping stems, 2 in., thin, lanceolate or ovate-lanceolate on fruiting branches and in the open, 3-6 in., leathery, base rounded, notched or wedge-shaped, tip often long-pointed, stalks  $\frac{1}{2}$  in., velvety, stipules  $\frac{1}{2}$  in., in pairs, hairy; figs  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., round, depressed above, solitary, axillary, shortly stalked, often warty and wrinkled, basal bracts 3, ovate, short-pointed, often reflexed.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE LOBED LEAVES.

## PETALS UNUNITED.

- Vitis latifolia**, see Climbing Plants, Alternate, Stipulate, Simple.
- Vitis vinifera**, see Climbing Plants, Alternate, Stipulate, Simple.
- Vitis parvifolia**, see Climbing Plants, Alternate, Stipulate, Simple.
- Cardiospermum halicacabum**, see Climbing Plants, Alternate, Stipulate, Compound.

**Bauhinia Vahlii**,  
*Malghan, malu*,  
 LEGUMINOSÆ.  
 F. B. I. ii. 279.  
 Himalaya,  
 2-4,000 ft.,  
 east of the Chenab.  
 Sutlej Valley.  
 Kalka (Collett).

very large, woody; stems and branches one to two hundred feet long, two tendrils at the end of branchlets, young parts rusty or grey-velvety; leaves 4-18 in. across, deeply notched, divided to  $\frac{1}{3}$ rd of its length into 2 blunt lobes, almost leathery, dark green and slightly hairy above, felted beneath, stalk 3-6 in. long, stout, stipules blunt, curved; flowers  $\frac{3}{4}$  in. across, white, in dense terminal long-stalked flat-topped racemes, lower lesser flower stalks 1-2 in. with persistent linear bracteoles, calyx tube  $\frac{1}{2}$ - $\frac{1}{4}$  in., cylindrical, lobes 2, rusty-felted, petals 5, ovate with a broad tip, shortly stalked, almost equal, hairy outside, stamens 3; pod 6-18 by 2-3 in., hanging down, flat, woody, rusty-felted, seeds 8-12, 1 in. diam., brown, flat. This plant produces a good fibre, the seeds and leaves are used as tonics and demulcents. The seeds are roasted and eaten.

**Rubus paniculatus**,  
*Kala-akhi, pulla*,  
 ROSACEÆ.  
 F. B. I. ii. 329,  
 Himalaya,  
 3-7,000 ft.  
 Simla, the Glen,  
 below Mahasu  
 (Collett).

perennial, pithy, upper stems and branches, except the upper surface of the leaves, covered with white or yellowish felt, prickles few, small; leaves 3-5 in., broadly ovate, base notched, long-pointed, more or less lobed, upper surface practically smooth, lower white felted, toothed, stalk 1-2 in., slender, rarely prickly, stipules small, divided into long segments; flowers  $\frac{3}{4}$ -1 in. diam., white, often long stalked, in spreading felted terminal branching racemes, bracts linear-oblong, toothed, calyx 5-lobed, lobes silky, ovate, short- or long-pointed, tip often cut, longer than the petals, erect in fruit, petals 5, very small, linear-oblong, stamens many; fruit round, of many black or dark purple, succulent, one-seeded drupelets.



## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

- Vitis carnosa**,  
or **trifolia**,  
*Karik, amal-bel.*  
VITACEÆ.  
F. B. I. i. 654.  
The Plains.  
Baluchistan  
(Hughes-Buller).  
perennial, stems slender, fleshy, branches angular, covered when young with velvet; leaves 2-6 in., with 3 leaflets, long-stalked, leaflets 1-3 in., broadly ovate or ovate-lanceolate, blunt or pointed, fleshy or almost thin, toothed, almost sessile, stipules oblong, tendrils wiry opposite the leaves, usually branched; flowers  $\frac{1}{8}$  in., greenish-white, shortly stalked on usually axillary 3-5-rayed umbellate clusters, calyx 4-toothed, petals 4, distinct, stamens 4, style distinct; fruit roundish, black, fleshy, 2-4-seeded; seeds  $\frac{1}{4}$  by  $\frac{1}{8}$  in., triangular, wedge-shaped.
- Vitis himalayana**,  
*Phlankur, zemaro.*  
VITACEÆ.  
F. B. I. i. 655.  
Himalaya,  
6-9,000 ft.  
Simla (Collett).  
Kashmir.  
like the last species, but stems woody, leaves larger, lateral leaflets oblique, tendrils absent, flowers larger.
- Vitis divaricata**,  
VITACEÆ.  
F. B. I. i. 657.  
Himalaya,  
4-7,000 ft.  
Simla.  
like the last species, but stem more slender, cylindric, downy, leaf-stalk longer, 3-4 in., leaves thin, flowers red or dark brown in umbellate clusters on woolly stalks with a forked tendril an inch from the top, petals and stamens 5.
- Vitis capriolata**,  
VITACEÆ.  
F. B. I. i. 659.  
Himalaya,  
4-7,000 ft.  
Simla, the Glen  
Mashobra,  
on trees and rocks.  
like the last species, but quite smooth, leaves with 5 leaflets, calyx, petals, and stamens in fours.
- Cardiospermum**  
**Halicacabum**,  
*Latapathkari.*  
SAPINDACEÆ.  
F. B. I. i. 670.  
The Plains to  
4,000 ft.  
Valleys below Simla  
(Collett),  
annual, almost smooth, stem slender, grooved; leaves  $1\frac{1}{2}$ -3 in. triangular or ovate, leaflets or lobes 3, deeply cut, long-pointed, smooth, stalks 2-3 in. long, stipules absent or small, soon falling off; flowers  $\frac{1}{8}$  in., white, in axillary racemes, lowest pair of minor stalks formed into tendrils, sepals 4, rounded, concave, 2 outer smaller, petals 4, in pairs, rounded, 2 larger lateral, jointed to the sepals, each with a notched scale above the base, 2 smaller lower, remote from the stamens, each with a crested scale, stamens 8, style 3-fid; capsule 3-celled,  $\frac{1}{2}$ - $\frac{3}{4}$  in. wide, 3-

## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Abrus precatorius,**  
*Gaungchi, ratak,*  
*labri.*

LEGUMINOSÆ.  
F. B. I. ii. 175.  
The Plains to  
3,500 ft.

angled, winged, seeds black with white heart-shaped protuberances. This plant is used medicinally, the green parts eaten as a vegetable. The root is emetic, diuretic, and laxative, the seeds, *hab-ul-kalkal*, are tonic and diaphoretic.

perennial, woody, branches many, smooth or silky, slender; leaves 2-3 in. long, leaflets 20-40 in opposite pairs,  $\frac{3}{8}$ - $\frac{5}{8}$  by  $\frac{1}{8}$ - $\frac{1}{4}$  in., ligulate-oblong, thin, smooth above, silky beneath, leaf stalk ending in a tendril; flowers  $\frac{1}{2}$  in., pink or white, in dense axillary stalked racemes, shorter than the leaves, calyx  $\frac{1}{10}$  in., thinly silky, bell-shaped, teeth very short, corolla much protruding, standard petal ovate, wing petals narrow, keel petals curved, stamens 9; pod 1-1 $\frac{1}{2}$  in. long, thick, oblong, 3-5-seeded, seeds the size of a pea, nearly round, usually scarlet and black or white and black. The seeds, *rati*, are used by jewellers as weights; as the specific name denotes, they are also used as beads in rosaries. The root is used as a substitute for liquorice. The powdered seeds are used to poison cattle by insertion under the skin in the shape of a small pencil and called *sui*. When applied to the conjunctiva, purulent ophthalmia is caused.

**Cicer soongaricum,**  
*Tizhu, sarri.*

LEGUMINOSÆ.  
F. B. I. ii. 176.  
Hima'aya,  
9-15,000 ft.  
Spiti, Lahul.

annual, widely spreading, stems wiry, finely velvety or smooth; leaves 3-4 in., ending in a spiral tendril, leaflets 20-40, ovate with a broad tip to wedge-shaped, veins marked, stipules  $\frac{3}{8}$ - $\frac{1}{2}$  in., palmately divided; flowers  $\frac{3}{4}$  in., pink, blue or white, solitary in the axils on stalks 1 $\frac{1}{2}$  in. with a large bract, calyx  $\frac{3}{8}$  in., pouched, calyx tube oblique, teeth 5, lanceolate, corolla projecting, standard petal broad, stamens 10; pod 1 in. long, densely velvety, linear-oblong, narrowed into the styles, seeds nearly round, beaked. The seeds are eaten, also used locally to fatten cattle. A vinegar forms with the dew on the leaves.

**Vicia hirsuta,**  
**Hairy vetch** or **tare,**  
*Masur-chana.*

LEGUMINOSÆ.  
F. B. I. ii. 177.  
The Plains to  
6,000 ft.  
Jaku, Simla.

annual, hairy, stems slender, 1-3 ft., velvety; leaves 1 $\frac{1}{2}$ -3 in., even pinnate ending in a twisted tendril, leaflets 10-16,  $\frac{1}{2}$ -1 in., stipules almost forked, toothed at the base; flowers  $\frac{1}{2}$  in., white tinged with blue, in six- or less-flowered racemes, shorter than the leaves, calyx bell-shaped, teeth 5, 3 lower longest, corolla just projecting from the calyx, standard erect, broad, keel nearly straight, obtuse, shorter than the wings, stamens 10, upper free; pod  $\frac{1}{4}$ - $\frac{1}{2}$  in., hairy, oblong, short-pointed, black, seeds 2. A weed of wheat fields, sometimes cultivated for fodder.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Vicia tenera,**  
LEGUMINOSÆ.  
F. B. I. ii. 177,  
Himalaya,  
3-8,000 ft.,  
east of the Sutlej,  
Simla (Collett).  
Sanawar.

like the last species, but perenn'ial, nearly smooth,  
flowers many in a raceme, pale pink, pod longer, seeds 6-8.

**Vicia pallida,**  
LEGUMINOSÆ.  
F. B. I. ii. 178,  
Himalaya,  
4-9,000 ft.  
Simla (Collett).  
Kashmir.

like the last species, but much taller, leaflets more  
numerous, corolla pale lilac.

**Vicia Griffithii,**

see Herbs, Erect, Alternate, Stipulate, Compound.

**Vicia rigidula,**  
LEGUMINOSÆ.  
F. B. I. ii. 178.  
Himalaya,  
7-9,000 ft.  
Kashmir.

like the last described species, but the veins of leaflets  
raised, corolla larger, reddish.

**Lathyrus sativus,**

see Prostrate Herbs, Alternate, Stipulate, Compound.

**Pisum arvense,**  
**Field Pea,**  
*Desi maitar,*  
*kala mattar.*  
LEGUMINOSÆ.  
F. B. I. ii. 181.  
The Plains.  
Cultivated.

annual, smooth, waxy green, leaves ending in a  
branched tendril, leaflets 4-6, stipules ovate, large, toothed  
at the base, flowers pink and purple on one to few-flowered  
stalks, style thick, laterally flattened, pod net-veined,  
seeds greenish-yellow with red mottling, smooth, angled;  
for other characters see the last species. The seed, peas,  
are eaten and the plant is used for fodder.

**Pisum sativum,**  
**Garden Pea,**  
*Gol mattar.*  
LEGUMINOSÆ.  
F. B. I. ii. 181.  
The Plains.  
Cultivated.

like the last species, but larger, flowers white, pods  
broader, seeds white, round. The plant is grown almost  
entirely for fodder.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

- Amphicarpæa Edegworthii**,  
LEGUMINOSÆ.  
F. B. I. ii. 181.  
Himalaya,  
5-6,000 ft.  
Simla (Collett).  
annual, velvety, stem slender, twining; leaves of 3 leaflets, leaflets  $1\frac{1}{4}$  by 1 in., broadly ovate, thin, end one stalked, lateral ones nearly sessile, stipules  $\frac{1}{2}$  in. long, oblong or lanceolate, bracts like the stipules; flowers  $\frac{1}{2}$  in., reddish, usually solitary or in pairs, rarely racemed, calyx  $\frac{1}{8}$  in., teeth lanceolate, awl-shaped, much shorter than the tube, corolla  $\frac{1}{2}$  in., petals equal, standard and wing petals with a spur on each side of their bases, stamens 10, 9 united, style thread-like, beardless; pod 1 in long linear, recurved, 2-3-seeded.
- Shuteria vestita**,  
var. **involutata**,  
LEGUMINOSÆ.  
F. B. I. ii. 181.  
Himalaya,  
3-7,000 ft.,  
east of the Sutlej.  
Simla, Dharni  
(Collett).  
perennial, hairy, stem slender, twining; leaves of 3 leaflets, leaflets  $1-2\frac{1}{4}$  by  $\frac{1}{3}-1\frac{1}{4}$  in., ovate, entire, blunt, lateral almost sessile, end one stalked, stipules lanceolate, short-pointed; flowers  $\frac{1}{2}$  in., white tinged with pink, 2 or 3 together in axillary racemes, bracts of the one or two lowest groups of flowers orbicular, leaflike, forming cups, calyx tubular, teeth 5, short, 2 upper united, lowest longest, petals longer, standard petal erect, ovate with a broad tip, keel nearly straight, blunt, shorter than the wings, stamens 10, all but the upper one united, style smooth, curved; pod  $1-1\frac{1}{4}$  in., narrow, flat, beaked with the base of the style, seeds 5 or 6.
- Dumasia villosa**,  
LEGUMINOSÆ.  
F. B. I. ii. 183.  
Himalaya,  
3-7,000 ft.  
Simla, Annandale,  
Shali (Collett).  
annual, densely hairy, grey or rusty, stem slender, twining; leaves of 3 leaflets, leaflets  $1\frac{1}{2}-3$  by  $\frac{3}{4}-1\frac{3}{4}$  in., ovate, blunt or short-pointed, lateral almost sessile, end one 2-3 in., stalked, stipules minute, bristle-like; flowers  $\frac{1}{2}-\frac{3}{4}$  in., yellow or purplish, in axillary bracteate racemes, 2-6 in. long, bracts and bracteoles thread-like, calyx  $\frac{1}{4}-\frac{3}{8}$  in., tubular, mouth oblique, teeth minute, petals twice the calyx in length, standard ovate with broad tip, erect, wings and keel nearly equal, keel slightly curved, all stamens but upper united; pod  $1-1\frac{1}{2}$  in. long, yellow-felted, flat, linear, contracted between the seeds, seeds 3 or 4.
- Teramnus labialis**,  
LEGUMINOSÆ.  
F. B. I. ii. 184.  
The Plains.  
annual, slender, hairs flat-lying, scattered; leaves with 3 leaflets,  $2\frac{1}{2}-4\frac{1}{2}$  in., leaflets  $1-2\frac{1}{2}$  in., ovate-oblong, thin, lateral rather smaller, stipules minute, awl-shaped, soon falling off; flowers  $\frac{1}{2}-\frac{1}{4}$  in., reddish, in long loose axillary racemes, 1-4 in., calyx  $\frac{1}{8}-\frac{1}{6}$  in., teeth 5, nearly equal, corolla not protruding far, stamens all united; pod  $1\frac{1}{2}-2$  in., linear, smooth, recurved, hooked with the permanent style, seeds 8-12.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Mucuna pruriens,**  
**Cowitch or cowhage,**  
*Kawanch, goncha.*

LEGUMINOSÆ.  
F. B. I. ii. 187.  
The Plains to  
2,000 ft.  
Hathni Kund.

annual, slender, branches velvety with flat-lying hairs at first, almost smooth afterwards; leaves 6-9 in. of 3 leaflets, leaflets 3-5 in. long, ovate-oblong, grey silky below, almost smooth and green above; flowers  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. long purplish in long, short-stalked drooping racemes, 6-12 in., bracts small, lanceolate, calyx  $\frac{3}{8}$  in., teeth 5, 2 upper united, lowest longer than the middle ones, corolla protruding far, keel and wings about equal, standard half as long; pod 2-3 in. long, ribbed, covered with grey or rusty weak irritating bristles, seeds 5-6. The irritating hairs on the pods are used in medicine as anthelmintics. The powdered seeds are used in Indian medicine as aphrodisiac, the root as a nervine tonic,

**Spatholobus**  
**Roxburghii,**  
*Mula, mala.*

LEGUMINOSÆ.  
F. B. I. ii. 193.  
The Plains.

perennial, woody, stout, branches covered with dense grey down; leaves of 3 leaflets, leaflets 6-8 in., ovate with a broad tip or narrowed to both ends; flowers  $\frac{1}{2}$  in., bright red to white, in terminal branching racemes, 1- $1\frac{1}{2}$  ft. long, very downy, calyx  $\frac{1}{8}$ - $\frac{1}{5}$  in., bell-shaped, densely grey velvety, teeth 5, lower lanceolate, corolla half as long again as the calyx, keel nearly straight, blunt, stamens 10, all united but the upper one; pod 3-4 in. long, 1 in. broad, covered with rusty felt especially towards the tip, stalk  $\frac{1}{2}$  in. long, seed one. A gum like kino exudes from the bark, an oil is obtained from the seeds, which is used for cooking.

**Pueraria tuberosa,**  
*Sural, siali.*

LEGUMINOSÆ.  
F. B. I. ii. 197.  
The Plains to  
4,000 ft.  
Basantpur, Sutlej  
Valley (Collett).

perennial, roots tuberous, stems velvety, twining, widely climbing, leaves falling in winter; leaves of 3 leaflets, arranged pinnately, leaflets 4-9 in., broadly ovate-accuminate, lateral oblique, green smoothish above, densely white velvety beneath, stipules minute, soon falling off, ovate-heart-shaped; flowers  $\frac{1}{3}$ - $\frac{1}{2}$  in., bright blue, in dense leafless twiggy, often branched racemes, bracts minute, calyx  $\frac{1}{8}$ - $\frac{1}{4}$  in., very silky, teeth almost blunt, 2 upper united, corolla distinctly spurred at the base, wings obliquely oblong, keel blunt, stamens 10, all united, style thread-like, much incurved, beardless; pod 2-3 in. long, flat, linear, contracted between the seeds, densely covered with soft brown bristle-like hairs, tipped with the style base, seeds 2-6, divided by partitions. The tubers, *bilai kand*, are given as food for cattle, also used as a cooling medicine, more rarely as human food.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Phaseolus lunatus,**  
**Lima Bean,**  
*Lobya.*

LEGUMINOSÆ.  
F. B. I. ii. 200.  
The Plains.  
Cultivated.

biennial, stems twining, first minutely downy, then almost smooth; leaves of 3 leaflets, leaflets nearly equal, usually lobed, margins entire, lateral almost sessile, end one long-stalked, stipules small, basifixed: flowers small, greenish yellow, in loose short-stalked, many-flowered racemes, 6 in. long, bracts small, soon falling off, bracteoles minute, calyx  $\frac{1}{12}$  in., teeth all very short, corolla hairy outside, keel very long forming a spiral beak, stamens 10, all united but the upper one, style much twisted, bearded down the side; pod 2-3 by  $\frac{5}{8}$ - $\frac{3}{4}$  in., upper suture recurved, lower rounded, oblong, seeds 2-4. large, white or mottled. The young beans are cooked like French beans, when older they are shelled, the seeds alone are boiled and eaten.

**Phaseolus vulgaris,**  
**French or Kidney**  
**Bean,**  
*Bakla, loba, babri.*

LEGUMINOSÆ.  
F. B. I. ii. 200.  
The Plains to  
7,000 ft.  
Cultivated.

like the last species, but annual, flowers white, pink, or lilac, longer, racemes few-flowered, bracteoles persistent, ovate, pods 4-6 in., linear, straight. Cultivated for its green pods.

**Phaseolus Mungo,**  
*var. radiatus,*  
**Green Gram,**  
*Mung.*

LEGUMINOSÆ.  
F. B. I. ii. 203.  
The Plains to  
7,000 ft.

like the last species, but more hairy, stipules ovate, leaflets rarely lobed, flowers yellow, crowded in a round raceme, pods much smaller, a little recurved, seeds green, yellow or black. Cultivated for its seeds which are eaten as *dal*.

**Phaseolus**  
**calcaratus,**  
*Ghurush.*

LEGUMINOSÆ.  
F. B. I. ii. 203.  
The Plains,  
7,000 ft.  
Valleys below Simla  
(Collett).  
Brogh.

like the last species, but stipules lanceolate, racemes not round, bracteoles linear, seeds red or cream colour. Cultivated both for food and fodder.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Vigna Catiang**,  
var. **sinensis**,  
*Lobia, rawan*.  
LEGUMINOSÆ.  
F. B. I. ii. 205.  
The Plains.  
Baluchistan  
(Hughes-Buller).

annual, smooth, twining; leaves of 3 pinnate leaflets, leaflets 3-6 in., broadly or narrowly ovate, entire or slightly lobed stipules  $\frac{1}{3}$ - $\frac{1}{2}$  in., ovate-lanceolate, persistent; flowers 1 in., yellow or reddish, few in almost rounded racemes, calyx  $\frac{1}{2}$  in., bell-shaped, teeth sharp-pointed, corolla far-protruding, keel not lobed, stamens 10, all united but the upper one, style long, thread-like, not twisted; pod 4-24 in. long, linear, slightly constricted between the seeds, 10-15-seeded. Cultivated with millets in the *kharif* for its seeds as food, and its stalks and leaves for fodder.

**Vigna vexillata**,  
LEGUMINOSÆ.  
F. B. I. ii. 206.  
The Plains to  
8,000 ft.  
Simla, on grassy  
slopes (Collett).

root spindle-shaped, perennial, roughly hairy, twining or trailing; leaves of 3 leaflets, leaflets 2-6 in. long, broadly ovate or lanceolate, short- or long-pointed, rounded at the base, lateral almost sessile, end one stalked, stipules  $\frac{1}{3}$ - $\frac{1}{4}$  in., lanceolate; flowers 1 in., reddish-purple, 2-4, on very long stalks, bracteoles needle-like, calyx  $\frac{1}{2}$  in., silky, bell-shaped, teeth 5, lanceolate, corolla much protruded, standard circular, spreading, keel beaked, much incurved, blunt, not spiral, stamens 10, all united but the upper one; pod 3-4 in., slender, 10-15-seeded.

**Clitoria Ternatea**,  
*Aparajit*.  
LEGUMINOSÆ.  
F. B. I. ii. 208.  
The Plains.

perennial, woody, downy, slender; leaves 4 in. long, leaflets 3-7, 1-2 in. long, ovate or oblong, blunt, almost leathery, stipules small, thin, persistent; flowers  $1\frac{1}{2}$ -2 in., bright blue with orange or white centre, solitary, axillary, bracteoles large, blunt, calyx  $\frac{1}{2}$ - $\frac{3}{4}$  in., tubular, thin, teeth 5, lanceolate, corolla with spoon-shaped large standard, wings and incurved keel much shorter, stamens-10, all united, or all but one united, style incurved, flattened; pod 2-4 in., flattish, linear, slightly hairy, 6-10-seeded. This plant supplies a dye from the flowers and seeds, different parts are used medicinally, as emetics and cathartics like jalap. The plant is sacred to Durga.

**Dolichos Lablab**,  
*Sem, sembi, kala lobia*.  
LEGUMINOSÆ.  
F. B. I. ii. 209.  
The Plains to  
6,000 ft.

perennial or annual, nearly smooth, twining, root tuberous; leaves 4-12 in. long, stalks 2-8 in., leaflets 3, 2-6 in. long, ovate, short-pointed, entire, base wedge-shaped, stipules  $\frac{1}{2}$  in., lanceolate; flowers  $\frac{3}{5}$  in. white or pink, in loose racemes, 6-9 in. long, on stalks 5-8 in. long, bracteoles oblong, calyx  $\frac{1}{2}$  in., bell-shaped teeth 5, short, triangular, corolla much protruded, keel blunt or beaked, stamens 10, all but upper one united, style thickened upwards; pod  $1\frac{1}{2}$ -2 in., flat, linear or oblong, recurved, tipped with the style base, seeds 3-5. Cultivated for its green pods.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Dolichos biflorus,**  
**Horse Gram,**  
*Kulti, kulat.*

LEGUMINOSÆ.

F. B. I. ii. 210.

The Plains to  
5,000 ft.Valleys below Simla  
(Collett).

like the last species, but leaves smaller, flowers yellow, one or two almost sessile in the axils of leaves. The seeds are eaten but are indigestible, the stems and leaves are used for fodder.

**Atylosia mollis,**

LEGUMINOSÆ.

F. B. I. ii. 213.

Himalaya,  
2-6,000 ft.Valleys below Simla,  
Haripur (Collett).  
Chamba.

perennial, densely velvety or felted, stems long, twining; leaves of 3 leaflets, with resinous dots and felted beneath, leaflets 1-2 in., ovate, nearly equal, lateral almost sessile, end one stalked, stipules minute, soon falling off; flowers 1-1½ in., yellow, in axillary racemes, calyx ⅜ in., grey, downy, teeth 5, almost equal, short-pointed, lowest longest, corolla twice the calyx, remaining till the pod is developed, standard circular, spreading, keel blunt, slightly incurved, stamens 10, all united but upper one, style thread-like, incurved, smooth; pod 1½-2 in., oblong, flat, grey-velvety, grooves between the seeds, tipped with the style base, seeds 8-10.

**Atylosia**  
**scarabæoides,**

LEGUMINOSÆ.

F. B. I. ii. 215.

The Plains to  
6,000 ft.

like the last species, but less velvety, branches often trailing, leaflets smaller, flowers smaller, in axillary clusters corolla soon falling off, pod smaller, densely hairy, seeds 4-6.

**Atylosia platycarpa,**

LEGUMINOSÆ.

F. B. I. ii. 216.

Himalaya,  
1-8,000 ft.

Simla (Collett).

like the last species, but more slender, leaflets circular flowers a little larger, corolla soon falling off, as in the last species.

**Rhynchosia aurea,**

LEGUMINOSÆ.

F. B. I. ii. 221.

The Plains to  
3,000 ft.

Kangra Valley.

annual, stems very slender, widely trailing, covered with fine and spreading hairs; leaves with 3 pinnate leaflets, stalks 1-3 in., leaflets ½-2 in. across, ovate with a broad tip, end one stalked, stipules minute, lanceolate; flowers ⅔-½ in., bright yellow, in close many-flowered short-stalked racemes; calyx teeth bristle-like, lowest longest, corolla hardly projecting, keel incurved, not beaked, stamens 10 all united but the upper one, style long, thread-like, much incurved; pod ⅔-½ in. across, round, thin-walled, tipped with the style base, 2-seeded, with a faint line showing between the seeds, seeds with a waxy appendage.



## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

- Rhynchosia minima**, like the last species, but twining, stem very slender, leaflets smaller, circular, flowers smaller, corolla much exserted, twice the calyx.  
 LEGUMINOSÆ.  
 F. B. I. ii. 223.  
 The Plains to 4,000 ft.  
 Sutlej Valley (Collett).
- Rhynchosia Falconeri**, like the last species, but more or less hairy, raceme long-stalked, pod 1 in.  
 LEGUMINOSÆ.  
 F. B. I. ii. 224.  
 Shali, 7,500 ft. (Collett).
- Rhynchosia himalensis**, like the last species, but surface sticky, leaflets long-pointed, flowers yellow with purple veins.  
 LEGUMINOSÆ.  
 F. B. I. ii. 225.  
 Himalaya, 3-6,000 ft.  
 Simla (Collett).  
 Murree.
- Rhynchosia sericea**, like the last species, but stems thick, leaflets larger, flowers dark red.  
 LEGUMINOSÆ.  
 F. B. I. ii. 225.  
 Himalaya, 2-6,000 ft.  
 Simla, Mashobra (Collett).
- Flemingia congesta**, see Prostrate Herbs, Alternate, Stipulate, Compound.  
 var. **semialata**,
- Flemingia vestita**, see Prostrate Herbs, Alternate, Stipulate, Compound.
- Cæsalpinia Bonducella**, perennial, woody, branches, leaf stalks and flower stalks covered with short hard yellow prickles; leaves 12-18 in. long, twice pinnate, pinnæ 12-16, leaflets 12-20½ in. long, very shortly stalked, oblong, blunt, thin, stipules divided; flowers ½-¾ in., yellow, many in dense axillary simple or branched racemes, bracts linear, projecting beyond the buds, recurved, calyx rusty-felted, 5-parted, lobes oblong, lowest largest, concave, overlapping, petals 5,  
**Fever Nut**,  
*Katkaranj*.  
 LEGUMINOSÆ.  
 F. B. I. ii. 254.  
 The Plains to 6,000 ft.

## CLIMBING PLANTS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

circular, spreading, upper smallest and innermost stalked, stamens 10, free; pod 2-3 in., oblong, densely covered with prickles, tipped with the style, seeds 1 or 2, round or ovoid,  $\frac{3}{4}$  in., shining, hard. The powdered seeds are used as a febrifuge, and the seeds are made into necklaces and rosaries.

**Cæsalpinia sepiaria,****Mysore Thorn,***Urn, arlei.*

LEGUMINOSÆ.

F. B. I. ii. 256.

The Plains to  
4,000 ft.

Sutlej Valley,

Basantpur, Subathu

(Collett).

like the last species, but prickles pale brown, not yellow, flowers larger; racemes long-stalked, not branched, stamens woolly at the base, longer than the petals, pods longer, 3-5 in., smooth, with a wing on one side, not prickly, seeds 4-8, flattened mottled.

**Acacia Intsia,***Arhai-ka-bel.*

LEGUMINOSÆ.

F. B. I. ii. 297.

The Plains to  
3,000 ft.

perennial, downy, prickles minute, hooked, numerous, often in vertical lines; leaves 2-pinnate, 10-18 in. long, pinnæ or side branches of main leaf stalk 12-16, leaflets 16-24,  $\frac{1}{4}$ - $\frac{1}{2}$  in., strap-shaped-oblong, stipules soon falling off; flowers  $\frac{1}{2}$  in., pale yellow, in dense round heads,  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., forming large terminal branching racemes, bracts minute, lanceolate, calyx broadly funnel-shaped, 4- or 5-toothed or lobed, petals 4 or 5, more or less united, stamens 50 or more, projecting, free or united at the base; pod 4-6 by  $\frac{3}{4}$ - $1\frac{1}{4}$  in., straight, strap-shaped, 8-12-seeded, stalked—Var. *Cæsia*, only differs in the number of leaflets, 40-60.

**Rubus niveus,**

see Shrubs, Erect, Alternate, Stipulate, Compound.

**Rosa moschata,***Kuji, karir.*

ROSACEÆ.

F. B. I. ii. 367.

Himalaya,

4-8,000 ft.

Simla (Collett).

perennial, smooth or nearly so, covered with scattered stout, hooked prickles; leaves 3-6 in., leaflets 3-7, 1-3 in., ovate, nearly equal, toothed, short-pointed, stipules united to the leaf stalks, glandular, awl-shaped; flowers  $1\frac{1}{2}$ -2 in. diam., yellowish-white, fragrant, in large branched velvety, not prickly, clusters, bracts awl-shaped, calyx small, ovoid, lobes 5,  $\frac{1}{2}$  in., lanceolate, long-pointed, often pinnately divided, bent back after flowering, shorter than the petals, petals 5, large, spreading, circular, ovate with broad tip, stamens many, styles united into a column projecting far beyond the calyx tube; fruit  $\frac{1}{2}$  in. diam., almost round, dark brown, consisting of many long hairy achenes, enclosed in the fleshy calyx tube.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Schizandra  
grandiflora,**

MAGNOLIACEÆ.  
F. B. I. i. 44.  
The Himalaya,  
east of the Sutlej,  
6-10,000 ft.  
Simla, Jaku,  
Matiana, Narkanda  
(Collett).

perennial, woody, smooth, branches long, slender, twining; leaves 3-6 by 1-2 in., ovate or oblong-lanceolate, long-pointed, alternate or clustered, teeth small, distant, rather fleshy, stalks and veins beneath red; flowers 1 in. diam., white, round, solitary, fragrant, on stalks 1-2 in. long, axillary or in the axils of scales near the base of short lateral leafy branches, sepals 3, petal-like, petals 6, waxy, white often tinged with pink, ovate, concave, outer smaller, male flowers, stamens 40, small, united below into a column, female flowers larger, sepals more brightly coloured, ovaries many, minute, sessile on a column, in fruit lengthening to 6-9 in. with many round sessile 2-seeded red berries  $\frac{1}{2}$  in. diam.

**Cocculus laurifolius,**

see Trees, Alternate, Exstipulate, Simple.

**Cocculus villosus,**

*Hier, kursan.*  
MENISPERMACEÆ.  
F. B. I. i. 101.  
The Plains to  
3,000 ft.  
Giri Valley  
(Collett).  
Baluchistan  
(Hughes-Buller).

perennial, grey-felted, hairy; leaves 2-3 in. long, ovate or ovate-oblong, sometimes 3-lobed, hairy, stalk  $\frac{1}{2}$  in.; flowers minute, male few, narrow in axillary branching racemes, 1-1 $\frac{1}{2}$  in. long, female 1-3, sessile at the end of short axillary stalks, sometimes in racemes, sepals 6, in 2 series, outer smaller, petals 6, smaller than the sepals, usually auricled, in male flowers stamens clasped by the petals, 6, free, anthers 4-lobed, in female flowers staminodes 6, ovaries 3, style simple; drupes  $\frac{1}{8}$  in., dark purple, laterally flattened, stone beautifully moulded. A bluish-purple ink is made from the fruit juice, the roots and leaves are used in medicine as a demulcent, a laxative and an alterative.

**Cocculus Leæba,**

*Vallur, parvatti.*  
MENISPERMACEÆ.  
F. B. I. i. 102.  
The Plains to  
3,000 ft.  
Valleys below Simla  
(Collett).  
The Park,  
Rawalpindi  
Chakwal (Douie)  
Baluchistan.  
(Lace).

like the last species, but leaves linear-oblong, male flowers in sessile axillary clusters, female 1-3, sessile at the end of short axillary stalks; the plant is used locally in the treatment of malarial fever.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES,

## PETALS UNUNITED.

- Stephania elegans**, perennial, smooth, branches angled, slender; leaves  
 MENISPERMACEÆ.  $2\frac{1}{4}$ -4 by  $1-2\frac{1}{2}$  in., triangular-ovate, entire, short-pointed,  
 F. B. I. i. 103. base rounded, pale beneath, stalk from the middle of  
 Himalaya, the blade; flowers  $\frac{1}{10}$  in., purple, in axillary umbels, solitary  
 east of the Sutlej, or several in a long-stalked cluster, male flowers sepals 6,  
 6-7,000 ft. long-pointed, petals 3, thick fleshy ovate with a broad  
 Valleys below Simla tip, stamens 6, united into a column, anthers round the  
 (Collett). dilated top, female flowers sepals 3, petals 3, style 3-  
 branched; drupe small, red, smooth, round, stone flattened,  
 ed, horse shoe-shaped, sides hollow, perforated.
- Stephania rotunda**, like the last species, but roots tuberous, leaves round,  
 MENISPERMACEÆ. flowers yellow.  
 F. B. I. i. 103. The Plains to  
 6,000 ft.  
 Valleys below Simla  
 (Collett).
- Cissampelos Pareira**, perennial, velvety or felted; leaves 1-4 in. across,  
*Dakh nirbisi, katori.* circular or broadly ovate, stalk long, attached to the under  
 MENISPERMACEÆ. surface of the blade; flowers small, male flower in stalked  
 F. B. I. i. 103. branched axillary clusters or on long axillary stalks, each  
 The Plains to cluster in the axil of a small leaf-like bract, sepals 4, hairy,  
 6,000 ft. ovate, spreading, petals united in a 4-lobed cup, stamens 4,  
 Valleys below Simla united in a short column, anthers round the margin of the  
 (Collett). summit, female flowers crowded in long axillary racemes  
 in the axils of round bracts, sepal 1, velvety, broadly ovate,  
 petal 1, opposite the sepal, smaller, deeply lobed, style  
 3-fid; drupe  $\frac{1}{8}$  in., scarlet, hairy, round. The bark and  
 leaves are used in medicine, the root, *katori*, however, is  
 more esteemed, being used as a demulcent, diuretic and  
 tonic.
- Mærua arenaria**, perennial, woody, smooth or velvety; leaves  $\frac{1}{2}$ -3 in.,  
 CAPPARIDACEÆ. broadly ovate, short-pointed, blunt or notched; flowers  
 F. B. I. i. 171.  $\frac{2}{3}$ -1 in. long, white, in terminal clusters or on lateral shoots,  
 The Plains to calyx funnel-shaped, lobes 4, valvate, petals 4, lanceolate,  
 2,000 ft. short-pointed, smaller than the calyx lobes, stamens  
 The Park, many, protruding, placed upon the column bearing the  
 Rawalpindi, Delhi. ovary; berry 2-5 in. long, fleshy, deeply contracted between  
 the 2 seeds.
- Celastrus paniculata**, see Climbing Plants, Alternate, Stipulate, Simple.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Sabia campanulata,**

SABIACEÆ.

F. B. I. ii. 1.

Himalaya,  
5-9,000 ft.,  
east of the Sutlej,  
Mashobra,  
Narkanda  
(Collett).

perennial, smooth, branches always have bud scales at their base; leaves 3-7 in. long, oblong-lanceolate, long-pointed, netted below; flowers  $\frac{3}{4}$  in. diam., brown-purple, bell-shaped or round, axillary, solitary, stalks 1-2 in., club-shaped, calyx 5-parted, very short, lobes almost equal, overlapping, petals 5,  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, ovate, concave, blunt, stamens 5, styles 2, simple, erect, more or less touching, tips recurved; drupe  $\frac{1}{4}$  in. diam., round, solitary or in pairs, wrinkled, flattened, stone 1-seeded.

**Hedera Helix,**

Ivy,

*Kuri, kuroi, karbaru.*

ARALIACEÆ.

F. B. I. ii. 739.

Himalaya,  
6-10,000 ft.  
Simla (Collett).  
The Salt Range.

perennial, stem smooth, climbing by means of many small rootlets; leaves 3-4 in., linear-lanceolate, heart-shaped-ovate, entire or lobed, stalk  $\frac{1}{2}$ -2 in.; leaves on barren branchlets more lobed and smaller than those on flowering branches; flowers yellow-green, small in stellately hairy umbels, solitary, or 2 or 3 together, sometimes compound, bracts triangular, bracteoles minute or none, calyx not toothed, petals 5, valvate, stamens 5, styles united; fruit  $\frac{1}{4}$  in. diam., smooth, round, yellow turning black.

**Smilax parvifolia,**

LILIACEÆ.

F. B. I. vi. 304.

Himalaya,  
5-8,000 ft.  
Simla (Collett).  
Kashmir.

perennial, rootstock thick, creeping, branches round, smooth, without prickles, often zigzag; leaves  $2\frac{1}{2}$ - $3\frac{1}{2}$  by  $1\frac{1}{4}$ - $1\frac{3}{4}$  in., broadly lanceolate, base heart-shaped, long-pointed, waxy-green below, tendrils 2, on the top of the leaf stalk sheaths; flowers minute, purple, on solitary stalked axillary umbels, male and female on different plants, bracts many, sepals 3, linear-oblong, petals 3, narrower, male flowers, stamens 6, shorter than the sepals and petals, female flowers, staminodes 3, stigmas 3, sessile, recurved; berry  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam., round, blue black, seeds usually 2.

**Smilax vaginata,**

LILIACEÆ.

F. B. I. vi. 305.

Himalaya,  
6-9,000 ft.  
Simla, Jaku,  
Mahasu, Narkanda  
(Collett),  
Kashmir.

like the last species, but branches often mottled, leaves ovate or almost round, no tendrils, no bracts, in female flowers 6 staminodes.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Smilax aspera,**  
LILIACEÆ.  
F. B. I. vi. 306.  
Himalaya,  
4-7,000 ft.  
Simla (Collett).  
Kashmir.

like the last species, but branches grooved, more or less prickly, leaves usually mottled, margins, nerves, and stalks sometimes prickly, tendrils long, flowers sweet-scented, bracts minute, berries red at first, then blue-black.

## PETALS UNITED.

**Cissampelos Pareira,**

see Climbing Plants, Alternate, Exstipulate, Simple, Petals ununited.

**Tricosanthes dioica,**  
*Palwal.*  
CUCURBITACEÆ.  
F. B. I. ii. 609.  
The Plains to  
3,000 ft.

annual, stems rough, woolly, slender, climbing by lateral 2-fid tendrils; leaves 3 by 2 in., ovate-oblong, hollow at the base, gap-toothed, not lobed, stiff, rough on both sides, stalk  $\frac{3}{4}$  in.; flowers  $1\frac{1}{2}$ -3 in white, male and female on different plants, male flowers not racemed, woolly outside, calyx tube  $1\frac{3}{4}$  in., narrow, teeth 5, linear-erect, corolla 5-fid nearly to the base, lobes long-fringed, stamens 3, anthers free, long-linear, female flower solitary calyx and corolla as in the male; fruit 2- $3\frac{1}{2}$  in., orange-red when ripe, oblong, pointed, smooth, seeds  $\frac{3}{8}$ - $\frac{1}{2}$  in., many, flattened, corrugate on the margin. Cultivated for its fruit which is cooked as a vegetable; the root, leaves and juice of the fruit are used as a purgative, bitter tonic and febrifuge.

**Herpetospermum caudigerum,**

see Climbing Plants, Alternate, Exstipulate, Lobed.

**Cephalandra or Coccinia indica,**

see Climbing Plants, Alternate, Exstipulate, Lobed.

**Codonopsis rotundifolia,**  
CAMPANULACEÆ.  
F. B. I. ii. 432.  
Himalaya,  
7-11,000 ft.

perennial, twining, root tuberous; leaves 2 by  $\frac{1}{4}$  in., linear or ovate from a rounded base, toothed, slightly hairy or smooth, stalk  $\frac{3}{4}$  in.; flowers  $\frac{3}{4}$ - $1\frac{1}{4}$  by  $\frac{3}{4}$  in., purple or bright grey blue on solitary stalks 1-6 in., axillary, terminal, calyx-lobes 5,  $\frac{3}{4}$  by  $\frac{1}{4}$ - $\frac{1}{2}$  in., often toothed, corolla widely bell-shaped, shortly 5-lobed, stamens 5, free, style cylindric, stigma 3-lobed; capsule  $\frac{1}{2}$ - $\frac{3}{4}$  in. broad, beak  $\frac{1}{4}$  in., fleshy, then dry, seeds  $\frac{1}{10}$  in., very many, netted, slightly flattened, brown.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Embelia Ribes,***Babrung.*

MYRSINACEÆ.

F. B. I. iii. 513.

The Plains to

5,000 ft.

perennial; leaves 3 by  $1\frac{1}{4}$  in., narrowed at both ends. entire, smooth, long-pointed, base wedge-shaped, stalk  $\frac{1}{3}$  in.; flowers  $\frac{1}{2}$  in., white, in grey velvety branching terminal and axillary racemes, minor flower stalks longer than the flowers, calyx 5-lobed, persistent, petals 5, overlapping in bud, stamens 5; fruit small, round, one, rarely two-seeded. The powdered seeds form an excellent anthelmintic.

**Ipomœa Bona-Nox,***Moon flower,*

CONVOLVULACEÆ.

F. B. I. iv. 197.

The Plains to

4,000 ft.

Cultivated, from

Tropical America.

annual, smooth or rough with projections, twining; leaves 3-8 in., heart-shaped, ovate, short-pointed, smooth, entire, or angular, or lobed, stalk 3-6 in. long; flowers 3 by 3-5 in., white, fragrant on 1-5-flowered stalks, 2-6 in. long, bracts soon falling off, calyx deeply 5-lobed, lobes  $\frac{1}{2}$  in., ovate, blunt or short-pointed, corolla funnel-shaped, tube 3 by  $\frac{1}{3}$  in., corolla mouth with lobes 3-5 in. across, lobes shallow, 5 plaits, stamens 5 on the corolla just protruding, style thread-like, stigma 2-lobed; capsule 1 in., ovoid-oblong, narrowed upwards, seeds 4, smooth.

**Ipomœa muricata,**

CONVOLVULACEÆ.

F. B. I. iv. 197.

Himalaya,

1-5,000 ft.

Kangra.

like the last species, but a weaker plant usually rough with projections, leaves 2-4 in., flowers much smaller, corolla tube 1-2 by  $\frac{1}{3}$  in., flower stalk much thickened in fruit.

**Ipomœa purpurea,**

CONVOLVULACEÆ.

F. B. I. iv. 200.

The Plains to

7,000 ft.

Valleys below Simla

(Collett).

Cultivated.

like the last species, but hairy, leaves a little larger, flowers pink, corolla tube short, capsule  $\frac{1}{4}$  in., 3-celled, 6-4-seeded.

**Ipomœa barlerioides,**

CONVOLVULACEÆ.

F. B. I. iv. 201.

The Plains to

4,000 ft.

like the last species, but leaves ovate-oblong, stalk short or none, flowers solitary, larger, purple, or purplish white, capsule  $\frac{1}{2}$  in., 2-celled.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Ipomæa Batatas,**  
**Sweet Potato,**  
*Shakarkand.*

CONVOLVULACEÆ.

F. B. I. iv. 202.

The Plains.

Cultivated.

Introduced from

America.

smooth or slightly hairy, tubers red, white or rarely yellow, stem usually hairy, often prostrate, leaves ovate, heart-shaped, short-pointed, angular, more or less lobed, flowers 2 in. or more, purple or many-flowered, long stalks, corolla widely tubular, funnel-shaped, stamens included, capsule 4-celled, widely cultivated and eaten; for other characters see the former species.

**Ipomæa eriocarpa,**  
*Bhanwar.*

CONVOLVULACEÆ.

F. B. I. iv. 204.

The Plains to

4,000 ft.

Valleys below Sim'a,

(Collett).

Koti.

hairy, twining, leaves  $2\frac{1}{2}$  by 1 in., oblong-heart-shaped, short-pointed, stalk 1 in., flowers  $\frac{2}{3}$  in., pink, sessile in heads, bracts  $\frac{1}{2}$  in., hairy, calyx lobes like the bracts, but smaller, corolla bell-shaped, capsule  $\frac{1}{4}$  in., round, hairy, 2-celled; for other characters see the former species.

**Ipomæa chryseides,**

CONVOLVULACEÆ.

F. B. I. iv. 206.

The Plains to

4,000 ft.

Valleys below Simla

(Collett).

annual, smooth, twining much, sometimes prostrate, often rough with very small projections, leaves  $1\frac{1}{2}$  by  $1\frac{1}{4}$  in., broadly ovate, heart-shaped, entire, or 3-lobed, toothed, long-pointed, flowers  $\frac{1}{2}$ - $\frac{3}{4}$  in., yellow, in close clusters on stalks  $\frac{1}{2}$ -3 in. long, calyx lobes  $\frac{1}{2}$  in., finally spreading; capsule  $\frac{1}{4}$  or more, wall thick somewhat angular, seeds almost velvety; for other characters as the former species.

**Ipomæa obscura,**

CONVOLVULACEÆ.

F. B. I. v. 207.

The Plains to

3,000 ft.

like the last species, but flowers white or yellowish with a purple spot at the base, on few-flowered stalks, capsule ovoid, seeds densely brown-velvety.

**Ipomæa sepiaria,**

CONVOLVULACEÆ.

F. B. I. iv. 209.

The Plains.

like the last species, but perennial, flower stalks long, flowers larger, pale purple or white with a dark spot.

**Ipomæa aquatica,**

see Water Plants, Alternate, Exstipulate, Simple.

**Ipomæa cymosa,**

CONVOLVULACEÆ.

F. B. I. iv. 211.

The Plains to

4,000 ft.

like the last described species, but annual, leaves larger, heart-shaped or with forked base or oblong, blunt-pointed, flowers white or yellowish in compact clusters on short stalks.



## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Ipomæa Turpethum**, like the last species, but stem stouter, square, winged, flattened or almost round, leaves larger, ovate or oblong, *Chita bansa*. flowers in few-flowered clusters, capsule much larger, CONVULVULACEÆ. seeds smooth. The bark of the root, *turbud*, is superior F. B. I. iv. 212. to jalap without the nauseous taste of the latter. The Plains to 8,000 ft.
- Ipomæa pilosa**, like the last species, but hairy, leaves broadly ovate, CONVULVULACEÆ. often 3-lobed, white, woolly beneath, corolla small, purple, capsule smaller. F. B. I. iv. 213. The Plains to 3,000 ft. Valleys below Simla. Subathu (Collett). Koti.
- Calystegia hederacea**, see Prostrate Herbs, Alternate, Exstipulate, Simple.
- Convolvulus glomeratus**, stems distinctly twining; leaves and heads larger than var. *volubilis*, CONVULVULACEÆ. *Convolvulus glomeratus*, to which refer under Herbs, Erect, Alternate, Exstipulate, Simple, Entire. F. B. I. iv. 209. The Plains.
- Convolvulus arvensis**, annual, smooth or almost velvety, stems twining, sometimes prostrate; leaves 1-3 in., ovate-heart-shaped, base **Lesser Bindweed**, lobed or forked, stalk  $\frac{1}{4}$ - $\frac{3}{4}$  in.; flowers  $\frac{3}{4}$ -1 by 1 in., purple *Hiranpaddi*. with white or yellowish centre, solitary or 2-3 on an axillary stalk, bracts small, calyx deeply 5-lobed, lobes ovate, CONVULVULACEÆ. blunt, corolla tube very short, mouth wide, funnel-shaped, almost 5-lobed, folding at the angles, stamens 5 on the F. B. I. iv. 219. the corolla tube at the base, unequal, style single, dividing into 2 short linear stigmas; capsule  $\frac{1}{4}$ - $\frac{1}{3}$  in., 4-valved, 7,000 ft. Simla (Collett). Lahore, Delhi, Rawalpindi. smooth, seeds 4. A common weed of cultivation. The root, *hiranpaddi*, is used as a substitute for jalap.
- Porana paniculata**, perennial, lofty twining climber, densely softly felted' CONVULVULACEÆ. branches long, drooping; leaves 3-5 by 2-3 in., ovate, heart-shaped, stalked, entire, long-pointed, velvety above, felted beneath; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., white, crowded in terminal F. B. I. iv. 222. drooping branching racemes, bracts persistent, calyx The Plains to 3,000 ft. lobes 5,  $\frac{1}{2}$  in., 3 enlarging in fruit, corolla bell-shaped, very shortly lobed, smooth, stamens 5, style very short, stigma barely 2-lobed; capsule  $\frac{1}{2}$  in. diam., round, hairy, 3 enlarged calyx lobes,  $\frac{3}{4}$  by  $\frac{1}{4}$  in., blunt, velvety, 2 other lobes  $\frac{1}{4}$  in., linear, seed one.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES,

## PETALS UNITED.

**Porana racemosa,**  
**Snowcreeper,**

CONVOLVULACEÆ.

F. B. I. iv. 222.

Himalaya,

2-6,000 ft.

Hathni Kund on  
the Jumna.

Koti.

Planted at Lahore  
in the Lawrence  
Gardens.

like the last species, but almost smooth, flowers deeply lobed, larger, in long racemes, calyx lobes all enlarged in fruit.

**Solanum Dulcamara,**

see Shrubs, Erect, Alternate, Exstipulate, Simple.

## PETALS NONE.

**Deeringia**  
**celosioides,**

AMARANTACEÆ.

F. B. I. iv. 714.

The Plains to

5,000 ft.

Koti.

perennial, branches long, arching, rambling; leaves 2-5 in., ovate or broadly lanceolate, stalked, long-pointed; flowers  $\frac{1}{8}$  in. diam., greenish-white in long branching compound racemes, calyx 5-parted, green, segments ovate, concave, spreading or reflexed, stamens 5, united below, style short, 3-parted; berry  $\frac{1}{4}$  in. diam., red, round, on the persistent calyx, seeds 3.**Ærua scandens,**

see Climbing Plants, Opposite, Exstipulate, Simple.

**Basella rubra.**

Poi.

CHENOPODIACEÆ.

F. B. I. v. 20.

The Plains.

annual, smooth, fleshy, twining, much branched; leaves 2-7 in. diam., broadly ovate, or heart-shaped, or circular, narrowed into the stalk, entire; flowers minute, red or white, sessile on axillary stalked, simple or branched spikes, 1-6 in. long, bracts minute, soon falling off, bracteoles 2, forming a cup united to the calyx, calyx 5-fid, fleshy, lobes short, incurved, stamens 5, on the tube mouth stigmas 3; fruit a berry, red, white or black, formed from the calyx lobes containing the round utricle, thin. Cultivated as a pot herb, also used medicinally as demulcent and diuretic.

**Tragia involucrata,**

Barhanta.

EUPHORBIACEÆ.

F. B. I. v. 465.

The Plains.

perennial, evergreen, twining, hairy or felted with stinging bristles; leaves 1-4 in., very varied in form, from linear-oblong to broadly ovate-heart-shaped, long-pointed, toothed, and from entire to deeply 3 fid or 3-partite with toothed almost pinnate lobes; flowers minute (male and female flowers separate, but in the same plant) in terminal axillary and leaf opposed racemes, 1-2 in., slender,

CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

PETALS NONE.

bracts small or minute, male flowers above in the racemes ; shortly stalked, calyx round, 3-partite, stamens 3, pistil-  
lode 3-fid, female flowers few, below in the raceme, calyx,  
lobes 6, overlapping, hairy, in fruit  $\frac{3}{4}$  in. diam., stiff, stel-  
lately spreading, oblong, pinnately divided ; capsule  $\frac{1}{3}$  in  
diam., cocci 3, 2-valved, seeds mottled. The root is used  
as an alterative and diuretic.

**Dioscorea deltoidea,**  
*Tar, kans.*

DIOSCOREACEÆ.

F. B. I. vi. 291.

Himalaya,

6-10,000 ft.

Simla, Narkanda

(Collett).

Jaku.

very like *Dioscorea glabra*, but leaves alternate, ovate-  
lanceolate, spikes solitary, male spikes long, calyx lobes  
broadly oblong ; for other characters see *Dioscorea glabra*  
under Climbing Plants, Opposite, Exstipulate, Simple.

**Dioscorea sativa,**

see Climbing Plants, Opposite, Exstipulate, Simple.

**Asparagus**  
**racemosus,**

see Leafless Plants, Petals None.

**Polygonatum**  
**cirrifolium,**

LILIACEÆ.

F. B. I. vi. 322.

Himalaya,

5-10,000 ft.,

east of the Sutlej.

Simla, Matiana,

Narkanda (Collett).

perennial, rootstock thick, creeping, annual stems un-  
branched, climbing by the tendril-like tips of the leaves,  
upper part zigzag, leafy, a seal-like mark is left on the  
rhizome when the annual stem comes off, hence the name  
Solomon's Seal ; leaves in circles of 3-6, 3-5 in. long, linear,  
narrowed to the tendril-like tips, sessile ; flowers  $\frac{1}{2}$  in.,  
white, often tinged with green or purple, drooping in axil-  
lary whorled, short, loose 2-4-flowered racemes ; flower  
stalks jointed near the top, calyx tubular, 6-lobed, petals  
none, stamens 6, inserted in the tube, very short, style  
linear ; berry  $\frac{1}{4}$ - $\frac{1}{2}$  in., round, blue-black, seeds few.

**Gloriosa Superba,**

see Climbing Plants, Opposite, Exstipulate, Simple.

CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

PETALS UNUNITED.

**Cocculus villosus,**

see Climbing Plants, Alternate, Exstipulate, Simple.

**Cocculus Leæba.**

see Climbing Plants, Alternate, Exstipulate, Simple.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Dicentra Roylei,**

FUMARIACEÆ.

F. B. I. i. 121.

Himalaya,

5-6,000 ft.

Simla (Collett).

root perennial, stems annual, slender, climbing by branched tendrils on the leaf-stalks; leaves 2-4 in., pinnately divided, segments  $\frac{1}{4}$ -1 in., ovate to linear-lanceolate, leaf-stalk often ending in a branched tendrils; flowers  $\frac{3}{4}$ -1 long, yellow, sometimes tinged purple, on stalks  $\frac{1}{2}$ -1 in., longer than the lanceolate membranous bracts, forming clusters on 2-4-flowered main stalks, sepals 2, small, soon falling off, petals 4, outer similar, oblong, concave, base dilated, tip hooded, inner narrow, stalked, keeled, stamens 6 in 2 bundles, opposite the outer petals, style long; capsule  $1\frac{1}{2}$  in. long, narrowly oblong, prolonged by the style, seeds black, shining, in 2 series, appendage small.

**Cardiospermum****Helicacabum,**

see Climbing Plants, Alternate, Stipulate, Compound.

**Hedera Helix,**

see Climbing Plants, Alternate, Exstipulate, Simple.

**Lagenaria vulgaris,****Bottle Gourd,***Kaddu, tumri, tumba.*

CUCURBITACEÆ.

F. B. I. ii. 613.

The Plains to

3,000 ft.

annual, velvety, tendrils 2-fid, stems stout, 5-angled; leaves up to 6 in., ovate or round, 5-angular or lobed, base notched, toothed, stalk long with 2 glands at the apex; flowers 2-4 in. diam., white, solitary, male and female on the same or different plants, male flowers on stalks to 6 in. long, female on stalks 1 in. long, male flowers, calyx tube  $\frac{1}{2}$  in. long, funnel-shaped, velvety, teeth 5, narrow, petals 5, 1-2 in. long, hairy on both sides, crumpled, ovate with a broad tip, stamens 3, anthers joined, enclosed, female flowers, calyx and corolla as in the male, style short with 3-fid stigmatic lobes; fruit up to 18 in. long, bottle or dumb-bell shaped, thick, almost woody, seeds  $\frac{3}{4}$  by  $\frac{3}{8}$  in.,  $\frac{1}{8}$  in. thick, with a groove parallel to and near the margin, white. The young fruit is cooked as a vegetable, the dried shell is used to hold water and also to form the base of a stringed instrument, *sitar*.

**Luffa ægyptiaca,***Ghia-tori.*

CUCURBITACEÆ.

F. B. I. ii. 614.

The Plains to

3,000 ft.

annual, hairy, tendrils 3-fid; leaves 4 in. diam., kidney-shaped-circular, 5-angled, or lobed, toothed, usually rough, dotted on both sides, stalk 2 in., without gland at the apex; flowers  $1\frac{1}{2}$ -2 in. across, yellow often with raised hairy green veins, male and female flowers on the same plant in the same axils, male flowers clustered on a long stalk with short lesser stalk to each, often with a small, ovate, entire sticky bract, calyx tube top-shaped, lobes 5, triangular or lanceolate, petals 5, ovate with a broad tip, stamens 5, anthers free, protruding, female flowers solitary

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

on a stalk 1-3 in. long, calyx tube projecting above the ovary, lobes and petals as in the male, stigma 3-lobed; fruit 5-12 in. long, club-shaped, smooth, slightly 10-ribbed, seeds  $\frac{3}{8}$  in. long, many, narrowly winged, usually black, smooth or slightly knobby. Cultivated for its young fruit which is eaten as a vegetable: the dry fruit consists of a net work of fibres and is used as a flesh brush.

**Luffa acutangula,***Kali tori.*

CUCURBITACEÆ.

F. B. I. ii. 615.

The Plains to

3,000 ft.

very like the last species, but stamens 3, fruit smaller, sharply 10-angled. The young fruit is eaten like the last species.

**Cucumis trigonus,***Bislumbhi,**indrayan.*

CUCURBITACEÆ.

F. B. I. ii. 619.

The Plains to

3,000 ft.

Baluchistan

(Frère).

root perennial, stems annual, rough, tendrils short, unbranched; leaves 1-2 in., palmately 3-7-lobed, or 5-angled, toothed, stalks  $\frac{1}{2}$ -1 $\frac{1}{2}$  in.; flowers  $\frac{1}{2}$  in. diam., small, yellow, males and females on the same plant, males clustered in the axils, females solitary, all shortly stalked, stalks  $\frac{1}{2}$ -1 in., in male flowers calyx tube top-shaped, or bell-shaped, lobes 5, petals 5, stamens 3, anthers free, in female flowers calyx and petals as in the male, style short, stigmas 3, blunt; fruit 1 $\frac{1}{2}$  in. long, ovoid, or slightly 3-angled, 3-striped or 10-striped. The fruit is sold as a drug and used as a purgative like Colocynth.

**Cucumis****prophetarum,**

CUCURBITACEÆ.

F. B. I. ii. 619.

The Plains in the

south of the Punjab.

Baluchistan

(C. B. Clarke).

like the last species, but stems whitish, leaves 3-5-lobed, smaller, fruit smaller, 1 in. long, green with pale white stripes and soft bristles.

**Cucumis Melo,****The Melon,***Kharbuza.*

CUCURBITACEÆ.

F. B. I. ii. 620.

The Plains to

2,000 ft.

Cultivated.

like *Cucumis trigonus*, but leaves larger, 3 in. diam., male flowers in clusters, fruit round, ovoid, long, or twisted. Two varieties are much cultivated—*C. utilissimus*, *Kakri*, the fruit is oval to narrowly cylindrical and twisted to 3 ft. long, eaten raw and cooked, the seeds are pounded and eaten as meal. *C. Momordica*, *Tuti*, *phunt*, fruit 1-2 ft. long, 3-6 in. diam., weighs 4-8 lbs., is cooked as a vegetable when young.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE LOBED LEAVES,

## PETALS UNUNITED.

**Cucumis sativus,**  
**The Cucumber,**  
*Khira.*

CUCURBITACEÆ.  
F. B. I. ii. 620.  
The Plains to  
4,000 ft.

like the last species, but leaves larger, stalk longer, ovary covered with prickles, fruit 12 by 1½ in., yellowish-green, slightly triangular, cylindrical. Two varieties—one with an oval fruit ripens before the rains and the other with a long fruit ripens towards the middle and end of the rains.

**Citrullus colocynthis,**  
**Colocynth,**  
*Makal.*

CUCURBITACEÆ.  
F. B. I. ii. 620.  
The Plains to  
2,000 ft.  
Baluchistan  
(Aitchison).

perennial, rough, stems angular, trailing, tendrils 2-fid; leaves 2½ in. by 2 in., ovate, 3-7-lobed, deeply divided, middle segment compound, pinnatifid, stalk 1 in.; flowers 1 in. diam., yellow, solitary, male and female on the same plant, in male flowers calyx tube bell-shaped, lobes 5, petals 5, ¼ in., ovate with a broad tip, stamens 3, anthers scarcely joining, in female flowers calyx and corolla as in male flowers, style short, stigmas 3, kidney-shaped; fruit up to 3 in. diam., round, variegated with dark green and white, pulp dry, spongy, bitter seeds ¼-½ in., not margined. Colocynth is obtained from the seed-bearing portion, oil from the seeds and the root is used as medicine.

**Citrullus vulgaris,**  
**The Water Melon,**  
*Tarbuza.*

CUCURBITACEÆ.  
F. B. I. ii. 621.  
The Plains to  
2,000 ft.  
Baluchistan  
(Aitchison);

very like the last species, but a great climber, young shoots woolly at the tips, leaves much larger, more divided, petals greenish without, fruit up to 10 in. diam. oblong with rounded ends, coat greenish waxy, clouded, flesh red, juicy, seeds margined. Much cultivated; the fruit of the wild plant is bitter or sweet.

## PETALS UNITED.

**Tricosanthes**  
**palmata,**  
*Lal indrayan.*

CUCURBITACEÆ.  
F. B. I. ii. 606.  
The Plains to  
5,000 ft.  
In moist jungle.  
Valleys below Simla  
(Collett).  
Dunera below  
Dalhousie.

perennial, rough, stem angular, tendrils 3-fid, lateral single spiral; leaves 2-6 in. diam., more or less deeply 3-7-lobed, base notched, toothed, roughly velvety, stalks 1-3 in.; flowers 1½-3 in. diam., white, male and female usually on different plants, male flowers on 2 axillary stalks, one with a single flower, soon falling off, the other with a raceme, short at first, then growing to 6-10 in., bracts sheathing the raceme, broadly ovate, margins deeply toothed, calyx tube ½ in., funnel-shaped, lobes 5, lanceolate, toothed, corolla 5-fid nearly to the base, lobes 5, margins long fringed, stamens 3, short, female flowers solitary, axillary, shortly stalked, calyx and corolla as in the male, style

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

1 in., 3-cleft; fruit  $1\frac{1}{2}$ -2 in. diam., round, smooth, red striped with yellow, seeds many, in green pulp. The fruit and roots are medicinal.

**Tricosanthes eucumerina,**  
*Jangli chichinda.*  
CUCURBITACEÆ.  
F. B. I. ii. 609.  
The Plains.

like the last species, but annual, stem twining, leaves a little smaller, almost kidney-shaped, stalks  $\frac{3}{4}$  in., fruit ovoid-conical, streaked with white, then yellow, seeds in red pulp, corrugated. The fruit is eaten as a vegetable and the young shoots as a pot herb.

**Tricosanthes anguina,**  
**Snake gourd,**  
*Chichinda.*  
CUCURBITACEÆ.  
F. B. I. ii. 610.  
The Plains.  
Cultivated.

very like the last species, but the fruit is long, 1-3 ft., cylindrical narrow, sometimes contorted, in colour like *T. Cucumerina*. The fruit is eaten as a vegetable.

**Herpetospermum caudigerum,**  
CUCURBITACEÆ.  
F. B. I. ii. 613.  
Himalaya,  
5-8,000 ft.,  
east of the Sutlej.  
Valleys below Simla  
(Collett).

annual, velvety, tendrils 2-3-fid; leaves 4-6 in. diam. ovate, little lobed, base notched, long-pointed, toothed, stalk 2-4 in.; flowers  $1\frac{1}{2}$ -2 in. diam., yellow, male and female flowers on different plants, male flowers racemed, main stalk 8 in., minor stalk 1 in., no bracts, calyx tube  $\frac{3}{4}$ -1 in. long, funnel-shaped, lobes 5, linear, corolla 5-lobed, almost to the base, lobes entire, stamens 3, short, anthers joined, female flowers solitary, shortly stalked, calyx and corolla as in the male, style  $\frac{1}{2}$  in., tip 3-cleft, stigmas 2-lobed; capsule 3 by  $1\frac{1}{2}$  in., ovoid, narrowed to both ends, opening by 3 valves, triangular, seeds 12,  $\frac{1}{2}$  in. long, flattened, minutely pointed at one end, something like a beetle, embedded in fibrous, almost dry pulp.

**Benincasa cerifera,**  
or **hispida,**  
**White Gourd, Melon,**  
*Petha.*  
CUCURBITACEÆ.  
F. B. I. ii. 616.  
The Plains.  
Cultivated.

annual, softly hairy, stems stout, angular, tendrils 2-fid; leaves 4-6 in. diam., kidney-shaped, round, base notched, more or less deeply 5-lobed, stalks 3-4 in. without glands; flowers large, yellow, solitary, without bracts. male and female on the same plant, male flowers on stalks 3-4 in., calyx tube bell-shaped, lobes 5, leaf-like, toothed, corolla 5-lobed, almost to the base, ovate with a broad tip, stamens 3, almost on the mouth of the tube, anthers free, protruding, female flowers calyx and corolla as in

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

the male, style thick, with 3 zigzag stigmas; fruit 12-18 in. long, oblong, fleshy, with a waxy bloom, seeds many, oblong, flattened. The fruit is sometimes eaten as a vegetable or cut into cubes crystallised and eaten as a sweetmeat.

**Momordica**  
**Charantia,**  
*Karela.*

CUCURBITACEÆ.  
F. B. I. ii. 616.  
The Plains to  
3,000 ft.  
Cultivated.

annual, young parts velvety, tendrils undivided; leaves 1-3 in. diam., circular, kidney-shaped, deeply cut into 5-7 narrow almost pinnatifid lobes, thin, lobes toothed with a short abrupt point on a straight edge narrowed to the base, stalks 1-3 in.; flowers 1 in. across, yellow, male and female on the same plant, male flowers solitary on slender stalks 2-4 in. long with a circular or kidney-shaped entire bract at or below the middle, calyx tube short, bell-shaped, lobes 5, ovate, short-pointed, corolla 5-lobed nearly to the base, lobes  $\frac{3}{8}$ - $\frac{3}{4}$  in., stamens 3, short, anthers at length free, female flowers solitary on stalks equal in length to the male one, with the bract near the base, style long, stigmas 3; fruit 1-5 in. long, orange yellow, ovoid narrowing to both ends, ribbed lengthways with rows of triangular tubercles, seeds  $\frac{1}{3}$  in., flattened, corrugate, on the margin, immersed in red pulp. The fruit is cooked and eaten as a vegetable, it is somewhat bitter.

**Momordica**  
**balsamina,**  
CUCURBITACEÆ.  
F. B. I. ii. 617.  
The Plains to  
3,000 ft.  
Cultivated.

like the last species, but leaves 3-5-lobed, lobes lobulate, bract on the male flower stalk near the top, toothed, not entire, variegated, no bract on female flower stalk, corolla lobes dark brown at the base, fruit a redder orange, seeds nearly smooth. The fruit is eaten as a vegetable, or as a pickle when young.

**Momordica dioica,**  
CUCURBITACEÆ.  
F. B. I. ii. 617.  
The Plains to  
5,000 ft.

like the last species, but perennial, roots tuberous, male and female flowers on different plants, leaves not so deeply lobed, male flower stalk 2-6 in., bracts near the top, cowl like, embracing the flower, calyx lobes oblong with a narrow tip, corolla lobes 1 in., stamens 2-anthered, 2-fid half way down, female flower stalk equal to the male, bract small, below the middle of the stalk, fruit shortly beaked, densely clothed with soft spines. The fruit when young is cooked in curries, the tuberous root is also cooked as a vegetable.



## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Cephalandra or  
Coccinia indica,**  
*Kanduri.*

CUCURBITACEÆ.

F. B. I. ii. 621.

The Plains to  
3,000 ft.

perennial, root tuberous, hardly hairy, tendrils undivided; leaves 2-4 in. diam., 5-angled, or lobed, rough, toothed, base notched, stalk 1 in.; flowers 1 in., white, solitary, without bracts, male and female on different plants, male flowers on a stalk 1 in. long, jointed below the flower, calyx tube bell-shaped, short, lobes 5, linear-oblong, reflexed, corolla bell-shaped, 5-lobed half way down, lobes long, triangular, stamens 3, anthers joined, protruding, female flowers on a stalk  $\frac{1}{4}$  in. long, calyx and corolla as in the male, style long with 3 bifid stigmas; fruit 1-2 by  $\frac{1}{2}$ -1 in., scarlet, ovoid or oblong, smooth, pulp red, seeds many, ovoid, flattened, margined, on section the fruit looks like a pomegranate. The fruit is cooked and eaten when young, when ripe it is eaten uncooked. This plant also supplies a drug used in diabetes.

**Cucurbita maxima,  
The Common Gourd  
or Spanish Gourd,**  
*Kadu.*

CUCURBITACEÆ.

F. B. I. ii. 622.

The Plains to  
4,000 ft.  
Cultivated.

annual, hairy, tendrils 2-4-fid; leaves 4-6 in. diam., ovate, stiff, 5-lobed, lobes rounded, sinus between lobes very shallow, base notched, stalk almost as long as the blade, hairs soft; flowers 3-4 in., yellow, all solitary, male and female flowers on the same plant, male flowers, stalk 4 in., calyx tube bell-shaped, 5-lobed, lobes lanceolate-linear, fleshy, corolla bell-shaped, 5-lobed almost half way down, stamens 3, inserted low in the corolla tube, anthers joined, female flowers, stalk  $1\frac{1}{2}$  in., calyx and corolla as in the male, style short, stigmas 3, bifid; fruit large, yellow, fleshy, oblong or flattened at both ends, stalk stout, corky, striated, not grooved, seeds many. The fruit is very commonly eaten as a vegetable and when ripe will keep good for months.

**Cucurbita Pepo,  
The Pumpkin,**

CUCURBITACEÆ.

F. B. I. ii. 622.

The Plains to  
4,000 ft.  
Cultivated.

like the last species, but leaf lobes sharp-pointed, sinus between lobes deep, hairs on leaf stalk stiff, stalk of fruit woody, strongly grooved.

**Cucurbita moschata,  
The Musk or Melon  
Pumpkin,***Sitaphal, mitha kadu.*

CUCURBITACEÆ.

F. B. I. ii. 622.

The Plains to  
4,000 ft.  
Cultivated.

like the last species, but leaves soft, hairs of leaf stalk soft, calyx tube very short or none, lobes spoon-shaped or leafy at the tips, fruit smaller, paler colour.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Bryonia** or **Bryonopsis laciniosa**, *Gargu-naru*.  
 Cucurbitaceæ.  
 F. B. I. ii. 622.  
 The Plains to 2,000 ft.

annual, rough or smooth, stems angular, slender, tendrils 2-fid; leaves 4-6 in., deeply 5-lobed, lobes 2-3 in., often rough and dotted above, sinus often broad or narrow, stalk as long as the blade, often rough with firm excrescences at the apex; flowers small, yellowish, male and female flowers on very short stalks clustered together in the same axils, male flowers, calyx tube widely bell-shaped, 5-toothed, teeth smooth, awl-shaped, corolla deeply 5-lobed, stamens 3, inserted low down in the calyx tube, anthers free, female flowers, calyx and corolla as in the male, style slender, 3-fid at the top; fruit  $\frac{3}{4}$  in. diam., sessile, often 2 or 3 together, green with white longitudinal stripes, seeds  $\frac{1}{4}$  in., ovoid, margin corrugated, often with excrescences on the faces. The young shoots are sometimes cooked as a vegetable, the plant when in fruit is used medicinally, as an aperient and tonic.

**Mukia scabrella**, or **Melothria maderaspatana**, *Gwala-kakri*.  
 Cucurbitaceæ.  
 F. B. I. ii. 623.  
 The Plains to 6,000 ft.  
 Mashobra (Collett).

annual, stem slender, angular, rough, tendrils unbranched; leaves 1-3 in., ovate-heart-shaped, 3-7-angled, not deeply lobed, toothed, long-pointed, very rough; flowers  $\frac{1}{4}$  in. diam., yellow, almost sessile, solitary, or in small clusters, male and female flowers on the same plant, male flowers, calyx bell-shaped, 5-toothed, teeth awl-shaped, corolla deeply 5-lobed, stamens 3, inserted low in the calyx tube, anthers free, female flowers, calyx and corolla as in the male, style club-shaped, stigma 3-lobed; berry  $\frac{1}{2}$  in. diam., bright red, round, seeds few, rough, strongly margined. The seeds have a sudorific action, and the root is used in flatulence.

**Zehneria** or **Melothria umbellata**, *Bankakra*.  
 Cucurbitaceæ.  
 F. B. I. ii. 625.  
 The Plains to 7,000 ft.  
 Simla, Mashobra (Collett).

perennial, root tuberous, smooth or velvety, tendrils branched, sometimes flower-bearing; leaves very variable, 6 by 4 in., broadly ovate or triangular with forked base, or 3-5-lobed, lobes unequal, narrow, diverging; flowers  $\frac{1}{4}$  in. diam., yellow, male and female generally on different plants, sometimes on the same, male flowers in umbels, calyx smooth or velvety, bell-shaped, 5-toothed, teeth short, corolla deeply 5-lobed, hairy within, stamens 3, rather long, inserted low in the calyx tube, anthers free, female flowers calyx and corolla as in the male, style 3-lobed at the top; berry  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. long, bright red, ovoid, smooth or velvety, seeds 6-12, oblong, smooth. The fruit is edible, the root when cooked is eaten, the seeds and leaves are used as medicine.

## CLIMBING PLANTS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

- Ipomæa Bonanox**, see Climbing Plants, Alternate, Exstipulate, Simple.
- Ipomæa Quamoclit**,  
CONVOLVULACEÆ.  
F. B. I. iv. 199.  
The Plains to  
4,000 ft.  
Cultivated.  
like *Ipomæa bonanox*, but leaves pinnately divided, segments linear, corolla generally crimson, more rarely white, sepals  $\frac{1}{4}$  in., narrowed to both ends, corolla tube 1 in., mouth  $\frac{3}{4}$  in. diam., capsule  $\frac{1}{4}$  in., 4-celled.
- Ipomæa hederacea**,  
CONVOLVULACEÆ.  
F. B. I. iv. 199.  
The Plains to  
6,000 ft.  
Simla, Shali  
(Collett).  
like the last species, but hairy, leaves ovate-heart-shaped, more or less deeply 3-lobed, lobes ovate, long-pointed, corolla pale-blue tinged with pink or yellow, tube very short, sepals linear, hairy, capsule 3-celled.
- Ipomæa Batatas**, see Climbing Plants, Alternate, Exstipulate, Simple.
- Ipomæa pes-tigridis**,  
CONVOLVULACEÆ.  
F. B. I. ii. 204.  
The Plains to  
4,000 ft.  
like the last described species, but leaves deeply 5-9-lobed, base notched, capsule 2-celled.
- Ipomæa chryseides**, see Climbing Plants, Alternate, Exstipulate, Simple.
- Ipomæa vitifolia**,  
CONVOLVULACEÆ.  
F. B. I. iv. 213.  
The Plains to  
4,000 ft.  
like the last described species, leaves with base notched, palmately 5-lobed, corolla yellow.
- Ipomæa pilosa**, see Climbing Plants, Alternate, Exstipulate, Simple.
- Calystegia hederacea**, see Prostrate Herbs, Alternate, Exstipulate, Simple.
- Convolvulus arvensis**, see Climbing Plants, Alternate, Exstipulate, Simple.
- Tragia involucrata**, see Climbing Plants, Alternate, Exstipulate, Simple.
- Dioscorea deltoidea**, see Climbing Plants, Alternate, Exstipulate, Simple.

## COMPOUND LEAVES.

- Cardiospermum Halicacabum**, see Climbing Plants, Alternate, Stipulate, Compound.

## WATER PLANTS.

## HERBS WITH OPPOSITE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Polygonum  
amphibium,**  
POLYGONACEÆ,  
F. B. I. v. 34.  
Kashmir.

medium size, perennial, rootstock woody, creeping; leaves usually floating, long, stalked or nearly sessile, and in air, blunt or short-pointed, slightly toothed or bristly, oblong or lanceolate, stipules smooth or rough, abruptly terminated; flowers bright red in racemes spike-like, solitary, very stout, 1-2 in. long, densely flowered, main flower stalks stout, hairy, bracts short-pointed, blunt or short-pointed, bristly, calyx  $\frac{1}{8}$  in., not nerved, 4-or 5-parted, much longer than the shining nut, stamens 4-8, styles usually 2; nut doubly convex.

**Zanichellia palustris,** see Herbs, Alternate, Stipulate, Simple.

## HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Stellaria aquatica,** see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Ammannia peploides,** see Prostrate Herbs, Opposite, Exstipulate, Simple.

**Ammannia  
rotundifolia,** see Prostrate Herbs, Opposite, Exstipulate, Simple.

## PETALS UNITED.

**Limnophila  
Roxburghii,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 265.  
The Plains to  
6,000 ft.  
Chamba.

medium size, annual, aromatic, growing in water, root creeping, stem stout, nodes often rooting, under water, or giving out much divided leaves; leaves and flower stalks and buds covered with glandular dots; leaves 2-3 in., stalked, ovate, blunt, minutely toothed, leathery, dotted beneath, often wrinkled, narrowed into a stalk  $\frac{1}{4}$ -1 in., nerves many, stout; flowers  $\frac{1}{2}$  in. long, blue, mouth yellow, in sessile or stalked axillary heads, calyx 5-lobed nearly to the base, segments nearly equal, lanceolate-short-pointed, corolla 2-lipped, tube cylindric, upper lip erect, 2-lobed, lower spreading, 3-lobed, stamens, 4 in unequal pairs, enclosed in the corolla, anther cells stalked, widely separated from one another, style bent at the top, stigma flat, 2-lobed; capsule ovoid, seeds many, small, angular.

## WATER PLANTS.

## HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Limnophila hypericifolia,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 269.  
The Plains to 5,000 ft.  
Kangra.                   like the last species, but the stem is unbranched, smooth, leaves stem-clasping, smaller, never much divided, nerves few, flowers  $\frac{3}{4}$  in. larger, pink-purple, solitary, axillary, forming leafy spikes.
- Limosella aquatica,**  
**Common Limosel,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 288.  
Kashmir, 5-8,000 ft.    small, annual, creeping, tufted, smooth; leaves 1-2 in., long-stalked, sometimes fascicled, oblong, narrowed into the stalk, never divided; flowers  $\frac{1}{10}$  in., pink or white, axillary, without bracts, calyx bell-shaped, 5-toothed, corolla nearly wheel-shaped or bell-shaped, 5-lobed, lobes nearly equal, stamens 4, filaments thread-like, anthers touching, style short, stigma rounded; capsule  $\frac{1}{2}$  in. diam., round, seeds many, small, ovoid.
- Veronica Anagallis,**                   see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Petals United, Stamens 2.
- Veronica Beccabunga,**                see Prostrate Herbs, Opposite, Exstipulate, Simple.
- Utricularia orbiculata,**  
LENTIBULARIACEÆ.  
F. B. I. iv. 334.  
Himalaya, 2-8,000 ft.  
On wet rocks in streams below Simla.    small, annual, delicate, stems creeping, thread-like, leafy; leaves  $\frac{1}{2}$  in. diam., in tufts or alternate, crowded, orbicular or ovate with a broad tip, interspersed with minute bladder-like vessels; flowers  $\frac{1}{4}$  in. long, lilac, forming terminal racemes on very slender erect naked scapes, 2-6 in. high, springing from leafy rosettes, calyx free, divided nearly to the base in two very unequal rounded segments, corolla 2-lipped, base prolonged backwards in a tubular, curved, pointed spur, upper lip very short, erect or recurved, notched, lower much larger, spreading, 3-lobed, base convex, closing the mouth of the spur, stamens 2, enclosed in the corolla, attached at the base of the upper lip, filaments curved, style very short, stigma 2-lipped; capsule round, enclosed in the enlarged calyx, seeds many, minute, covered with barbed hairs. The small bladder-like vessels devour insects, they each have a little trap door which opens inwards.
- Hygrophila polysperma,**            see Prostrate Herbs, Opposite, Exstipulate, Simple.
- Hygrophila salicifolia,**            see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Corolla 2-lipped.

## WATER PLANTS.

## HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

**Hygrophila spinosa**, see Herbs, Erect, Opposite, Exstipulate, Simple, Entire, Corolla 2-lipped.

**Hydrilla verticillata**, small, submerged, leafy, forming large masses, male and female organs in separate flowers; leaves  $\frac{1}{4}$ - $\frac{1}{3}$  in., *Janjh, jala.*  
**HYDROCHARITACEÆ.** linear or oblong-linear, four to eight leaves in a whorl, F. B. I. v. 659. with a short sheathing one at the base of each branch, and a short pair above this; flowers  $\frac{1}{8}$  to  $\frac{1}{4}$  in. long, male flowers The Plains to solitary, shortly stalked in small sessile nearly round 2,000 ft. sheaths, rough with short processes, sepals 3, ovate, green, In still or slowly petals 3, oblong or wedge-shaped, stamens 3, anthers running waters. large, kidney-shaped, the male flower when mature Baluchistan. escapes from the sheath and floats on the water, female flowers 1-2, sessile in a tubular 2-toothed sheath, sepals and petals as in the male flower, styles 2-3, linear, undivided, stigmas 3, fringed, the styles and stigmas are contained in a beak of the ovary which projects beyond the sheaths; fruit awl-shaped, smooth or rough, seeds 2-3, oblong. This plant is used by sugar refiners to cover the sugar and allow water to pass through slowly.

**Lagarosiphon** medium size, stem thread-like, branching, leafy, sub-merged, male and female organs in separate flowers; leaves **Roxburghii**, 3-4 in. long, linear-lanceolate, often twisted, nerveless, **HYDROCHARITACEÆ.** short-pointed, scattered; male flowers minute, many, on a F. B. I. v. 659. short spadix on an ovoid 2-valved axillary sessile sheath, The Plains in sepals 3, petaloid, petals rather shorter, anthers 2, ovoid, stagnant water. female flower solitary, sessile in a narrow oblong sheath, sepals and petals as in the male, styles 3, stout, notched on the filiform beak of the ovary; fruit ovoid, oblong, or linear, many-seeded.

**Hydrocharis** small, annual, floating, bearing runners which produce **Morsus-ranæ**, buds, break off in the autumn, sink to the bottom and come **Frog Bit**, up next spring to become new plants; leaves 1-1 $\frac{1}{2}$  in. diam., **HYDROCHARITACEÆ.** circular or kidney-shaped, quite entire, often reddish F. B. I. v. 662. beneath, male and female organs in separate flowers; Kashmir, in stagnant flowers 1 $\frac{1}{2}$  in. diam., male flowers 2-3 in a stalked two- leaved sheath, sepals 3, green, small, oblong, petals 3, thin, } water. broadly ovate with a broad tip, papery, crumpled, white, stamens 6-9 with 3-6 staminodes, filaments forked, female flowers solitary, long-stalked, sepals and petals as in the male flower, but with a fleshy tubercle at the base, staminodes 6 in pairs, stigmas 6, linear, 2-fid; fruit fleshy, ovoid or oblong, 6-celled, seeds many.

## WATER PLANTS.

## HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

- Ottelia alismoides**, medium size, submerged, roots fibrous ; leaves crowded, very variable, the submerged narrow, the floating long-stalked orbicular or oblong, heart-shaped, 2-6 by 1-2 in. or even 7 in. diam., 7-11-nerved, stalk 1-10 in. ; flowers white, solitary sessile on a tubular 2-fid sheath, sheath 1-1½ in., 5- or 6-winged, wings waved unequal, sepals 3, linear or oblong, petals 1 in. broad, stamens 6-15, styles 6, linear, 2-fid ; fruit 2 in. diam., oblong, 6-valved, enclosed in the sheath, crowned by the withered flower, 6-grooved, linear-oblong to round, seeds many, oblong.
- HYDROCHARITACEÆ.**  
F. B. I. v. 662.  
The Plains,  
in tanks and  
ditches.

## PETALS NONE.

- Callitriche stagnalis**, small, floating, submerged, or growing on mud, stems slender, brittle, much branched, rooting at the joints ; leaves ¼ in. long, ovate or very narrow, entire, lower opposite, upper crowded into little rosettes ; flowers minute, axillary, usually solitary, each between two minute bracts (sometimes wanting), calyx and corolla none, in male flowers one stamen, filament long, in female flowers a 4-lobed ovary, styles 2, long, thread-like ; fruit round, flattened, sessile, margins winged, short-pointed, dividing into 4 one-seeded nuts.
- Water Starwort**,  
**HALLORRHAGIDACEÆ.**  
F. B. I. ii. 434.  
Himalaya,  
5-10,000 ft.  
Kashmir, Sipi  
below Mashobra.

- Callitriche verna**, like the last species, but the leaves are often oblong, fruit not winged, blunt.
- HALLORRHAGIDACEÆ.**  
F. B. I. ii. 434.  
Himalaya,  
5-8,000 ft.  
Kashmir, 7,000 ft.  
Changlagalli (Douie).

- Vallisneria spiralis**, medium size, tufted, stemless, submerged ; leaves 5-10 by ½ in. varying with the depth of water, linear, translucent, green ; flowers male and female separate in sheaths, male flowers many, minute on long stalks in a 3-lobed short-stalked sheath ⅓ in., sepals 3, petals none, stamens 1-3, the sheath breaks off and floats at the surface when the anthers shed the pollen, female flower solitary in a tubular 3-toothed sheath on a long thread-like coiled stalk, sepals 3, petals none, staminodes 3, 2-fid, stigmas 3, broad, notched ; fruit linear enclosed in the sheath, seeds many. For purposes of propagation, the flower is carried to the surface by the un-coiling of the spiral stalk, after fertilization it is again submerged by the stalk coiling up again ; fruit linear, many-seeded. This plant is used similarly to *Hydrilla verticillata* in sugar refining.
- Sawala, syala**,  
**HYDROCHARIDACEÆ.**  
F. B. I. v. 660.  
The Plains to  
2,000 ft.  
Baluchistan  
(Stocks).

## WATER PLANTS.

## HERBS WITH OPPOSITE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Crinum defixum,**  
AMARYLLIDACEÆ.

F. B. I. vi. 281.

The Plains, on  
swampy river banks.

large, bulbous, neck cylindric, bulb large, spindle-shaped; leaves 24-36 by  $\frac{3}{4}$ -1 in., linear, erect, blunt-pointed, concave; flowers 4-5 in., white tinged with red, fragrant at night, sessile in ovate-lanceolate sheaths,  $1\frac{1}{2}$ -2 in. long, in umbels, 6-15-flowered on stout main stalks  $1\frac{1}{2}$ -2 ft. long, calyx 6-segmented, tube  $2\frac{1}{2}$ -3 in., segments nearly as long, narrowly linear-lanceolate, corolla none, stamens 6, bright red, shorter than the segments, anthers  $\frac{1}{2}$  in.; fruit 1 in. diam., nearly round, 1-2-seeded.

**Najas major,**

NAIADACEÆ.

F. B. I. vi. 569.

The Plains to  
8,000 ft.

submerged, rootstock creeping, stem cylindrical, branched, thread-like; leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, linear, teeth 4-8 on each side, triangular, dorsally spinous; flowers male and female on separate plants, minute, solitary, axillary, male flowers consist of an oblong tube, 2-3-toothed with an inner tube, thin, transparent, stamen one, united to the inner tube, female flowers consist of one sessile oblong carpel, stigmas 2-3, thread-like; achene  $\frac{1}{12}$ - $\frac{1}{8}$  in., seed erect.

## HERBS WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Myriophyllum**  
**verticillatum,**

HALORRHAGIDACEÆ.

F. B. I. ii. 433.

Kashmir, 7,000 ft.,  
in ponds.

small, stem floating, smooth, varying in length with the depth, leafy; leaves whorled, in fours, pinnately divided, segments simple, distinct, hair-like,  $\frac{1}{4}$ - $\frac{1}{2}$  in.; flowers male and female separate, small, sessile in whorls of 4, forming slender axillary spikes projecting above the water, one large, 2 minute bracts round each flower, upper flowers of spike male, lower female, of male flower calyx 4-toothed, petals 4, concave, stamens 8, short, of female flowers calyx 4-grooved, teeth 4, minute, petals minute, stigmas 4, nearly sessile; fruit nearly square, not deeply grooved, dividing into 4 one-seeded nutlets.

**Myriophyllum**  
**spicatum,**

Water Milfoil,

HALORRHAGIDACEÆ.

F. B. I. ii. 433.

Himalaya,

1-5,000 ft,

Kashmir,

Baluchistan.

very like the the last species, but the spikes always terminal, fruit narrowly but deeply grooved, carpels more or less tubercled on the back.



## WATER PLANTS

## HERBS WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Limnophila sessiliflora,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 270.  
The Plains,  
in rice fields and  
marshes.

small, annual, slender, hairy, covered with glands; leaves  $\frac{1}{2}$  in. long, 3-6 in a whorl, lobed or pinnately divided, upper leaves often opposite and entire; flowers  $\frac{1}{2}$  in. long, blue, sessile, axillary, solitary, calyx 5-lobed nearly to the base, segments nearly equal, lanceolate, long-pointed, corolla 2-lipped, tube cylindric, upper lip erect, 2-lobed, lower spreading, 3-lobed, stamens 4, in unequal pairs, enclosed in the corolla, anther cells stalked, widely separated, style bent at the top, stigma flat, 2-lobed; capsule ovoid, seeds many, small, angular.

**Limnophila heterophylla,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 270.  
The Plains,  
in rice fields and  
marshes.

like the last species, but much larger, stem smooth, many, much divided leaves, calyx lobes less long-pointed.

**Limnophila gratioloides,**  
SCROPHULARIACEÆ.  
F. B. I. iv. 271.  
The Plains.  
Kangra and  
Dharmasala,  
3-4,000 ft.  
Baluchistan.

small, simple or branched, smelling of turpentine, smooth, leaves  $\frac{1}{4}$ - $\frac{3}{4}$  in. long, lower leaves often finely divided, flowers stalked, sometimes racemed, calyx  $\frac{1}{3}$ - $\frac{1}{2}$  in., corolla  $\frac{1}{2}$  in.; for other characters see the last species.

**Utricularia stellaria,**  
LENTIBULARIACEÆ.  
F. B. I. iv. 328.  
The Plains, in rice  
fields and marshes.

stem floating, leaves submerged; leaves much divided into hair-like segments, interspersed with bladders; flowers yellow, bracteate, stalked, 1 to 8 together,  $\frac{1}{2}$  in. long on main stalks which are 2-8 in. long, standing out of the water, smooth, bearing about the middle a cluster of oblong vesicles, calyx of 2 segments, lobes entire, or nearly so, ovate, corolla  $\frac{1}{4}$  in. diam., 2-lipped, upper lip entire or notched, lower larger, 3-6 lobed, spur curved, shorter than the lower lip, stamens 2, broad, anthers ovate, style short, stigma 2-lobed; capsule  $\frac{1}{2}$  in., round, fruit sepals  $\frac{1}{4}$ - $\frac{1}{2}$  in., seeds many, small, thickly discoid, concavo-convex caused by the turning in of the thin barely winged margin.

## WATER PLANTS.

## HERBS WITH OPPOSITE EXSTIPULATE LOBED LEAVES.

## PETALS UNITED.

**Utricularia flexuosa,**  
LENTIBULARIACEÆ.  
F. B. I. iv. 329.  
The Plains, in rice  
fields and marshes.

like the last species, but generally larger, corolla  $\frac{1}{2}$ - $\frac{1}{4}$   
in. long, main flower stalks with only a few scales.

**Utricularia exoleta,**  
LENTIBULARIACEÆ.  
F. B. I. iv. 329.  
The Plains, in rice  
fields and marshes  
(uncommon).

like the last species, but very much smaller, capsule  
much larger than the sepals, seeds with thin margin, open,  
nearly entire.

## PETALS NONE.

**Ceratophyllum**  
**demersum,**  
Hornwort,  
CERATOPHYLLACEÆ.  
F. B. I. v. 639.  
The Plains to  
8,000 ft., in still  
water.

rootless, submerged, slender, fragile, stem 8-36 in.  
long, densely leafy, green; leaves 1 in. long, whorled, divid-  
ed into thread-like toothed lobes, spreading in water,  
closing together when lifted out of the water; flowers  
minute, axillary, sessile, male and female flowers on the  
same plant, male flowers solitary, calyx of 6-12, narrow, 2-fid  
awl-like, segments, petals none, stamens 20-30, very short,  
anthers erect, with a minute float at the top to enable it to  
remain near the surface, pollen of the same specific gravity  
as the water to enable it to float about till it strikes a stigma,  
female with the same calyx as the male flower, no stamens,  
ovary sessile, ovoid, one-celled, style awl-like, stigmated  
surface on one side; fruit a small leathery ovoid, some-  
what flattened nut with a hooked style on the top, and  
2 curved spurs on each side above the base.

**Najas graminea,**  
NAIADACEÆ.  
F. B. I. vi. 569.  
The Plains.

rootstock creeping, submerged, stem 1-2 ft., branched,  
thread-like; leaves  $\frac{2}{3}$  to 1 in., narrowly linear, long-pointed,  
soft, sharply many-toothed, basal lobes (auricles) erect,  
lanceolate, toothed on both edges; flowers male and  
female on the same plant, minute, axillary, clustered,  
male flowers consist of an outer tubular or inflated tube  
with a thin transparent inner one, stamen one, united to  
the inner tube, female flowers consist of one sessile carpel  
with or without a transparent tube outside, stigmas 2-4,  
slender; achenes oblong, seed erect.

**Najas minor,**  
NAIADACEÆ.  
F. B. I. vi. 569.  
The Plains.

very like the last species, but very slender, much  
branched, leaves less acutely toothed, less broad, less  
transparent, basal auricles rounded.

## WATER PLANTS.

## HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Nymphæa alba,**  
**Water-Lily,**  
*Brimposh, nilofar.*  
 NYMPHÆACEÆ.  
 F. B. I. i. 114.  
 Kashmir.

large, perennial, rootstock creeping, submerged; leaves 5-10 in. diam., base heart-shaped, nearly circular, quite entire, floating, stalks long, hollow, in deep water ribbon-like, submerged leaves are sometimes found, stipules at the base of stalks; flowers 3-4 in. diam., floating, stalks long from rootstock, sepals 4, petals many, stamens many, petaloid, anthers without appendages, linear, pollen bristly, stigmas 6, forming a rosette of 6 rays in the centre of the top of the round berry  $1\frac{1}{2}$  in. long in which the 16 carpels containing many minute seeds are sunk, at first the carpels sink to the bottom and ripen, then burst, the seeds first float then sink.

**Nymphæa Lotus,**  
*Chota Kanwal.*  
 NYMPHÆACEÆ.  
 F. B. I. i. 114.  
 The Plains.

like the last species, but rootstock short, erect, tuberous, leaves undulating sharp-toothed, arrow-shaped when young, flowers often pink or red, sepals blunt, ribbed, pollen smooth, anthers without appendages. The root is often eaten, and is used as a cooling medicine and demulcent.

**Nymphæa stellata,**  
*Bambher, nilpadma.*  
 NYMPHÆACEÆ.  
 F. B. I. i. 114.  
 The Plains.

like the last species, but the leaves often entire, flowers sometimes blue or purple, petals 10-30, stamens 10-30, stigmas 10-30, anthers with long appendages. The root and seeds are often eaten.

**Euryale ferox,**  
**Gorgon fruit,**  
*Makhana, jewar.*  
 NYMPHÆACEÆ.  
 F. B. I. i. 115.  
 Kashmir.

large, perennial, densely prickly, stemless, rootstock thick, short; leaves 1-4 ft. diam., oval or circular, green above, downy reddish beneath with strong spiny ribs; flowers 1-2 in. long, partially submerged, violet inside, green and shining outside, sepals 4, erect, with recurved spines on their backs, petals 20 or so, in 3-5 series, shorter than the sepals, narrowly-ovate-oblong, stamens many, in bundles of 8, linear, stigma depressed, concave discoid; berry 2-4 in. diam., nearly round, prickly, crowned with the persistent sepals, seeds 8-20, size of a pea to a cherry, coat pulpy, skin thick, black. The seeds are roasted and eaten, and considered very digestible and very strengthening.

## WATER PLANTS.

## HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Nelumbium speciosum,**  
**Sacred Lotus** or  
**Egyptian Bean,**  
*Kanwal, pamposh.*  
 NYMPHÆCÆÆ.  
 F. B. I. i. 116.  
 The Plains to  
 6,000 ft.  
 Kashmir.  
 Pind Dadan Khan.

large, perennial, juice milky, rootstock submerged, stout, creeping; leaves 24-36 in. diam., waxy, bluish-green, cupped, thin, standing above the water, stalks 3-6 ft. long, full of spiral vessels, surface smooth or prickly, joined to the centre of leaf-blade; flowers 4-10 in. diam., white or pink, sepals 4-5, soon falling off, petals many, concave, veined, soon falling off, stamens many, soon falling off, anthers with a clubbed appendage, carpels many, sunk in spongy base of the flower, which breaks off the stalk, then floats about, finally rots and the carpels each with one seed sink to bottom of the pond and take root, styles many, stigma terminal. The rootstock is eaten; and the seed is used as a heart stimulant.

**Trapa bispinosa,**  
**Horn nut,**  
*Singhara.*  
 ONAGRACEÆ, OF  
 HYDROCARYACEÆ.  
 F. B. I. ii. 590.  
 The Plains, in  
 stagnant waters.

medium size, perennial, floating, stem long, zigzag, submerged portion at intervals gives off much divided pairs of green organs-like stipules at the base of the old leaf scars; leaves 2 by  $2\frac{1}{2}$ -3 in., floating, crowded into rosettes on the upper part of the stem, dark green, shining above, woolly beneath, tips slightly round-toothed, stalk 4-6 in. long, woolly, stipules linear, thin, soon falling off; flowers small, white, axillary, solitary, stalked, calyx tube short, 4-fid, 2 segments or all are persistent, becoming spinescent on fruit, petals 4, small, stamens 4, style awl-shaped, stigma round; fruit 1-1 $\frac{1}{2}$  in. long and broad, horny, ovoid with a broad top, one-celled, ripening under water, 4-angled, 2 or all spinescent with a short beak on the top for the seed radical to protrude, seed one. The plant is often cultivated in ponds, the seed is much eaten raw or cooked.

**Trapa natans,**  
 ONAGRACEÆ OF  
 HYDROCARYACEÆ.  
 F. B. I. ii. 590.  
 Kashmir.

like the last species, but the floating leaves only 1 in. diam., tip toothed deeply, stalk 2-4 in., smooth, under surface only slightly hairy on the nerves, fruit only  $\frac{3}{4}$  in., broad, all 4 angles spinescent, 2 lateral spines shorter.

## PETALS NONE.

**Polygonum orientale,**

see Herbs, Erect, Alternate, Stipulate, Simple, Entire.

**polygonum glabrum,**

see Herbs, Erect, Alternate, Stipulate, Simple, Entire.

## WATER PLANTS.

## HERBS WITH ALTERNATE, STIPULATE, SIMPLE LEAVES.

## PETALS NONE.

- Polygonum  
Hydropiper,** see Herbs, Erect, Alternate, Stipulate, Simple, Entire.
- Polygonum  
flaccidum,** see Herbs, Erect, Alternate, Stipulate, Simple, Entire.
- Polygonum  
strigosum,** see Herbs, Erect, Alternate, Stipulate, Simple, Entire.
- Polygonum  
amphibium,** medium size, perennial, partially submerged, rootstock creeping, woody; leaves usually long-stalked and floating, or nearly sessile and aerial, blunt, oblong or lanceolate, stipules tubular, abruptly ended, smooth or hairy; flowers  $\frac{1}{6}$  in. long, red, in spike-like stout racemes, 1-2 in. long, main stalk stout, bracts more or less tubular, calyx 4-5 fid,  $\frac{1}{8}$  in., not nerved, much longer than the nut, petals none, stamens 4-8, styles 2; nut ovoid, biconvex, shining.
- POLYGONACEÆ.  
F. B. I. v. 34.  
Kashmir.
- Polygonum  
lanigerum,** see Prostrate Herbs, Alternate, Stipulate, Simple.
- Potamogeton  
indicus,** medium size, submerged, rootstock creeping, stem cylindrical; floating leaves 3-4 $\frac{1}{2}$  by 1-2 $\frac{1}{2}$  in., oblong with a rounded tip, leathery, lower submerged, leaves longer, narrower, papery, stipules 1-1 $\frac{1}{2}$  in., free; flowers small in spikes on a main stalk rising from a membranous sheath, bractless, sepals 4, concave, green, anthers 4, sessile, on the segments, carpels 4, sessile, stigma nearly sessile, persistent; drupelets small, smooth, seeds nearly kidney-shaped.
- NAIADACEÆ.  
F. B. I. vi. 565.  
The Plains to  
5,000 ft.
- Potamogeton  
natans,** like the last species, but leaves folded at the insertion of the stalk, submerged leaves, if any, long, narrow, sessile, main flower stalk stout, stipules 4-5 in., much longer, drupelets larger, keeled at the back, shortly beaked.
- NAIADACEÆ.  
F. B. I. vi. 565.  
The Plains to  
5,000 ft.  
Kashmir.
- Potamogeton  
javanicus,** like the last species, but stem very slender, leaves  $\frac{1}{2}$ -1 $\frac{1}{2}$  in., ovate-oblong, pointed at both ends, stalk very short, submerged leaves linear, long-tipped, stipules  $\frac{1}{2}$ -1 in., main flower stalk slender, flower spikes not crowded with flowers, sepals round, drupelets  $\frac{1}{2}$  in. stout, ribs toothed, beak stout, hooked;
- NAIADACEÆ.  
F. B. I. vi. 566.  
The Plains to  
7,000 ft.  
Simla (Collett).

## WATER PLANTS.

## HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Potamogeton  
perfoliatus,**

NAIADACEÆ.

F. B. I. vi. 566.

Himalaya,  
4-8,000 ft.

(Collett).

Baluchistan,  
(Stocks).

like the last species, but all leaves submerged, stem stout, dividing into two, leaves 1-4 in., ovate, heart-shaped, stem clasping, margins even, upper leaves opposite, stipules small, soon falling off, flower spikes crowded, sepals long-stalked, drupelets  $\frac{1}{10}$  in., hardly ribbed, flattened, beak short, straight.

**Potamogeton  
crispus,**

NAIADACEÆ.

F. B. I. vi. 566.

The Plains to  
1,000 ft.Kashmir (Collett).  
Khanki.

like the last species, but stem slender, flattened, leaves 1-3 in., narrowed at the base, linear or upper opposite and half stem-clasping, tip rounded, margins very wavy, finely toothed, flower spikes few-flowered, very short, flowers very small, drupelets larger,  $\frac{1}{2}$  in., ovoid, flattened, long-beaked, ribs entire or toothed.

**Potamogeton lucens**

NAIADACEÆ.

F. B. I. vi. 567.

Kashmir,  
5-6,000 ft.

(Collett).

like the last species, but stem stout, leaves large, 4-10 in., nearly sessile, lanceolate, very slightly wavy, upper leaves sometimes floating, stipules large, long, 2-winged or keeled, flower spike stout, drupelets  $\frac{1}{10}$  in., stout, convex on both sides, shortly bluntly beaked.

**Potamogeton  
pectinatus,**

NAIADACEÆ.

F. B. I. vi. 567.

The Plains to  
12,000 ft.

(Collett).

Khanki.

stem thread-like, densely branched on opposite sides, leaves 3-8 in. by  $\frac{1}{20}$ - $\frac{1}{2}$  in., very narrow, grass-like, base sheathing, margins slightly thickened, stipules like small lobes on the edge of the lobe sheath, flowers at intervals along the spike, drupelets  $\frac{1}{6}$  in., large, stout, smooth, hardly beaked; for other characters see the first described species of this genus.

**Potamogeton  
pusillus,**

NAIADACEÆ.

F. B. I. vi. 567.

Kashmir; 5,000 ft.

like the last species, but leaves  $\frac{1}{3}$ -3 in., narrowly linear or thread-like, stipules small, not united to the sheath, flowers few, minute, clustered, drupelets stoutly beaked, bluntly ribbed.

## WATER PLANTS.

## HERBS WITH ALTERNATE STIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Ruppia rostellata,**

NAIADACEÆ.

F. B. I. vi. 568.

The Plains to  
5,000 ft.

Kalar Kahar.

large, slender, branched, submerged, found in brackish waters, stem 2 ft. and more; leaves 1-3 in., thread-like, sheaths stipule-like; flowers minute, 2-6 together within a leaf sheath on a short main stalk, which lengthens after flowering, straight or slightly twisted, sepals and petals none, anthers 2, sessile; carpels 4, in fruiting long-stalked, stigma sessile, obliquely ovoid  $\frac{1}{2}$  in. long, shortly beaked.

**Zannichellia****palustris,****Horned Pond Weed,**

NAIADACEÆ.

F. B. I. vi. 568.

The Plains to  
15,000 ft.Common in marshes  
and ponds (Collett).

small, very slender, submerged, stem 3-6 in., branched; leaves 1-3 in., linear, in threes or opposite, stipules small, sheathing, thin; flowers minute, one male and one female flower sessile in the stipules, no sepals or petals, male flower one long stamen, anther 2-celled, female flower 4 one-celled carpels, style long, stigma discoid; achenes 2-4, curved, flattened, usually covered with small projections or wrinkled, sometimes stalked, crowned by the persistent style from which it gets its English name.

## HERBS WITH ALTERNATE STIPULATE LÖBED LEAVES.

## PETALS NONE.

**Ranunculus****aquatilis, var.****trichophyllus,****Water Crowfoot,**

RANUNCULACEÆ.

F. B. I. i. 16.

The Plains to  
10,000 ft.

Kashmir,

Baluchistan.

small, submerged, leaves much divided into thread-like segments, stipules half attached with large processes; flowers white, small, in panicles, sepals 3-5, petals none, stamens few, styles short; fruit is a head of beaked achenes, transversely wrinkled.

## HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Neptunia oleracea,***Lajalu, pani lajak.*

LEGUMINOSÆ.

F. B. I. ii. 285.

The Plains,  
east of the Sutlej.

annual, prostrate, floating on water, rooting at the joints of the stem which gives out leaves and flower stalks, stem stout; leaves twice pinnate, stipules obliquely heart-shaped, persistent, pinnæ 4-6, 2-3 in. long, with 8-15 pairs of leaflets,  $\frac{1}{2}$ - $\frac{1}{2}$  in. long, strap-shaped, thin, sensitive; flowers minute, yellow in dense heads on axillary main stalks, the flowers of base of head being replaced by yellow

## WATER PLANTS.

## HERBS WITH ALTERNATE STIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

flat protruding staminodes, main stalk 9-12 in., ascending, smooth, bracts small, ovate, nearly blunt-tipped, calyx minute, bell-shaped, 5-toothed, petals 5, strap-shaped, united at the base, stamens of perfect flowers protruding, anthers gland-crested, style thread-like, stigma club-shaped; pod  $\frac{1}{2}$ -1 in., oblong, strap-shaped, beaked, seeds 6-8. This plant is often eaten as a pot herb.

## HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

**Jussiaea repens,**

ONAGRACEÆ.

F. B. I. ii. 587.

The Plains.

Thanesar.

In water and on the banks of tanks.

small, prostrate, succulent, creeping on land and floating in water, stem supported on water by white vesicles  $\frac{1}{2}$ -1 in. below the insertions of the leaves on the stem; leaves  $\frac{1}{2}$ -3 in., ovate or lanceolate with a broad tip, blunt, narrowed into the stalk, smooth or hairy; flowers 1 in. diam., whitish yellow on stalks  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long, 2-bracteate at the top, calyx tube linear, teeth 4-6, short-pointed, persistent, petals 4-6, usually 5,  $\frac{1}{2}$  in. long, ovate with a broad tip, white with yellowish veins towards the base, stamens twice the number of petals, style short, stigma 4-5-lobed; capsule  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long, linear-cylindric, woody, smooth or with scattered hairs, seeds very many, 4-cornered without a tuft of hairs, corky, with a netted skin.

**Jussiaea suffruticosa,***Lal-bunlunga,*  
*bun-lung (Beng.).*

ONAGRACEÆ.

F. B. I. ii. 587.

The Plains, not the south-western desert region.

large, perennial, branching, sometimes woody and shrubby, growing in wet places, banks of rivers and swamps, leaves 2-3 in. long, sessile, lanceolate, ovate-lanceolate, rarely linear, short- or long-tipped, narrowed to the base, usually more or less woolly, flowers  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. diam., yellow, calyx teeth 4, petals 4,  $\frac{1}{4}$ - $\frac{3}{4}$  in., capsule 1-2 in. long, linear, 8-ribbed, papery, seeds almost hemispheric, coat brown, shining, not corky; for other characters see the last species. It is used in dysentery, flatulence and constipation.

**Ludwigia parviflora,**

ONAGRACEÆ.

F. B. I. ii. 588.

The Plains.

Common in marshes, rice fields, banks of rivers.

erect, small, smooth, 8-24 in. high; leaves 1-3 in. long, lanceolate, linear-lanceolate, or linear-oblong, narrowed to the base; flowers small, yellow, on short stalks, axillary, solitary, main flower stalk 2-bracteate at the top, calyx tube linear, teeth 3-5, short-tipped, persistent, petals 3-5, small, stamens the same number as the calyx teeth, style simple, stigma round; capsule  $\frac{1}{3}$ - $\frac{1}{2}$  in. long,



## WATER PLANTS.

## HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNUNITED.

swollen, slightly 4-angled, seeds in many rows in the 4-5 cells of the capsule.

**Samolus Valerandi**, see Herbs, Erect, Alternate, Exstipulate, Simple, Entire.

## PETALS UNITED.

**Limnanthemum nymphæoides**,  
*Kuru, khair-posh.*  
GENTIANACEÆ.  
F. B. I. iv. 131.  
Himalaya,  
6-9,000 ft.  
Kashmir.

stems long, floating, rooting at the joints; leaves 1-2 in. diam., nearly opposite, circular, deeply notched at the base, leaf stalk 1-2 in.; flowers  $1\frac{1}{2}$ -2 in. diam., yellow, on minor stalks, 1-4 in., forming umbels on main flower stalks clustered in the leaf axils at the joints, calyx lobes  $5, \frac{1}{2}$  by  $\frac{1}{8}$  in., oblong, corolla wheel-shaped, deeply 5-lobed, lobes without a longitudinal fold down the middle, slightly bristly and minutely round-toothed at the margin, stamens 5 on the corolla tube, style short; capsule 1 in., oblong with rounded ends, seeds  $\frac{1}{8}$  in., many, discoid, winged. This plant is largely used for fodder.

**Limnanthemum cristatum**,  
*Tagarmul, ghain-chu.*  
GENTIANACEÆ.  
F. B. I. iv. 131.  
The Plains.

like the last species, but flowers much smaller, corolla white, yellow at the base within, lobes 5-6 entire with a longitudinal fold down the middle, capsule  $\frac{1}{2}$  in., seeds small, many, rough. The different parts are cooked and eaten in many districts.

**Limnanthemum indicum**,  
GENTIANACEÆ.  
F. B. I. iv. 131.  
The Plains.

like the last species, but flowers larger, corolla lobes fringed without a longitudinal fold down the middle, capsule larger, seeds many, smooth.

**Hydrolea zeylanica**,  
HYDROPHYLLACEÆ.  
F. B. I. iv. 133.  
The Plains to  
4,000 ft.,  
in swamps.

medium size, annual, prostrate, branched, flowering parts sticky; leaves 2 by  $\frac{1}{4}$  in., lanceolate, narrowed at the base; flowers blue in terminal racemes, 1-2 in. long, on lateral branches, bracts  $\frac{1}{4}$ - $\frac{1}{2}$  in.; calyx segments 5, lanceolate,  $\frac{1}{4}$  in., nearly divided to the base, longer than the capsule, corolla widely open, bell-shaped, almost wheel-shaped, lobes 5,  $\frac{1}{3}$  in., overlapping, stamens 5, anthers arrow-shaped, styles 2, distinct, stigmas round; capsule  $\frac{1}{2}$  in., seeds minute.

## WATER PLANTS.

## HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS UNITED.

*Ipomœa aquatica*,  
*Ganthian, nari, nali*.  
CONVOLVULACEÆ.  
F. B. I. iv. 210.  
The Plains.

annual, smooth, stems lying on mud or floating on water, hollow; leaves 3-6 in., stalk 1-6 in., generally long, oblong-heart-shaped, or forked at the base, entire or angular, almost lobed; flowers 2 in., pale purple, on 1-5-flowered stalks, 2-7 in. long, minor flower stalks long, 1-2 in., bracts small, sepals 5,  $\frac{1}{3}$  in. long, almost equal, smooth, corolla 5-plaited, margin very shortly lobed, smooth, stamens 5, included; capsule  $\frac{1}{3}$  in., ovoid, 4-2-seeded, smooth, seeds minutely closely silky. The leaves are eaten as a vegetable, the dry juice forms an excellent purgative.

## PETALS NONE.

*Monochoria*  
*hastæfolia*,  
PONTEDERIACEÆ.  
F. B. I. vi. 362.  
The Plains.

rootstock creeping, spongy; leaves 6-7 by 5-6 in. arrow-shaped, long-stalked, erect or floating, blunt or short-tipped, many nerved, stalk of the floral leaf swollen above, clasping the short main flower stalk, stalks of the basal leaves 18-24 in., broad and sheathing at the base; flowers  $\frac{3}{4}$ -1 in. diam., violet blue, dotted with red, long-stalked in racemes, calyx petaloid, bell-shaped, segments 6 unequal, larger ovate with a broad tip, smaller oblong, spurred, longest one with blue anther, the rest yellow, capsule  $\frac{1}{4}$  in., nearly round or oblong, seeds small.

*Monochoria*  
*vaginalis*,  
PONTEDERIACEÆ.  
F. B. I. vi. 363.  
The Plains to  
5,000 ft.  
Kashmir.

like the last species, but rootstock short, nearly erect, leaves linear to ovate and ovate-heart-shaped, few nerved, flowers short-stalked in spikes rather than racemes.

*Typha angustata*,  
Reed Mace, Lesser  
Cats' Tail,  
*Patira, kundar, pitz*.  
TYPHACEÆ.  
F. B. I. vi. 589.  
The Plains to  
5,000 ft.  
Kashmir.

lower part of stem is a thick rhizome, stem 6-10 ft., projects high out of the water; leaves  $\frac{3}{4}$ -1 in. broad, linear erect or floating, spongy, half cylindric above the sheath; flowers in very dense cylindric spikes (catkins), upper part yellow of male flowers, lower brown of female flowers, male flowers consist of 2-5 stamens, enclosed in a number of hairs, female flowers consist of one carpel, one persistent style enclosed in hairs; achenes minute, membranous, covered with a tuft of hairs. The leaves are used for matting, the young shoots and roots are eaten.

## WATER PLANTS,

## HERBS WITH ALTERNATE EXSTIPULATE SIMPLE LEAVES.

## PETALS NONE.

**Typha Laxmanni**,  
 TYPHACEÆ.  
 F. B. I. vi. 489.  
 Kashmir, 9,000 ft.  
 Baluchistan.

like the last species, but much smaller, stem 2-3 ft., leaves slender, half cylindric at the sheath, male spikes 1-2 in., female  $\frac{2}{3}$ -1 by  $\frac{1}{2}$ - $\frac{1}{3}$  in., hairs very short, shorter than the styles.

**Sparganium ramosum**,  
 Burweed,  
 TYPHACEÆ.  
 F. B. I. vi. 490.  
 The Plains to  
 5 000 ft.  
 Kashmir.

rootstock creeping, stem 1-4 ft., erect, leafy; leaves 2-5 ft., 1 in. or less, broad, linear, margins concave, 3-edged at the base; flowers in round heads with leafy bracts below, male and female in separate heads, heads sessile on the branches of a panicle, male heads olive brown,  $\frac{1}{2}$ - $\frac{3}{4}$  in. diam., soon falling off, male flowers of 2-3 stamens surrounded by 3-6 membranous linear scales, female heads 1 in. diam., in fruit, female flowers of one persistent style with a unilateral stigma surrounded by 3-6 thin linear scales; drupe  $\frac{1}{2}$  in. long, angled, sessile, shortly beaked.

**Pistia Stratilotes**,  
*Jalkhumbi*.  
 AROIDEÆ OR  
 ARACACEÆ.  
 F. B. I. vi. 497.  
 The Plains.

perennial, stemless, floating in the still fresh water, bearing runners, tuft of simple white rootlets and leaves; leaves  $1\frac{1}{4}$ -4 in. long, apex rounded or broadly notched, wavy, velvety above and below, together forming an erect cup; flowers minute, sessile on a stalk (spadix) within a white sheath (spathe)  $\frac{1}{2}$  in. long, spathe obliquely bell-shaped, woolly without, pouched, closed below, contracted about the middle, the spadix joined to the back of the tube of the spathe below, male and female flowers on one spadix, male above, female below, neuter between; male flowers consist of a few sessile united stamens or rather anthers beneath the top of the spadix, anthers with vertical slits, a ring of minute neuters below them, female flowers consist of a solitary conical ovoid, one-celled ovary, a conical style with a discoid stigma; fruit membranous, few seeded, seeds oblong or ovoid with a broad top. The plant is supposed to purify water, the leaves are demulcent, and the root laxative.

## WATER PLANTS.

## HERBS WITH ALTERNATE EXSTIPULATE LOBED LEAVES.

## PETALS UNUNITED.

**Nasturtium  
palustre,**  
**Marsh Water Cress,**  
CRUCIFERÆ.  
F. B. I. i. 183.  
The Plains to  
10,000 ft.  
Simla (Collett).

small, perennial, stem 6-12 in., branched, growing in wet places; radical leaves many, stalked, 2-6 in., pinnately divided, lobes toothed, lower distinct, narrow, end one large, broad, stem-leaves similar, or ovate-lanceolate, sessile, toothed; flowers small, bractless, yellow, in long loose racemes, sepals 4, short, spreading, equal at the base, petals 4, short, narrowed at the base, equal in length to the sepals, stamens 2, 4 or 6. stigma nearly sessile, rounded; pod  $\frac{1}{6}$ - $\frac{1}{4}$  in., oblong, slightly curved when ripe, splitting by 2 valves, leaving the seeds crowded in 2 series attached to the central stalk.

**Nasturtium indicum,**  
CRUCIFERÆ.  
F. B. I. i. 184.  
The Plains to  
7,000 ft.  
Kashmir.

like the last species, but annual, upper leaves with a large broad end lobe, frequently with small auricles, pods narrow, cylindrical,  $\frac{1}{3}$ - $\frac{3}{4}$  in., seeds wrinkled.

**Nasturtium  
montanum,**  
CRUCIFERÆ.  
F. B. I. i. 184.  
The Plains to  
7,000 ft.  
Simla (Collett).

very like the last species, but smaller, leaves less divided, pods longer, 1-1 $\frac{1}{2}$  in., seeds oblong, flattened.

## PETALS NONE.

**Caltha palustris,**

see Herbs, Erect, Alternate, Exstipulate, Lobed.

## HERBS WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES.

## PETALS UNUNITED.

**Nasturtium  
officinale,**  
**Common**  
**Water Cress,**  
*Piriya ha'im.*  
CRUCIFERÆ.  
F. B. I. i. 183.  
The Plains to  
7,000 ft.  
Simla, Kashmir,  
Baluchistan.

like *Nasturtium Palustre*, see above under Lobed Leaves, but is found floating with long creeping stems, leaves 2-4 in., pinnate, leaflets sessile,  $\frac{1}{2}$  in., entire or wavy, flower white, racemes short, petals longer than the sepals. This plant is much eaten by Europeans, to a smaller extent by Indians; it is considered to be antiscorbutic and stimulating to the appetite.

## WATER PLANTS.

## HERBS WITH ALTERNATE EXSTIPULATE COMPOUND LEAVES

## PETALS UNUNITED.

***Nanthe  
stolonifera,*  
Water Dropwort,**

UMBELLIFERÆ.

F. B. I. ii. 695.

The Plains to  
5,000 ft.Valleys below Simla  
(Collett).Kashmir, in  
marshes.

large, perennial, stem 2-4 ft., succulent, thick, prostrate or ascending, often floating, rooting at the lower joints, bearing runners at the base; leaves once or twice pinnate, upper often of only 3-leaflets, leaflets lanceolate 1-2 by  $\frac{1}{2}$ -1 in., toothed, sometimes lobed; flowers white, small, many in a compound umbel, umbels leaf-opposed, long-stalked, bracts 1-3 or none, bracteoles several, linear up to  $\frac{1}{4}$  in., rays 15-30, nearly equal, calyx 5-toothed, teeth lanceolate, short-pointed, petals 5, unequal, notched, ovary 2-celled, styles 2, carpels  $\frac{1}{8}$  by  $\frac{1}{10}$  in., ovoid with a broad tip, ridges 5 distinct but not raised.

## UNBRANCHED.

***Acorus Calamus,*****Sweet Flag,***Bach, warch, bariboj.*

AROIDÆ OR

ARACEÆ.

F. B. I. vi. 555.

The Plains to  
8,000 ft.

In marshes.

stem 6-12 in., flat, rootstock thick, creeping; leaves all radical, tufted, 2-3 ft. by  $\frac{1}{2}$  in., margins crimped; flowers small, yellow-green, along a stalk spadix)  $1\frac{1}{2}$ -3 in. long, tapering in a leaf-like sheath (spathe), narrow, sepals 6, free, persistent, petals none, stamens 6, at the base of the sepals, berries yellow, green, angular, 1-3-seeded, seeds oblong. The rootstock is used as flea-bane in this country, also as an emetic in large doses, in small doses it is useful in flatulence or dyspepsia.

***Alisma Plantago,*****Water Plantain,**

ALISMACEÆ.

F. B. I. vi. 559.

Himalaya,

1-7,000 ft.

Patarnala, in  
marshes.

medium size, perennial, root fibrous, stems  $1\frac{1}{2}$ -3 ft., base swollen, leaves all radical, undivided, entire,  $3\frac{1}{2}$  by  $1\frac{1}{2}$  in., ovate-lanceolate, base tapering or slightly heart-shaped, stalks  $1\frac{1}{2}$ -10 in.; flowers  $\frac{1}{3}$  in. diam., pink with a yellow base, on long slender unequal stalks in bracteate clusters forming a large terminal pyramidal branching raceme, sepals 3, green, persistent, petals 3, thin, soon falling off, stamens 6, ovaries many, small, in a ring, style slender, stigmas terminal; achenes 20-30 in one circle, surrounded by the three enlarged sepals.

***Alisma reniforme,***

ALISMACEÆ.

F. B. I. vi. 560.

The Plains to

5,000 ft.

In marshes.

like the last species, but the leaves are leathery, kidney-shaped or circular with a heart-shaped base, flowers  $\frac{1}{2}$  in. diam., white.

## WATER PLANTS.

## HERBS UNBRANCHED.

## PETALS UNUNITED.

**Alisma oligococum,**

ALISMACEÆ.

F. B. I. vi. 560.

The Plains,  
in marshes.

like the last species, but leaves 3-6 by 2-3 in. broad ovate, heart-shaped, flowers pink and small.

**Sagittaria sagittifolia,  
Arrow Head,**

ALISMACEÆ.

F. B. I. vi. 561.

The Plains,  
in tanks.stemless, perennial; leaves vary, submerged ones ribbon-shaped, floating, have an ovate blade, those above the water are arrow-shaped, 2-8 in. long, blunt or short-pointed, stalks 8-18 in., triangular; flowers  $\frac{3}{4}$  in. diam., white with purple base, in branching racemes or spiked clusters, sepals 3, green, petals 3, thin, stamens 6 or more; fruit of a round or oblong head of flattened winged achenes; achenes flat, dorsally winged, wings broad, entire or slightly round-toothed.**Sagittaria guayanensis,**

ALISMACEÆ.

F. B. I. vi. 561.

The Plains,  
in tanks.like the last species, but leaves broadly ovate, deeply notched at the base, blunt-pointed, 1-2 in., lobes broad, short-pointed, or blunt, notch broad or narrow, flowers  $\frac{3}{4}$  in. diam., white, achenes flat, surrounded by a broad toothed wing.**Butomus umbellatus,  
Flowering Rush,**

ALISMACEÆ.

F. B. I. vi. 562.

The Plains to  
5,000 ft.  
Kashmir, in  
marshes.large, smooth, rootstock stout, creeping; leaves all radical, 36-48 by  $\frac{1}{3}$  in., linear, erect, 3-edged, long pointed, base sheathing; flowers 1 in. diam., pink, in simple bracteate umbels, on a long bare erect stalk, umbels many-flowered, bracts 3, lesser flowers stalks 2-4 in., sepals 3 and petals 3, both pink, leathery, persistent, stamens 9; fruit of 6 leathery, beaked, many-seeded follicles, seeds linear-oblong, furrowed.**Triglochin palustre,  
Arrow Grass,**

NAIADACEÆ.

F. B. I. vi. 563.

Himalaya,  
8-15,000 ft.  
Baluchistan (Lace).small, rootstock creeping, stem 6-24 in., tuberous, bearing runners, growing in marshes; leaves 2-12 in., rush-like,  $\frac{1}{2}$  cylindrical; flowers small, green with purplish margins on short minor stalks, in a raceme on a slender scape, sepals and petals 3 each, green, concave, soon falling off, stamens 6, styles short, often united; fruit  $\frac{1}{4}$  in. long of 3 carpels with recurved tips, lying flat against the stalk.

## WATER PLANTS.

## HERBS UNBRANCHED.

## PETALS UNUNITED.

**Triglochin  
maritimum,**  
NAIADACEÆ.  
F. B. I. vi. 563.  
Himalaya,  
12-16,000 ft.  
In marshes.

like the last species, but larger, stouter, more tuberous at the base, leaves slightly flattened at the tip, flowers larger, carpels 6.

## PETALS NONE

**Aponogeton  
monostachyon,**  
NAIADACEÆ.  
F. B. I. vi. 564.  
The Plains.  
In tanks.

submerged, rootstock tuberous ; leaves 3-6 in., floating, oblong, short-pointed or blunt, base wedge-shaped, rounded or notched ; flowers white, on sessile single or double spikes on a long stalk, young spikes enclosed in a conical sheath which soon falls off, sepals 3, ovate with a broad tip to lanceolate, petals none, stamens 6, fruit of 3 smooth leathery carpels, seeds 4-8.

**Aponogeton crispum,**  
NAIADACEÆ.  
F. B. I. vi. 564.  
The Plains, in  
tanks.

like the last species, but leaves much larger, 1-3 ft., submerged, linear-oblong to lanceolate, thin, translucent, flat or undulate, spike solitary, sepals much longer than the three to four smooth 1-2-seeded follicles.

## HERBS LEAFLESS.

## PETALS NONE.

**Lemna minor,**  
**Lesser Duckweed,**  
LEMNACEÆ.  
F. B. I. iv. 556.  
The Plains to  
9,000 ft.,  
in stagnant water.

minute, floating, growing in colonies bearing a leaf-like frond and one single root-fibre with a root cap ; the frond  $\frac{1}{8}$ - $\frac{1}{4}$  in. long, broadly ovate or oblong, nearly flat on both surfaces, green above ; flowers in the marginal cleft of the frond, at first enclosed in a minute sheath (spathe), sepals and petals none, stamens 2, style long, ovule one ; fruit a bottle-shaped utricle with one leathery seed. This plant is generally propagated by buds, which appear in the groove at the back of the frond.

## WATER PLANTS.

## HERBS LEAFLESS.

## PETALS NONE.

- Lemna gibba,** like the last species, but frond larger,  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam.  
**Gibbon's Duckweed,** circular, flat above, convex below, ovules 2-7.  
 LEMNACEÆ.  
 F. B. I. vi. 556.  
 The Plains to  
 7,000 ft., in stagnant  
 water.
- Lemna trisulca,** like the last species, but frond larger,  $\frac{1}{2}$ - $\frac{3}{4}$  in., lanceolate  
 LEMNACEÆ. with a broad toothed tip, not convex below, ovule one.  
 F. B. I. vi. 557.  
 The Plains, in  
 stagnant water.
- Lemna polyrrhiza,** like the last species, but root fibres several, clustered,  
**Great Duckweed,** frond  $\frac{1}{4}$ - $\frac{1}{3}$  in. diam., broadly ovate or circular, both surfaces  
 LEMNACEÆ. nearly flat, dark green above, usually purple below, ovules  
 F. B. I. vi. 557. 1 or 2.  
 The Plains to  
 5,000 ft.,  
 in stagnant water.
- Wolffia arrhiza,** minute, like grains of green sand, root fibres none,  
**Rootless Duckweed,** frond  $\frac{1}{12}$  in. and less in diam., upper surface flat, lower  
 LEMNACEÆ. swollen, flowers consisting of one sessile anther and one  
 F. B. I. vi. 557. ovule bursting through the upper surface of the frond.  
 The Plains to  
 10,000 ft.,  
 in stagnant water.



## LEAFLESS PLANTS.

## TREES.

- Tamarix articulata** see Trees, Erect, Alternate, Exstipulate, Simple.
- Casuarina equisetifolia**,  
CASUARINACEÆ.  
F. B. I. v. 598.  
The Plains, planted. large, wood reddish, bark fibrous, stripping in long pieces, branches drooping; branchlets thread-like, cylindrical, almost 6-8-angled, grooved, falling in winter, jointed, internodes  $\frac{1}{8}$  in., ending in a sheath of 6-8 united, awl-shaped scales (leaves ?); flowers minute, male and female on the same or different trees, male flowers in superposed cups in terminal cylindrical or almost clubbed spikes,  $\frac{1}{2}$  in. long, sepals 1 or 2, concave, stamen 1, anther large, female flowers in ovoid or round heads, bracteate or 2-bracteolate, style 2-fid; fruit  $\frac{3}{4}$  in. diam., of hardened bracts, oblong-ovate with a broad tip, 12 rows of achenes winged, wing terminal, tipped by the style.

## SHRUBS.

## PETALS UNUNITED.

- Capparis aphylla**, see Shrubs, Erect, Alternate, Stipulate, Simple.
- Tamarix gallica**, see Shrubs, Erect, Alternate, Exstipulate, Simple.
- Tamarix salina**, see Shrubs, Erect, Alternate, Exstipulate, Simple.
- Tamarix dioica**, see Shrubs, Erect, Alternate, Exstipulate, Simple.

## PETALS UNITED.

- Periploca aphylla**, see Shrubs, Erect, Opposite, Exstipulate, Simple.
- Periploca hydaspidis**,  
ASCLEPIADECEÆ.  
F. B. I. iv. 12.  
The Plains to  
4,000 ft.  
Kashmir. perennial, smooth, twining, branches wiry, tortuous,  $\frac{1}{2}$  in. thick, sometimes clustered; leaves (if any)  $\frac{1}{6}$ - $\frac{1}{4}$  in., opposite, linear, thick, just pointed; flowers  $\frac{1}{4}$  in. diam., yellow, in loose terminal or axillary clusters  $\frac{1}{2}$ -1 in. across, often opposite, very many, stalk thick, erect, bracts soon falling off, calyx 5-lobed, lobes quite smooth, overlapping, rounded, corolla wheel-shaped, lobes 5, oblong, blunt, velvety within, smooth without, mouth with a 10-lobed (corona) ring with 5 awl-shaped hairy processes, stamens 5, ununited, broad, short, flat, anthers bearded, touching over the stigma, stigma convex; follicles 2, cylindrical, smooth, seeds flattened, ovoid, winged with a tuft of hairs (coma).
- Leptadenta Spartium**, see Shrubs, Erect, Opposite, Exstipulate, Simple.
- Orthanthera viminea**, see Shrubs, Erect, Opposite, Exstipulate, Simple.

## LEAFLESS PLANTS.

## SHRUBS.

## PETALS NONE.

- Anabasis phyllophora**, see Shrubs, Erect, Opposite, Exstipulate, Simple.
- Anabasis setifera**, see Shrubs, Erect, Opposite, Exstipulate, Simple.
- Calligonum polygonoides**, see Shrubs, Erect, Alternate, Exstipulate, Simple.
- Viscum articulatum**, . perennial, parasitic on trees, such as *Cordia vestita*,  
*Pudu, pan.*  
 LORANTHACEÆ.  
 F. B. I. v. 226.  
 Himalaya,  
 3-6,000 ft.,  
 east of the Ravi.  
 Simla, the Glen  
 (Collett).  
 Chamba.  
 Purus Pashia, *Cornus capitata*, much branched, green, main stem rounded, branches flat, streaked, furrowed lengthwise, contracted at the knots, hanging down, internodes 1-2 in. long; flowers minute, green, clustered at the top of the joints, male and female in the same cluster, sessile, groups of 3, two or several groups at a joint, male flowers calyx 3 or 4-parted, lobes thick, soon falling off, anthers broad, sessile, united to the calyx lobes, female flowers, calyx as in the male, stigma sessile; berry  $\frac{1}{10}$  in., yellow, smooth, juicy, 1-seeded, sticky.
- Viscum japonicum**, like the last species, but parasitic on *Quercus incana*,  
 LORANTHACEÆ.  
 F. B. I. v. 226.  
 Himalaya,  
 5 7,000 ft.  
 Simla, the Glen  
 (Collett).  
 Matiana.  
*Ilex dipyrrena*, *Rhus*, *Olea*, *Rhododendron*, erect, only 6 in. high, branches fleshy, flat, jointed, joints  $\frac{1}{2}$ - $\frac{3}{4}$  in., not grooved, calyx lobes persistent, crowning the berry.
- Euphorbia Tirucalli**, see Shrubs, Erect, Opposite, Exstipulate, Simple.
- Ephedra vulgaris**, small, stiff, smooth, almost erect, branches green,  
 or *gerardiana*, slender, finely grooved, often curved, membranous sheathing scales at the joints take the place of leaves; flowers  
 var. *saxatilis*, minute in the axils of upper bracts of small cones, bracts  
*Amsania, budshur,* united, opposite bracts not margined, lower empty, male  
*cheva.* and female cones on different plants, male cones solitary  
 GNETACEÆ. or in pairs, more rarely in clusters of 3, flowers 3-4 pairs,  
 F. B. I. v. 640 calyx short, tubular, thin, flattened, 2-lobed, stamens  
 & 863. united, forming a column projecting from the calyx with  
 Himalaya, a top of 5-8 round anthers, female cone solitary, bracts  
 7-12,000 ft. 2-3 pairs, flowers one or two, the flower is a single sessile  
 Shali (Collett). erect naked ovule of two coats, the inner coat protruded  
 as a style; fruit  $\frac{1}{4}$  in. long, ovoid, pink or red, sweet, edible  
 seeds one or two enclosed in the juicy bracts.

## LEAFLESS PLANTS.

## SHRUBS.

## PETALS NONE.

**Ephedra pachyclada,**

GNETACEÆ.

F. B. I. v. 641.

Himalaya,

7-15,500 ft.

Kashmir.

like the last species but larger, stouter, rougher, bracts margined. The plant is used for tanning and the fruit is eaten.

## HERBS.

## PETALS UNUNITED.

**Lathyrus Aphaca,****Yellow Vetchling,***Rewan, rewari.*

LEGUMINOSÆ.

F. B. I. ii. 179.

The Plains to

7,000 ft.

Kundal, Rohtak.

annual, stems trailing, prostrate, wingless, slender, leaves and leaflets none, stipules 2, leaflike, forked, with a long tendril between them; flowers  $\frac{1}{2}$  in., yellow, one to two on a long stalk, calyx  $\frac{1}{4}$  in., bell-shaped, oblique, teeth 5, petals 5, slender, broad, erect, notched, keel nearly straight, blunt, shorter than the wings, stamens 10, all united but the upper one, style incurved; pod 1-1 $\frac{1}{4}$  in., linear-oblong, wingless, 4-6-seeded. This plant is sometimes cultivated for fodder.

**Monotropa uniflora,**

MONOTROPACEÆ.

F. B. I. iii. 476.

Himalaya,

6-8,000 ft.

Simla, the Glen,

Narkanda (Collett).

smooth, stem erect, leafless, with scales, parasitic, waxy white, scales  $\frac{3}{4}$  in., broadly lanceolate; flowers  $\frac{3}{4}$  in., waxy white, solitary, nodding, sepals 4, free, scale-like, nearly as long as the petals, petals 5, free, overlapping, stamens 10, nearly as long as the petals, style short, thick; capsule erect, 5-celled, seeds many, minute.

**Hypopitys****lanuginosa,**

MONOTROPACEÆ.

F. B. I. iii. 476.

Himalaya,

8-10,000 ft.

Mashobra,

Narkanda.

like the last species, but yellow brown, scales ovate, oblong, flowers yellow brown in a bracteate raceme, end flowers 5 petals, 10 stamens, others 4 petals, 8 stamens, petals  $\frac{1}{2}$  in., hairy within. This plant is found in pine forests.

## PETALS UNITED.

**Caralluma edulis,**

see Herbs, Erect, Opposite, Exstipulate, Simple

## LEAFLESS PLANTS.

## HERBS.

## PETALS UNITED.

**Boucerosia  
Aucheriana,**  
*Charungli, pamanke.*  
ASCLEPIADACEÆ.  
F. B. I. iv. 78.  
Dry hills, east of  
the Jhelum.  
The Salt Range.

perennial, leafless, stems erect, fleshy, thick, 4-angled, angles toothed, 2-6 in. high, branches  $\frac{1}{3}$ - $\frac{1}{2}$  in. diam.; flowers  $\frac{1}{3}$  in. diam., purple, in heads, calyx lobes 5, narrow, ovate-lanceolate, corolla wheel-shaped, deeply divided, lobes 5, lanceolate, hairless, pustular above, a narrow ring (corona) within the corolla, 5-lobed, united to the column, lobes 2-fid, awl-shaped, with a linear fleshy projection on the inner surface, inflexed over the anther, column minute, stigma 5-angled, low, conical; follicles 2, 3-4 in., slender, straight, tips rounded, seeds flat, winged, with a tuft of hair. This plant is considered stomachic, tonic, and carminative.

**Cuscuta reflexa,**  
**Dodder,**  
*Nilathari, zarbuti.*  
CONVOLVULACEÆ.  
F. B. I. iv. 225.  
The Plains to  
6,000 ft.  
Mashobra, Fagu,  
Matiana (Collett).  
Sanawar.

annual, parasitic, leafless, stems twining, thread-like, attached by minute disks, succulent; flowers  $\frac{1}{4}$ - $\frac{1}{3}$  in., long, yellow, waxy white, fragrant, shortly stalked in many small racemes or clusters, calyx 5-lobed, lobes  $\frac{1}{10}$  in., ovate, blunt, corolla  $\frac{1}{4}$ - $\frac{1}{3}$  in., lobes 5, short, triangular, reflexed, stamens 5, attached near the throat of the corolla tube, stigmas 2, sessile, diverging, long, short-pointed; capsule  $\frac{1}{4}$ - $\frac{1}{3}$  in., fleshy, round, 4-seeded. The seeds are used as a carminative medicine. The seeds germinate in the ground as soon as the young plant has reached a host, suckers penetrate the bark of the host, the root of the parasite then dies and it loses its connection with the soil.

**Cuscuta chinensis,**  
CONVOLVULACEÆ.  
F. B. I. iv. 226.  
Himalaya,  
5-7,000 ft.,  
west of the Sutlej,  
Kashmir, Chamba.

like the last species, but styles 2, long, stigmas round, corolla lobes lanceolate, longer pointed, not reflexed.

**Cuscuta capitata,**  
CONVOLVULACEÆ.  
F. B. I. iv. 227.  
Himalaya,  
6-12,000 ft.  
Kashmir to Simla.

like the last species, but stems pink, flowers much smaller, in heads, corolla ovoid, covered without, with minute papillæ, styles long, stigmas equally long.

## LEAFLESS PLANTS.

## HERBS.

## PETALS UNITED.

**Cuscuta europæa,**  
**Greater Dodder,**

CONVOLVULACEÆ.

F. B. I. iv. 227.

Himalaya,

5-12,000 ft.

Kashmir.

like the last species, but styles shorter than the stigmas.

**Cuscuta planiflora,**

CONVOLVULACEÆ.

F. B. I. iv. 227.

The Plains to

6,000 ft.

very like the last species, but styles short, stigmas longer, corolla tube much longer than the calyx.

**Lathræa squamosa,**  
**or squamaria,**

SCROPHULARIACEÆ.

F. B. I. iv. 318.

Himalaya,

6-9,000 ft.

Baghi Forest

(Collett).

Hattu.

perennial, pale pink, leafless, parasitic on the roots of trees, stems creeping underground, fleshy, covered with short thick scales, much branched, branches erect, aerial, 4-12 in. with a few thin scales bearing terminal racemes of flowers; flowers  $\frac{3}{4}$  in., creamy white tipped with pink purple, many in bracteate racemes, lengthening and straightening as they open, calyx 2-lipped, 4-lobed, tubular, hairy, corolla 2-lipped, upper lip entire, lower 3-lobed, both lips almost erect, stamens 4, in unequal pairs, near the top of the tube, anthers slightly touching, hairy; capsule ovoid, 2-valved. The scales have small cavities lined with glands like those of insectivorous plants, remains of insects are found in these cavities, the proteid matter possibly absorbed by the glands.

**Æginetia**  
**pedunculata,**

OROBANCHACEÆ.

F. B. I. iv. 320.

The Plains to

7,000 ft.

Murree.

annual, leafless, parasitic on the roots of grasses, small, 3-6 in. high, red or yellow, stem very short;  $\frac{1}{4}$  in. thick, creeping underground, scapes short, stout, very fleshy; flowers  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long, yellow with blue, on long slender stalks 1-4 in., at the base bracts  $\frac{1}{4}$ - $\frac{1}{2}$  in., ovate, blunt, calyx spoon-shaped, split down the front, fleshy, corolla tube broad, uncurved, 2-lipped, lobes 5, broad, 2-upper united, stamens 4, unequal, style long, tip curved, stigma 2-lobed; capsule ovoid, 2-valved.

**Cistanche** or  
**Phelipæa tubulosa,**

OROBANCHACEÆ.

F. B. I. iv. 324.

The Plains.

Lahore (Thomson).

annual, large, leafless, smooth or velvety, parasitic, stem 12-60 by  $\frac{1}{2}$ -3 in., unbranched, scaly, scales  $\frac{1}{2}$ -1 in., lanceolate; flowers 1- $1\frac{3}{4}$  in., yellow, in crowded spikes 6-10 by 1-3 in., bracts  $\frac{5}{8}$ - $\frac{7}{8}$  in., lanceolate, longer than the calyx, bracteoles linear, narrower and shorter, calyx  $\frac{1}{2}$ - $\frac{3}{4}$  in., broadly tubular-bell-shaped, lobes 5, nearly equal, blunt,

## LEAFLESS PLANTS.

## HERBS.

## PETALS UNITED.

corolla much incurved, dilated above, slender below, tube inflated, mouth  $\frac{3}{4}$ - $1\frac{1}{4}$  in. diam., lobes broad, short, nearly equal, stamens 4, almost projecting from the corolla tube, hairy, anthers woolly; capsule ovoid, laterally flattened, 2-valved to the base, seeds many, almost round.

**Orobanche kashmirica,**  
OROBANCHACEÆ.  
F. B. I. iv. 324.  
Kashmir.  
Tilail (Clarke).

annual, small, velvety, leafless, parasitic, pale brown, stem 12 by  $\frac{1}{4}$  in., unbranched, scaly, scales  $\frac{1}{4}$ - $\frac{1}{2}$  in., lanceolate, few, distant, flowers  $\frac{1}{2}$ - $2\frac{2}{3}$  in., pale brown in few loose bracteate spikes, bracts  $\frac{1}{4}$ - $\frac{1}{3}$  in., lanceolate, longer than the calyx, bracteoles none, calyx  $\frac{1}{4}$  in., divided to the base behind, 5-toothed, teeth broad, short-pointed, corolla broad, softly velvety, tube curved, 2-lipped, upper lip erect, lower 3-lobed, lobes rounded, stamens 4 in unequal pairs, inserted at the base of the corolla tube, anthers included, spurred at the base, minutely hairy, style long, tip curved, stigma 2-lobed; capsule 2-valved, seeds very many, round.

**Orobanche cernua,**  
OROBANCHACEÆ.  
F. B. I. iv. 325.  
The Plains to  
12,000 ft.

like the last species, but almost smooth, flowers blue in crowded spikes, calyx lobes lanceolate, calyx divided to the base behind, almost in front, 2-lobed, 3 lower corolla lobes long-pointed, anthers long-pointed.

**Orobanche borealis,**  
OROBANCHACEÆ.  
F. B. I. iv. 325.  
Himalaya,  
7-8,000 ft.  
Murree.

like the last species, but roughly velvety, calyx with 4 long awl-shaped teeth and a median, very small tooth.

**Orobanche Solmsii,**  
OROBANCHACEÆ.  
F. B. I. iv. 325.  
Kashmir, Kishtwar,  
8-11,000 ft.  
(Falconer).

like the last species, but stem stouter, flower yellow not blue, calyx segments bi-fid to the middle.

## LEAFLESS PLANTS.

## HERBS.

## PETALS UNITED.

**Orobanche  
epithymum,  
Red Broom Rape,**

OROBANCHACEÆ.

F. B. I. iv. 325.

Himalaya,  
7-12,000 ft.

Simla, Mahasu

(Collett).

Kashmir.

like the last species, but stickily velvety, parasitic on thyme roots, stems often tuberous below, calyx divided to the base, before and behind, segments undivided, flower orange brown.

**Orobanche indica,  
Sarsan banda.**

OROBANCHACEÆ.

F. B. I. iv. 326.

The Plains.

Thanesar.

like the last species, but parasitic on mustard roots, sometimes much branched from the base bracteoles 2, calyx divided only to the base behind, 4- or 5-toothed, corolla blue, straight. This parasite grows on the roots of mustard and tobacco plants. Cows taught to eat it give more milk.

**Orobanche ramosa,  
Branched Broom  
Rape,**

OROBANCHACEÆ.

F. B. I. iv. 326.

Kashmir, Jammu,

Banahal, 6-7,000 ft.

very like the last species, but parasitic on hemp and lucerne roots, calyx lobes slender, awl-shaped, from a broad base, corolla tube white, lobes blue.

**Orobanche psila,**

OROBANCHACEÆ.

F. B. I. iv. 327.

Kashmir at

Mapanon, 9,000 ft.

(Clarke).

like the last species, but not branched, calyx divided to the base in front and behind, segments 2-fid, lobes awl-shaped, corolla tube curved.

**Corallorhiza innata,  
Spurless Coral Root,**

ORCHIDACEÆ.

F. B. I. v. 710.

Kashmir

(Jacquemont).

perennial, erect, leafless, red brown, rootstock coral-like, jointed, scape 6-10 in., slender, not branched, sheathed, sheaths loose; flowers  $\frac{1}{4}$  in. long, yellowish green, few in a terminal spike, almost sessile, bracts minute, sepals 3, ovate-lanceolate, lateral deflexed, petals 3, equal to the sepals, incurved, tip hanging, united to the base of the column, 3-lobed, side lobes narrow, middle blunt, slightly notched, column short, erect, with a terminal lid-like anther, 2 pairs of round pollen masses.

## LEAFLESS PLANTS.

## HERBS.

## PETALS UNITED.

**Neottia listeroides,**

ORCHIDACEÆ.

F. B. I. vi. 103.

Himalaya,

5-9,000 ft.

Simla, in forest

(Collett).

Jaku, Kashmir.

perennial, erect, leafless, brown, roots forming a dense mass of fleshy fibres growing on rotting vegetation in shade, stem unbranched with the raceme 8-14 in. high, sheathed, stout or slender, stiff, sheaths 3-4, loose; flowers  $\frac{1}{2}$  in. red or brown-green in a loose flowered velvety raceme, 6-12 in., bracts  $\frac{1}{8}$ - $\frac{1}{3}$  in., ovate-lanceolate, as long as or longer than the ovary, sepals 3, ovate-lanceolate, concave, erect, then spreading, petals 3, smaller, linear, blunt, then spreading, lip hanging from the base of the column, 2-3 times as long as the sepals, linear, oblong, tip broad, 2-lobed, mid-rib broad, dark green, column short, incurved, prolonged into a pointed process stretching over the stigma, 2 pairs of pollen masses hanging from the gland of the rostellum; capsule  $\frac{1}{3}$  in. long, erect, narrowed at both ends, seeds minute.

**Gastrodia  
orobanchoides,**

ORCHIDACEÆ.

F. B. I. vi. 122.

Himalaya,

7-8,000 ft.

perennial, erect, leafless, yellowish-brown, root a large oblong ringed tuber, parasitic on roots, stem 10-24 in., stout, sheaths short, loose; flowers  $\frac{1}{2}$ - $\frac{2}{3}$  in., yellow, in a many-flowered loose raceme, bracts nearly as long as the flowers, oblong, short-pointed, sepals and petals united into a 5-lobed tube, split in front, lip short, united below to the column and the sepals and petals ovate recurved, column erect, nearly as long as the tube, narrowly 2-winged, stigma prominent, anther terminal; pollen masses 2; capsule  $\frac{3}{4}$  in., erect, swollen.

**Epipogum aphyllum,  
Leafless Epipogum,**

ORCHIDACEÆ.

F. B. I. vi. 124.

Himalaya,

6-8,000 ft.

Fagu, the Chor, in  
forest (Collett).

perennial, leafless, rare, grows on decaying leaves, only found in Herefordshire in Britain and there on two occasions, rootstock creeping, tuberous above, branches short, fleshy, stem 4-8 in., stout, erect, sheathing, sheaths 1-2, short, blunt; flowers  $\frac{3}{4}$  in., yellow pink in a 3-6 flowered terminal raceme, bracts large, shorter than the flowers, raceme thin, oblong, sepals  $\frac{1}{2}$ - $\frac{3}{4}$  in., narrowly lanceolate, petals are like in size and shape to the sepals, lip above, joined to the base of the column, oblong, whitish with red glandular warts, 3-lobed, middle much the largest, pointed, recurved, concave, spur large, equal to the lip, blunt, column short, anther thickened, 2-celled, terminal, pollen masses 2, connected by slender tails to a triangular gland on the column; capsule 3-valved, seeds very many, minute.



## LEAFLESS PLANTS.

## HERBS.

## PETALS UNITED.

**Balanophora involuerata,**

BALANOPHORACEÆ.

F. B. I. vi. 237.

Himalaya,

6,000 ft.

Kotgarh, Simla  
Hills (Thomson)

(Collett).

smooth, fleshy, fungus-like, leafless, parasitic on the roots of trees, rootstock tuberous, 3-4 in. diam., warted, flower stems 1-6 in. long burst from the rootstock which forms a sheathed ring at the base, on the stem about the middle a ring of 2-4 scales (involucre) contain yellow or red flower heads or cones, flowers minute, interspersed with club-shaped cellular bodies (bracteoles), male flower consists of a tube (calyx) of 3 united lobes sunk in the head, stamens 3, united in a column, female flowers consist of a round flattened ovary narrowed into a slender style, sometimes clustered round a bracteole; fruit minute, brittle, seed round.

**Asparagus filicinus,***Alli palli, satzarra.*

LILIACEÆ.

F. B. I. vi. 314.

Himalaya,

4-7,000 ft.

Mashobra (Collett).

Kashmir.

Nathiagalli.

rootstock perennial, stout, creeping, stems annual, erect, zigzag, hollow, much branched, smooth, unarmed: leafless, minute scales in their axils, tufts of 2-5 flattened curved branchlets (cladodes)  $\frac{1}{3}$ - $\frac{1}{2}$  in.; flowers  $\frac{1}{12}$ - $\frac{1}{10}$  in., white, drooping, single or in pairs, stalks  $\frac{1}{2}$  in., very slender, jointed about the middle, calyx bell-shaped, 6-parted, stamens 6, at the base of the calyx lobes, ovary 3-angled, 3-celled, style 1, stigmas 3; berry  $\frac{1}{2}$  in. diam., round, red, seeds 2-6. The root is used as a tonic and astringent.

**Asparagus gracilis,**

LILIACEÆ.

F. B. I. vi. 315.

The Plains to

6,000 ft.

Valleys below Simla

(Collett).

Rawalpindi.

Baluchistan.

like the last species, but prickly on the lower branches, cladodes straight, stiff, flowers  $\frac{1}{6}$  in., calyx-segments spreading.

**Asparagus****racemosus,***Satawar, shakakul,*

LILIACEÆ.

F. B. I. vi. 316.

The Plains to

4,000 ft.

Valleys below Simla

(Collett).

Below Fagu.

like the last species, but stems climbing, prickles  $\frac{1}{4}$  in., curved, round, spreading, flowers in racemes, 1-4 in. long. This plant is used as a demulcent, diuretic, alterative and antidiysenteric.

**LEAFLESS PLANTS.****HERBS.****PETALS UNITED.**

**Asparagus  
adscendens,**  
*Safed musli.*

LILIACEÆ.

F. B. I. vi. 317.

The Plains to  
6,000 ft.

Suni (Collett).

like the last species, but stems straggling, half climbing, prickles  $\frac{1}{2}$ - $\frac{3}{4}$  in. straight cladodes erect in tufts of 6-20. The root is used as a demulcent and tonic, often instead of salep.

# PLANTS OF THE PUNJAB.

## Index of the Botanical, English and Vernacular names of Plants.

A.	PAGE.		PAGE.		PAGE.
Aaron's Rod ..	476	ACTÆA—		<i>Akarkarha</i> ..	188
Abelo ..	21	ADENOCALYX—	388	<i>Akas Nim</i> ..	7
ABELIA—		bicolor ..	329	<i>Akhi</i> ..	519
triflora ..	55	ADENOSTEMMA—		<i>Akhi-ul-malik</i> ..	557
ABIES—		viscosum ..	416	<i>Akhreri</i> ..	107
Webbiana ..	40	ADHATODA—		<i>Akhrot</i> ..	45
ABRUS—		Vasica ..	66	<i>Akra</i> ..	263
precatorius ..	596	ADONIS—		<i>Aksan</i> ..	121
ABUTILON—		æstivalis ..	348	" ..	309
Avicennæ ..	226	chrysoyathus ..	349	<i>Al</i> ..	1
bidentatum ..	239	scrobiculata ..	349	ALBIZZIA—	
graveolens ..	226	ADOXA—		Julibrissin ..	28
indicum ..	239	Moschatellina ..	505	Lebbek ..	28
ACACIA—		<i>Adrak</i> ..	431	odoratissima ..	28
arabica ..	26	ÆCMANTHERA—		procera ..	28
Catechu ..	27	tomentosa ..	62	stipulata ..	28
eburnea ..	26	ÆGINETIA—		ALCHEMILLA—	
Farnesiana ..	26	pedunculata ..	647	vulgaris ..	407
Intsia ..	604	ÆGLE—		<i>Alethi</i> ..	521
Jacquemontii ..	27	Marmelos ..	42	ALETRIS—	
leucophloea ..	27	ÆRUA—		nepalensis ..	434
modesta ..	27	javanica ..	123	<i>Alettic</i> ..	541
Senegal ..	27	lanata ..	315	<i>Alfalfa</i> ..	252
ACALYPHA—		scandens ..	586	ALHAGI—	
brachystachya ..	348	ÆSCHYNOMENE—		maurorum ..	79
ciliata ..	348	indica ..	262	<i>Alish</i> ..	519
ACANTHOLIMON—		ÆSCULUS—		ALISMA—	
lycophodioides ..	484	Hippocastanum ..	6	oligococum ..	640
ACANTHOPHYLLUM—		indica ..	7	Plantago ..	639
maerodon ..	142	<i>Afim</i> ..	353	reniforme ..	639
ACER—		<i>Afsantin</i> ..	365	ALLARDIA—	
cæsius ..	6	" ..	366	tomentosa ..	374
caudatum ..	6	<i>Afsantin-ul-bahr</i> ..	364	<i>Alli palli</i> ..	651
lævigatum ..	2	AGERATUM—		ALLIUM—	
oblongum ..	2	conyzoides ..	186	ascalonicum ..	437
pentapomicum ..	6	AGRIMONIA—		atropurpureum ..	441
pictum ..	6	Eurpatorium ..	468	atrosanguineum ..	439
villosum ..	6	pilosa ..	468	Cepa ..	438
<i>Ach</i> ..	1	Agrimony, common ..	468	Clarkei ..	440
ACHILLEA—		<i>Ailan</i> ..	32	consanguineum ..	439
Millefolium ..	508	AILANTHUS—		Fedschenkoanum ..	439
ACHYRANTHES—		excelsa ..	42	Govanianum ..	440
aspera ..	181	AINSLLEE—		lilacinum ..	439
bidentata ..	181	aptera ..	476	porrum ..	438
ACONITUM—		pteropoda ..	475	rubellum ..	439
heterophyllum ..	352	<i>Ajmut</i> ..	391	sativum ..	438
Lycocotium ..	352	" ..	392	Schœnoprasum ..	438
Napillus ..	502	AJUGA—		Semonovii ..	438
ACORUS—		bracteosa ..	217	Stracheyi ..	439
Calamus ..	639	parviflora ..	217	Thomsoni ..	440
ACROCEPHALUS—		<i>Ajwain</i> ..	392	victoralis ..	440
capitatus ..	191	<i>Al</i> ..	60	Wallichii ..	440
ACROGLOCHIN—		" ..	121	Almond ..	10
chenopodioides ..	513	<i>Akalbir</i> ..	406		

<i>A--continued.</i>		PAGE.	PAGE.
		<i>Amrola</i>	54
		<i>Amrut</i>	2
		<i>Amsania</i>	644
		<i>Amul</i>	65
ALNUS—		ANABASIS—	
<i>nepalensis</i>	18	<i>phylophora</i>	70
<i>nitida</i>	18	<i>setifera</i>	70
Alpino circæa	184	ANÆCTOCHILUS—	
<i>pennycross</i>	322	<i>Roxburghii</i>	427
<i>Thalictrum</i>	408	ANAGALLIS—	
ALPINA—		<i>arvensis</i>	154
Allughas	432	ANAPHALIS—	
Galanga	431	<i>adnata</i>	472
<i>Alsi</i>	275	<i>arancosa</i>	285
ALTERNANTHERA—		<i>cinnamomea</i>	472
<i>sessilis</i>	543	<i>controta</i>	286
ALTHEA—		<i>cuneifolia</i>	472
Ludwigii	551	<i>nubigena</i>	471
<i>officinalis</i>	237	<i>triplinervis</i>	472
<i>Alucha</i>	11	<i>Anar</i>	53
ALYSICARPUS—		ANDRACHNE—	
<i>hamosus</i>	545	<i>cordifolia</i>	115
<i>monilifer</i>	545	<i>telephioides</i>	571
<i>rugosus</i>	546	ANDROGRAPHIS—	
<i>vaginalis</i>	517	<i>echioides</i>	168
ALYSSUM—		ANDROSACE—	
<i>minimum</i>	273	<i>Aizoon</i>	420
<i>Am</i>	30	<i>lanuginosa</i>	533
<i>Amal-bel</i>	595	<i>muscoidea</i>	534
<i>Amaltas</i>	25	<i>rotundifolia</i>	510
Amaranth, prickly	313	<i>saxifragifolia</i>	420
AMARANTUS—		<i>sempervivoides</i>	421
Blitum	314	<i>villosa</i>	534
<i>caudatus</i>	314	ANELLEMA—	
<i>gangeticus</i>	314	<i>Hamiltonianum</i>	564
<i>paniculatus</i>	314	<i>nudiflorum</i>	564
<i>polygamus</i>	314	<i>spiratum</i>	564
<i>spinosus</i>	313	ANEMONE—	
<i>tenuifolius</i>	572	<i>biflora</i>	453
<i>viridis</i>	314	<i>Falconeri</i>	454
<i>Ambara</i>	45	<i>narcissiflora</i>	451
<i>Ambar vel</i>	582	<i>obtusiloba</i>	454
<i>Ambu</i>	14	<i>polyanthes</i>	454
<i>Amboti</i>	552	<i>rivularis</i>	386
American jute	226	<i>rupestris</i>	454
<i>Amla</i>	14	<i>rupicola</i>	453
<i>Amlanch</i>	127	<i>tetrasepala</i>	454
<i>Amldandi</i>	84	<i>vitifolia</i>	386
<i>Amlika</i>	552	Angelica	398
<i>Amlin</i>	352	ANGELICA—	
<i>Amlok</i>	33	<i>glauca</i>	398
<i>Amlora</i>	247	<i>Angharakhindi</i>	82
AMMANIA—		<i>Angu</i>	7
<i>baccifera</i>	179	<i>Angur</i>	592
<i>multiflora</i>	179	ANISOMELES—	
<i>pentandra</i>	179	<i>cvata</i>	211
<i>peploides</i>	532	<i>A kol</i>	591
<i>rotundifolia</i>	532	<i>Ankra</i>	263
<i>salicifolia</i>	179	ANOGEISSUS—	
<i>senegalensis</i>	179	<i>latifolia</i>	36
AMORPHOPHALLUS—		ANONA—	
<i>campanulatus</i>	455	<i>squamosa</i>	110
AMPHICARPEA—		ANCTIS—	
Edgeworthii	598	<i>calycina</i>	134
AMPHICOME—		ANTHEMIS—	
<i>aruta</i>	403	<i>odontostephana</i>	374
<i>emodi</i>	403	ANTHRISCUS—	
		<i>nemorosa</i>	395
		ANTICHARIS—	
		<i>linearis</i>	12
		ANTIDESMA—	
		<i>Ghæsembilla</i>	14
		ANTIRRHINUM—	
		<i>Orontium</i>	171
		<i>Aparajit</i>	601
		APIUM—	
		<i>graveolens</i>	391
		APONOGETON—	
		<i>crispum</i>	641
		<i>monostachyon</i>	641
		Apple	12
		Apricot	11
		AQUILEGIA—	
		<i>vulgaris</i>	388
		ARABIS—	
		<i>alpina</i>	409
		<i>amplaxicaulis</i>	409
		<i>auriculata</i>	409
		<i>glabra</i>	409
		<i>nuda</i>	409
		<i>taraxicifolia</i>	446
		<i>tibetica</i>	355
		ARALIA—	
		<i>cachemirica</i>	109
		<i>Arambu</i>	287
		ARCHANGELICA—	
		<i>officinalis</i>	398
		ARCTIUM—	
		<i>Lappa</i>	288
		<i>Ardandu</i>	590
		ARDISIA—	
		<i>humilis</i>	119
		ARENARIA—	
		<i>foliosa</i>	149
		<i>glanduligera</i>	530
		<i>holosteoides</i>	149
		<i>kashmirica</i>	149
		<i>Meyeri</i>	149
		<i>neelgerrensis</i>	530
		<i>serpyllifolia</i>	530
		<i>Arend</i>	130
		ARGEMONE—	
		<i>Mexicana</i>	354
		ARGSTEMMA—	
		<i>verticillatum</i>	133
		ARGYROLOBIUM—	
		<i>flaccidum</i>	91
		<i>roseum</i>	249
		<i>Arhai-ka-bel</i>	604
		<i>Arhar dal</i>	98
		ARISEMA—	
		<i>curvatum</i>	406
		<i>flavum</i>	516
		<i>intermedium</i>	515
		<i>Jacquemontii</i>	516
		<i>tortuosum</i>	516
		<i>utile</i>	515
		<i>Wallichianum</i>	515
		<i>Arjha san</i>	115
		<i>Arjun</i>	36
		<i>Arkhar</i>	44
		<i>Arkhol</i>	44

A—concluded.		PAGE.		PAGE.	
	PAGE.	ASTRAGALUS—concluded—			
<i>Arkpushpi</i>	582	cashmirensis	258	<i>Badward</i>	371
<i>Arlei</i>	604	chlorostachys	101	<i>Badhshahi-lai</i>	357
<i>Arnatto</i>	8	cicerifolius	103	<i>Badranj</i>	206
ARNEBIA—		ciliolatus	256	<i>Badror</i>	37
<i>Griffithii</i>	306	contortuplicatus	257	<i>Baggi buti</i>	213
hispidissima	306	Falconeri	256	<i>Bagha-nulla</i>	571
tibetana	306	frigidus	256	<i>Bagnu</i>	21
Thomsoni	306	graveolens	101	<i>Bahamb</i>	45
Arrow head	640	hamosus	557	<i>Baheru</i>	35
" grass	640	himalayanus	557	<i>Bail</i>	88
ARTEMISIA—		leptocentrus	103	<i>Bairi</i>	84
Absinthium	366	leucocephalus	258	<i>Bajan</i>	78
amygdalina	330	longicaulis	101	<i>Bakain</i>	42
annua	364	malacophyllus	102	<i>Bakar</i>	3
Dracunculus	363	melanostachys	258	<i>Bakchi</i>	325
laciniata	365	multiceps	103	<i>Bakesh</i>	30
maritima	364	Munroi	258	<i>Bakhra</i>	527
Moorecroftiana	365	polyacanthus	258	<i>Bakhtmal</i>	92
parviflora	363	prolixus	257	<i>Bakla</i>	64
Roxburghiana	365	pyrrhotrichus	102	"	600
scoparia	364	rhizanthus	462	<i>Bakli</i>	3
Sieversiana	366	Stewartii	101	"	36
vestita	365	strobiliferus	104	<i>Bakrati</i>	100
vulgaris	365	subumbellatus	556	<i>Bakru</i>	56
<i>Aru</i>	10	tribuloides	557	<i>Bala mushk</i>	416
<i>Arua</i>	42	trichocarpus	256	BALANOPHORA—	
<i>Asafotida</i>	399	zanskarensis	103	involucrata	61
<i>Asaind</i>	36	<i>Atis</i>	352	<i>Bal basant</i>	76
<i>Asgand</i>	121	<i>Atri lal</i>	170	BALIOSPERMUM—	
"	309	ATRIPLEX—		axillare	86
Ash, common	7	erassifolia	315	<i>Bal raksha</i>	286
Ashphodel	437	hortensis	497	Balsam	323
<i>Asl rai</i>	357	ATYLOSIA—		<i>Baltanga</i>	425
ASPARAGUS—		mollis	602	<i>Balut</i>	87
adscendens	652	platycarpa	602	<i>Bambher</i>	629
capitatus	318	scarabæoides	602	<i>Bammewa</i>	125
filicinus	651	<i>Austakhadus</i>	177	<i>Bana</i>	18
gracilis	651	Ava chiretta	156	"	61
racemosus	651	Avens, common	461	<i>Banada</i>	431
ASPERUGO—		AVERRHOA—		<i>Banafshah</i>	456
procumbens	570	Bilimbi	41	<i>Banajwain</i>	67
ASPERULA—		Carambola	41	<i>Banakhor</i>	109
brachyantha	154	AXYRIS—		<i>Banana</i>	432
cynanchica	153	amaranthoides	315	<i>Banaphal</i>	464
ASPHODELUS—		AZADIRACHTA—		<i>Banar</i>	266
comosus	437	indica	42	<i>Banbakharu</i>	55
tenuifolius	437			<i>Banbaki</i>	66
ASTER—				"	503
altaicus	291			<i>Banda</i>	65
amellus	290			<i>Banduke</i>	547
asperulus	333			<i>Baneberry</i>	388
diplostephioides	476			<i>Bangha-nulla</i>	571
Laka	477			<i>Banguch</i>	54
molliusculus	290	<i>Babchi</i>	237	<i>Ban gulab</i>	108
pseudamellus	290	<i>Babri</i>	600	<i>Banjoan</i>	395
Thomsoni	333	<i>Babrunj</i>	609	<i>Bankakra</i>	620
ASTILBE—		<i>Babul</i>	26	<i>Ban kapas</i>	24
rivularis	272	"	27	<i>Banmaru</i>	62
ASTRAGALUS—		<i>Babuna</i>	362	<i>Ban nambu</i>	130
Aitchisoni	257	"	374	<i>Ban-okra</i>	362
amherstianus	556	<i>Baburi</i>	175	<i>Banphal</i>	234
bakuensis	462	<i>Bach</i>	639	<i>Banphant</i>	58
bicuspis	104	<i>Bada</i>	19	<i>Bansa</i>	66
Candolleanus	102	"	88	<i>Bansa-bansu</i>	255
		<i>Badam</i>	10	<i>Bansa siyah</i>	168
		<i>Badaward</i>	368	<i>Bansu</i>	71

<b>B—continued.</b>		PAGE.	PAGE.	PAGE.
			<i>Bed</i>	19
			<i>Beda</i>	20
			<i>Bedanjir</i>	130
			<i>Bedleila</i>	19
			BEGONIA—	
			<i>amœna</i>	458
			<i>picta</i>	458
			<i>Behel</i>	8
			<i>Bekhal</i>	80
			<i>Bekhar</i>	80
			<i>Bekh-akwar</i>	185
			<i>Bel</i>	42
			BELAMCAUDA—	
			<i>chinensis</i>	435
			<i>Beli</i>	20
			"	128
			"	130
			<i>Bengan</i>	129
			BENINCASA—	
			<i>cerifera</i>	617
			<i>Ber</i>	9
			<i>Berain</i>	138
			BERBERIS—	
			<i>aristata</i>	50
			<i>Lycium</i>	51
			<i>vulgaris</i>	50
			BERCHEMIA—	
			<i>Edgeworthii</i>	77
			<i>floribunda</i>	91
			<i>lineata</i>	77
			BERGIA—	
			<i>æstivosa</i>	47
			<i>ammannioides</i>	136
			<i>odorata</i>	47
			<i>Bersu</i>	115
			BETA—	
			<i>vulgaris</i>	497
			<i>Bettar</i>	127
			BETULA—	
			<i>alnoides</i>	18
			<i>utilis</i>	17
			<i>Bhabar</i>	248
			<i>Bhains</i>	88
			<i>Bhan</i>	114
			<i>Bhand</i>	526
			<i>Bhanda</i>	525
			<i>Bhang</i>	248
			<i>Bhangjala</i>	406
			<i>Bhangjira</i>	192
			<i>Bhans</i>	180
			<i>Bhant</i>	67
			<i>Bhanwar</i>	610
			<i>Bhat niggi</i>	124
			<i>Bhatte</i>	403
			<i>Bhedaru</i>	127
			<i>Bhekar</i>	66
			<i>Bhendi</i>	245
			<i>Bhentri</i>	127
			<i>Bher-band</i>	354
			<i>Bhil</i>	127
			<i>Bhilawa</i>	31
			<i>Bhindi</i>	246
			<i>Bhui-champa</i>	430
			<i>Bhuiokra</i>	538
			<i>Bhumphor</i>	443
			<i>Bhur-bhur</i>	368
			<i>Bhur-bhur</i>	473
			<i>Bhutjhata</i>	391
			<i>Biar</i>	39
			<i>Bibsar</i>	130
			<i>Bichua</i>	138
			BIDENS—	
			<i>cernua</i>	188
			<i>pilosa</i>	219
			<i>tripartita</i>	219
			<i>Wallichii</i>	220
			<i>Bihi</i>	81
			<i>Bijindak</i>	359
			<i>Bikh</i>	502
			<i>Bilauri</i>	459
			<i>Bilmbi</i>	41
			<i>Bilin</i>	41
			<i>Biliri</i>	589
			<i>Billi lotu</i>	206
			BIOPHYTUM—	
			<i>sensitivum</i>	455
			Bird's foot trefoil	555
			<i>Birm-kanwal</i>	473
			<i>Bis</i>	20
			"	112
			<i>Bish</i>	502
			<i>Bishkapra</i>	541
			Bishop's weed	392
			<i>Bislambhi</i>	615
			<i>Bistendu</i>	33
			<i>Bisu</i>	19
			<i>Bithua</i>	298
			<i>Bitsu</i>	88
			BIXA—	
			<i>Orellana</i>	8
			Blackberry	519
			Bladder Campion	182
			" <i>Doek</i>	32
			" <i>senna</i>	100
			BLAINVILLEA—	
			<i>latifolia</i>	187
			BLEPHARIS—	
			<i>edulis</i>	194
			<i>sindica</i>	193
			Blue bell of Scotland	341
			" <i>bottle</i>	371
			" <i>pine</i>	39
			BLUMEA—	
			<i>amplectens</i>	326
			<i>hieracifolia</i>	327
			<i>lacera</i>	327
			<i>laciniata</i>	361
			<i>membranacea</i>	362
			<i>Wightiana</i>	326
			BŒHMERI—	
			<i>platyphylla</i>	50
			BENNINGHAUSENIA—	
			<i>albiflora</i>	390
			BŒRHAAVIA—	
			<i>elegans</i>	180
			<i>repanda</i>	586
			<i>repens</i>	542
			<i>verticillata</i>	586
			<i>Bōi kalan</i>	123
			<i>Bokat</i>	437
			BOMBAX—	
			<i>Malabaricum</i>	24

<b>B—concluded.</b>		PAGE.		PAGE.	
	PAGE.		PAGE.		PAGE.
BONNAYA—		<i>Bun-lung</i>	634	CALOTROPIS—	
brachiata ..	194	BUPLEURUM—		gigantea ..	60
veronicaefolia ..	535	Candollii ..	279	procera ..	60
<i>Bor</i> ..	16	diversifolium ..	280	CALTHA—	
BOSIA—		falcatum ..	280	plustris ..	387
Amherstiana ..	123	jucundum ..	279	Caltrops ..	527
BOSWELLIA—		lanceolatum ..	279	CALYSTEGIA—	
serrata ..	42	longicaule ..	280	hederacea ..	570
BOTHRIOSPERNUM—		Maddeni ..	281	CAMPANULA—	
tenellum ..	570	setaceum ..	281	argyrotricha ..	568
BOUCEROSIA—		tenue ..	280	aristata ..	484
Aucheriana ..	646	Thomsoni ..	279	canescens ..	341
Box ..	71	Buplever ..	279	cashmiriana ..	342
<i>Boya</i> ..	206	<i>Burani muli</i> ..	358	colorata ..	342
Boybean ..	514	<i>Burans</i> ..	32	latifolia ..	341
BRACHYACTIS—		Burdock ..	388	Camphire ..	53
menthodora ..	334	<i>Burhna</i> ..	336	Canal weed ..	523
robusta ..	291	Bur-Marigold ..	188	CANNA—	
umbrosa ..	291	Bur Medick ..	555	indica ..	432
<i>Brahmamduki</i> ..	546	Burnet saxifrage ..	393	CANNIBUS—	
Bramble ..	519	Burweed ..	362	sativa ..	248
BRASSICA—		..	637	CANSCORA—	
alba ..	358	<i>But</i> ..	21	decussata ..	158
campestris ..	357	BUTEA—		diffusa ..	158
juncea ..	357	frondosa ..	24	Caper ..	73
Napus ..	357	<i>Butkis</i> ..	446	CAPPARIS—	
nigra ..	356	BUTOMUS—		aphylla ..	73
Tournefortii ..	357	umbellatus ..	640	horrida ..	590
BREWERIA—		Buttercup ..	350	sepiaria ..	73
latifolia ..	121	Buxbaum's Speedwell ..	537	spinosa ..	73
BRIDELIA—		BUXUS—		CAPSELLA—	
montana ..	35	sempervirens ..	71	Bursa-pastoris ..	358
retusa ..	34	<i>Buzru</i> ..	52	CAPSICUM—	
stipularis ..	586	<i>Bwir</i> ..	88	frutescens ..	309
<i>Brimposh</i> ..	629			minimum ..	309
<i>Brind</i> ..	28			grossum ..	309
<i>Brinjal</i> ..	129			CARAGANA—	
Brooklime ..	536			brevispina ..	100
Brookweed ..	297			CARALLUMA—	
BRUNELLA—				edulis ..	156
vulgaris ..	177			Caraway ..	392
BRYONIA—				CARDAMINE—	
laciniosa ..	620			hirsuta ..	503
BRYOPHYLLUM—				impatiens ..	503
calycinum ..	185			macrophylla ..	504
BUCHNERA—				CARDIOSPERMUM—	
hispida ..	190			Halicacabum ..	595
Buckbean ..	514			CARDUUS—	
BUCKTHORN—				nutans ..	368
Indian ..	10			CAREYA—	
sea ..	125			arborea ..	31
Buckwheat ..	231			CARISSA—	
<i>Budanar</i> ..	40			Carandas ..	59
BUDDLEIA—				spinarum ..	59
asiatica ..	61			Carnation ..	142
paniculata ..	61			CARPESIUM—	
<i>Budshur</i> ..	644			abrotanorides ..	288
<i>Bugra</i> ..	389			cernuum ..	329
<i>Bui</i> ..	164			trachelifolium ..	329
..	223			CARPINUS—	
..	336			faginea ..	19
<i>Bui-kalan</i> ..	315			viminea ..	19
<i>Buimadaran</i> ..	365			Carrot ..	401
<i>Buimaderan</i> ..	508			CARTHAMUS—	
<i>Bulan</i> ..	538			lanatus ..	373
Bullace ..	511			oxyacantha ..	332
				tinctorius ..	332

**C.**





<b>C—continued.</b>		PAGE.	PAGE.
	PAGE.		
<i>Chaya</i> ..	314	<b>COCCULUS—</b>	<i>Coriander</i> .. 401
<i>Chuma</i> ..	125	<i>laurifolius</i> ..	<b>CORIANDRUM—</b>
<i>Chura</i> ..	398	<i>Leæba</i> ..	<i>sativum</i> .. 401
<i>Chutisirin</i> ..	43	<i>villosus</i> ..	<b>CORIARIA—</b>
<i>Churi saroj</i> ..	368	<b>COCHLEARIA—</b>	<i>nepalensis</i> .. 52
<i>Churial</i> ..	109	<i>flava</i> ..	<b>CORN butter-cup</b> .. 350
<b>CICER—</b>		<b>Cock's comb</b> ..	" <i>flower</i> .. 371
<i>arietinum</i> ..	262	<b>Codlins and cream</b> ..	" <i>galium</i> .. 152
<i>soongaricum</i> ..	596	" ..	" <i>mint</i> .. 193
<b>CICHORIUM—</b>		" ..	" <i>Snap Dragon</i> .. 171
<i>Intybus</i> ..	376	<b>CODONOPSIS—</b>	" <i>sow thistle</i> .. 381
<b>CICUTA—</b>		<i>ovata</i> ..	" <i>spurry</i> .. 132
<i>virosa</i> ..	391	<i>rotundifolia</i> ..	<b>Cornel</b> .. 54
<b>CIMICIFUGA—</b>		<b>COLCHICUM—</b>	<b>CORNUS—</b>
<i>fœtida</i> ..	388	<i>luteum</i> ..	<i>capitata</i> .. 3
<b>CINNAMOMUM—</b>		<i>oppositifolia</i> ..	<i>Macrophylla</i> .. 3
<i>Tamala</i> ..	5	<b>COLEUS—</b>	<i>oblonga</i> .. 3
<b>Cinquefoil</b> ..	466	<i>aromaticus</i> ..	<i>sanguinea</i> .. 54
<b>CIRCEA—</b>		<i>barbatus</i> ..	<b>CORTUSA—</b>
<i>alpina</i> ..	184	<b>Colocynth</b> ..	<i>Matthioli</i> .. 510
<i>cordata</i> ..	184	<b>Colt's foot</b> ..	<b>CORYDALIS—</b>
<i>lutetiana</i> ..	184	<b>Columbine</b> ..	<i>cachemiriana</i> .. 446
<b>CISSAMPELOS—</b>		<b>COLUTEA—</b>	<i>cornuta</i> .. 354
<i>Paireira</i> ..	606	<i>arborescens</i> ..	<i>Gortschakovii</i> .. 446
<b>CISTANCHE—</b>		<b>COMBRETUM—</b>	<i>Govaniana</i> .. 446
<i>tubulosa</i> ..	647	<i>decandrum</i> ..	<i>Moorecroftiana</i> .. 446
<b>CITRULLUS—</b>		<b>COMMELINA—</b>	<i>ramosa</i> .. 573
<i>colocynthis</i> ..	616	<i>benghalensis</i> ..	<i>rutæfolia</i> .. 445
<i>vulgaris</i> ..	616	<i>cœlestis</i> ..	<b>CORYLUS—</b>
<b>CITRUS—</b>		<i>Hasskarlii</i> ..	<i>Colurna</i> .. 19
<i>Aurantium</i> ..	30	<i>nudiflora</i> ..	<b>Costus</b> .. 370
<i>decumana</i> ..	30	<i>obliqua</i> ..	" .. 507
<i>medica</i> ..	113	<b>CONVOLVULUS—</b>	<b>COTONEASTER—</b>
<b>Cleaver's Goose Grass</b> ..	579	<i>Aitchisoni</i> ..	<i>acuminata</i> .. 81
<b>CLEMATIS—</b>		" ..	<i>bacillaris</i> .. 81
<i>barbellata</i> ..	589	<i>arvensis</i> ..	<i>microphylla</i> .. 518
<i>Buchaniana</i> ..	590	<i>glomeratus</i> ..	<i>nummularia</i> .. 82
<i>connata</i> ..	590	" ..	<b>Cotton</b> .. 90
<i>Gouriana</i> ..	589	" ..	<b>COTULA—</b>
<i>grata</i> ..	589	<i>microphyllus</i> ..	<i>anthemoides</i> .. 362
<i>gravecolens</i> ..	589	" ..	<i>aurea</i> .. 575
<i>montana</i> ..	588	<i>pluricaulis</i> ..	<i>hemisphærica</i> .. 363
<i>nutans</i> ..	590	" ..	<b>COTYLEDON—</b>
<i>orientalis</i> ..	590	<b>CONYZA—</b>	<i>Oreades</i> .. 284
<i>puberula</i> ..	589	<i>japonica</i> ..	<b>COUSINIA—</b>
<b>CLEOME—</b>		" ..	<i>auriculata</i> .. 368
<i>brachycarpa</i> ..	389	<i>stricta</i> ..	<i>microcarpa</i> .. 368
<i>papillosa</i> ..	275	<i>viscidula</i> ..	<i>minuta</i> .. 367
<i>quinquenervis</i> ..	275	<b>CORALLOCARPUS—</b>	<i>Thomsoni</i> .. 367
<i>viscosa</i> ..	389	<i>epigæa</i> ..	<b>Cowbane</b> .. 391
<b>CLERODENDRON—</b>		<b>CORALLORHIZA—</b>	<b>Cowitch</b> .. 599
<i>infortunatum</i> ..	67	<i>innata</i> ..	<b>Cowhage</b> .. 499
<i>phlomoides</i> ..	63	<b>CORCHORUS—</b>	<b>Crab, Siberian</b> .. 12
<i>serratum</i> ..	66	<i>acutangulus</i> ..	<b>Crane's Bill</b> .. 139
<b>CLITORIA—</b>		<i>Antichorus</i> ..	" .. 526
<i>Ternatea</i> ..	601	<i>capsularis</i> ..	<b>CRANIOTOME—</b>
<b>Clove, pink</b> ..	142	<i>fascicularis</i> ..	<i>versicolor</i> .. 211
<b>CNICUS—</b>		<i>olitorius</i> ..	<b>Crape, China</b> .. 53
<i>argyranthus</i> ..	369	<i>tridens</i> ..	<b>CRASSULA—</b>
<i>arvensis</i> ..	368	<i>trilocularis</i> ..	<i>indica</i> .. 415
" ..	43	<b>CORDIA—</b>	<b>CRATEGUS—</b>
<i>involucratus</i> ..	369	<i>Myxa</i> ..	<i>Clarkei</i> .. 23
<i>Wallichii</i> ..	369	<i>obliqua</i> ..	<i>crenulata</i> .. 81
		<i>Rothii</i> ..	<i>Oxyacantha</i> .. 23
		<i>vestita</i> ..	

<b>C—concluded.</b>		PAGE.	CUSCUTA—concluded—	PAGE.	DAPHNE—	PAGE.
CRATEVA—			europæa ..	647	cannabina ..	124
<i>religiosa</i> ..	40		<i>planiflora</i> ..	647	<i>oleoides</i> ..	124
CREMANTHODIUM—			<i>reflexa</i> ..	646	<i>Darchir</i> ..	39
<i>Decaisnei</i> ..	478		Custard apple ..	110	<i>Dargola</i> ..	591
CREPIS—			CYAMOPSIS—		<i>Darli</i> ..	43
<i>acaulis</i> ..	40		<i>psoraloides</i> ..	252	<i>Darunaj-akrabi</i> ..	337
<i>blattaroides</i> ..	480		CYANOTIS—		<i>Dasan</i> ..	131
<i>foetida</i> ..	376		<i>axillaris</i> ..	571	<i>Dasarni</i> ..	131
<i>japonica</i> ..	377		<i>barbata</i> ..	571	Date palm ..	45
<i>sibirica</i> ..	480		<i>cristata</i> ..	571	DATISCA—	
<i>Stoliczkai</i> ..	480		CYATHOCLINE—		<i>cannabina</i> ..	406
<i>tenuifolia</i> ..	377		<i>lyrata</i> ..	361	<i>Dattura</i> ..	383
Cress, garden ..	359		CYATHULA—		<i>Datura</i> —	
" winter ..	355		<i>capitata</i> ..	180	<i>fastuosa</i> ..	384
CRESSA—			<i>tomentosa</i> ..	180	<i>Stramonium</i> ..	383
<i>critica</i> ..	121		CYDONIA—		DAUCUS—	
CRINUM—			<i>vulgaris</i> ..	81	<i>Carota</i> ..	401
<i>defixum</i> ..	626		CYNANCHUM—		<i>Dawna</i> ..	366
<i>litifolium</i> ..	435		<i>Arnottianum</i> ..	155	DEBREGESIA—	
<i>pratense</i> ..	435		<i>auriculatum</i> ..	583	<i>hypoleuca</i> ..	87
CROCUS—			<i>glaucum</i> ..	155	DECRINGIA—	
<i>sativus</i> ..	434		<i>Dalhousie</i> ..	583	<i>celosioides</i> ..	612
CROTALARIA—			<i>Jacquemontianum</i> ..	155	DELPHINIUM—	
<i>alata</i> ..	78		<i>Vincetoxicum</i> ..	154	<i>cashmirianum</i> ..	352
<i>albida</i> ..	114		CYNOGLOSSUM—		<i>denudatum</i> ..	351
<i>Burhia</i> ..	114		<i>denticulatum</i> ..	343	<i>elatum</i> ..	351
<i>hirsuta</i> ..	545		<i>furcatum</i> ..	299	<i>incanum</i> ..	351
<i>humifusa</i> ..	544		<i>lanceolatum</i> ..	343	<i>uncinatum</i> ..	350
<i>jucea</i> ..	115		<i>micranthum</i> ..	343	<i>saniclefolium</i> ..	351
<i>medicaginea</i> ..	552		<i>microglochin</i> ..	299	<i>vestitum</i> ..	351
<i>mysorensis</i> ..	224		<i>nervosum</i> ..	300	<i>Dendru</i> ..	150
<i>prostrata</i> ..	563		<i>Wallichii</i> ..	343	<i>Denthar</i> ..	63
<i>sericea</i> ..	78		Cypress ..	5	<i>Desi mallar</i> ..	597
<i>sessiliflora</i> ..	224		CYPRIPEDIUM—		DESMODIUM—	
Crow-foot ..	349		<i>cordigerum</i> ..	496	<i>concinnum</i> ..	97
Crown Imperial ..	443				<i>floribundum</i> ..	96
CRYPTOLEPIS—					<i>gangeticum</i> ..	79
<i>Buchanani</i> ..	581				<i>gyrans</i> ..	97
CRYPTOSTEGIA—					<i>latifolium</i> ..	79
<i>grandiflora</i> ..	581				<i>laxiflorum</i> ..	95
CUCUBALUS—					<i>oxyphyllum</i> ..	96
<i>baccifer</i> ..	145				<i>parvifolium</i> ..	560
Cucumber ..	616		<i>Dabra</i> ..	262	<i>podocarpum</i> ..	95
CUCUMIS—			<i>Dadhuri</i> ..	17	<i>polycarpum</i> ..	97
Melo ..	615		<i>Daduri</i> ..	49	<i>sequax</i> ..	96
<i>prophetarum</i> ..	615		DÆDALACANTHUS—		<i>teliefolium</i> ..	96
<i>sativus</i> ..	616		<i>nervosus</i> ..	52	<i>triflorum</i> ..	559
<i>trigonus</i> ..	615		DÆMIA—		<i>triquetrum</i> ..	517
CUCURBITA—			<i>extensa</i> ..	582	<i>Deter</i> ..	262
<i>maxima</i> ..	619		<i>Dagarmul</i> ..	635	DEUTZIA—	
<i>moschata</i> ..	619		<i>Dak</i> ..	128	<i>corymbosa</i> ..	52
Pepo ..	619		<i>Dakh nirbisi</i> ..	606	<i>staminea</i> ..	52
Cudweed ..	285		DALBERGIA—		<i>Devidar</i> ..	5
Cumin ..	401		<i>Sissoo</i> ..	24	<i>Devil's claw</i> ..	222
CUMINUM—			<i>Dalchini</i> ..	5	<i>Dev-reus</i> ..	81
<i>Cyminum</i> ..	401		<i>Dalina</i> ..	125	<i>Dhak</i> ..	24
CUPRESSUS—			<i>Dalmi</i> ..	125	<i>Dhama</i> ..	525
<i>torulosa</i> ..	5		<i>Dalunchi</i> ..	52	<i>Dhan</i> ..	53
CURCUMA—			<i>Damahan</i> ..	525	<i>Dhanla</i> ..	53
<i>angustifolia</i> ..	429		<i>Daman</i> ..	9	<i>Dhanya</i> ..	401
Currant, black ..	128		<i>Damtura</i> ..	310	<i>Dharposh</i> ..	413
CUSCUTA—			Dandelion ..	449	<i>Dhatura, kala</i> ..	384
<i>capitata</i> ..	646		<i>Dandura</i> ..	310	<i>Dhau</i> ..	36
<i>chinensis</i> ..	646		<i>Dant hukun</i> ..	86	<i>Dhouldak</i> ..	24
			<i>Danti</i> ..	364	<i>Dhaura</i> ..	3



<b>E—concluded.</b>		PAGE.		PAGE.	
	PAGE.	EUPHRASIA—		Flame tree	48
		officinalis	200	Flax	275
		European Madder	578	"  Bush	76
<b>ERIGERON—concluded—</b>		<b>EUROTIA—</b>		Flea bane	293
linifolius	334	ceratoides	123	"	334
multiradiatus	292	<b>EURYALE—</b>		"	365
<b>ERIOBOTRYA—</b>		ferox	629	<b>FLEMINGIA—</b>	
japonica	12	<b>EUTREMA—</b>		congesta	560
<b>ERITRICHIUM—</b>		primulæfolium	410	strobilifera	517
basifixum	302	<b>EVOLVULUS—</b>		vestita	527
strictum	302	alsinoides	308	"	500
<b>ERODIUM—</b>		"	568	Flixweed	356
ciconium	141	<b>EXACUM—</b>		Flowering rush	640
cicutarium	526	pedunculatum	156	<b>FLUEGGIA—</b>	
malacoides	141	tetragonum	156	Leucopyrus	126
stipaceum	527	Eyebright	200	microcarpa	126
<b>EROPHILA—</b>				<b>FENICULUM—</b>	
vulgaris	410			vulgare	396
<b>ERUCA—</b>				Forget-me-not	304
sativa	358			<b>FRAGARIA—</b>	
<b>ERYNGIUM—</b>				indica	463
Billardieri	360			vesca	464
caerulum	360	<b>FAGONIA—</b>		Frangipani tree	33
<b>ERYSIMUM—</b>		arabica	139	<b>FRANKENIA—</b>	
hieraciifolium	470	Bruguieri	525	pulverulenta	523
odoratum	470	<b>FAGOPYRUM—</b>		<i>Frax</i>	20
repandum	321	cymosum	231	<b>FRAXINUS—</b>	
<b>ERYTHRÆA—</b>		esculentum	231	excelsior	7
babylonica	158	tataricum	231	floribunda	7
Meyeri	421	<i>Farash</i>	29	xanthoxyloides	8
ramosissima	157	<i>Faridbuti</i>	111	<b>FRTILLARIA—</b>	
Roxburghii	421	<i>Farid muli</i>	110	imperialis	443
<b>ERYTHRINA—</b>		<b>FARSETIA—</b>		Roylei	443
indica	24	agyptiaca	111	French Bean	600
suberosa	24	Hamiltonii	111	Frog Bit	624
<b>EUCLIDIUM—</b>		Jacquemontii	110	<b>FUMARIA—</b>	
syriacum	274	Fenugreek	250	parviflora	355
<b>EUGENIA—</b>		Fennel	396	Fumitory	355
Jambolana	2	<b>FERONIA—</b>		<i>Furruj-mushk</i>	175
<b>EULOPHIA—</b>		Elephantum	41		
campestris	427	<b>FERULA—</b>			
<b>EUONYMUS—</b>		Jäschkeana	399		
cannabinus	58	Thomsoni	399		
Hamiltonianus	47	Fetid cassia	265		
tingens	2	Fever nut	603		
<b>EUPATORIUM—</b>		<b>FIGUS—</b>			
cannabinum	58	bengalensis	16	<i>Gach marich</i>	109
Reevesii	57	clavata	86	<b>GAGEA—</b>	
<b>EUPHORBIA—</b>		Cunia	17	lutea	498
antiquorum	85	elastica	16	persica	499
Clarkeana	523	foveolata	593	reticulata	499
dracunculoides	318	glomerata	17	<i>Gaggar yurmi</i>	118
Emodi	137	hispida	49	<b>GAILLONIA—</b>	
falcata	318	infectoria	16	calycoptera	49
granulata	523	nemoralis	17	hymenostephana	49
helioscopia	347	palmata	91	<i>Gajar</i>	401
hypericifolia	137	religiosa	16	<i>Galgoja</i>	39
Maddeni	318	retusa	16	<b>GALICUM—</b>	
micractina	347	Roxburghii	17	acutum	533
Nivulia	85	Rumphii	16	Aparine	579
pilosa	317	Field pea	597	boreale	152
pilulifera	137	<b>FILAGO—</b>		ceratophylloides	153
prolifera	318	arivensis	285	mollugo	579
Royleana	85	germanica	285	rotundifolium	532
thymifolia	523	Fir, Himalayan silver	40	setaceum	153
Tirucalli	71	<b>FLACOURTIA—</b>		spurium	579
Wallichii	317	Ramontehi	35	tenuissimum	153
		Flag sweet	635		

G—continued.		PAGE.		PAGE.	
	PAGE.		PAGE.		PAGE.
<b>GALIIUM—concluded—</b>		<b>GERANIUM—co. cluded—</b>		<i>Go sa</i>	119
tricornis	152	rotundifolium	525	<i>Gokhri kalan</i>	527
triflorum	152	Tuberaria	140	<i>Gokhru</i>	527
vernum	533	Wallichianum	140	<i>Gokshura</i>	174
verum	153	<b>GERANIUM—</b>		<i>Gokula kanta</i>	174
vestitum	152	Dove's foot	526	<b>GOLDBACHIA—</b>	
<i>Gandal</i>	5	meadow	13	l. vigata	322
<i>Gandalu</i>	41	Round leaved	525	Golden rod	476
<i>Gandan</i>	437	Small flowered	525	<b>GOLDENIA—</b>	
<i>Gandanin</i>	41	<b>GERBERA—</b>		procumbens	569
<i>Gandera</i>	120	Kunzeana	449	<i>Gol matter</i>	597
<i>Gandhana</i>	437	lanuginosa	449	<i>Goncha</i>	599
<i>Gandhula</i>	50	Germander	194	<i>Gondi</i>	34
<i>Gandial</i>	149	<b>GEUM—</b>		<i>Gondni</i>	35
<i>Gandibuli</i>	522	elatum	461	<b>GOOSEBERRY—</b>	
<i>Ganger</i>	74	urbanum	461	cape	309
"	78	<i>Ghain</i>	125	rough	127
<i>Ganhira</i>	120	<i>Ghain-chu</i>	635	<i>Gorakh panu</i>	569
<i>Gani</i>	582	<i>Ghantiali</i>	588	<i>Gora lane</i>	124
<i>Ganthian</i>	636	"	589	Gorgon fruit	629
<i>Guozaban</i>	485	<b>GHARIF—</b>		<i>Gosum</i>	46
Garden pea	597	Kashmalu	209	<b>GOSSYPIUM—</b>	
<i>Gargas</i>	74	<i>Gharote</i>	582	arboresum	90
<i>Gargira</i>	402	<i>Ghaz</i>	112	barbadense	90
<i>Gargu-naru</i>	620	<i>Ghia-tori</i>	614	herbaceum	90
<i>Garkath</i>	115	<i>Ghui</i>	17	Gourd, bottle	614
Garlic	438	<i>Ghuraske</i>	123	„ common	619
<b>GASTROCOTYLE—</b>		<i>Ghurush</i>	600	„ spanish	619
hispidia	303	<i>Ghwa</i>	112	„ white	617
<b>GASTRODIA—</b>		Gibbon's duckweed	642	Gram	262
orbanchoides	650	<i>Gidi</i>	336	„ green	600
<b>GAULTHERIA—</b>		<i>Gilas</i>	11	<b>GRANGEA—</b>	
nummularioides	520	<i>Gingarū</i>	81	maderaspatana	574
trichophylla	520	Gingully	197	Grape vine	592
<i>Gaungchi</i>	596	Ginger	431	<b>GRAPTOPHYLLUM—</b>	
<i>Gaunt</i>	78	Gipsywort	193	hortense	66
<i>Gavuta</i>	119	<b>GIRARDINIA—</b>		Grass of Parnassus	413
Gean	11	heterophylla	248	Great Luckweed	642
<b>GENTIANA—</b>		<i>Girgitti</i>	130	„ Mullein	485
aquatica	159	<i>Girthan</i>	576	„ willow herb	324
argentia	160	<b>GISEKIA—</b>		Greater Lodder	647
cachemirica	160	pharnaceoides	542	„ plintain	425
capitata	160	<b>GLOEBIDIUM—</b>		Greek Valerian	402
carinata	160	velutinum	14	<i>Grelu</i>	593
contorta	161	<b>GLORIOSA—</b>		<b>GREWIA—</b>	
decemfida	159	superba	587	asiatica	9
detonsa	161	<b>GLOSSOCARDIA—</b>		oppositifolia	8
Kurroo	422	linearifolia	373	olygama	75
Moorcroftiana	158	„	574	populifolia	74
nubigena	421	<b>GLOSSOGYNE—</b>		salvifolia	74
quadrifaria	159	pinnatifida	220	vestita	9
tenella	159	<b>GLOSSOSTIGMA—</b>		villosa	75
vensuta	534	spathulatum	536	<i>Guar</i>	252
<b>GERANIUM—</b>		<b>GLYCOSMIS—</b>		Guava	2
collinum	140	pentaphylla	130	<i>Guch</i>	55
lucidum	526	<b>GMELINA—</b>		<i>Gudi</i>	354
molle	526	arbores	5	<i>Gudlei</i>	78
nepalense	525	<b>GNAPHALIUM—</b>		<i>Gugal</i>	508
ocellatum	526	hypoleucum	286	<i>Guggal</i>	127
palustre	140	indicum	287	<b>GUIZOTIA—</b>	
pratense	139	luteo-album	286	abyssynica	188
pusillum	525	pulvinatum	565	<i>Gul</i>	376
rectum	140	Stewartii	472	<i>Gulabi</i>	552
Robertianum	141	Thomsoni	473	<i>Gulbadla</i>	23
		Goat's beard	482	<i>Gulchin</i>	33
		<i>Gobla</i>	49	<i>Gul dupaharia</i>	246
		<i>Gogina</i>	31		

G—concluded.		PAGE.		PAGE.	
GULDENSTÆDTIA—		HAMILTONA—			
mirpourensis	.. 461	suvaolens	.. 48	Henbit	.. 540
<i>Guldoda</i>	.. 215	<i>Hand</i>	.. 376	Henna	.. 53
<i>Gulili</i>	.. 4	<i>Hanc</i>	.. 7	HERACLEUM—	
<i>Gulkhairo</i>	.. 237	<i>Hanz</i>	.. 8	cachemiricum	.. 400
<i>Gulmendi</i>	.. 323	<i>Harantutiya</i>	.. 444	candicans	.. 400
<i>Gulsakari</i>	.. 238	<i>Hararh</i>	.. 36	cancescens	.. 400
<i>Gun</i>	.. 7	Hare's ear	.. 279	pinnatum	.. 400
<i>Gunda-bute</i>	.. 347	<i>Harh</i>	.. 36	Thomsoni	.. 399
<i>Guracha</i>	.. 108	<i>Harnal</i>	.. 241	Herb-Bennet	.. 461
<i>Gurgu</i>	.. 46	<i>Harnauli</i>	.. 130	" Christopher	.. 388
<i>Gurguli</i>	.. 115	<i>Harrana</i>	.. 234	" Robert	.. 141
<i>Gurgunna</i>	.. 453	<i>Harsingar</i>	.. 58	HERMINIUM—	
<i>Gurgura</i>	.. 119	<i>Hathajori</i>	.. 222	angustifolium	.. 490
<i>Gurhal</i>	.. 89	<i>Hatmul</i>	.. 164	gramineum	.. 491
<i>Guruk mundi</i>	.. 328	<i>Hattajuri</i>	.. 342	monorchis	.. 490
<i>Gwa</i>	.. 37	<i>Haurijal</i>	.. 59	pugioniforme	.. 491
<i>Gwala darim</i>	.. 113	Hawk's beard	.. 376	HERPESTIS—	
" <i>kakri</i>	.. 620	" "	.. 480	monniera	.. 535
GYMNOSPORIA—		Hawkweed	.. 339	Hamiltoniana	.. 171
montana	.. 114	" "	.. 481	HERPETOSPERMUM—	
Royleana	.. 113	" picris	.. 339	caudigerum	.. 617
Wallichiana	.. 113	Hawthorn	.. 23	HEYLANDIA—	
GYNANDROPSIS—		<i>Hazarmani</i>	.. 232	latebrosa	.. 563
pentaphylla	.. 390	HERA—		HERIBISCUS—	
GYNURA—		Helix	.. 607	Abelmoschus	.. 245
angulosa	.. 330	Hedge garlic	.. 321	cancellatus	.. 246
GYPSOPHILA—		" Goose Grass	.. 579	esculentus	.. 246
cerastioides	.. 528	" Parsley	.. 401	ficulneus	.. 245
Stewartii	.. 51	" stachys	.. 213	Gibsoni	.. 214
H.		HEDYCHUM—		hirtus	.. 89
HABENARIA—		coronarum	.. 430	pungens	.. 245
Aitchisoni	.. 429	spicatum	.. 431	rosa-sinensis	.. 82
arietina	.. 492	HEDYOTIS—		Sabdariffa	.. 244
densa	.. 494	hispidula	.. 133	Solandra	.. 244
digitata	.. 491	stipulata	.. 521	surattensis	.. 551
Elizabethæ	.. 494	HEDYSARUM—		suriacus	.. 89
ensifolia	.. 493	astragaloides	.. 260	Trionum	.. 243
galeandra	.. 495	cachemirianum	.. 260	vitifolius	.. 244
goodyeroides	.. 494	laxiflorum	.. 260	<i>Hier</i>	.. 605
Griffithi	.. 495	microcalyx	.. 261	HIRACIUM—	
intermedia	.. 492	strobiliferum	.. 260	crocatum	.. 481
latilabris	.. 493	HELICTERES—		pennan hoides	.. 340
marginata	.. 492	Isora	.. 73	umbellatum	.. 481
pectinata	.. 491	HELINUS—		virosum	.. 339
stenopetala	.. 491	lanceolatus	.. 592	vulgatum	.. 43
Susannæ	.. 492	HELIOBOTRIUM—		Hill toon	.. 399
Hairy bittercress	.. 503	dasycarpum	.. 298	<i>Hing</i>	.. 43
" spurge	.. 317	Eichwaldi	.. 298	HIPPOPHIE—	
" vetch	.. 596	indicum	.. 342	rhamnoides	.. 125
<i>Haisa-ka-patta</i>	.. 185	rariflorum	.. 299	salicifolia	.. 125
<i>Hakik</i>	.. 432	strigosum	.. 569	HIPTAGE—	
<i>Hala</i>	.. 131	supinum	.. 569	Madablota	.. 576
ALENIA—		undulatum	.. 342	<i>Hiranpaddi</i>	.. 611
elliptica	.. 166	zeylanceum	.. 298	<i>His</i>	.. 390
<i>Haleo</i>	.. 3	HEMIPROCALLIS—		<i>Hiungarna</i>	.. 73
<i>Halim</i>	.. 359	fulva	.. 436	<i>Hius</i>	.. 73
HALOCHARIS—		HEMIGRAPHIS—		Hog-plum tree	.. 45
sulphurea	.. 316	latebrosa	.. 190	HOLARHENA—	
violacea	.. 573	HEMIPILIA—		antidysenterica	.. 4
HALOXYLON—		cordifolia	.. 495	Holly, Himalayan	.. 9
multiflorum	.. 70	Hemp agrimony	.. 58	HOLOPTELEA—	
recuvum	.. 70	HEMIPHRYGMA—		intergrifolia	.. 14
<i>Halu</i>	.. 196	heterophyllum	.. 536	<i>Holma</i>	.. 109
		HEMIPILIA—		HOLMSTIOLDIA—	
		cordifolia	.. 495	sanguinea	.. 64
		Henbane	.. 310		



## J—concluded.

	PAGE.		PAGE.		PAGE.
		JUNIPERUS—		KALANCHÆ—	
		communis ..	126	spathulata ..	185
<i>Jaman</i> ..	2	pseudosabina ..	127	<i>Kali jarri</i> ..	196
<i>Jamoi</i> ..	12	recurva ..	127	„ <i>sarson</i> ..	357
<i>Jand</i> ..	26	JURINEA—		„ <i>siris</i> ..	28
<i>Jangli badam</i> ..	35	ceratocarpa ..	475	„ <i>tori</i> ..	615
„ <i>chichinda</i> ..	617	macrocephala ..	508	„ <i>zewar</i> ..	280
„ <i>frast</i> ..	21	modesta ..	289	„ <i>ziri</i> ..	325
„ <i>gajar</i> ..	394	JUSSIEUA—		<i>Kallri buti</i> ..	166
„ <i>methi</i> ..	238	repens ..	634	<i>Kambal</i> ..	44
„ <i>muli</i> ..	327	sulfruticosa ..	634	<i>Kambei</i> ..	382
„ <i>piaz</i> ..	439	JUSTICIA—		<i>Kampti</i> ..	576
„ <i>pipli</i> ..	16	Betonica ..	169	<i>Kana</i> ..	281
„ <i>saran</i> ..	455	diffusa ..	170	<i>Kanachi</i> ..	519
„ <i>sarson</i> ..	504	heterocarpa ..	169	<i>Kanakchampa</i> ..	22
<i>Janjh</i> ..	624	pubigera ..	169	<i>Kanchari</i> ..	368
<i>Japhrota</i> ..	83	simplex ..	170	<i>Kanda phaphor</i> ..	441
<i>Jaramla</i> ..	233	Jute ..	234	<i>Kander</i> ..	73
<i>Jarul</i> ..	3	<i>Juti</i> ..	130	<i>Kanderu</i> ..	9
JASMINE—		<i>Juti misak</i> ..	342	<i>Kandiara</i> ..	103
Arabian ..	579			<i>Kandiari</i> ..	308
Spanish ..	72			„ ..	367
JASMINUM—				<i>Kandlu</i> ..	10
dispermum ..	588			<i>Kandu</i> ..	113
grandiflorum ..	72			<i>Kanduri</i> ..	619
humile ..	131	<i>Kachlei</i> ..	112	<i>Kandyari</i> ..	129
officinale ..	71	<i>Kachnach</i> ..	382	<i>Kaner</i> ..	120
pubescens ..	579	<i>Kachnal</i> ..	22	<i>Kanghi</i> ..	239
Sambac ..	579	<i>Kachnar</i> ..	22	<i>Kangi</i> ..	318
<i>Jazwm</i> ..	82	<i>Kachur</i> ..	431	<i>Kangu</i> ..	122
<i>Jati</i> ..	72	<i>Kaddu</i> ..	614	<i>Kanji</i> ..	10
JATROPHA—		<i>Kadera</i> ..	48	„ ..	243
Curcas ..	83	<i>Kadu</i> ..	619	<i>Kanjura</i> ..	281
<i>Jawasa</i> ..	79	<i>Kaem</i> ..	1	<i>Kankol mirch</i> ..	125
<i>Jayanti</i> ..	255	KEMPFERIA—		<i>Kanna</i> ..	30
<i>Jeku</i> ..	124	Galanga ..	430	„ ..	564
Jersey cudweed ..	286	rotunda ..	430	<i>Kanphul</i> ..	449
<i>Jewar</i> ..	629	<i>Kafri marich</i> ..	309	<i>Kans</i> ..	613
Jew's mallow ..	234	<i>Kafir-ka-pal</i> ..	65	<i>Kanshura</i> ..	564
<i>Jhampi</i> ..	239	<i>Kaghuk</i> ..	127	<i>Kansi</i> ..	127
<i>Jhar-beri</i> ..	76	<i>Kagsari</i> ..	124	<i>Kanta-nutia</i> ..	313
<i>Jharu</i> ..	112	<i>Kagshi</i> ..	3	<i>Kantiari</i> ..	332
<i>Jhingan</i> ..	41	<i>Kahu</i> ..	3	<i>Kanwal</i> ..	473
<i>Jiaputa</i> ..	38	„ ..	377	„ ..	630
<i>Jinjru</i> ..	56	<i>Kaila</i> ..	432	<i>Kanjurts</i> ..	363
<i>Jiunt</i> ..	388	<i>Kai-zaban</i> ..	118	<i>Kanzars</i> ..	164
<i>Jonkmari</i> ..	154	<i>Kail</i> ..	39	<i>Kapas</i> ..	90
<i>Judwar</i> ..	351	<i>Kaiphal</i> ..	38	<i>Kapasi</i> ..	449
JUGLANS—		<i>Kaira-ka-jhor</i> ..	237	<i>Kapasiya</i> ..	245
regia ..	45	<i>Kakhum</i> ..	118	<i>Kapper</i> ..	30
<i>Juhi</i> ..	351	<i>Kakkar</i> ..	46	<i>Kapur-kachri</i> ..	431
<i>Jujar</i> ..	31	<i>Kakkari</i> ..	43	<i>Kavaitu</i> ..	222
JUNCUS—		<i>Kakkur-tumaku</i> ..	311	<i>Karang</i> ..	25
bufonius ..	582	<i>Kaknaj</i> ..	308	<i>Karantu</i> ..	581
„ ..	499	<i>Kakri</i> ..	73	<i>Karaunda</i> ..	59
compressus ..	499	<i>Kakrondu</i> ..	327	<i>Karbaru</i> ..	607
coninnus ..	501	<i>Kakua</i> ..	149	<i>Kavela</i> ..	618
glaucus ..	499	<i>Kal</i> ..	248	<i>Kareta</i> ..	238
himalensis ..	501	<i>Kal akhi</i> ..	594	<i>Kargnalia</i> ..	35
lampocarpus ..	500	„ <i>bisa</i> ..	125	<i>Karial</i> ..	582
l. ucomclaus ..	500	„ <i>dhatara</i> ..	384	<i>Kariari</i> ..	587
membranaceus ..	500	„ <i>lobia</i> ..	601	<i>Karik</i> ..	595
prismatocarpus ..	500	„ <i>mattar</i> ..	597	<i>Karil</i> ..	73
triglumis ..	500	„ <i>mewa</i> ..	121	<i>Karir</i> ..	604
<i>Juniper</i> ..	126	„ <i>tulsi</i> ..	175	<i>Karkar</i> ..	434
„ ..	127	„ <i>ziri</i> ..	370		

## K.



**K**—concluded.

	PAGE.		PAGE.		PAGE.
<i>Karkoa</i>	.. 30	<i>Khulakhudi</i>	.. 546	<i>Kuri</i>	.. 607
<i>Karku</i>	.. 217	<i>Khurbanri</i>	.. 217	<i>Kurkan</i>	.. 80
<i>Karttul</i>	.. 15	<i>Kidney bean</i>	.. 600	<i>Kurkani</i>	.. 115
<i>Karu</i>	.. 422	<i>Kikar</i>	.. 26	<i>Kurol</i>	.. 607
<i>Karuu</i>	.. 15	<i>Kikra</i>	.. 48	<i>Kurru</i>	.. 422
<i>Kasa</i>	.. 17	<i>Killar</i>	.. 83	<i>Kursan</i>	.. 605
<i>Kashmul</i>	.. 50	<i>Kilu</i>	.. 129	<i>Kuru</i>	.. 635
<i>Kasir</i>	.. 3	<i>Kimbu</i>	.. 44	<i>Kurund</i>	.. 387
<i>Kasni</i>	.. 376	<i>Kinkar</i>	.. 27	..	.. 544
<i>Kaspat</i>	.. 231	<i>Kip</i>	.. 61	<i>Kust</i>	.. 370
<i>Kashuri-bhendi</i>	.. 245	<i>Kira</i>	.. 73	<i>Kust-talk</i>	.. 507
<i>Kasumbhu</i>	.. 332	<i>Kira or Kerru-kerin</i>	.. 73	<i>Kusum</i>	.. 332
<i>Kasundu</i>	.. 105	<i>Kiriki kukri</i>	.. 515	<i>Kussumb</i>	.. 46
<i>Kat</i>	.. 370	<i>Kirch</i>	.. 170	<i>Kut</i>	.. 507
<i>Katai</i>	.. 35	<i>Kirimar</i>	.. 213	<i>Kutch</i>	.. 27
<i>Katambal</i>	.. 247	<i>Kirni</i>	.. 32	<i>Kutital</i>	.. 124
<i>Katori</i>	.. 606	<i>Kisari</i>	.. 558	<i>Kutki</i>	.. 422
<i>Katbel</i>	.. 41	<i>Kitserma</i>	.. 122	<i>Kutri</i>	.. 181
<i>Kateli or Kuteli</i>	.. 383	<i>Knot grass</i>	.. 547	<b>KYDIA—</b>	
<i>Kathal</i>	.. 390	<i>Koame</i>	.. 485	calycina	.. 21
<i>Kathgular</i>	.. 17	<b>KOCHIA—</b>			
<i>Kathi</i>	.. 104	indica	.. 316		
<i>Kathmarra</i>	.. 37	<b>KALPINIA—</b>		<b>L.</b>	
<i>Kathu</i>	.. 99	linearis	.. 479	<i>Labri</i>	.. 596
..	.. 231	<i>Koiral</i>	.. 22	<b>LABURUNUM—</b>	
<i>Katkuranj</i>	.. 603	<i>Kokali</i>	.. 348	Himalayan	.. 104
<i>Katori</i>	.. 606	<i>Komal</i>	.. 396	Indian	.. 25
<i>Katta-milhu</i>	.. 232	<i>Korake</i>	.. 497	Lac tree	.. 46
<i>Kaula</i>	.. 36	<i>Koshta</i>	.. 234	<b>LACTUCA—</b>	
<i>Kavanti</i>	.. 234	<i>Kowar</i>	.. 239	decipiens	.. 378
<i>Kaur</i>	.. 422	<i>Krishnachura</i>	.. 25	dissecta	.. 378
<i>Kaura-ro</i>	.. 316	<i>Kuchan</i>	.. 587	hastata	.. 378
<i>Kauri-buti</i>	.. 217	<i>Kudaliyu</i>	.. 559	lessertiana	.. 379
<i>Kavanch</i>	.. 599	<i>Kugina</i>	.. 109	longifolia	.. 378
<i>Kedari chuu</i>	.. 314	<i>Kuji</i>	.. 604	macrorrhiza	.. 379
<i>Kelo</i>	.. 40	<i>Kukai</i>	.. 35	polyccephala	.. 379
<i>Kenthi</i>	.. 99	<i>Kukar</i>	.. 443	rapunculoides	.. 378
<i>Keri</i>	.. 248	<i>Kukarhat</i>	.. 47	sagittarioides	.. 379
<i>Kesar</i>	.. 434	<i>Kukulia</i>	.. 122	scariola	.. 377
<i>Kesra</i>	.. 547	<i>Kukur bicha</i>	.. 75	undulata	.. 377
<i>Khabarra</i>	.. 120	<i>Kulahalla</i>	.. 384	Ladies' bed straw	.. 153
<i>Khagshi</i>	.. 15	<i>Kulal</i>	.. 602	Lady's Mantle	.. 407
<i>Khaindu</i>	.. 59	<i>Kulfa</i>	.. 544	.. slipper	.. 496
<i>Khair</i>	.. 27	<i>Kulthi</i>	.. 252	.. Tresses	.. 428
<i>Khair-posh</i>	.. 635	<i>Kulti</i>	.. 602	<b>LAGAROSIPHON—</b>	
<i>Khajur</i>	.. 45	<i>Kultu</i>	.. 231	Roxburghii	.. 624
<i>Khamrak</i>	.. 41	<i>Kum</i>	.. 7	<b>LAGENARIA—</b>	
<i>Khar</i>	.. 70	<i>Kumala</i>	.. 109	vulgaris	.. 614
<i>Kharak</i>	.. 15	<i>Kumbi</i>	.. 31	<b>LAGERSTREMIUM—</b>	
<i>Kharanja</i>	.. 87	..	.. 34	Flos-Regiæ	.. 3
<i>Kharatua</i>	.. 387	<i>Kumhar</i>	.. 5	indica	.. 53
<i>Kharbuza</i>	.. 615	<i>Kumta</i>	.. 27	parviflora	.. 3
<i>Kharmach</i>	.. 108	<i>Kum paiman</i>	.. 34	<b>LAGGERA—</b>	
<i>Kharsan</i>	.. 114	<i>Kun</i>	.. 104	alata	.. 327
<i>Kharsku</i>	.. 18	<i>Kunda</i>	.. 54	aurita	.. 328
<i>Khas</i>	.. 377	..	.. 579	flava	.. 327
<i>Khaskhasa</i>	.. 123	<i>Kungku</i>	.. 2	pterodonta	.. 328
<i>Kherbaba</i>	.. 81	<i>Kundar</i>	.. 636	<i>Laghme</i>	.. 70
<i>Khetsunsu i</i>	.. 560	<i>Kundphul</i>	.. 579	<b>LAGOTIS—</b>	
<i>Khichar</i>	.. 122	<i>Kupald</i>	.. 347	glauca	.. 424
<i>Khip</i>	.. 114	<i>Kupasi</i>	.. 73	<i>Lahsan</i>	.. 433
<i>Khira</i>	.. 616	<i>Kuppi</i>	.. 348	<i>Lahura</i>	.. 4
<i>Khor</i>	.. 27	<i>Kura</i>	.. 4	<i>Lai</i>	.. 112
		<i>Kural</i>	.. 10	<i>Lajalu</i>	.. 633
		<i>Kurand</i>	.. 544	<i>Lakhar</i>	.. 44
		<i>Kurang</i>	.. 583		

<b>L—continued.</b>		PAGE.		PAGE	
	PAGE.				
<i>Lakhtei</i>	.. 367	<b>LEE</b> A—		<b>LILIUM</b> —	
<i>Lala</i>	.. 353	<i>aspera</i>	.. 109	<i>gigantum</i>	.. 442
<i>Lal Anchhu</i>	.. 519	<b>Lee</b> k	.. 438	<i>nepalense</i>	.. 442
<i>buntunga</i>	.. 634	<b>Lelar</b>	.. 115	<i>polyphyllum</i>	.. 442
<i>indrayan</i>	.. 616	<b>LEMNA</b> —		<i>Thomsonianum</i>	.. 442
<i>marich</i>	.. 309	<i>gibba</i>	.. 642	<i>Liljahri</i>	.. 140
<i>murgha</i>	.. 313	<i>minor</i>	.. 641	<i>Lima Bean</i>	.. 600
<i>post</i>	.. 353	<i>polyrrhiza</i>	.. 642	<b>LIMEUM</b> —	
<i>sag</i>	.. 314	<i>trisulca</i>	.. 642	<i>indicum</i>	.. 532
<i>siris</i>	.. 28	<b>Lemon</b>	.. 113	<b>LIMNANTHEMUM</b> —	
<i>Laljari</i>	.. 140	<b>Lendi</b>	.. 300	<i>cristatum</i>	.. 635
"	.. 485	<b>Lendu</b>	.. 38	<i>indicum</i>	.. 635
<b>LALLEMANTIA</b> —		<b>LENS</b> —		<i>nymphæoides</i>	.. 635
<i>Royleana</i>	.. 209	<i>esculenta</i>	.. 264	<b>LIMNOPHILA</b> —	
<b>LAMIUM</b> —		<b>Lentil</b>	.. 264	<i>gratioloides</i>	.. 627
<i>album</i>	.. 540	<b>Lenwa</b>	.. 300	<i>heterophyllia</i>	.. 627
<i>amplexicaule</i>	.. 540	<b>LEONOTIS</b> —		<i>hypericifolia</i>	.. 623
<i>rhomboideum</i>	.. 213	<i>nepetaefolia</i>	.. 215	<i>Roxburgii</i>	.. 622
<i>Lana</i>	.. 70	<b>LEONTOPODIUM</b> —		<i>sessiliflora</i>	.. 627
"	.. 123	<i>alpinum</i>	.. 471	<b>LIMONIA</b> —	
<i>gora</i>	.. 70	<b>LEONURUS</b> —		<i>acidissima</i>	.. 130
<i>shori</i>	.. 70	<i>Cardiaca</i>	.. 222	<i>Limosa</i> , common	.. 623
<b>LANCEA</b> —		<b>LEPIDAGATHIS</b> —		<b>LIMOSELLA</b> —	
<i>tibetica</i>	.. 422	<i>hyalina</i>	.. 174	<i>aquatica</i>	.. 623
<b>LANTANA</b> —		<i>purpuricaulis</i>	.. 174	<b>LINARIA</b> —	
<i>Camara</i>	.. 63	<b>LEPIDIDIUM</b> —		<i>minor</i>	.. 312
<i>indica</i>	.. 63	<i>Draba</i>	.. 359	<b>LINDELOFIA</b> —	
<b>LAPSANA</b> —		<i>sativum</i>	.. 359	<i>Benthami</i>	.. 300
<i>communis</i>	.. 376	<i>strictum</i>	.. 470	<i>spectabilis</i>	.. 300
<i>Larger Wintergreen</i>	.. 484	<b>LEPTADENIA</b> —		<b>LINDENBERGIA</b> —	
<b>LASIOPOGON</b> —		<i>reticulata</i>	.. 585	<i>macrostachya</i>	.. 198
<i>lanatum</i>	.. 565	<i>spartium</i>	.. 61	<i>polyantha</i>	.. 198
<i>Lastuk</i>	.. 587	<b>LEPTODERMIS</b> —		<i>urticæfolia</i>	.. 198
<i>Lasura</i>	.. 33	<i>lanceolata</i>	.. 49	<b>Linseed</b>	.. 275
<i>chota</i>	.. 34	<i>virgata</i>	.. 49	<b>LINUM</b> —	
<i>Lathphatkari</i>	.. 595	<b>LEPTORHABDOS</b> —		<i>mysorense</i>	.. 276
<i>Lathia</i>	.. 110	<i>Benthamiana</i>	.. 385	<i>perenne</i>	.. 276
<i>Latjira</i>	.. 181	<b>LESPEDEZA</b> —		<i>strictum</i>	.. 276
<b>LATHRÆA</b> —		<i>elegans</i>	.. 93	<i>usitatissimum</i>	.. 275
<i>squamosa</i>	.. 647	<i>ericarpa</i>	.. 94	<b>LIPARIS</b> —	
<b>LATHYRUS</b> —		<i>Gerardiana</i>	.. 93	<i>paradoxa</i>	.. 486
<i>altaicus</i>	.. 265	<i>juncea</i>	.. 93	<i>rostrata</i>	.. 427
<i>Aphaca</i>	.. 645	<i>macrostyla</i>	.. 94	<b>LIPPIA</b> —	
<i>inconspicuus</i>	.. 558	<i>sericea</i>	.. 93	<i>nodiflora</i>	.. 538
<i>lateus</i>	.. 265	<b>Lesser Bindweed</b>	.. 611	<b>LITHOSPERMUM</b> —	
<i>pratensis</i>	.. 558	<i>cat's tail</i>	.. 636	<i>arvense</i>	.. 305
<i>sativus</i>	.. 558	<i>clover</i>	.. 553	<i>officinale</i>	.. 306
<i>sphaericus</i>	.. 558	<i>Duckweed</i>	.. 641	<i>tenuiflorum</i>	.. 305
<i>Lathkan or Latkan</i>	.. 8	<i>Thalictrum</i>	.. 405	<b>LITSEA</b> —	
<b>LAUNNÆA</b> —		<b>Lettuce, Prickly</b>	.. 377	<i>lanuginosa</i>	.. 37
<i>aspleniifolia</i>	.. 381	<b>LEUCAS</b> —		<i>polyantha</i>	.. 37
<i>chondrillides</i>	.. 381	<i>aspera</i>	.. 178	<i>sebifera</i>	.. 37
<i>glomerata</i>	.. 382	<i>Cephalotes</i>	.. 215	<i>umbrosa</i>	.. 37
<i>nudicaulis</i>	.. 382	<i>hyssopifolia</i>	.. 178	<i>Liu</i>	.. 12
<i>secunda</i>	.. 510	<i>lanata</i>	.. 214	<b>LLOYDIA</b> —	
<b>LAVATERA</b> —		<i>nutans</i>	.. 214	<i>serotina</i>	.. 443
<i>kashmiriana</i>	.. 242	<i>urticæfolia</i>	.. 214	<i>Loba</i>	.. 600
<b>LAWSONIA</b> —		<b>Lewar</b>	.. 126	<b>LOBELIA</b> —	
<i>alba</i>	.. 53	<b>LEYCESTERIA</b> —		<i>trialata</i>	.. 346
<b>Leafless Epipogum</b>	.. 650	<i>formsa</i>	.. 57	<i>Lobia</i>	.. 601
<b>LECANTHUS</b> —		<b>LIGUSTICUM</b> —		<i>Lobyia</i>	.. 600
<i>Wallichii</i>	.. 524	<i>marginatum and</i>		<i>Lodar</i>	.. 33
<i>Wightii</i>	.. 523	<i>clatum</i>	.. 396	<i>Lodhphathani</i>	.. 33
		<b>LIGUSTRUM</b> —		<i>Lokat</i>	.. 12
		<i>compactum</i>	.. 58	<b>London Rocket</b>	.. 504

L—concluded.		PAGE.		PAGE.			
	PAGE.	LYSIMACHIA—					
		alternifolia	..	568	Marigold	..	294
		chenopodioides	..	297	Marjoram, wild	..	176
LONICERA—		japonica	..	534	Mark	..	2
alpigena	..	lobelioides	..	296	"	..	34
angustifolia	..	pyramidalis	..	297	Marking nut tree	..	31
asperifolia	..				MARLEA—		
glauca	..				begoniaefolia	..	40
heterophylla	..				Marorphali	..	73
hispida	..				Marphal or Morphal	..	22
microphylla	..				MARRUBIUM—		
obovata	..				vulgare	..	211
parvifolia	..				MARSDENIA—		
orientalis	..				Roylei	..	583
purpurascens	..				Marsh betony	..	212
quinquelocularis	..				" Mallow	..	237
spinosa	..				" marigold	..	387
Loquat	..				" Orchis	..	490
LORANTHUS—					" Valerian	..	415
cordifolius	..				" water cress	..	638
elatus	..				MARTYNTIA—		
longiflorus	..				diandra	..	222
vestitus	..				Marwan	..	72
Lotak	..				Masho	..	67
LOTONONIS—					Maslun	..	459
Leobordea	..				Mastiara	..	539
LOTUS—					Masur chana	..	596
corniculatus	..				" dal	..	264
LOUREA—					Masuri	..	52
vespertilionis	..				MATRICARIA—		
Lousewort	..				Chamomilla	..	374
Lovage	..				præcox	..	374
Love-lies bleeding	..				Mavlsari	..	32
Lubar	..				Mawal	..	313
Ludh	..				Mazri	..	129
Lucerne	..				MAZUS—		
Ludut	..				rugosus	..	422
LUDWIGIA—					surculosus	..	543
parviflora	..				Meadow pea	..	558
LUFFA—					" sweet	..	266
ægyptiaca	..				MECONOPSIS—		
acutangula	..				aculeata	..	354
Luhuriya	..				MEDICAGO—		
Lunak	..				denticulata	..	555
"	..				falcata	..	252
"	..				laciniata	..	555
LUZULA—					lupulina	..	554
spicata	..				minima	..	555
campestris	..				orbicularis	..	555
LYCHNIS—					sativa	..	252
Cachemeriana	..				Medick	..	252
coronaria	..				" black	..	554
indica	..				" toothed	..	555
nutans	..				Mehal	..	13
pilosa	..				Mehnde	..	53
Stewartii	..				MELASTOMA—		
LYCIUM—					Malabathricum	..	53
barbarum	..				MELHANIA—		
eupæum	..				futteyporensis	..	74
ruthenicum	..				Hamiltoniana	..	74
LYCOPERSICUM—					tomentosa	..	74
esculentum	..				MELIA—		
LYCOPSIS—					Azadirachta	..	42
arvensis	..				Azedarach	..	42
LYCOPUS—					Melilot	..	251
eupæus	..				" white	..	251

<b>M—concluded.</b>					
	PAGE.		PAGE.		PAGE.
MELILOTUS—		MOLTZIA—		MURRAYA—	
alba	251	parviflora	304	exotica	130
parviflora	251	<i>Momodra chopandiga</i>	508	Königii	41
MELIOSMA—		MOMORDICA—		MUSA—	
dillenæefolia	30	balsamina	618	sapientum	432
pungens	30	Charantia	618	<i>Mushk-dana</i>	245
Melon	615	dioica	618	<i>Mushk-tara</i>	192
"	617	Monkey flower	171	Musk Orchis	490
MELOTHRIA—		Monk's hood	502	" thistle	368
maderaspatana	620	MONOCHORIA—		" or Melon Pumpkin	619
<i>Mendu</i>	123	hastæfolia	636	<i>Musna</i>	143
MENTHA—		vaginalis	636	<i>Musrini</i>	463
arvensis	193	MONOTROPA—		Mustard, black	356
sylvestris	192	uniflora	645	" white	358
MENYANTHES—		MONSONIA—		<i>Mustaru</i>	574
trifoliata	514	heliotropioides	457	MYOSOTIS—	
<i>Meradu</i>	564	Moon flower	609	arvensis	305
MERENDEEA—		MORICANDIA—		cæspitosa	304
persica	444	tortuosa	274	stricta	305
MERIANDEA—		MORINA—		sylvatica	305
strobilifera	65	Coulteriana	186	MYRIACTIS—	
Merino	108	longifolia	186	nepalensis	332
MERTENSIA—		persica	185	Wallichii	333
echioides	304	MORINDA—		MYRICA—	
longata	303	tinctoria	1	Nagi	38
moltkioides	304	MORINGA		MYRICARIA—	
racemosa	304	pterygosperma	44	germanica	112
<i>Metha</i>	251	<i>Moru</i>	18	MYRIOPHYLLUM—	
<i>Methi</i>	250	MORUS—		spicatum	626
Michaelmas Daisy	290	alba	15	verticillatum	626
MICROMERIA—		indica	15	MYRSINE—	
biflora	68	laevigata	15	africana	118
hydaspidis	68	serrata	15	semiserrata	119
MICROSTYLIS—		Moschatel	505	Mysore Thorn	604
cylindrostachya	486	MOSLA—			
muscifera	426	dianthera	195	<b>N.</b>	
Wallichii	486	<i>Moth</i>	559		
Milfoil	508	Motherwort	222	NAIAS—	
Milkwort	282	<i>Motia</i>	579	graminea	628
MILLINGTONIA—		<i>Moti-lanc</i>	124	major	626
hortensis	7	Mountain ash	29	minor	628
MIMOSA—		" Lloydia	443	<i>Nabar</i>	128
hamata	106	" spinach	497	<i>Naga</i>	47
rubicaulis	106	Mouse-ear chickweed	147	<i>Nagar jaman</i>	593
MIMULUS—		<i>Mral</i>	122	<i>Nagdaun</i>	1
gracilis	171	MUCUNA—		<i>Nagphana</i>	115
MIMUSOPS—		pruriens	599	<i>Nakkehikni</i>	566
Elengi	32	<i>Mudar</i>	60	<i>Nali</i>	636
hexandra	32	<i>Mugra</i>	579	<i>Naktrusa</i>	504
Mint, corn	193	Mugwort	365	<i>Nanagke</i>	127
" Horse	192	<i>Mukha-jali</i>	457	NANNORHOPS—	
<i>Mri</i>	39	MUKIA—		Ritchiana	129
<i>Mirzanjosh</i>	176	scabrella	620	<i>Nari</i>	636
Mistletoe	70	<i>Mula</i>	599	<i>Naringi</i>	30
<i>Mitha dudia</i>	436	Mulberry	15	<i>Nar kachur</i>	431
" <i>kadu</i>	619	<i>Muli</i>	111	<i>Narna</i>	541
<i>Mith-patta</i>	36	" "	504	" "	83
Mithridate mustard	322	<i>Mulin</i>	587	Narrowfooted Cornsalad	416
Mock orange	52	<i>Mulin</i>	7	Narrow Helleborine	489
<i>Mokna</i>	538	<i>Mundi</i>	328	Narrow-leaved Bitter-	
MOLLUGO—		<i>Munila</i>	351	cress	503
hirta	522	<i>Mung</i>	600	<i>Nashpali</i>	12
nudicaulis	407	<i>Mungani</i>	558	NASTURTIUM—	
stricta	135	<i>Muradh</i>	128	indicum	638
		<i>Murkula</i>	583	montanum	638



<b>P—continued.</b>			PAGE.		PAGE.
	PAGE.				
<i>Palak</i>	.. 388			PHLOMIS—	
<i>Palak-juhi</i>	.. 66	PEDICULARIS— <i>concl.</i> —		bracteosa	.. 217
<i>Paljor</i>	.. 463	<i>carnosa</i>	.. 345	<i>cashmeriana</i>	.. 216
<i>Palu</i>	.. 79	<i>fissa</i>	.. 452	<i>setigera</i>	.. 216
<i>Palwal</i>	.. 608	<i>gracilis</i>	.. 386	<i>spectabilis</i>	.. 216
<i>Pama</i>	.. 126	<i>megalantha</i>	.. 511	<i>Stewartii</i>	.. 69
<i>Pamanke</i>	.. 646	<i>pectinata</i>	.. 385	PHŒBE—	
<i>Pamposh</i>	.. 630	<i>porrecta</i>	.. 386	<i>lanceolata</i>	.. 37
<i>Pamukh</i>	.. 222	<i>pycnantha</i>	.. 451	PHŒNIX—	
<i>Pan</i>	.. 644	<i>rhinanthoides</i>	.. 512	<i>sylvestris</i>	.. 45
PANCRATIUM—		<i>siphonantha</i>	.. 452	<i>Phog</i>	.. 84
<i>verecundum</i>	.. 435	<i>tenuirostris</i>	.. 385	<i>Phok</i>	.. 84
<i>Panda</i>	.. 65	<i>tubiflora</i>	.. 512	PHRYMA—	
<i>Pangra</i>	.. 24	<i>versicolor</i>	.. 452	<i>leptostachya</i>	.. 200
<i>Panibel</i>	.. 592	<i>verticillata</i>	.. 451	<i>Phulahi</i>	.. 27
<i>Pani-ki-sanbhalu</i>	.. 72	<i>Peelu</i>	.. 59	<i>Phulanch</i>	.. 128
<i>Panirband</i>	.. 122	PEGANUM—		<i>Phulla</i>	.. 78
<i>Pani tajak</i>	.. 633	<i>Harmala</i>	.. 241	<i>Phuman</i>	.. 215
<i>Panjakka</i>	.. 306	Penny cress	.. 322	<i>Phut</i>	.. 56
<i>Panj-pilchi</i>	.. 112	PENTAPETES—		PHYLLANTHUS—	
<i>Panr</i>	.. 175	<i>phœnicea</i>	.. 246	<i>distichus</i>	.. 14
<i>Pansra</i>	.. 64	PENTATROPIS—		<i>Emblica</i>	.. 14
<i>Panwar</i>	.. 265	<i>spiralis</i>	.. 582	<i>Niruri</i>	.. 233
<i>Papar</i>	.. 25	PEPEROMIA—		<i>parvifolius</i>	.. 86
PAPAVER—		<i>reflexa</i>	.. 543	<i>simplex</i>	.. 86
<i>dubium</i>	.. 353	PERGULARIA—		<i>urinaria</i>	.. 232
<i>hybridum</i>	.. 353	<i>minor</i>	.. 584	PHYSALIS—	
<i>Rhæas</i>	.. 353	<i>odoratissima</i>	.. 584	<i>minima</i>	.. 308
<i>somniferum</i>	.. 353	<i>pallida</i>	.. 584	<i>peruviana</i>	.. 309
<i>Papra</i>	.. 196	PERILLA—		PHYSOCHLAINA—	
<i>Papri</i>	.. 14	<i>ocimoides</i>	.. 192	<i>præalta</i>	.. 310
"	.. 503	PERIFLOCA—		PHYSORHYNCUS	
PARACARYUM—		<i>aphylla</i>	.. 60	<i>brahvicus</i>	.. 111
<i>glochidiatum</i>	.. 301	<i>hydaspidis</i>	.. 643	PHYTEUMA	
<i>heliocarpum</i>	.. 301	PERISTROPHE—		<i>Thomsoni</i>	.. 483
<i>microcarpum</i>	.. 301	<i>bicalyculata</i>	.. 170	PHYTOLACCA—	
<i>Parhar</i>	.. 390	Persian lilac	.. 42	<i>acinosa</i>	.. 316
PARIS—		" "	.. 58	<i>Piaz</i>	.. 434
<i>polyphylla</i>	.. 444	" " <i>chamomile</i>	.. 374	"	.. 438
PARKINSONIA—		Persicaria	.. 228	<i>Piazi</i>	.. 437
<i>aculeata</i>	.. 25	PETALIDIUM—		PICEA—	
PARNASSIA—		<i>barlerioides</i>	.. 62	<i>Morinda</i>	.. 40
<i>nubicola</i>	.. 413	PEUCEDANUM—		PICRAMMA—	
<i>ovata</i>	.. 413	<i>gravecolens</i>	.. 399	<i>quassioides</i>	.. 131
PAROCHETUS—		<i>Thomsoni</i>	.. 399	PICRIDIMUM—	
<i>communis</i>	.. 553	<i>Peltha</i>	.. 617	<i>tingitanum</i>	.. 482
PARROTTIA—		PHAGNALON—		PICRIS—	
<i>Jacquemontiana</i>	.. 83	<i>niveum</i>	.. 286	<i>hieracioides</i>	.. 339
<i>Parvatti</i>	.. 605	<i>Phaguar</i>	.. 91	PICRORHIZA—	
<i>Parwana</i>	.. 119	<i>Phalijuri</i>	.. 405	<i>Kurrooa</i>	.. 422
<i>Patajan</i>	.. 38	<i>Phalsa</i>	.. 9	PIERUS—	
<i>Pataki</i>	.. 113	<i>Phalsh</i>	.. 4	<i>ovalifolia</i>	.. 32
<i>Patchak</i>	.. 507	<i>Phaphra</i>	.. 231	Pigeon pea	.. 98
<i>Pathor</i>	.. 34	PHASEOLUS—		<i>Pila jau</i>	.. 364
<i>Pathor chur</i>	.. 202	<i>aconitifolius</i>	.. 559	" <i>sirson</i>	.. 357
<i>Patira</i>	.. 636	<i>calcaratus</i>	.. 600	<i>Pilchi</i>	.. 112
<i>Patrang</i>	.. 62	<i>lunatus</i>	.. 600	PILEA—	
<i>Patthar or Pathar</i>	.. 126	<i>Mungo</i>	.. 600	<i>peploides</i>	.. 138
<i>Pathra</i>	.. 319	<i>trilobus</i>	.. 558	<i>scripta</i>	.. 139
<i>Patwa</i>	.. 244	<i>vulgaris</i>	.. 600	<i>umbrosa</i>	.. 138
<i>Peach</i>	.. 10	PHILADELPHUS—		<i>Pilkhan</i>	.. 16
<i>Pear</i>	.. 12	<i>coronarius</i>	.. 52	<i>Pimpernel</i>	.. 154
<i>Pearlwort</i>	.. 530	<i>Philkku</i>	.. 56	PIMPINELLA—	
PEDICULARIS—		<i>Phindak</i>	.. 23	<i>acuminata</i>	.. 393
<i>bicornuta</i>	.. 511	<i>Phitni</i>	.. 76	<i>diversifolia</i>	.. 393
<i>brevifolia</i>	.. 451	<i>Phlankur</i>	.. 595	<i>Saxifraga</i>	.. 393

<b>P—continued.</b>		PAGE.	PAGE.	PAGE.
			<b>PLUCHEA—concl'd.—</b>	<b>POLYGONUM—concl'd.—</b>
			Wallichiana .. 116	pterocarpum .. 593
<i>Pimpri</i> .. 83			<b>PLUMBAGO—</b>	recumbens .. 546
<i>Pindi</i> .. 51			zeylanica .. 226	rumicifolium .. 460
<b>PINUS—</b>			<b>PLUMERIA—</b>	sagittatum .. 551
excelsa .. 39			acutifolia .. 33	serrulatum .. 549
Gerardiana .. 39			<i>Podina</i> .. 192	sibiricum .. 230
longifolia .. 39			<b>PODOPHYLLUM—</b>	sinuatum .. 552
<i>Pipal</i> .. 16			Emodi .. 503	sphaerostachyum .. 459
<i>Pipat-buti</i> .. 342			<b>POGOSTEMON—</b>	stagninum .. 228
<b>PIPER—</b>			plectranthoides .. 191	strigosum .. 549
brachystachyum .. 593			<i>Poi</i> .. 612	tortuosum .. 85
<i>Pippira-sari</i> .. 524			<b>POINCIANA—</b>	tubulosum .. 547
<i>Pippu</i> .. 156			pulcherrima .. 25	vacciniifolium .. 548
<i>Pirhi</i> .. 96			<i>Pokar-mul</i> .. 188	virginianum .. 227
<b>PIPTANTHUS—</b>			<b>POLEMONIUM—</b>	viviparum .. 459
nepalensis .. 91			caeruleum .. 402	Polygonum, slender .. 548
<i>Piriya halim</i> .. 638			<i>Poli</i> .. 332	„ pale .. 228
<b>PISTACIA—</b>			<b>POLYCARPÆA—</b>	Pomegranate .. 53
integerrima .. 46			corymbosa .. 133	<b>PONGAMIA—</b>
<b>PISTIA—</b>			<b>POLYCARPON—</b>	glabra .. 25
Stratiotes .. 637			Lœffingia .. 133	Poplar, Himalayan .. 21
<i>Pisumar</i> .. 390			<b>POLYGALA—</b>	„ Lombardy .. 20
<b>PISUM—</b>			abyssinica .. 283	„ white .. 21
arvense .. 597			chinensis .. 565	Poppy .. 353
sativum .. 597			crotalarioides .. 283	„ field .. 353
<i>Pitz</i> .. 636			erioptera .. 284	„ longheaded .. 353
<b>PITHECOLOBIUM—</b>			Hohenhackeriana .. 283	„ Mexcian .. 354
dulce .. 28			leptalea .. 283	„ opium .. 353
<i>Pit-papra</i> .. 355			persicariæfolia .. 284	„ Prickly .. 354
<i>Piyaz</i> .. 438			sibirica .. 284	<b>POPULUS—</b>
Plantain .. 432			triphylla .. 282	alba .. 21
<b>PLANTAGO—</b>			<b>POLYGONATUM—</b>	balsamifera .. 21
amplexicaulis .. 426			cirrifolium .. 613	ciliata .. 21
brachyphylla .. 425			geminiflorum .. 436	euphratica .. 21
ciliata .. 426			multiflorum .. 498	nigra .. 20
lanceolata .. 425			verticillatum .. 436	<b>PORANA—</b>
major .. 425			<b>POLYGONUM—</b>	paniculata .. 611
ovata .. 426			affine .. 460	racemosa .. 612
Psyllium .. 426			alatum .. 229	<i>Porprang</i> .. 307
tibetica .. 425			alpinum .. 230	„ .. 567
<b>PLATANUS—</b>			amphibium .. 622	<b>PORTULACA—</b>
orientalis .. 23			„ .. 631	oleracea .. 544
<b>PLECOSPERMUM—</b>			amplexicaule .. 459	quadrifida .. 521
spinsum .. 86			aviculare .. 547	<i>Posprang</i> .. 522
<b>PLECTRANTHUS—</b>			barbatum .. 228	<i>Poshkar</i> .. 338
Coetsa .. 202			capitatum .. 549	<i>Poshca</i> .. 23
Gerardianus .. 201			chinense .. 84	<i>Post</i> .. 353
incanus .. 202			cognatum .. 547	<i>Potali</i> .. 130
rugosus .. 67			delicatulum .. 459	<b>POTAMOGETON—</b>
striatus .. 201			dumetorum .. 593	crispus .. 632
ternifolius .. 202			Emodi .. 548	indicus .. 631
<b>PLEUROGYNE—</b>			filicaule .. 459	javanicus .. 631
carinthiaca .. 162			flaccidum .. 229	lucens .. 632
spathulata .. 162			glabrum .. 227	natans .. 631
<b>PLEUROSPERMUM—</b>			glaciale .. 229	pectinatus .. 632
angelicoides .. 397			Hydropiper .. 229	perfoliatus .. 632
Brunonis .. 398			islandicum .. 458	pusillus .. 632
Candollii .. 397			lanigerum .. 548	Potato, sweet .. 610
densiflorum .. 398			lapathifolium .. 228	<b>POTENTILLA—</b>
Govanianum .. 397			minus .. 548	albifolia .. 267
stylosum .. 398			nummularifolium .. 549	ambigua .. 464
<b>PLUCHEA—</b>			orientale .. 227	anserina .. 464
arguta .. 116			persicaria .. 228	argentina .. 466
lanceolata .. 116			plebejum .. 547	argyrophylla .. 264
ovalis .. 116			polystachyum .. 84	Clarkei .. 267

<b>P—concluded.</b>		PAGE.	PAGE.
	PAGE.	<b>PRUNUS—concl.—</b>	<b>QUERCUS—concl.—</b>
<b>POTENTILLA—concl.—</b>		prostrata .. 79	flex .. 87
curviseta .. 467		Puddum .. 11	incana .. 18
desertorum .. 466		tomentosa .. 80	semecarpifolia .. 18
doubjouniana .. 467		<b>PSAMMOGETON—</b>	Quince .. 81
fragarioides .. 465		biternatum .. 402	<b>QUISQUALIS—</b>
fruticosa .. 108		<i>Psher</i> .. 83	indica .. 577
fulgens .. 267		<b>PSORALEA—</b>	
gelida .. 466		corylifolia .. 237	<b>R.</b>
kashmirica .. 268		plicata .. 92	
Kleiniana .. 467		<b>PTEROSPERMUM—</b>	Radish .. 504
Leschenaultiana .. 465		acerifolium .. 22	<i>Raeru</i> .. 27
microphylla .. 465		<b>PTEROTHECA—</b>	<i>Rai</i> .. 40,356
monanthes .. 467		Falconeri .. 481	<i>Raini</i> .. 38
multifida .. 465		<i>Pudinah</i> .. 193	<i>Ral</i> .. 106
nepalensis .. 268		<i>Pudu</i> .. 644	<i>Ramsar</i> .. 580
nivea .. 467		<b>PUERARIA—</b>	<i>Ramturai</i> .. 246
reptans .. 466		tuberosa .. 599	<b>RANDIA—</b>
Salessoyii .. 108		<i>Pula</i> .. 21	dumetorum .. 48
sericea .. 267		<i>Pulak</i> .. 16	tetrasperma .. 48
Sibaldi .. 464		<b>PULICARIA—</b>	<i>Ranghari</i> .. 64
supina .. 468		angustifolia .. 293	<i>Rangun-ki-bel</i> .. 577
<i>Pothi</i> .. 64		crispa .. 336	<b>RANUNCULUS—</b>
<b>POUZOLZIA—</b>		dysenterica .. 293	aquatilis .. 633
hirta .. 524		foliolosa .. 287	arvensis .. 350
indica .. 524		glauscens .. 287	falcatus .. 502
pentandra .. 524		vulgaris .. 293	hirtellus .. 349
viminea .. 87		<i>Pulla</i> .. 594	lætus .. 350
<b>PRANGOS—</b>		Pumelo .. 30	muricatus .. 502
pabularia .. 396		Pumpkin .. 619	pensylvanicus .. 319
<b>PRENANTHES—</b>		Pumpkin, musk or melon .. 69	sceleratus .. 649
Brunoniana .. 380		<i>Puna</i> .. 34	Rape, Branched Broom .. 649
violæfolia .. 482		<i>Punac</i> .. 180	„ Red broom .. 649
Prickly pear .. 115		<b>PUNICA—</b>	<b>RAPHANUS—</b>
„ chaff flower .. 181		Granatum .. 53	sativus .. 504
„ Amaranth .. 313		<i>Punk</i> .. 577	<i>Ratak</i> .. 594
„ lettuce .. 377		<b>PUPALIA—</b>	<i>Ratmandu</i> .. 166
„ poppy .. 354		lappacea .. 181	<i>Rattanjog</i> .. 454
<b>PRIMULA—</b>		<i>Purkar</i> .. 505	<i>Rattanjot</i> .. 83
Clarkei .. 418		Purple clover .. 553	„ .. 268
denticulata .. 418		<i>Puruni</i> .. 87	„ .. 485
elliptica .. 419		<i>Puthorin</i> .. 131	<i>Rau</i> .. 40
floribunda .. 420		<b>PUTRANJIVA—</b>	<i>Rauns</i> .. 81
involutrata .. 419		Roxburghii .. 38	<i>Rawan</i> .. 601
minutissima .. 420		<b>PYCNOCYCLA—</b>	Reed Mace .. 636
petiolaris .. 419		glauca .. 395	<b>REINWARDTIA—</b>
rosea .. 419		<b>PYROLA—</b>	trigyna .. 76
rotundifolia .. 418		rotundifolia .. 484	<b>REPTONIA—</b>
sibirica .. 418		<b>PYRUS—</b>	buxifolia .. 119
Stuartii .. 419		Aucuparia .. 29	<b>RESEDA—</b>
<b>PRINSEPIA—</b>		baccata .. 12	pruinosa .. 223
utilis .. 80		communis .. 12	<i>Reshami</i> .. 116
Procumbent Speedwell .. 537		foliolosa .. 29	<i>Reus</i> .. 81
Prophet's flower .. 306		kumaoni .. 13	<i>Rewan</i> .. 645
<b>PROSPIS—</b>		lanata .. 22	<i>Reward chini</i> .. 453
spicigera .. 26		Malus .. 12	<i>Rewari</i> .. 645
Stephaniana .. 26		Pashia .. 13	<b>RHAGADIOLUS—</b>
<b>PRUNUS—</b>			Hedynois .. 376
Amygdalus .. 10			<b>RHAMNUS—</b>
Armeniaca .. 11			dahuricus .. 10
avium .. 11			persicus .. 77
Cerasus .. 11			procumbens .. 13
Communis .. 11			purpureus .. 77
Padus .. 12			triqueter .. 78
persica .. 10			
		<b>Q.</b>	
		<b>QUERCUS—</b>	
		dilatata .. 18	
		glauca .. 18	



<b>R—concluded.</b>				<b>PAGE.</b>		<b>PAGE.</b>	
	<b>PAGE.</b>						
		<i>Ruba barik</i>	..	121	SAGITTARIA—		
		<b>RUBIA—</b>			guayanensis	..	640
		albicaulis	..	578	sagittifolia	..	640
<b>RHAZYA—</b>		cordifolia	..	578	<i>Sahadebi</i>	..	239
stricta	.. 120	himalaycnese	..	578	<i>Sahadevi</i>	..	325
<b>RHINACANTHUS—</b>		tibetica	..	151	<i>hari</i>	..	381
communis	.. 66	tinctorum	..	578	<i>Saigun</i> or <i>Sagun</i>	..	5
<b>RHODODENDRON—</b>		<b>RUBUS—</b>			<i>Sain</i>	..	36
anthopogon	.. 118	antennifer	..	562	<i>Sainji</i>	..	554
arboreum	.. 32	biflorus	..	107	<i>Sainjna</i>	..	44
campanulatum	.. 118	Clarkei	..	561	<i>Salab</i>	..	8
lepidotum	.. 118	ellipticus	..	519	<i>Salad</i>	..	490
<b>RHUS—</b>		foliolosus	..	562	<i>Salap</i>	..	377
Cotinus	.. 114	fruticosus	..	519	<i>Salar</i>	..	490
mysorensis	.. 131	lasiocarpus	..	108	<i>Saldbargh</i>	..	42
parviflora	.. 131	macilentus	..	518	<i>Salhi</i>	..	294
punjabensis	.. 44	niveus	..	107	<i>Salib-misri</i>	..	42
semi-alata	.. 44	nutans	..	561	<b>SALIX—</b>		
suc edanea	.. 44	paniculatus	..	594	acmophylla	..	19
Wallichii	.. 44	pungens	..	520	alpa	..	20
<b>RHYNCHOSTA—</b>		purpureus	..	519	babylonica	..	20
aurea	.. 602	saxatilis	..	561	daphnoides	..	20
Falconeri	.. 603	<i>Rugru</i>	..	185	fragilis	..	20
himalensis	.. 603	<b>RUMEX—</b>			elegans	..	88
minina	.. 603	acetosa	..	248	hastata	..	88
Pseudo-cajan	.. 98	hastatus	..	247	oxycarpa	..	89
sericea	.. 603	nepalensis	..	231	tetrasperma	..	19
<b>RH NCOSPERMUM—</b>		scutatus	..	552	viminalis	..	88
verticillatum	.. 290	vesicarius	..	232	Wallichiana	..	88
<b>RIBES—</b>		<i>Rungrek</i> or <i>rangrek</i>	..	29	Sallow-Thorn	..	125
glaciale	.. 128	<i>Rungan</i> or <i>rangan</i>	..	48	<i>Salpan</i>	..	79
Grossularia	.. 127	<b>RUNGIA—</b>			<b>SALSOLA—</b>		
nigrum	.. 128	repens	..	537	foetida	..	124
orientale	.. 127	<b>RUPPIA—</b>			verrucosa	..	124
rubrum	.. 128	rostellata	..	633	Saltwort	..	124
<b>Rib-wort plantain</b>	.. 425	<b>RUSH—</b>			<i>Sabuni</i>	..	232
<i>Richi</i>	.. 54	Hard	..	499	<b>SALVADORA—</b>		
<b>RICINUS—</b>		jointed	..	500	leoides	..	59
communis	.. 130				persica	..	59
<i>Rikkul</i>	.. 44				<b>SALVIA—</b>		
<i>Rinj</i>	.. 27				aegyptiaca	..	197
<i>Ringni</i>	.. 383				" "	..	68
<i>Rinsag</i>	.. 316				asperata	..	195
<i>Ritha</i>	.. 43				dumetorum	..	196
<b>ROCHELIA—</b>		<i>Sabbajaya</i>	..	432	glutinosa	..	195
stylaris	.. 302	<b>SABIA—</b>			hians	..	195
<b>Rock cress</b>	.. 409	campanulata	..	607	lanata	..	196
<b>Rocket, yellow</b>	.. 355	<i>Sabuni</i>	..	541	Moorcroftiana	..	196
<i>Rohira</i>	.. 4	Sacred Lotus	..	630	plebeia	..	197
<i>Roli</i>	.. 38	<i>Sada-hazur-mani</i>	..	233	<b>SAMBUCUS—</b>		
<b>Rootless duckweed</b>	.. 642	<i>Safed bhangra</i>	..	569	Ebulus	..	50
<i>Rora</i>	.. 38	<i>chamni</i>	..	535	<i>Samma</i>	..	46
<b>ROSA—</b>		<i>musli</i>	..	652	<b>SAMOLUS—</b>		
macrophylla	.. 108	<i>rai</i>	..	358	Valerandi	..	297
moschata	.. 604	<i>sanbhalu</i>	..	72	<i>Samundar-phal</i>	..	31
paniculatis	.. 592	<i>siris</i>	..	28	" <i>sok</i>	..	197
sericea	.. 109	<i>Safeda</i>	..	20	<i>Sanai</i>	..	115
Webbiana	.. 109	<i>Safedar</i>	..	21	<i>Sanatta</i>	..	123
<b>ROSCÆA—</b>		Safflower	..	332	<i>Sandan</i>	..	24
alpina	.. 496	Saffron	..	434	Sand spurry	..	132
procera	.. 496	Sage	..	195	Sanicle	..	300
Rose	.. 108	<b>SAGERETIA—</b>			<b>SANICULA—</b>		
Rosebay	.. 151	Brandrethiana	..	78	europæa	..	360
<i>Rowan</i>	.. 29	oppositifolia	..	576	<i>Sanbhahuli</i>	..	158
<b>ROYLEA—</b>		theezans	..	591	<i>Sankhpushpi</i>	..	380
elegans	.. 69	<b>SAGINA—</b>			"	..	568
<b>Rozelle</b>	.. 244	procumbens	..	530			



<b>S—continued.</b>		PAGE.		PAGE.			
	PAGE.						
		<i>Sitaphal</i>	..	110			
		<i>Sit-ruti</i>	..	431	SPERMATOCOE—		
		<i>Sittu</i>	..	156	<i>hispidata</i>	..	522
Shrubby potentilla	.. 108	SIUM—			<i>striata</i>	..	135
<i>suæda</i>	.. 123	<i>latijugum</i>	..	393	SPHERANTHUS—		
<i>Shukardana</i>	.. 64	<i>Sizgai</i>	..	358	<i>indicus</i>	..	328
<i>Shun</i>	.. 20	SKIMMIA—			SPHENOCLEA—		
SHUTERIA—		<i>Laureola</i>	..	112	<i>zeylanica</i>	..	296
<i>vestita</i>	.. 598	Skulleap, common	..	210	Spiderwort	..	281
<i>Shuti</i>	.. 433	SMILACINA—			Spinach	..	388
<i>Siali</i>	.. 582	<i>pallida</i>	..	498	SPINACIA—		
<i>"</i>	.. 599	SMILAX—			<i>oleracea</i>	..	388
<i>Sial-kanta</i>	.. 354	<i>aspera</i>	..	608	<i>Spinbajja</i>	..	122
<i>Sialu</i>	.. 40	<i>parvifolia</i>	..	607	SPITRÆA—		
<i>Siaru</i>	.. 87	<i>vaginata</i>	..	607	<i>Aruncus</i>	..	266
<i>Sicka</i>	.. 10	SMITHIA—			<i>bella</i>	..	80
SIDA—		<i>ciliata</i>	..	261	<i>canescens</i>	..	80
<i>carpinifolia</i>	.. 238	<i>geminiflora</i>	..	261	<i>sorbifolia</i>	..	106
<i>cordifolia</i>	.. 239	<i>sensitiva</i>	..	261	<i>vaccinifolia</i>	..	80
<i>grewloides</i>	.. 229	Snake gourd	..	617	<i>vestita</i>	..	242
<i>humilis</i>	.. 544	Snow creeper	..	612	SPILANTHES—		
<i>rhombifolia</i>	.. 239	Soapnut tree	..	43	<i>acmella</i>	..	188
<i>spinosa</i>	.. 238	SOLANUM—			SPONDIAS—		
SIEGESBECKIA—		<i>coagulans</i>	..	129	<i>Mangifera</i>	..	45
<i>orientalis</i>	.. 187	<i>"</i>	..	382	<i>Spruce, Himalayan</i>	..	40
<i>Sikanda</i>	.. 109	<i>dulcamara</i>	..	121	<i>Spurless Coral Root</i>	..	649
<i>Siki</i>	.. 47	<i>gracilipes</i>	..	308	<i>Spurry, corn</i>	..	132
<i>Sil</i>	.. 313	<i>indicum</i>	..	129	<i>" sand</i>	..	132
SILENE—		<i>Melongena</i>	..	129	<i>Squinancywort</i>	..	153
<i>apetala</i>	.. 178	<i>nigrum</i>	..	382	STACHYS—		
<i>arenosa</i>	.. 144	<i>verbascifolium</i>	..	121	<i>floccosa</i>	..	212
<i>conoidea</i>	.. 143	<i>xanthocarpum</i>	..	383	<i>melissæfolia</i>	..	212
<i>Falconeriana</i>	.. 183	<i>Solei</i>	..	67	<i>palustris</i>	..	212
<i>Griffithii</i>	.. 144	SOLENANTHUS—			<i>parviflora</i>	..	213
<i>inflata</i>	.. 182	<i>circinnatus</i>	..	300	<i>sericea</i>	..	212
<i>Moorcroftiana</i>	.. 143	SOLIDAGO—			<i>sylvatica</i>	..	213
<i>tenuis</i>	.. 144	<i>Virga-aurea</i>	..	476	<i>tibetica</i>	..	68
<i>Webbiana</i>	.. 145	Solomon's seal	..	498	STAPHYLEA—		
Silk cotton tree	.. 24	<i>Soltarj</i>	..	571	<i>Emodi</i>	..	1
Silver weed	.. 464	<i>Somni</i>	..	170	<i>Starga</i>	..	45
SILYBUM—		SONCHUS—			<i>Star of Bethlehem</i>	..	498
<i>Marianum</i>	.. 369	<i>arvensis</i>	..	381	STATICE—		
<i>Simak</i>	.. 239	<i>asper</i>	..	380	<i>cabulica</i>	..	484
<i>Singhara</i>	.. 630	<i>maritimus</i>	..	381	STELLARIA—		
<i>Singi</i>	.. 47	<i>oleraceus</i>	..	380	<i>aquatica</i>	..	529
<i>Sinji</i>	.. 76	SOPHORA—			<i>bulbosa</i>	..	148
<i>"</i>	.. 251	<i>mollis</i>	..	104	<i>crispata</i>	..	148
<i>Sipil</i>	.. 280	<i>Moorcroftiana</i>	..	104	<i>decumbens</i>	..	529
<i>Siran</i>	.. 28	SOPUBIA—			<i>glauca</i>	..	148
<i>Siris</i>	.. 28	<i>trifida</i>	..	385	<i>latifolia</i>	..	529
<i>Sirma</i>	.. 125	Sorrel, red	..	244	<i>longissima</i>	..	529
<i>Sirsa</i>	.. 28	<i>"</i>	..	232	<i>media</i>	..	529
<i>Sis</i>	.. 114	<i>Sosan</i>	..	433	<i>paniculata</i>	..	148
SISYMBRIUM—		<i>Sowa</i>	..	399	STEPHANIA—		
<i>Alliaria</i>	.. 321	<i>Sow thistle</i>	..	380	<i>elegans</i>	..	606
<i>Columnæ</i>	.. 356	<i>" corn</i>	..	381	<i>rotunda</i>	..	606
<i>foliosum</i>	.. 320	<i>Spang jha</i>	..	108	STEPHEGYNE—		
<i>himalaicum</i>	.. 320	SPARGANIUM			<i>parvifolia</i>	..	1
<i>Irio</i>	.. 504	<i>ramosum</i>	..	637	STERCULIA—		
<i>Lœselii</i>	.. 356	SPATHOLOBUS—			<i>villosa</i>	..	23
<i>mollissimum</i>	.. 273	<i>Roxburghii</i>	..	599	St. John's Wort, com-		
<i>rupestre</i>	.. 321	SPERGULA—			<i>mon</i>	..	150
<i>Sophia</i>	.. 356	<i>arvensis</i>	..	132	<i>Stork's bill</i>	..	526
<i>strictum</i>	.. 470	<i>pentandra</i>	..	132	<i>Strawberry clover</i>	..	553
<i>Thalianum</i>	.. 320	<i>rubra</i>	..	132	<i>" tree</i>	..	3
<i>Wallichii</i>	.. 504				<i>" wild</i>	..	464

















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