Eng. :—Rosary tulsi.

Habitat :—Plains and lower hills of India.

Strongly scented erect herbaceous, pubescent plants, branched from the base, 1-2ft., high. Leaves 1-1½in. narrowly ovate, toothed or entire ; petiole very slender, usually ciliate. Bracts stalked, ovate awned, not so large as the nearly glabrous Calyx ; spikes 3-8in. ; whorls rather close. Flowers subsessile. Calyx ciliate, two lower Calyx-teeth ovate-lanceolate, awned, longer than the rounded upper ; lateral smaller than the lower. Corolla ⅛in., long, white Filaments twice as long as the Corolla, hairy at the knee Nutlets pitchy black, narrowly ellipsoid, punctulate.

Uses :—During fever, when the extremities are cold, the leaves, made into a paste, are applied to the finger-and toe-nails. The same preparation is used as a cure for parasitical diseases of the skin (Revd. A. Campbell).

969. *O. Basilicum*, *Linn.* H.F.B.I., IV. 608 ; *Roxb.* 464.

Syn. :—O. pilosum, *Willd* ; O. caryophyllatum, *Roxb.* 464.

Sans. —Vishvatulasi.

Vern. : —Shâhasfaram, raihan Arab , Shúhasparam, názbi, daban-shâh (Pers.); Sabzah (Hind. and Dec.); Tirunitru, Karandai pachch-ai, uruttirajadai (Tam); Rudha-jeda (Tel.) ; Ramatulasi, Vibudi patri, tulasi-Krittâbu (Mal.), Kám-kastúrí, nirutulasi, Kammagaggare, Karvagagri-gida (Kan.) ; Bábutulshí (Beng.) ; Sabza (Guz.); Pinzain Pinzin (Burm.); Sabajhi (Sind) ; Tulsi, babúri (Pb.).

Habitat . —Throughout tropical and hotter India, cultivated from the Punjab to Travancore. Indigenous in the Punjab on low hills.

N. B. —Commonly known and sold in Bombay as *sabja*. It is used as an offering over the graves every Friday by the Mahomedans of Bombay (K.R.K.)

Herbaceous plants, 2-2ft. high, erect, glabrous or pubescent. The Ceylon form, says Trimen, is generally perfectly smooth ; stems and branches green or sometimes purplish. Leaves 1-3in. long, ovate, toothed or entire, copiously gland-dotted, aromatic sweet-smelling Bracts petiolate. Fruiting calyx very shortly pedicelled, two lower teeth ovate-lanceolate, awned, longer

than the rounded upper, lateral smaller than the lower. Corolla $\frac{1}{3}$-$\frac{1}{2}$in. long, large for the genus white pinkish-purple. Ovary 4-partite. Nutlets drupe, about $\frac{1}{12}$in. long, ellipsoid, black, basal scar small.

Uses :—The seeds of this plant are mucilaginous and cooling, given in infusion in gonorrhœa, diarrhœa and chronic dysentery. The juice of the leaves form an excellent nostrum for the cure of ringworms, and the bruised leaves for scorpion stings. The seeds and flowers also possess stimulant, diuretic and demulcent properties. *Diaphoretic and expectorant properties are also* ascribed to this plant ; a cold infusion of the seeds can relieve after-pains of parturition. The leaves are useful in the treatment of croup, for which the juice warmed with honey is given. (Kanai Lall De). Dr. Irvine remarks that the seeds in doses of from ʒj to ʒiii are use l as an aphrodisiac The seeds washed and pounded are used in poultices for unhealthy sores and sinuses. They are also given internally with *sherbet* in cases of habitual constipation and in internal piles. The juice is dropped into the ears for the cure of ear-ache and dulness of hearing. Roots are used for the bowel complaints of children.

The oil, obtained by distilling the leaves with water has a yellowish colour and a strong characteristic smell. It has a specific gr. = 0 9154 at 15°, and a rotation of −7°40′ in a 100 mm. tube. (J Ch. S LXXII. pt I, (1897) p. 429.)

The essential oil of *ocimum basilicum* contains a new terpene, ocimene $C_{10}H_{16}$ closely resembling myrcene; like that terpene, it readily absorbs oxygen, being converted into a colourless viscid substance. Ocimene differs from myrcene, however, in physical characters and on reduction with Sodium in alcohol yields dihydro-ocimene, which gives a crystalline bromine addition compound differing in Sp. Gr. from that obtained by Semmler from dihydro-myrcene. Incidentally, it is noted that basil oil finds useful application for blending with mignonette bouquets (J. S. Ch. I Dec. 31, 1904, p 1235.)

Experiments with *Ocimum basilicum* show that plants which have been deprived of their flower buds produce appreciably more essential oil than plants allowed to grow naturally, the increase of oil obtained amounting to about 82 per cent. The weight of the plant was also increased by about 39 per cent. Fecundation and fructification are, therefore, accompanied by a consumption of the odorous principles of the plant (J. S, Ch. I., 15-12-1905, p. 1253.)

970. *O. gratissimum, Linn.*, H.F.B.I., IV. 608 ; Roxb. 464.

Eng. :—Shrubby Basil.

Vern. :—Râm-tulsi (Hind. and Dec.); Râm-tulshi (Beng.); Furanjmishk (Arab.); Palangmishk (Pers.); Elumich-chamtolashi (Tam.); Nimmatulasi (Tel.); Káttu-tuttuvá (Mal.); Banjere (Pb.); Râmatulas (Mar.); Avachibâ-vachi (Guz.)

Habitat :- Bengal, Chittagong, E. Nepal and throughout the Deccan Peninsula.

A strongly-scented, perennial shrub, 4-8ft. glabrescent, much-branched, woody below. Leaves 2-4in. ovate acute crenate or coarsely toothed. Petiole 1-2in. Racemes strict, slender; whorl rather close set; bracts sessile, lanceolate, awned from a rounded base, longer than the Calyx. Calyx pubescent, fruiting ¼in. long, recurved; two lower Calyx-teeth minute, much shorter than the rounded upper, lateral triangular, broader than the lower. Corolla ⅛in., hardly exceeding the Calyx, pale yellow. Filaments exserted, knee bearded. Nutlets sub-globose, rugose, with glandular depressions (J. D. Hooker).

Uses --It is an esteemed remedy in gonorrhœa. Dr. Waitz (*Dis. of Children in Hot Climate*, p. 196) states that in the aphthæ of children he found a strong decoction of the plant effectual when ordinary European remedies had failed. He also advises (*Ibid.*, p. 230) the use of aromatic baths of fumigations prepared with this plant in the treatment of rheumatism and paralysis (Bouton, *Med. Plants of Mauritius* p. 120). Ph. Ind.

A decoction of the leaves is of value in cases of seminal weakness (S. Arjun). The seeds are given in headaches and neuralgia.

The sample of oil of Ocimum gratissimum L. prepared at Dabakala is very limpid and golden yellow in colour Its odour is perfectly similar to that of the oil of ajowan seeds.

Its constants are :

Density at 15° C . .	**... 0.9105**
Polarmetric rotation . .	**.. +0°58′**

Soluble in $1\frac{1}{5}$ vol. of 80 per cent alcohol, later an opalescence.

Judging from its odour, this essential oil should contain a large proportion of thymol or carvacrol.

Agitation with a 5 per cent aqueous solution of caustic soda showed that it contains, as a matter of fact, 44 per cent of phenolic constituents. The alkaline solution is decomposed by dilute sulphuric acid, then exhausted with ether. By rapid evaporation in a small porcelain capsule, this solvent

deposits a residue which soon crystallises by simple cooling without the necessity of sowing it with a crystal. This residue was therefore almost entirely composed of thymol. After recrystallisation, the crystals had still a slight reddish coloration, but the manner of their preparation, their melting point (49.3°—50.5°C.) and their odour are sufficient for their identification.

We do not think that the essential oil of Ocimum gratissimum L has previously been studied, but thymol, which, moreover, has hitherto scarcely been observed except in the Labiatæ, has nevertheless already been recorded (see E. Gildemeister, Les Huiles essentielles' 2nd French Edition, p. 502) in the essential oil of another Ocimum, O viride —(Scien. and Indus. Bull. of Roure-Bertrand fils of Grasse for Oct. 1913 p 21)

971. *O. sanctum, Linn.*, H.F.B.I., IV. 609 ; Roxb. 463.

Sans. :—Purnsa, ajaka, tulasi, manjarika, Bhurati, bhûlaka, Divyâ, Krishna mûla.

Vern. :—Kála-tulsi, tulsi baranda, varanda (Hind); Kálatulsi tulshi (Beng.); Bantulsi, tulsi (Pb.) ; Tulasi (Bomb.); Tulasa (Mar.) ; Talasi (Guj.); Tulsi (Dec.) ; Tulasi, alaṅgai, pirundam (Tam.) ; Tulasi, krushna-tulasi, gaggera-chettu (Tel.) ; Tulashigidá (Kan.); Niella tirtua, krishna tulsi, nallu tirtta (Malay); Lun (Burm.) ; Mudurutulla (Sing.)

Habitat :—Throughout tropical and hotter India.

A strongly-scented, perennial, herbaceous, erect plant, 1-2ft. high, softly patently hairy. Stem sometimes woody below Branches erect, ascending or spreading. Leaves oblong obtuse or acute, 1-2½in. long, variable in breadth, base narrowed ; margin entire or subserrate, hairy on both surfaces and minutely dotted, petioles ½-1in. long. Floral leaves sessile, ovate-lanceolate. Racemes very slender 6-8in. long ; pedicels slender as long as the Calyx. Calyx short, two lower teeth very long-awned, longer than the broadly oblong upper, lateral broadly ovate, shorter than the lower. Corolla very small, scarcely longer than the Calyx. Filaments exserted, knee villous. Fruiting Calyx ⅛in. long on a slender pedicel, broadly campanulate, membranous. Nutlets subglobose or broadly oblong, slightly compressed, nearly smooth, pale-red, brown.

Uses :—The leaves have expectorant properties, and their juice is used by native physicians in catarrh and bronchitis. This preparation also is applied to the skin in ring-worm and

other cutaneous diseases. An infusion of the leaves is used as a stomachic in the gastric disorders of children, and in hepatic affections. The dried leaves are powdered and employed as a snuff in ozæna. They are also an effectual means of dislodging maggots. The root is given in decoction as a diaphoretic in malarial fevers. The seeds are mucilaginous and demulcent, and are given in disorders of the genito-urinary system. The juice of the leaves dropped into the ear, is said to be a good remedy for ear-ache.

The Mosquito plant—Ocimum viride.

Sir George Birdwood writes to the "Times" under date April 29th 1904 :—"When the Victoria Gardens and Albert Museum were established in Bombay, the men employed on these works were at first so pestered by mosquitos and suffered so much from malarial fever, that on the recommendation of the Hindu *kârbâri* ("manager"), the whole boundary of the gardens was planted with holy basil and any other basil at hand, on which the plague of mosquitos was at once abated, and fever altogether disappeared from among the resident gardeners and temporarily resident masons The site of the gardens had ever before been one of the worst malarial-stricken spots on the island of Bombay. No one in those days knew anything of the "mosquito-malaria theory" of to-day. I myself used myrrh as a protection against mosquitos. They never came near any bed in which a little myrrh was burnt or a little tincture of myrrh sprinkled when retiring for the night. I never knew natives who used much cinnamon or cloves, etc., in their daily diet ever take malarial fever or die of cholera."

K. R. Kirtikar's note on Sir George Birdwood's remarks :—

Sir George speaks of the *Holy basil.* It is the Tulsi plant the Ocimum sanctum, Linn. Among the "other basils," he speaks of is our Sabjá plant, Ocimum basilicum, Linn. I think, it therefore, to include Sir George's remarks under either O. sanctum or O. basilicum.

OCIMUM VIRIDE *Willd., Enum Hort.* Berol 629—is from Tropical Africa. See p. 326 Fasc. III. Hooker's Kew Index, 1894.

(1) OCIMUM FEBRIFUGUM *Lindl.* in Bot. Register *Tab* 753 is given as a synonym by Hooker in the same Index Kewenses at p. 325 of Ocimum viride.

(2) OCIMUM HOPTODON, *Beaum.* Fl. Owar II. 59 to 94 is also a synonym, given by Hooker at the same page

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972. *Geniosporum prostratum, Benth.*, H.F.B.I., IV. 610.

Vern :—Nazel-nagai (Tam.)

Habitat :—Deccan Peninsula, from the Concan southwards.

Annual prostrate herbs. Stems many, from a woody stock, slender, glabrous, pubescent or hirsute. Leaves in distant pairs very variable, from $\frac{1}{4}$ by $\frac{1}{3}$in. to 2 by $\frac{3}{4}$in, rather thick, base narrow, sessile or petioled, ovate-lanceolate or oblong, or linear, sparingly toothed. Spikes elongate, slender; whorls close or distant, in slender racemes 2-6in. long; bracts ovate, acute, reflexed. Flowers green, occasionally white, minute, pedicelled. Calyx hairy, upper lip very variable in size, throat hairy. Corolla $\frac{1}{16}$in., hairy. Filaments exserted. Fruiting Calyx $\frac{1}{12}$in., subcampanulate, ribbed, tube not pitted; calyx-throat with a ring of hairs Nutlets very minute, elliptic, smooth, naked.

Use.:—It is regarded as febrifuge at Pondicherry. (Ph Ind.)

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973. *Orthosiphon stamineus, Bentham*, H.F.B.I., IV. 615.

Syn:—Ocimum grandiflorum, *Blume*. O. longiflorum, *Ham.*

Habitat:—Assam and Southern India.

Undershrubs, slender, glabrous or pubescent. Stems 1-2ft., 4-angled. Leaves in distant pairs, 2-4in., narrowed into the petiole, ovate, acuminate or coarsely toothed, base cuneate. Racemes very lax-fid. Calyx $\frac{1}{6}$in., campanulate, Calyx-throat naked; 2 lower teeth subulate. Corolla 1in, glabrous, white or purplish. Corolla-tube very slender, thrice as long as the Calyx. Filaments far exserted, capillary, twice as long as the corolla. Nutlets broadly oblong, compressed, rugulose.

Dr. Hooker writes in *Curtis' Bot. Mag.* for April 1st, 1870:—

"It is a very wide-spread Eastern plant from Assam and Burma to the Philippine islands, and from the Nicobars and Siam to Java, Borneo and Cape Coole in North-East Australia. It is a stone plant, a profuse flowerer, and of very pretty appearance."

Uses:—Dr. Van Itallie uses the leaves for gout and in renal disorders (Ph. J. Oct. 2, 1886, p. 267). In Java, the leaves are made into a tea and used in the treatment of diseases of the kidneys and bladder. In Holland and France, they have been

used successfully in the treatment of diseases of urinary organs (Christy's N. L. P. No. X, p. 104, 1887).

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974. *Coleus aromaticus, Benth.*, H.F.B.I., IV. 625.

Syn. :—Plectranthus aromaticus, *Roxb.* 466.

Sans. :—Páshána bhedi.

Vern. :—Páthar chur (H.) ; Páter-chur (B.) ; Páthor chur, pathúr chúr, owa (B.) ; Karpura valli (Tel.) ; Pánáchá onvá (Mar.)

Habitat : —Cultivated throughout India.

A perennial herb, shrubby below, hispidly villous or tomentose. Stem 1-3ft , fleshy. Leaves 1-2in., petioled, broadly ovate or cordate, crenate, fleshy, very aromatic. Flowers shortly pedicelled, ⅛in. long, whorls distant, densely many-fid. Upper Calyx-lip ovate, acute membranous, lower acuminate. Corolla pale purplish, tube short, throat inflated, lips short. Stamens shortly exserted. Fruiting Calyx sub-erect.

Uses :—" Said by Sanskrit writers to have a specific action on the bladder and to be useful in urinary diseases, vaginal discharges, etc." (U. C Dutt). It is employed in Cochin China, according to Lourero (*Flor. Cochin* , p 452), in asthma, chronic coughs, epilepsy and other convulsive affections. Dr. Wight (*Illust.* vol. ii.) speaks of it as a powerful aromatic carminative given in cases of colic in children, in the treatment of which the expressed juice is prescribed mixed with sugar or other suitable vehicle. In his own practice he observed it to produce so decidely an intoxicating effect that the patient, an European lady, who had taken it on native advice for dyspepsia, had to discontinue it, though otherwise benefiting under its use. The Rev. J. Long (*Journ. Agri.-Hort. Soc. India*, 1858, vol. x, p. 23) also notices its intoxicating properties, and states that the people of Bengal employ it in colic and dyspepsia. (Ph. Ind.) It is much employed (in Ceylon) as a medicine, especially for cattle, and a plant is always to be found growing in a little box susponded on the sides of native carts (Trimen). Used for claret, champagne, and moselle cup—as a flavouring adjunct (K. R. K.)

975. *Anisochilus carnosus, Wall.*, H.F.B.I., IV. 627.

Syn. :—Plectranthus strobiliferus, *Roxb.* 466.

Sans. :—Utpalabheda, ajapâda, indupami.

Vern. :—Panjíri-ká-pát, Sitá-ki-panjíri (Hindi); Ajvân-ká-pattá, Pánjírí (Dec.); Karppúra-valli (Tam.); Pânajiren, Kápurlí, chora-onvá (Mar.); Karpúra-valli (Tel.); Chómarú (Mal.); Dodda-patri, kuruvelu-balli (Kan.); Kattukúrkka, kurkká, patu-kúrkká (Mal.); Omamu-áku, roga-chettu (Tel.); Ajmánu-pátru, ajamá (Guz.).

Habitat :—Western Himalaya; Kumaon and Garwhal, and throughout Central and Southern India to Travancore

An erect annual, 1-2 ft. high. Stem stout, bluntly 4 angled, glabrous or sparsely pubescent, often tinged with red Leaves rather fleshy, 1-2½in long, broadly ovate, obtuse, crenate, rounded or subcordate at the base, usually hairy beneath, petioles ½-1½ in. long Spikes ½-1½in long, 4-gonous in flower and becoming cylindrical in fruit, peduncles slender; bracts ⅛ in. long, ovate, acuminate, ciliate, glandular. Calyx pubescent, ⅛in long, enlarging in fruit; upper lip ovate-lanceolate, acute, ciliolate, bending over the lower lip and closing the mouth of the calyx when in fruit, lower lip truncate, its membranous ciliate tip reflexed and appressed against the tube Corolla pale-purple, ⅛in. long, hairy outside; upper lip short, erect, with shallow lobes. Nutlets suborbicular, compressed, polished and brown when ripe.

Uses :—Ainslie says that the fresh juice of the leaves mixed with sugar-candy is given by the Tamil doctors in Cynanche, and, mixed with sugar and gingelly-oil, is used as a cooling liniment for the head.

Dr. Bidie characterises it as a mild stimulant, expectorant, and particularly useful in the cough of childhood. Its properties depend upon a volatile oil (Ph. Ind.)

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976. *Lavendula Burmanni., Benth*, H.F.B.I., IV. 631.

Vern. :—Sarpano-charo ; Asmâni galgoto ; Jangali lavandar (Duk. and Guz.).

Habitat : —Deccan Peninsula ; common in the West, from the Concan to Coorg. Central India, at Indore.

A slender erect herb. Stems 2-3 ft. high, simple or branched, 4-angled, pubsecent. Leaves sessile or nearly so, 2-4in. long and as broad as long, pinnatipartite or deeply pinnatisect ; lobes linear, entire or cut or toothed, obtuse or subacute, glabrous or pubescent above, pale and pubescent beneath. Spikes simple or more or less branched, or sometimes subumbellate, bracts pubescent, ¼-⅓in. long, broadly ovate and strongly nerved at the base, the apex ending in a long capillary awn. Calyx (in fruit) grey-pubescent, ⅓in. long, tube somewhat curved ; teeth lanceolate, acute and with pennicillate tips. Corolla blue or white, nearly ⅓in. long, hairy outside ; tube ⅓in. long, slender below ; upper lip ⅛in. long ; middle lobe of lower lip twice as long as the 2 lateral ones Nutlets oblong-ellipsoid, mucilaginous when moistened (Duthie)

Uses.—Mr. Indraji, the author of "Vanaspati Shástra," a book containing valuable information on the flora of the Western Presidency, India, writes that it is not known whether anybody else has made use of the plant except that the villagers and shepherds of the Barda Hills in Kathiawar have used it as a medicine.

In places where the plant grows serpents abound. It is supposed to act as an antidote for poison ; the roots are rubbed with water and the solution or the paste is applied over the sting of wild animals. The powdered leaves are given for inhalation to the person who has been stung by a serpent in order to prevent him from falling into sleep.

Colonel Kirtikar having drawn the attention of Prof. D. D. Kanga, to the importance of this plant, who extracted oil from its flowers, and leaves.

According to him ' the oil obtained from the flowers was quite different in all respects from that obtained from the leaves ; it differed both physically and chemically ; the yield of oil was greater from the leaves than from the flowers.

The following table will give some idea as to the differences in the physical properties and chemical composition of the two oils :

	Oil from flowers.	Oil from leaves.
Colour	Red	Yellow
Odour	Pleasant, somewhat peppermint like	Very pleasant, resembling lemon-grass.
Specific gravity	$D^{24\cdot5^\circ}_{15^\circ}$ 0·923	$D^{26\cdot75^\circ}_{15^\circ}$ 0·895
Optical Rotation	Colour too deep to allow of determination.	$[a]D$ - 0·87.°
Refractive Index	$^{25^\circ}nD$ 1·4683	$^{28\cdot5^\circ}n_D$ 1·4822
Solubility in 70 % alcohol	1 part in 28 parts	1 part in 2 parts
Saponification value	149·5	44·25
Acetyl value	199	141·4.

977. *Pogostemon plectranthoides, Desf.*, H.F.B.I., IV. 632.

Vern.—*Pângla* (Deccan) and Konkan also Pângla.

Habitat.—Western Himalaya, from Nepal to Simla; Lower Bengal and Behar. The Concan, Canara and the Circars.

A strongly-scented, large, gregarious, shrubby, hoary, pubescent bush; branches round, often dark purple. Young parts tomentose. Leaves opposite, stalked ovate acute, doubly-toothed or serrate, long pointed, 3-6in., longer than the petiole. Panicle usually elongate; whorls subsecured, crowded in large cylindric spikes. Floral leaves bract-like, hairy glandular, ovate acute. Flowers hardly ¼in. long, white tinged with, pink. Calyx hirsute, tubular 5-toothed. Calyx-teeth shortly triangular lanceolate, ciliate, nearly equal. Corolla-tube, curved, longer than the calyx. Limb spreading, 4-lobed, lobes nearly equal, obtuse. Stamens 4 nearly equal, far protruding. Filaments lilac, bearded with long, lilac, beaded hairs (Collett and J. D. Hooker).

Use.—Used like *P. purviflorus.* (Syn. P. purpuricaulis, Dalz.) It is the source of the *phângla* (see the correspondence on the subject, pp. 243-246 of Vol. I of Report Proceed Central Indigen Drugs Com.)

978. *P. purpurascens, Dalz.*, H.F.B.I., IV. 632.

Habitat.—Deccan and Manipur. Dr. Watt says : "It is a very striking species and has the somewhat remarkable distribution

of re-appearing in Manipur.. ...while it nowhere occurs in the vast expanse of the tableland of India that lies between the Deccan and Manipur."

An erect herb, softly villous, with spreading hairs. Stem 4-angled. Leaves sometimes 9 inches long, membranous, long-petioled, ovate or ovate-lanceolate, sinuate or cut and toothed or crenate, base narrowly cuneate. Whorls dense-fid globose, secund, continuous or separate, in long peduncled hirsute spikes sometimes 9in. long. Bracts narrow, falcate, equalling the Calyx, ciliate. Calyx $\frac{1}{8}$in. long, tubular, teeth long, subulate, ciliate. Corolla white, with purple upper lip (probably a form of P. arviflora (J. D. Hooker)

Use.—Used like P. parviflorus. It seems more likely than either P. plectranthoides or P. parviflorus to be used medicinally (Watt)

979. *P. parviflorus, Benth.*, H.F.B.I., IV. 632.

Vern. :—Phángla, pángla (Bomb.).

Habitat :—Subtropical Himalaya, from Kumaon to Bhotan. Assam, Khasia Hills, and Silhet, Chittagong West Deccan Peninsula, from the Concan to the Anamallay.

An annual herb, stout erect, branched, glabrous pubescent or scaberulous. Leaves long-petioled, ovate or ovate-lanceolate, singly or doubly crenate-toothed or serrate, base cuneate. Whorls dense-fid, subglobose in dense cylindric or one-sided softly hairy spikes. Bracts elliptic ovate, exceeding the hirsute calyx. Calyx $\frac{1}{6}$in. long narrow, usually purplish. Calyx teeth short, triangular-lanceolate, ciliate. The stem and branches are usually dark-purple, but not constantly.

Uses :—The fresh leaves, when bruised, are applied as a cataplasm in order to clean wounds and promote healthy granulation. The roots are reputed to be a remedy for the bite of the *Phursa* snake (*Echis Carinata*) (Dymock). In Satara, the juice of the leaves is given in colic and fever (B. D. Basu).

Surg.-Maj. J. Parker, Med. Store-keeper to Gov., Bombay, in his letter dated 21st April 1896, to the Sec., Indigen. Drugs Com., Calcutta wrote :—

The root juice is used internally and externally in snake-bite (*Phursa*), but the plant is said to be efficacious in the fresh state only. It would be well to

have the supposed use of *phangala* in snake bite carefully investigated, for, although much has already been done in this direction, the question apparently is still undecided. Not commercial, but can readily be collected. Could be cultivated from the seed An ammoniacal tincture might be useful in snake-bite (Proceed. Indigen. Drugs Com., Vol. I. p. 158.)

Chemical composition.—The most interesting principle detected in the plant was an alkaloid. After repeated purification it was left as a yellow varnish with slightly bitter and mouse-like flavour. It was more soluble in chloroform than in ether. No special colour reactions were noted. We also detected the presence of trimethylamine, and a volatile principle with a cedar-wood odour. Resinous principles were also present, with astringent matter. We provisionally call the alkaloid *Pogostemonine* (Pharmacographia Indica, III. 101).

980. *P. patchouli, Pelletier*, H.F.B.I., iv. 633.

Syn. :—P. Heyneanus, *Benth.*

Vern. :—Peholi ; Pachôlí ; Pachâpât ; Panel ; Mali ; Pachpanadi ; Pako nilam (Bomb.).

Habitat :—Western Peninsula, from Bombay southwards, wild and cultivated.

An erect, branched, pubescent or glabrate herb, 2-3ft. high. Leaves 2-3 in., long-petioled, ovate, acute, acuminate or obtuse crenate or simply or doubly toothed or incised, membranous ; base cuneate petiole, ½-1½in. Spikes 3-6in., rarely short and dense. Whorls ½in., diam subglobose, many and dense-fid, distinct or sub-confluent on the slender pubesent or tomentose panicled spikes ; bracts elliptic, acute, equalling the calyx or shorter. Calyx ⅛in., pubescent or tomentose, triangular, ciliate. Corolla very small, tube shortly exserted.

Use :—Sir George Watt, in his *Commercial Products of India*, p. 904, writes :—

"In the Central Provinces and Berar I found *P. Heyneanus* growing in the *betel*-leaf houses and sold apparently by the owners to the perfume manufacturers. This may be, at least partly, the patchouli of Bombay."

The subject requires further investigation. Patchouli is also obtained from the following plant.

981. *Microtæna Cymosa, Prain.*

Habitat :—Assam Manipur and Burma.

Stems 40-100 cm., lower branches 15-20 cm. petiolos 2-3 cm. long, laminæ 4-7 cm. long 3-5 cm. wide, hairy on both surfaces; cymes sometimes

loosely paniculate irregularly branched, *calyx* 2·5 mm. (tube 2 mm.), *corolla* 14 mm. (tube infundibuliform 6 mm., upper lip 8 mm.), pollen grains minute oval smooth, *nutlets* 1·25 mm.—The cultivated plant smells very strongly of Patchouli, much more so than does the Patchouli plant of commerce, but it is only grown as a curiosity; the natives of the hills of Assam do not grow this plant of the true Patchouli plant, nor do they know or use the prepared article: the Shan hill plant is devoid of smell. (Prain).

982. *Colebrookia oppositifolia*, *Smith*, H.F.B.I., IV. 642; Roxb. 467.

Syn. :—C. ternifolia, *Roxb.* 466.

Vern. :—Pansra (H.); Shakardâna (Trans-Indus); Duss, sampru, suali, briali, casuti, barmera, phisbekkar (Pb.); Dulsahat (Kumaon); Dosul (Nepal); Binda (Dehra Dun); Bhainsa, barsa pakor (Santal); Bahmani, dasai, dasari (Bomb.).

Habitat :—Subtropical Himalaya, from the Salt Range and Peshawar to Sikkim, Behar, Central India and the Deccan Peninsula to Travancore.

A densely woolly hoary shrub 5-10ft., erect. Trunk stout; branches stout, terete often whorled in threes. Leaves opposite or in threes, shortly stalked, lanceolate, 4-8in., crenate, long-pointed; upper surface pubescent, wrinkled, lower grey-tomentose. Flowers minute white, 2-or 1-sexual, the male and female often on different plants in large whorls, crowded in long, cylindric, erect spikes, axillary or paniculate at the end of branches. Calyx deeply 5-lobed; lobes linear, hairy, becoming much elongated, and leathery in fruit when the tips often turn purple. Corolla pubescent; tube as long as the Calyx; limb spreading, 4-lobed, lobes unequal. Stamens 4, equal, protruding in male flowers, included in the female, filament naked. Style protruding in female flowers, wanting in male flowers. Nutlet usually only one, tip hairy (Collett). The spikes are suggestive of Indian squirrels' tails (Nairne).

Uses :—The leaves are applied to wounds and bruises (Stewart). A preparation from the root is used by the Santalis in epilepsy (Revd. A. Campbell). The down on the stem and leaves is used by the Paharias of Sikkim to extract worms from bad sores on their legs (Gamble).

983. *Mentha viridis, Linn*, H.F.B.I., IV. 647.

Vern. :—Pudiná (B, Mar, Guz, Tel. and Sind.); Pudinâ, pudinâ kuhi, pahari pudinâ (Pb.); Pahari pudinâ (Hind.); Nagbó, shah-sufiam (Pers.)

Habitat —Cultivated in Indian gardens

A perennial herb, with a pungent smell, glabrous or nearly so. Leaves all sessile, or the lower only petioled, oblong-lanceolate, subacute, sessile, smooth above. Spikes slender. Whorls in terminal spikes; bracts minute. Throat of Calyx glabrous. Corolla glabrous without and within. Probably a cultivated form of M. sylvestris (J. D. Hooker)

Uses —The medicinal properties and uses of the oil obtained by distillation from the fresh herb, are similar to those of Peppermint, but it is only less powerful in its action. The seeds are mucilaginous Leaves given in fever and bronchitis. Decoction used as lotion for aphthæ (Dr. Emerson).

984. *M. piperita, Linn.*, H.F.B.I, IV. 647.

Habitat :—Cultivated in Indian gardens

A perennial glabrous strong-scented herb Leaves petioled 1-4in, acute or obtuse at base, coarsely serrate, smooth above, rarely sparingly, hairy on the nerves below, ovate or oblong-lanceolate, upper smaller, sometimes bracteiform. Whorls in terminal spikes. Spikes cylindric, interrupted below. Bracts minute Pedicels and flowers glabrous, or very sparingly hispid. Calyx often red. Probably a garden form M. Aquatica, as suggested by Bentham (J. D. Hooker)

Use :—Officinal in the British and Indian Pharmacopœias.

985. *M. sylvestris, Linn.*, H.F.B.I., IV. 617.

Vern. .—Pudina (H, B., M., Gr. Tam.), Chetni-Maragi (Kan.).

Habitat :—Temperate Western Himalaya, from Kashmir to Garhwal.

A strongly scented erect or diffuse herb Rootstock creeping; stems 1-3ft., hoary-pubescent. Leaves nearly sessile, lanceolate, ovate or oblong, 1-3in., sharply toothed, acute; upper surface hoary pubescent, lower white tomentose. Flowers small, lilac in large whorls crowded in axillary and terminal cylindric

tapering spikes ; lower floral leaves leaflike, upper smaller lanceolate. Calyx hairy, bell-shaped acutely 5-toothed. Corolla-tube included in the Calyx ; limb erect, 4-lobed, lobes, equal. Stamens 4, equal, protruding, filaments naked.

Uses :—The leaves are officinal as astringent. *Pudinah* of Bombay gardens has exactly the odour of peppermint (Dymock).

A decoction is said to be used in fevers and heat apoplexy by the Afghans.

The oil possesses sp-gr. 0·9701 at 15° C., α_D −31° 30′ (100 m), $\eta_{D_{20}}$° = 1·49544 ; acid value, 2·4 ; ester value, 20·9 ; ester value after acetylation, 171·4; soluble in 3 vols. of 70 per cent. alcohol ; (the diluted solution showed slight opalescence); faintly mint-like odour ; yellow colour. It is obvious that the saponification value of 171·4 after acetylation of the oil cannot in this case be indicative of the menthol content, which, judging by this factor, should have been 54·8 per cent.; for, as a matter of fact, it contains but little menthol. The mint-like odour is chiefly due to the presence of pulegone, of which the oil contains 40 per cent. (isolated with Sodium Sulphite). In addition to this, a phenol (probably carvacrol) can be detected.

Owing to the simultaneous occurrence in it of menthol, pulegone and a phenol, the oil cannot be used either as peppermint oil or as European pennyroyal or origanum oil. It is differentiated from oil of peppermint by its much higher specific gravity and by its pronounced dextra-rotatory power.

(Schimmel's Report, April 1910, quoted in J. C. I. for June 15, 1910, p. 716).

986 *M. arvensis*, *Linn*., Fl. B. I., IV. 618, *Roxb.* 460.

Vern. :—Pudinâh (Beng., Hind. and Dec.), Pudinâ, I-echchak-kirai (Tam.); Pudiná, Tga-engili-kúra (Tel.); Putiyina (Mal.); Pudina (Guz.); Bhúdína (Burm.); Chetni-maragu (Kan.).

Habitat :—Western Himalaya and Kashmir.

A strong-scented perennial herb, hairy or glabrate. Stem 1-2ft. Leaves shortly petioled or sessile, oblong ovate, or lanceolate, 1-2in., obtusely or acutely serrate, petioled or sessile. Bracts acute, shorter than the flowers, whorls axillary, capitate. Calyx hairy ; Calyx-teeth triangular or lanceolate. Corolla hairy without and within.

Use :—The dried plant is refrigerant, stomachic, diuretic and stimulant medicine. It possesses antispasmodic and emmenagogue properties (Fleming). Used in jaundice. The dried plant powdered is used as a dentifrice.

The scent of the fresh fruit is said to be useful to relieve fainting (Dr. Emerson). Frequently given to stop vomiting ; a

chutney prepared from the fresh herb is in use all over Bengal. (Dr. Kanai Lal De).

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987. *Lycopus europæus, Linn.* H.F.B.I. IV. 648.

Vern. :—Gandamgúndú ; Jalnim (Kashmir).

Eng. :—Gipsy wort.

Habitat :—Western Himalaya and Kashmir.

Perennial marsh herbs, glabrous or puberulous. Rootstock creeping or stoloniform. Stem 1-3ft. Leaves subsessile, elliptic-oblong, sometimes pinnatifid, sinnate-toothed or serrate. Corolla bluish white, dotted with purple, hairy within. Staminodes minute. Nutlets longer than the Calyx-tube.

Use :—Used in the Punjab as a cooling drug (Stewart) The leaves are used externally as a poultice to cleanse foul wounds.

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988. *Origanum marjorana,. Linn.*, H.F.B.I. IV. 648.

Vern. .—Murwo (Sind) , Murwa (H.) ; Maroo (Tam.) ; Bantulsi (Kumaon).

Eng. :— Sweet Marjoram.

Habitat :—Extensively cultivated in India.

An aromatic herb, 1-2ft. Leaves purplish and white, petioled, ovate-oblong, glaucous.

Uses :- The seeds are officinal, and are considered astringent and a remedy for colic. The leaves are eaten along with Gynandropsis pentaphylla, D. C., as a remedy for colic. An essential oil is also distilled from them, used as a perfume and for hot fomentations in acute diarrhœa. Aromatic, carminative, and stimulant (Watt).

Chemical composition.*—The volatile oil (*Oleum marjoranæ*) is thin, yellowish, of the specific gravity 0·89, boils above 163° C., is readily soluble in alcohol, has the aromatic odour of the herb, and, according to Beilstein and E. Wiegand (1882), contains a terpene, boiling at 178° C. and forming a liquid compound with HCl ; the fraction boiling between 200° and 220° C. has the composition $C^{10}H^{20}O$, and is not affected by metallic sodium *(Stillé and Maisch.)

989. *O. vulgare, Linn.*, H.F.B.I. IV. 648.

Vern. :—Mirzanjosh (Pb. and Hind.) ; Mizangosh (Pers.); Sáthra (H.); Mridu-maru-vamu (Tel.)

Habitat : · Temperate Himalaya, from Kashmir to Sikkim.

An aromatic erect herb, corymbosely branched, 1-3ft., more or less clothed with short hairs, glabrous, at times prostrate. Rootstock short, stoloniferous. Leaves entire or toothed, ½-1in. long, lower early withering, stalked, ¾in. broad. Flowers dimorphic small, pink (Female paler), crowded in numerous 4-sided spikes, ¼-1in. long, in clusters or heads at the end of branches sometimes forming terminal panicles ; floral leaves bract-like lanceolate longer than the calyx, overlapping, often tinged with purple. Calyx bell-shaped enlarged in fruit ; 5-toothed, mouth hairy within, calyx-teeth short ; Corolla-tube longer than the calyx ; limb 2-lipped, upper lip erect, nearly flat, notched, lower, spreading 3-lobed. Stamens 4 in unequal pair, slightly protruding. Nutlets smooth dry.

Uses :--It yields a volatile oil, useful as an aromatic, stimulant and tonic in colic, diarrhœa and hysteria. It is also applied in chronic rheumatism and tooth-ache. It is said to stimulate the growth of hair, and also to act as an emmenagogue (Stewart).

Considered a good "pick-me-up" after a carousal. The oil is dropped into the ear for earache (Dr. Emerson).

The infusion is gently tonic, also carminative, stimulant, emmenagogue and diaphoretic It is also used as a fomentation externally (Brunton).

The Greeks used it extensively, both internally and for making fomentations. It was esteemed as a remedy for narcotic poisons, convulsions and dropsy, by them, and also by the older herbalists of Europe.—The oil is still an ingredient in some embrocations in use in England, and has a special reputation for toothache (Sowerby's English Botany.).

A sample from Ramnagar, United Provinces, yielded to ether 27·3 per cent. of a light coloured drying oil. The oil had an acid value of 11·3, saponification value 191·9, iodine value 190·5 (Hooper).

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990. *Thymus Serpyllum, Linn.* H.F.B.I, IV. 649.

Vern. :—Másho, rángsbúr, marizha (Pb.) ; Ban-ajwain (H.)

Habitat :—Western Temperate Himalaya, from Kashmir to Kumaon.

A small, slender much-branched shrub, very aromatic, hairy more or less, or glabrous, procumbent or ascending, often tufted, usually about 6-12in. Rootstock woody. Leaves usually nearly sessile, ⅛-¼in., gland-dotted, ovate-oblong, entire obtuse. Whorls capitate. Flowers small, purple, sometimes one-sexual; males largest, in small whorls crowded in short terminal spikes. Calyx hairy, gland-dotted, 2-lipped, mouth hairy within; upper lip broad, 3-toothed, lower 2-parted, segments linear. Calyx-teeth ciliate. Corolla ¼-½in., purple, very variable. Corolla-tube as long as the Calyx; limb 2-lipped, upper-lip nearly erect, flat notched, lower spreading, 3-lobed. Stamens 4, nearly equal, protruding. Nutlets nearly smooth.

Uses :—On the Chenab, in the Punjab, the seeds are given as a vermifuge (Stewart). Used by the Hakims in weak vision, complaints of stomach and liver, suppression of urine and menstruation (Honnigberger).

The oil is sometimes applied as a remedy in toothache. In France a decoction of the plant has been used to cure the itch and some other skin disorders. Linnæus recommends it for curing headache and the effects of intoxication (Sowerby's English Botany).

Chemical composition.—The volatile oil of *Thymus Serpyllum*, Linn., according to E. Buri (1879), contains two phenols which do not congeal at 10° C., and of which one imparts a yellowish-green colour to ferric chloride, and yields a sulphonic acid, the salts of which, like the thymol sulphonates, produce with ferric salts and intense blue colour. Jahns (1880) reported also the presence of a little thymol and carvacrol. Messrs. Schimmel & Co. (Report, April 1891) obtained by distillation of the leaves and stalks 0·3 per cent. of an oil having a very pleasant melissa-like aroma with a slight soupcon of thyme. Its specific gravity at 15° C. was 0·917 (Pharmacogr. Ind.).

991. *Hyssopus officinalis, Linn.*, H.F.B.I. IV. 649.

Vern. :—Zúfah yabis (Arab. and Pers.). "The drug is generally attributed to *Hyssopus officinalis*, but this cannot be correct, as the flowers are in oblong spikes. It is imported from Persia" (Pharmacogr. Ind. III. 116).

Habitat :—Western Himalaya, from Kashmir to Kumaon.

An undershrub, usually glabrous. Stem below branched, woody 1-2ft., erect or diffuse. Leaves sessile, oblong linear or

lanceolate, entire, obtuse, whorls 6-15-fid., secund axillary and terminal spikes. Calyx fruiting, ¼-¼in. long. Corolla bluish purple. Nutlets narrow nearly smooth triquetrous.

Use :—Used for coughs and asthma in infusion ; also in tooth-ache, uterine or vesical affections, and indurations of the liver or spleen. Leaves are said to be stimulant, stomachic, emmenagogue and carminative ; useful in hysteria and colic. Also used as a poultice to bruises, especially of the eyes (Watt). The sap of the leaves made into a syrup with sugar and honey is used as a vermifuge for round-worms (Dr. Emerson).

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992. *Micromeria capitellata Benth.*, H.F.B.I., IV. 649.

Habitat :— Behar, on Parasnath. Western Himalaya. Dehra Doon. Western Ghats, from the Concan to the Nilghiris.

A pubescent very aromatic shrub. Rootstock woody. Stems 1-2ft., tall, slender erect. Leaves entire or subserrate, obtuse, ½-1in., ovate or oblong, flat ; floral small ; petiole short, bract short. Whorls subglobose, distant in slender spikes, lower pedunculed. Flowers ⅛in. Calyx villous ; teeth long, subulate, erect ; fruiting ⅛in. Nutlets smooth.

Uses : —According to Mr. Dalzell, who first brought it to notice, under the name of Marrubium Malcolmianum, " it is entitled to be called East Indian Peppermint, being possessed of all the aromatic and carminative qualities of Mentha piperita " (*Hooker's Journ. of Bot.*, 1852, vol. iv., p. 109).

993. *Calamintha Clinopodium, Benth.*, H.F.B.I. IV. 650.

Vern. :—Asába-el-fatiyát (Arab.).

Habitat :— Western Temperate Himalaya, from Kashmir to Kumaon.

A softly hairy herb. Stems erect 3ft., slender, subsimple. Rootstock woody, stoloniferous. Leaves ovate, 1-1¾in., entire or toothed, remote. Whorls densi-fid, terminal and axillary ¾-1in. diam., depressed. The whorls are thus described by

Collett:—'Many flowered, crowded, compact, surrounded by an involucre of numerous long bracts.' Bracts filiform or linear, hairy, equalling the Calyx. Calyx ⅛in. long, hispid, usually curved. Corolla ⅓-1in. Stamens in unequal pair.

Use :—The authors of the *Pharmacographia Indica* write :—"The plant from which the seeds of *Faranjmishk* or Biranjmishk, Arabic forms of the Persian name *Palangmishk*, are said to be obtained, is described by Persian Medical writers as having a clove-like odour, on which account it is often called *Karanfal-i-bustani*, garden clove. According to Abu Hanfeh, it is the same as the plant called by the Arabs *Asâba-el-fatiyât*. It is considered to be cephalic, astringent, cardiacal, tonic and carminative."

994. *Mel'ssa parviflora, Benth.*, H.F.B.I. IV. 651.

Vern. :—Badrunj boya (Pers.).

Habitat :—Temperate Himalaya, from Garhwal to Sikkim and Mishmi. Khasia Mts.

A pubescent or glabrate herb. Stem tall erect, angles hirsute. Leaves 1-4in., ovate or ovate-lanceolate acute, base acute, rotunded or cordate; petiole ¼-1in., slender. Whorls numerous few-or many-fid; flowers pedicelled. Calyx ¼-⅓in. Calyx-teeth very variable in length of the acute points; bracts narrow. Corolla white; tube very short, scarcely exceeding the Calyx.

Hooker writes:—"Very near *M. officinalis*, which has its Eastern limit in Eastern Persia, but the leaves are more acute and the lower calyx teeth are broader and shorter, but these are variable characters in the European plant."

Uses :—Mr. Honnigberger speaks of M. officinalis, *Linn.*, being used in the Punjab as stomachic, also in liver and heart diseases, and weakness of sight, etc.

Of the *M. officinalis*, "the leaves drunk with wine or applied outwardly are good against the stingings of venomous beasts and the bitings of mad dogs; also it helpeth the toothache, the mouth being washed with a decoction, and is likewise good

for those that cannot take breath unless they hold their necks upright" (Gerard).

995. *Perowskia abrotanoides, Kiril.*, H.F.B.I. IV. 652.

Vern. :—Shanshohai (Pushtu).

Habitat :—Western Tibet ; Afghanistan and Baluchistan.

An erect much-branched, dioecious strong-scented twiggy shrub or undershrub 2-4ft , woody below, densely or sparsely clothed with white or grey stellate scurf. Leaves opposite, linear-oblong sometimes bipinnatisect, crenatures or lobes or segments obtuse Flowers small, whorls small, distant, in simple or compound or panicled spikes, 2-or more-fid. Calyx clothed with long cottony wool. Stamens 2, lower fertile. Nutlets pyriform, smooth dry.

Use :—At Ziarat (Baluchistan), the plant is used as a cooling medicine (Lace, in Watt's Dic. Ec. Pr.)

996. *Meriandra strobilifera Benth.*, H.F.B.I., IV. 652

Habitat .—Western Temperate Himalaya, on dry rocks, from Simla to Kumaon.

An erect strongly-scented tomentose shrub, 2-5ft. Branches obscurely angled. Leaves coriaceous, thick, shortly stalked, oblong or lanceolate. 2-4 by ¾-1½in., crenate, base prolonged downwards in 2 pointed lobes ; upper surface pubescent, closely wrinkled ; lower white tomentose. Flowers small white in large whorls crowded in erect tomentose, 4-sided, often paniculate spikes; spikes with woody bracts in fruit (Kanjilal); floral leaves small, bract-like sessile ovate, overlapping. Calyx tubular-ovoid, 2-lipped ; upper lip concave, entire, lower 2-toothed. Corolla-tube as long as the Calyx. Stamens 2, anthers protruding (Collett). Nutlets obovoid, smooth brown.

Uses :—The same as of the following species, *viz.*, M. Bengalensis, *Benth.*

997. *M. Bengalensis, Benth.* H.F.B.I., IV. 653.

Syn. :—Salvia bengalensis, *Roxb.* 49.

Habitat :—Native of Abyssinia ; cultivated in India.

Vern :—Kapur-ka-patta (H.) ; Sesti (Bom.); Shima-karpuram-áku (Tam.)

A large strongly-scented, straggling shrub, finely tomentose or hoary. Branches cylindric. Leaves 2-3 by 1-1½in, finely crenulate, obtuse thinner than in M. strobilifera, as finely granulate above and reticulate beneath, base rounded or bractate. Petiole slender, ¼-½in., spikes terminal with interrupted ebracteate globose whorls. Whorls ½-¾in. diam., villous. Calyx ⅛in long, pedicelled, teeth acute. Corolla white, lips spreading or recurved. Nutlets obovoid, smooth, brown (J. D. Hooker).

Uses :—The camphoraceous bitter plant possessing the properties of Sage (Salvia officinalis). Leaves are much used in native practice, an infusion being an useful application to aphthæ and sore throats, according to Mr. Rama Churn Bose, who also notices its power to diminish or arrest the secretion of milk (*Pharm. Ind.*).

998. *Salvia moorcroftiana, Wall.*, H.F.B.I., IV. 654.

Vern.—Kâli-jaṛi ; Shobri ; Gurgumna (Pb.).

Habitat.—Western Temperate Himalaya, from Kashmir to Kumaon.

A very robust tall erect herb, clothed with white, usually woolly or cottony hairs on stem, leaves beneath and often above petiole and branches of panicle ; very rarely glabrous. Stems 1½-3ft. Leaves thick, long stalked, ovate or oblong, 5-8 by 2½-6in., sinuately and irregularly lobed, crenate or sharply toothed ; upper surface nearly glabrous or cottony-tomentose, closely wrinkled ; lower white tomentose. Flowers 1in. long, pale blue, lilac or nearly white, in many distant whorls ; bracts large, pale, green-veined, orbicular, abruptly pointed. Calyx bristly, bell-shaped ; teeth spinous ; upper-lip 3-toothed. Corolla-tube much longer than the calyx ; upper lip long, curved, flattened, concave (Collett). Nutlets subglobose (J. D. Hooker).

Use.—The root is given in cough, and the seeds are used as an emetic. The leaves are a medicine for guinea-worm and itch, and in the form of poultice applied to wounds. At Lahore, the seeds are given in colic and dysentery, and are applied to boils (Stewart). The seeds are given for haemorrhoids (Bellew).

999. *S. lanata, Roxb.*, H.F.B.I., IV. 654.

Habitat :—Western Himalaya, at altitudes from 5,000 to 8,000 feet.

Robust erect herbs, softly densely wooly, white tomentose. Stems usually many from the root ; 1-1½ft. simple or branched. Leaves mostly radical, sessile oblong-lanceolate 3-6 by ¾-1½in. toothed ; upper surface tomentose or nearly glabrous, closely wrinkled ; lower tomentose. Flowers ¾in long, blue-grey in distant whorls ; bracts viscidly hairy, large orbicular ; abruptly pointed. Calyx viscidly hairy, bell-shaped ; teeth spinous : upper lip 3-toothed. Corolla-tube not longer than the Calyx ; upper lip long, curved, flattened concave (Collett) Nutlets $\frac{1}{10}$in., brown (J. D. Hooker).

Use :—According to Stewart, this species is often confused with S. Moorcroftiana. It may be used separately, or as an adulterant.

1000. *S. plebeia, Br.*, H.F.B.I., IV. 655.

Syn.—S. brachiata, *Roxb.*, 19.

Vern.—Sathi, samûndarsok (Pb.) ; Kinro (Sind.) ; Koka-buradi, bhû-tulsi (B.). The seeds called Kammar-kas (Bomb.).

Habitat.—Throughout India, in the plains, and ascending the hills to 5,000 feet.

An annual roughly pubescent herb. Stem stout erect hoary or scaberulous, 6-18in. ; fastigiately branched. Inflorescence glandular. Leaves petioled, oblong obtuse, or upper ovate acute crenate ; 1-3in., narrowed at both ends ; floral small lanceolate. Spikes panicled, often fastigiate. Flowers hardly ¼in. long, lilac or nearly white, in small whorls in numerous slender panicled racemes ; bracts small, lower leaf-like, upper lanceolate (Collett). Whorls very numerous. Calyx pedicelled ⅛in.,

bell-shaped, upper calyx-lip entire, lower obtusely 2-toothed. Stamens very small whitish. Corolla-tube very short included upper lip short, nearly straight, slightly flattened, concave. Nutlets very minute, $\frac{1}{30}$in. long, ellipsoid (J. D. Hooker)

Use.—The seeds are used in gonorrhœa and menorrhagia (Stewart). They are used in Bombay to increase sexual powers (Dymock

1001. *S. ægyptica, Benth.*, H.F.B.I., IV. 656.

Vern.—Tukhm malanga (Pb.)

Habitat.—The Punjab plains and hills, from Delhi westward; and Scinde

A very dwarf scaberulous, hispid or hoary much-branched undershrub. Branched from the base, straggling, divaricate, rigid. Leaves rarely $\frac{1}{2}$in., small, few, subsessile, linear or lanceolate, acute rigid, crenate whorls remote 2-3-fid. Flowers small-hardly $\frac{1}{4}$in. long. Calyx glandular hairy, nodding, pedicelled, ovoid campanulate, fruiting $\frac{1}{4}$in long, upper lip orbicular minutely 3-toothed, teeth of lower subulate. Corolla-tube very short, not exserted, limb very small, upper lip short, nearly straight, slightly flattened concave Nutlets $\frac{1}{12}$in long, narrowly oblong, nearly black

Var pumila—This is a variety named in Hooker under Salviae gyptica. It is more scabrid and hispid. Leaves very rigid and rugose. Calyx villous with long hairs.

Use—The seeds are used in diarrhœa, gonorrhœa and hæmorrhoids (Stewart).

In Mexico and in some other parts of the United States, a drink is made from the seeds of several species of *Salvia*. In his 'Notes on Economic Botany of the Western United States' (reprinted in the Ph. J., 21-2-1880), Surgeon J. T. Rothrock writes:—

The seeds are collected, roasted and ground, in the native way, between two stones. This puts it in the condition in which I first saw it. It is used as a food by mixing it with water and enough sugar to suit the taste. It soon develops into a copious mucilaginous mass, several times the original bulk. The taste is somewhat suggestive of linseed meal. One soon acquires a fondness for it, and eats it rather in the way of a luxury than with any reference to the fact that it is exceedingly nutritious besides. It is in great demand among the knowing ones who have a desert to cross, or who expect to encounter a scarcity of water, and what there is, of bad quality. By preparing it so that it can be used as a drink, it seems to assuage thirst, to improve

the taste of water, and, in addition, to lessen the quantity of water taken, which in hot countries is often so excessive as to produce serious illness. As a remedy it is invaluable from its demulcent properties, in cases of gastro-intestinal disorders. It also holds a place among domestic remedies, for the same purpose that flax seed occasionally does with us, *i.e*, a grain of the seed is placed in the eye (where it gives no pain) to form a mucilage by means of which a foreign body may be removed from the organ. I have found it of great service as a poultice.

With reference to the above, Mr. John M. Maisch wrote :—

Most of the fruits of the *Labiatæ* do not differ very greatly in size or shape, and more or less similarity must be expected among those of the numerous species of salvia ; how many of those may agree in the colour of their epicarp and in the presence of the mucilaginous epithelium it is impossible at the present time to say. But I think it must be concluded that at least several species have fruits resembling in appearance very small ricinus seeds, and that most likely such of them which are mucilaginous have been used by the aborigines under the name of *chia*, which would, therefore, have to be regarded as a generic term, applicable to all fruits of salvias having the characters indicated.

Seeds of Indian species of Salvia may be put to the same uses as those of Mexico and California.

1002. *Nepeta elliptica*, *Royle*, H.F.B I., IV. 658.

Vern.—Tukm malangi (Pb.).

Habitat.—Western Temperate Himalaya, from Kashmir to Kumaon.

Herbs often flexuous, ascending, densely hairy. Stem 1-2ft., woolly branched. Leaves subsessile elliptic-oblong or obcordate, tip rounded or acute, pectinately crenate, ½-1in., tomentose. Whorls sessile, crowded in terminal spikes. Spikes 3in. long, slender, often interrupted at base ; bracts ovate or lanceolate, awned ; calyx sessile ⅛in., teeth filiform ciliate, as long as the tube ; flowers about ¼in. long, pale-blue, nearly white (Collett). Corolla-tube hardly longer than the Calyx.

Use.—One dram of seeds infused in cold water, used in dysentery.

1003. *N. ciliaris*, *Benth*., H.F.B I., IV. 661.

Vern.—Zúfa zábis (Pb.) ; Joofa (Sind).

Habitat.—Western Temperate Himalaya, from Kashmir to Garhwal.

Herbs tall, erect, branched, softly densely tomentose ; stem

2-3ft. Leaves ¾-1½in., sometimes almost as broad, lower floral large ; shortly petioled, ovate-cordate, obtuse-crenate. Spikes 4-8in., pale ; whorls secund dense-fid, in long interrupted villous spikes, upper crowded. Bracts lanceolate, often tinged with purple. Flowers ⅓in. long, lilac. Calyx ⅛in. curved villous, hairs long ; teeth linear lanceolate, shorter than the tube often tinged with purple. Corolla very small, about one-third inch lilac, hairy, tube slender, longer than calyx (Collett). Nutlets broadly ellipsoid. J D. Hooker says the plant is very like N Ruderulis, but the inflorescence is more simple, the whorls rarely peduncled. Bentham describes the nutlets as minutely granular, but says Hooker that he finds them smooth.

Uses.—It is given in *sherbet* for fever and cough (Stewart).

1001. *N. ruderalis, Hamilt.*, H.F.B.I., IV. 661.

Syn —Glechoma, erecta, *Roxb.* 460

Vern -Billi-lotan, Badranj boya, Bebrang khatai (Pb.) ; Niasbo (Nepal).

Habitat. –Tropical and Sub-tropical India, from the Indus to Behar, Central India and the Concan, ascending the Himalaya to 8,000ft.

Annual herbs, erect or ascending, finely pubescent or hoary, stem 6-18in., branched from the base, robust or slender, obtusely 4-angled Leaves broadly ovate or orbicular-cordate, obtuse crenate, ½-2½in , green or hoary , petiole ¼-1¼in. Whorls ½-1in. diam., unilateral, depressed ; peduncles 1in. Flowers pedicelled, ⅛in. long, blue or purple, minutely darker dotted. Calyx hairy ; teeth linear-lanceolate, shorter than the tube. Corolla pubescent, slightly longer than the calyx, ¼in., purplish, says J. D. Hooker. "Calyx ⅛in., villious, mouth sub-equal, 3 upper teeth triangular, aristate, 2 lower filiform" (Hooker). Nutlets obscurely granulate, $\frac{1}{28}$in. long, broad oblong, brown, spotted with white, mucilaginous when moistened. The granulation, says J. D. Hooker, consists of more or less tumid areolæ and is sometimes very distinct.

Uses.—Supposed to be cardiac tonic (Stewart). Decoction used as a gargle in sore-throat. Largely used in fevers (Dr.

Emerson). It is used by the Nepalese internally as a remedy for gonorrhœa (Buchanan.)

1005. *Dracocephalum moldavicum, Linn.*, H.F.B.I., IV. 665.

Vern.—Tukhm-ferunjmishk (H.)

Habitat.—Western Temperate Himalaya and Kashmir.

An annual erect herb, quite glabrous. Stem 1-2ft., branched from the base. Leaves 1-2in., narrowed into a short slender petiole; lanceolate, obtusely deeply serrate or sub-pinnatifid. Spikes 4-8in., leafy; whorls distinct or distant. Flowers pedicelled, shorter than the floral leaves; bracts lanceolate, teeth long-awned. Calyx coriaceous, 2-lipped $\frac{1}{3}$in., glabrous, upper lip broad, 3-toothed; upper teeth broadly ovate or mucronate. Corolla $\frac{3}{4}$-1in., blue, tube greatly dilated at the throat. Stamens subexserted. Nutlets $\frac{1}{10}$in., narrowly oblong, truncate.

Use.—The seeds are used ground up in fevers and as a demulcent: dose two drachms to half an ounce in infusion (Irvine).

1006. *Lallemantia Royleana, Benth.*, H.F.B.I., IV. 667.

Vern.—Gharei kashmalú; Tukhm-malangá (H. and Pb.); Balungoo (Pb. and Kash.).

Habitat.—Punjab Plains and Hills; from Lahore westward.

The genus Lallemantia has the characters of Dracocephalum, but the upper lip of calyx with 3 obtuse lobes, of which the lateral are placed under the central (J. D. Hooker).

An erect annual, hoary-pubescent or glabrate, 6-18in., stem branched or single, obtusely angled. Leaves $\frac{1}{2}$-1in., base cordate or narrowed into the petiole; ovate or oblong-obtuse, coarsely crenate. Bracts small, deciduous, oblong or lanceolate, teeth long-awned, whorls very numerous in long interrupted narrow spikes. Flowers shortly pedicelled. Calyx $\frac{1}{3}$in., erect; Calyx-teeth pale-lilac; tube hardly exserted, limb small, stamens included. Nutlets $\frac{1}{10}$in., narrowly oblong, smooth.

Use.—Seeds of this plant are used as cooling and sedative remedies (Stewart).

1007. *Prunella vulgaris, Linn*, H.F.B.I., IV. 670.

Vern.—Ustakhadús (Pb. and Sind.)

Habitat.—Temperate Himalaya, from Kashmir to Bhotan; Khasia Hills, Nilgiris and Travancore, and hilly districts throughout India.

A thinly hairy erect or ascending perennial herb, 4-12in. Rootstock creeping. Leaves 1-3in., upper sessile, the rest petioled, ovate or oblong, pinnatifid entire or toothed, acute or obtuse. Flowers ½-¾in. long, violet-purple, in whorls of 6, crowded in erect, terminal spikes Floral leaves bract-like, hairy, purple margined, broadly ovate acute overlapping. Calyx tinged with purple, bell-shaped, 2-lipped; upper lip broad, 3-toothed; lower deeply 2-lobed; mouth closed after flowering time. Corolla-tube broad, slightly longer than the Calyx; limb 2-lipped; upper lip erect, wood-like, notched, lower spreading 3-lobed, mid-lobe largest, minutely toothed. Stamens 4, in unequal pair ascending under the upper lip; filaments bearing a small tooth below the anthers (Collett) "Corolla purple or white ½-¾in" (J. D. Hooker)

Uses.—Regarded by the Punjab Himalayan hill tribes as expectorant and antispasmodic. (Stewart) The green leaves smeared with castor oil and warmed over the fire applied externally to the anus in cases of painful piles

1008. *Carrubium vulgare, Linn*, H.F.B.I., IV. 671.

Habitat.- Western Temperate Himalaya; and Kashmir.

A perennial tall robust shortly woolly herb. Stem 2-4ft, leafy. Leaves ovate or orbicular, crenate, rugose, ½-1½in. diam., base rounded or cordate or cuneate, leathery, wrinkled. Petiole ¼-½in. Whorls depressed, villous, axillary, many and dense-ed Flowers small. Calyx ⅛-¼ coriaceous. Calyx-teeth 10, subulate, spreading and re-curved at the lip, throat woolly; corolla ⅓in., white, tube slender, upper lip long, 2-fid. Nutlets 1/12in., smooth.

Uses:—It is a well known old domestic remedy for coughs and other pectoral complaints, but is now seldom used in medicine by regular practitioners. In large doses it acts as a laxative and diuretic; in small doses, as a tonic and stimulant. An infusion

of a handful of the leaves is a good remedy for coughs. Linnæus records an instance in which salivation, caused by the use of mercurial medicines, was removed by the administration of this infusion after every other remedy had failed. The plant should be gathered when in flower (Sowerby's English Botany).

In America, it is generally used in catarrhal states of the air passages, over which it seems to have a soothing effect and is much employed in confectionery as an ingredient in "cough drops" (Potter's Materia Medica, p. 277).

In Mexico, a preparation made from the leaves of this is used for rheumatism. It is also added to mescal and applied as liniment for rheumatism.

A proximate analysis gave the following result :

	Per cent.
Fat, wax and traces of volatile oil ...	2·05
Crystalline compound, soluble in ether ..	·18
Chlorophyl and fat	2·29
Resin and bitter compounds, soluble in absolute alcohol	1·94
Mucilage	4·94
Glucose	67
Extractive, soluble in water	5·93
Albuminoids . ..	4·48
Pectin and undetermined	5·93
Pararabin	2·30
Cellulose and lignin	37·48
Moisture	6·72
Ash	24·30
Loss	·49

The fat was soluble in hot 95 per cent. alcohol, and melted at 46° C. The wax was insoluble in this solvent, but dissolved in carbon bisulphide. The crystalline principle was extracted from the drug with stronger ether, and purified by repeated crystallization from hot 95 per cent. alcohol, with one or more treatments with animal charcoal. The crystals were insoluble in water and in solution of potassium hydrate, very sparingly soluble in boiling water and in cold alcohol. Soluble in hot 95 per cent. alcohol, also in ether and chloroform. They melted at 152° to 153° C. They were at first tasteless, but developed, when held on the tongue, a decided bitterness. The alcoholic solution was very bitter.

Sulphuric or nitric acid gave a dark-brown colour, hydrochloric acid produced no change and ferric chloride produced no change.

This principle reduced Fehling's solution slightly by boiling, without first being treated with an acid.

A small quantity of a bitter principle was extracted from the drug by absolute alcohol, along with the resin. This appeared to be different from the previous one extracted by ether.

These results point to the presence of two bitter principles besides marrubiin, which is in agreement with Hertel's statement, that after the separation of marrubiin the fluid extract appeared to be as bitter as before.

1009. *Anisomeles ovata, Br.* H.F.B.I., IV. 672.

Syn. :—A. disticha, *Heyne* Roxb. 459.

Vern. : —Gopâli (Bomb).

Habitat :—Tropical and Sub-tropical India, from the Indus to Assam. ascending the Himalaya to 5,000 ft and south to Travancore.

An erect hairy annual herb, 3-6ft , most variable in hairiness. Stems stout, acutely quadrangular, woolly-pubescent. Leaves 1½-2½in., ovate, acute, deeply crenate serrate, softly pubescent on both sides. Petiole about 1in , hairy. Flowers nearly sessile, whorls dense axillary, distant below, but approximated above to form a dense spicate inflorescence. Bracts linear. Calyx-tube long campanulate, glandular and hairy, somewhat enlarged in fruit. Segments lanceolate, very acute, half as long as tube. Upper lip of Corolla oblong oval obtuse, lower lip with two middle lobes, large round deflexed, the lateral ones small. Stamens 4-unequal pair protruding from under the upper lip, outer or superior pair longer than the inner. Filaments with a tuft of long hairs in front. Nutlets $\frac{1}{16}$in., hardly oblong, polished. Flowers white, the lower lobes of lip, pale pink violet. The leaves have a slightly camphor odour.

Use :—A distilled oil is prepared from it and found useful in uterine affections (Ph. Ind.). It has also carminative, astringent and tonic properties.

1010. *A. malabarica, Br.* H.F.B.I., IV. 673.

Syn. :—Ajuga fruticosa, *Roxb.* 458.

Vern. :—Pemayarutie (Tam.); Moga-becrakoo, mabheri,—china-ranabheri (Tel.); Gâozubân (Hind.); Chodhâra (Bombay); Mogbir-kâ-pattâ (Duk.); Pêyaverutti, irattai-pêy, marutti (Tam.); Moga-bira, maga-bira (Tel.); Pêyi-meratti, peruntûmba, karintûmba (Mal.).

Habitat:—Deccan Peninsula. Common in the Western Ghauts.

A shrubby annual herb, densely, tomentose or thickly woolly, 4-6ft. Branches sometimes very stout and most densely clothed with somewhat adpressed wool. Leaves 2-6in., very thick, oblong, linear-oblong or oblong-lanceolate, obtuse, acute or acuminate, crenate or serrate, base cuneate, very rarely cordate. Petiole ⅛-½in, very stout. Spikes sometimes very heavy with dense whorls, 2in diam, densely woolly; bracts filiform, Calyx ¼-⅓in, villous or woolly; teeth narrow lanceolate, slender. Corolla purple. Nutlets pale

Uses:—In Southern India, few plants are held in higher esteem, or are more frequently employed in native practice, than this An infusion of the aromatic bitter leaves is in common use in affections of the stomach and bowels, catarrhal affections and intermittent fevers According to Dr Wight (*Illust*, vol ii, p. 221), in addition to its internal use in the cure of fevers, patients are made to inhale the vapour of a hot infusion so as to induce copious diaphoresis An infusion of the leaves is reported by Dr. E Ross to be powerfully diaphoretic, and very useful in the low continued fevers of the natives. An oil obtained by distillation of the leaves is likewise stated to prove an effectual external application in rheumatism. The virtues of this plant seem worthy of further investigation (Ph. Ind.). "Amslie tells us that an infusion of the leaves is given to children in colic, dyspepsia and fever arising from teething. A decoction of the plant, or the essential oil distilled from the leaves, is used externally in rheumatism" (Dymock).

1011. *Stachys parviflora*, *Benth.*, H.F.B.I., IV. 677.

Vern.:—Kirimara; Baggibûti (Pb.); Speraghunai (Pushtu).

Habitat:—Punjab Plains and Hills, from the Jhelum eastwards and northwards to Murree.

Herbs densely clothed with floculent white wool, branched from the base and upwards. Stem and branches very stout nearly terete. Leaves 1-3in., sessile, thick, elliptic oblong or oblong ovate, or lanceolate, sub-acute entire or serrate; floral far exceeding the flowers, glabrous and shining or cottony

above, upper woolly all over. Whorls distant, 2-4-fid. Calyx $\frac{1}{8}$-$\frac{1}{6}$in., densely woolly, cupular, teeth short, acute; fruiting closed over the nutlets with the teeth incurved. Corolla re-purple, lips very small, upper short, rounded. Nutlets enclosed in the ovoid or sub-globose calyx, usually 2, turgid, plano-convex, $\frac{1}{6}$in. long, grey, granulate.

Use :—In the Salt Range the bruised stems are applied to the guinea-worm (Stewart)

1012. *Galeopsis Tetrahit, Linn.*, H.F.B.I., IV. 677.

Habitat.—Sikkim Himalaya; Fields at Lachen, altitude 11-12,000ft.

A hispid annual Stems 1-3ft., hairs spreading and deflexed; Nodes very hispid, thickened. Leaves 1-4in., ovate or ovate-lanceolate, acute or acuminate, coarsely serrate. Calyx $\frac{1}{2}$-$\frac{3}{4}$in., teeth straight, equalling or exceeding the tube. Corolla $\frac{3}{4}$-$1\frac{1}{4}$in., yellow and purple.

Use :—This plant deserves investigation

Chemistry.—When the leaves are boiled with 1 per cent. hydro chloric acid, their lower sides are covered with microscopic crystalline aggregates. Crystals of the same substance, scutellerin, separate when the aquous extract of the leaves in acidified It is found chiefly in the leaves.

Scutellarin, $C_{21}H_{20}O_{12}$, 2^1 H_2O, is prepared by extracting the leaves and flowers of the plant with ten times the quantity of water, and acidifying the extract with concentrated hydro-chloric acid, the yield is less than 1 per cent. The acid filtrate from the scutellarin contains cinnamic and fumaric acids. Scutellarin crystallises in pale-yellow needles, which darken at 200°, but do not melt at 310° Lead acetate gives red precipitate with the alcoholic solution, and ferric chloride an intense green coloration which becomes red on heating. Oxidising agents (chlorine, water, etc.) give an immediate green colour. Alkalis, ammonia and alkali carbonates dissolve it with a deep yellow colour; these solutions reduce ammoniacal silver nitrate and Fehling's solution; acids re-precipitate scutellarin. Concentrated sulphuric acid dissolves it with a yellow colour. From the solution or suspension in acetic acid, concentrated mineral acids throw down deep yellow or orange, crystalline salts. The *acetyl* derivative melts and decomposes at 267.° When fused with potash, *p*-hydroxy benzoic acid and a substance, which crystallises in large plates, are formed.

Under the action of 30-40 per cent. sulphuric acid, it is converted into *scutellarein*, $C_{15}H_{10}O_6$, which melts above 300°, dissolves in alkalis with a yellow colour, gives a reddish brown tint with ferric chloride, an emerald-green colour with baryta water, and a yellowish-red precipitate with lead acetate. When fused with potash, scutellarein yields *p*-hydroxy-benzoic

acid and phloroglucinol (?). Scutellarin and scutellarin both appear to be flavone derivatives. (J. Ch. S. 1902 A. I 48)

1013. *Leonurus sibiricus, Linn.*, H.F.B.I., IV. 678; Roxb. 461.

Vern. :—Gúmâ (Patna).

An annual herb, 2-6 ft. high, glabrous or more or less pubescent. Stems bluntly 4-angled, sulcate Leaves 1½-4 in. long, palmatipartite; segments linear, incised, glabrous or nearly so on the upper surface, pale beneath and more or lese pubescent on the prominent nerves, petioles up to 2in long. Floral leaves of upper whorls usually entire; bracts ⅕in. long, spinescent. Calyx ¼-⅓in long, glabrous or slightly pubescent; teeth triangular, spine-tipped Corolla red, up to ½in long, tube as long as the limb, annulate within; upper lip hooded, hairy; lower equaling the upper, the 2 lateral lobes rounded. Nutlets $\frac{1}{10}$in. long. (Duthie.)

Habitat :—Plains of India, from Bengal and Sylhet to Coorg.

Use :—The root, leaves and juice are bitter and used as a febrifuge. Dose 2 drachms to 2 ounces in infusion, price 1 anna per pound (Irvine).

1014. *Roylea elegans, Wall.*, H.F.B.I., IV. 679.

Syn. :—Phlomis calycina, *Roxb* 462.

Vern. Patkaran (H), Tit-patti, kauri (Kumaon); Kaur, kauri (Pb.).

Habitat.—Sub-tropical Western Himalaya, from Kashmir to Kumaon.

A tall hoary woody undershrub, much-branched, 3-5ft. high. Branches slender terete, finely tomentose. Bark grey. Wood hard white. Leaves opposite, 1-2in., long, ovate, crenately toothed, tomentose beneath, base cuneate, Petiole ¼-¼in. Flowers in 6-10 flowered axillary whorls; Calyx 5-lobed, 10-ribbed, rigid; Fruiting Calyx ½-⅔in., tube deeply ribbed, lobes as long. Corolla-tube narrow, ½in., white or pinkish 2-lipped; upper lip erect, lower spreading. Stamens 4 ascending; Stigma sub-equally 2-lipped. Nutlets ⅛in. long, obovoid oblong, smooth. The plant has the odour of lemons.

Use :—An infusion of the leaves is drunk for contusions produced by blows, and about Kumaon the same preparation is used as a bitter tonic and febrifuge. (Stewart).

1015. *Otostegia limbata, Benth. Mss.*; H.F.B.I., IV. 680.

Vern. :—Búi, phútkanda, jandí, lana, kandiáni, agzhan, awáni-búti Pb.).

Habitat :—Punjab, lower hills, in rocky places, west of the Jhelum to the Salt Range.

A small grey, hoary spiny bush. Branches tomentose, white, terete. Spines ½-¾in Leaves sub sessile elliptic-lanceolate, obtuse or quite entire, nerveless 1in , base narrowed, hoary on both surfaces, floral exceeding the calyces. Bracts lower spinescent, upper dilated pungent, whorls distant. Calyx villous, throat bearded, flowering ⅛in , turbinate with a broad membranous 5-toothed limb, which in fruit expands into a reticulated 5-angled cup, ⅔in. diam , with often toothed margins. Corolla ½in., tube short, upper lip very long, villous. Stamens exserted. Nutlets ½in , flattened, smooth.

Uses :—The juice of the leaves is applied to children's gums, and to ophthalmia in man and beast. (Stewart).

1016. *Leucas cephalotes, Spreng.*, H.F.B.I., IV. 689.

Syn :—Phlomis Cephalotes, *Roth* Roxb. 461.

Vern. :—Dhurpi ság (H.); Bara palkasá (B.); Audia dhurup arak (Santali) ; Kubi (Guz) ; Pedda tumui, tum-ui (Tel); Kedari Tumba (Mar.). Phumián, sisaliús, maldoda, guldoda, chatra (Pb.);

Habitat :—Himalaya, from Simla to Bhotan. Plains from Chittagong and Assam to the Punjab, and south through the Deccan.

A tall stout scaberulous annual herb. Stem 2-3ft., hairs spreading. Leaves membranous, more or less pubescent, 2-4in., shortly-petioled ovate or ovate-lanceolate, sub-acute, crenate serrate ; whorls 1-2in. diam. very large-rounded by the imbricating membranous adpressed bracts ; terminal whorls globose. Bracts elliptic or linear-lanceolate, awned. Calyx ¾in., tubular slightly

curved, usually softly pubescent, membranous, hairs of mouth as long as the teeth ; teeth very short, subulate scabrid Flowers 1in. long, says Collett from Simla. Calyx hairy near the top, otherwise glabrous.

Uses :—The plant is officinal, being considered stimulant and diaphoretic (Stewart) The seeds yield an oil which is used medicinally by the Santals (Revd. A. Campbell). The fresh juice is used in certain localities as an external application in scabies The flowers are administered in the form of a syrup as a domestic remedy for coughs and colds.

It is also used as a vegetable rennet

1017. *L. zeylanica*, *Br.*, H.F.B.I., IV. 689.

Vern :—Gatta tumba (Cingh.)

Habitat :—Assam ; Cachar ; Chittagong.

An erect annual, pubescent or hispidly hairy herb. Stem 1-3ft., branched above. Hairs spreading, deflexed or adpressed. Leaves 2-3in., sometimes 1in. diam , linear or elliptic-lanceolate, obtuse, sub-serrate, shortly petioled. Whorls small, ½-⅔in. diam., sub-terminal many-fid, rarely axillary. Bracts few, ciliate. Calyx very constant in size and shape, ¼-⅓in , obliquely turbinate glabrous, scabrid or sparsely hispid ; teeth minute, erect or spreading horizontally. Mouth broad pubescent within.

Uses :—The Cinghalese attribute miraculous powers to this plant The leaves are bruised and a teaspoonful of the juice given, which is snuffed up by the natives as a remedy in snake-bites. The fresh juice is also employed in headache and colds (Long, Ind. Plants of Bengal). In Reunion, it is considered to be stimulant and antirheumatic.

Chemi. com.—**The herb of L. zeylanica on distillation afforded a very small quantity of essential oil. By boiling a decoction of the herb with soda solution a strong odour was given off, and on condensing the vapour, ammonia and a volatile alkaloid were detected in the distillate. The alkaloid was combined in the plant with an acid giving a green colour with ferric salts. The air-dried plant afforded 7 3 per cent. of ash (Pharmacog. Ind. III 124).**

1018. *L. aspera*, *Spreng.*, H.F.B.I., IV. 690.

Syn. :—Phlomis esculenta, *Roxb.* 461.

Vern. :—Chota-pal-kúsa (H. and B.); Thurduri baji (Dec.); Tamba (Bomb.); Tumbai-chedi, Thombay-keerary (Tam.); Tumma-chettu, Tummi-kura (Tel.).

Habitat :—Plains of India, from Sikkim and Behar to the Punjab, and southward to Cape Comorin.

An erect or diffuse annual, very variable. Stem stout hispid or scabrid, erect, usually much diffusely branched from below. Branches 4-6 in., rather leafy, sometimes taller, with erect branches and larger leaves $\frac{2}{3}$ in. broad Leaves 1-3in. Inner or oblong, obtuse entire or crenate Whorls large terminal and axillary, often 1in. diam., very dense-fid and hispid. Bracts long, linear and filiform. Calyx variable, but with always the upper lip produced and with short triangular teeth, $\frac{1}{3}$-$\frac{2}{3}$ in, tubular curved, smooth below, green and ribbed and scabrid above, contracted above the nutlets, mouth small, glabrous, very oblique, shortly irregularly toothed. Corolla small. The whole plant is fragrant and used as a potherb.

Use :—The juice of the leaves, according to Dr. J. Shortt, is applied successfully in psoriasis and other chronic skin eruptions. (Ph. Ind.). The leaves are said to be useful in chronic rheumatism (Dr. Meadows, in Watt's Dictionary)

1019. L. *linifolia*, *Spreng.*, H.F.B.I., IV. 690.

Syn · —Phlomis zeylanica, *Roxb.* 461.

Sans. :—Dronapushpi, Rudrapushpa.

Vern. :—Hulkussa (B. and H.); Poo-alla-toomi (Tel.); Tumbai (Tam.). Tumbe, Karjâli-gida (Kan.); Tumpa (Mal.); Dron (Assam); Gumi, Kumbha (Gond.); Goma (Deccan.)

Habitat · —Plains of India, from Assam, Bengal and Sylhet to Singapore In the Deccan, from the Concan to Travancore.

An annual erect, smooth or scaberulous herb. Stem 2-3ft., usually stout and much-branched above. Leaves 2·4 in, linear or linear-lanceolate, obtuse entire or subserrate, rarely $\frac{3}{4}$in. broad. Petiole 0-$\frac{1}{2}$in. Whorls axillary and terminal towards the ends of the branches, $\frac{1}{2}$-$\frac{3}{4}$in. diam.; bracts few short, setaceous.

Calyx pale below, not striate above, toothing variable, sometimes spinescent, ¼-⅓in., obovoid, glabrous or puberulous, mouth very oblique, contracted, glabrous within upper lip, projecting, acute 3-toothed, lower 2-fid.

Use :—The natives of Central India believe that the leaves, when roasted and eaten with salt, have febrifugal properties (Duthie).

1020. *Leonotis nepetæfolia*, *Br.* H.F.B.I., IV. 691.

Syn. :—Phlomis nepetæfolia, *Linn.* Roxb 461.

Vern. :—Hejur-chei (H.); Dare dhompo, janum dhompo (Santal); Mati-jei, mátisul (Guz.) Dipmal, Ekri (Mar.); Rana bheri, beri, mulu golmidi, hanumanta bira (Tel.).

Habitat :—Throughout hotter India, from the Punjab to Travancore.

A tall, herbaceous annual 4-6ft. Stem as thick as the finger, 4-angled with concave faces, puberulous. Leaves 4-8 by 2-5in., membranous ovate, crenate, floral lanceolate, deflected. Bracts spinescent, winged, linear, deflexed. Petiole 1-3in. winged above, slender Whorls distinct, globose, 2-3in diam., squarrose. Calyx ½-1in. ribbed and reticulate, pubescent or villous, tubular incurved; teeth spinescent, upper lip prominent rigid, ¼ in. long Lower with three erect spinescent rigid teeth. Throat glabrous. Corolla orange-red, 1in. long, tube slender, exserted, villous like the upper lip, lower lip minute. Nutlet linear-oblong, widening upward, truncate.

Uses :—In Chutia Nagpur, the ash produced by burning the flower-buds is applied to burns and scalds (Revd. A. Campbell). In Bombay, the ashes of the flower-heads mixed with curds is applied to ringworm and other itchy diseases of the skin. Dr. A. J. Amadeo states that it is called Rascamono in Porto-Rico, and that a decoction of the leaves is used as a tonic, the juice is also expressed and taken with limejuice and rum as a febrifuge. Dr. Amadeo has used it in combination with Phyllanthus Niruri in intermittents. (Dymock.)

1021. *Eremostachys Vicaryi, Benth.*, H.F.B.I., IV. 695.

Vern :—Gurgunna ; Khalátra ; Rewand chini (Pb.).

Habitat :—Western Punjab, Peshawar, Salt Range, and Jhelum.

Erect herbs, stems 3-5ft, very stout, simple or branched. Leaves radical, 12-18in., ovate, pinnatisect; segments or pinnules sessile-glabrous, lower floral sessile oblong, lobulate, petiole strong, base woolly. Spikes 8-10in, rachis very stout. Whorls many-fid, at length distant Calyx, ½in, campanulate, scurfily tomentose, mouth truncate, shortly 5-crenate, crenatures apiculate ; galea of Corolla, says J D. Hooker, villous and fringed with white hairs.

Use :—The seeds are given as a cooling medicine (Stewart).

1022. *Ajuga bracteosa, Wall.*, H.F.B.I., IV. 702.

Vern. :—Kauri búti (Jhelum) ; Kaiku, nilkanthi (Sutlej) ; Khurbani (Trans-Indus). The bazar names are Jân-i-adam, mukund babri, nilkanthi. Mr Baden-Powell gives *jan-i-adam* as the vernacular of Ajuga reptans, a European species, and Stewart further gives that name to Salvia lanata.

Habitat :—Western Himalaya, from Kashmir to Nepal, and in the plains near them from Oudh to Peshawar

Softly hairy herbs. Stems erect or ascending, many from the rootstock, branching usually diffusely from the base, 1-12in., simple or divided, usually stout, leafy, softly pubescent, villous or glabrate, rarely substrigose or hispid. Branches terete or ascending. Leaves 1-4in. ; lower petioled, upper sessile, sinuate-toothed or nearly entire, oblanceolate or sub-spathulate, whorls axillary and crowded in spikes, much shorter than the leafy ovate or cuneate-obovate, entire or toothed bracts. Calyx ⅛in. villous ; Calyx-teeth ovate-lanceolate. Corolla pale blue or lilac, pubescent ; tube rarely twice as long as the Calyx ; upper lip erect, 2-fid ; side lobes or lower oblong, midlobe dilated, variable in length, stamens protruding from the upper lip. Nutlets $\frac{1}{10}$in., ellipsoid, deeply rugosely fitted.

Uses :—Jan-i-adam is described as a bitter astringent, nearly

inodorus; sometimes substituted for Cinchona in the treatment of fevers (Baden Powell)

Mukand babri —On the Salt Range it is used to kill lice, and is regarded as depurative (Stewart); an aromatic tonic, specially useful in ague (Baden-Powell).

"There appears to be some confusion as to the identification of the medicinal products sold in the bazars of the Punjab and North-West Provinces, under the names of Jân-i-adam and Mukand babri Specimens and further information should therefore be obtained" (Watt).

The leaves of the species of Ajuga have a peculiar resinous odor and a bitter taste They are said to be stimulant, diuretic and aperient They have been given in rheumatism, gout, palsy and amenorrhea. (U S Disp)

N O. PLANTAGINEÆ

1023. *Plantago major, Linn*, H.F B I, IV. 705.

Syn —P asiatica, *Linn*

Vern —Lahuniza (H , Gul, isufgol (isupgul) is P ovata, for which see further (K R. K)

Habitat,—Temperate and Alpine Himalaya, from Peshawar and Kashmir to Bhotan Assam, Khasia Hills, Bombay and Nilghirris

Perennial scapigerous herbs, glabrous or hairy. Rootstock stout, truncate Leaves all radical, 2 5in, variable in breadth, teething irregular, oblong, or oblong-ovate, subentire at times, 3 7-ribbed Petiole sometimes 1in Spikes 3-4in, very long and slender Flowers scattered or crowded; bracts equalling the Calyx Sepals glabrous, ⅛in long, margins broadly scarious, obtusely keeled Corolla glabrous; filaments short Capsule 2-celled, cells 1-8-seeded Seeds angular, very minute, black.

Uses.—In Lahoul (Himalayas) the leaves are applied to bruises. (Stewart)

The seeds have the same properties ascribed to them as those of P. ovata, being considered an efficient remedy in dysentery, stimulant, warm and tonic.

The root and leaves possess slightly bitter and astringent qualities and were formerly much used as a febrifuge. They are still employed as a domestic remedy in England, and in Tuscany a decoction of the leaves is believed to form an excellent eye wash, and to have styptic properties. The seeds are used as diuretic in China.

Contains a fair proportion of sugar and oxalic acid; whilst in the leaves of the plant, T. Koller found albumen, pectin, with citric and oxalic acids, J Ch. I. 1887 P, 49

1024. *P. Lanceolata, Linn*, H.F.B.I., IV. 706.

Vern.:—Baltanga (H.); Baltung, bartung (B); Parhar pangri, parbar pangi, bartang (Pushtu).

Habitat:—Western Himalaya, from Kashmir to Simla, the Salt Range and Waziristan.

Perennial scapegerous herbs, very variable in size Root-stock tapering Leaves all radical, shortly petioled 1-12in., lanceolate, entire or toothed, 3-5-ribbed, woolly. Scape as long as the leaf, deeply furrowed. Spikes very short, ½-3in, ovoid subglobose or cylindric; bracts acuminate Sepals usually ciliate, corolla glabrous; filaments long. Capsule 2-celled; cells 1-2-seeded.

Uses:—The leaves are used as an application to wounds, inflamed surfaces and sores The seeds are used with sugar as a drastic purgative. Said to act as a hæmostatic. (Ph. J., 24th Feb, 1883. p. 683.)

1025. *P. brachyphylla, Edg.*, H.F.B.I. IV. 706.

Vern:—Parhar pangi (Pushtu).

Habitat:—Western Himalaya, from Kumaon to Kashmir; Western Tibet, and Afghanistan

Perennial glabrous herbs. Leaves elliptic ovate, subsessile or petioled, 3-5-ribbed, axils glabrous. Scapes stout, glabrous, larger than the leaves and cylindric spikes. Much resembling a smaller state of P. Major, but the seeds are 1-2in, each cell, oblong and plano-convex.

Use:—The leaves, slightly bruised, are, in Ziarat, used as an application to wounds. (Lace, in Watt's Dic.)