# STUDIES IN THE FLORA OF AFGHANISTAN: VI*

## Labiatae A-Lal.

IAN C. HEDGE

Eleven genera in the Afghanistan—W. Pakistan area are considered in alphabetical order from *Ajuga* to *Lallemantia*. The account follows the same pattern as a previous paper in this series on *Salvia* (Notes R. B. G. 26 : 407–425, 1965); keys to the species are presented and specimens cited to give an idea of the species range. The total range of the species is also given as far as it is known. Four new *Eremostachys* and one new *Dracocephalum* are described; several species new for the area are recorded.

Although there is now considerably more Labiate material for study than was available to Rechinger when he prepared an account of the family in Symbolae Afghanicae (Biol. Skr. 8, 1, 1954), it became increasingly clear during the present review that there is still much collecting and field work to be done before definitive accounts can be prepared. This is particularly true of such genera as *Eremostachys*, dealt with in this paper, and *Nepeta* and *Scutellaria* which it is hoped to consider in a future paper.

In addition to the collections cited in the *Salvia* paper, the recent collections of Miss J. Lamond (made on K. H. Rechinger's 1965 Iter Orientale, specimens at E) and Roemer (from Wakhan, specimens at M) have been examined. Specimens quoted have been seen unless marked n.v.

### AJUGA L., Gen. Plant. ed. 5 : 246 (1754).

1. Leaves simple, margins entire, coarsely lobed or toothed; verticils many-flowered; corolla 5–10 mm, blue, lilac or white . . . . 2
\+ Leaves tridactyloid-pinnate; verticils 2-flowered; corolla c 30 mm, purple-violet with green veins . . 3. *A. chamaecistus* Benth.
2. Stamens included; corolla c 5 mm; rootstock not woody 1. *A. parviflora* Benth.
\+ Stamens slightly exserted; corolla c 10 mm; rootstock woody 2. *A. bracteosa* Benth.

**1. A. parviflora** Benth. in Wall., Plant. Asiat. Rar. 1 : 59 (1830).
Type: India, Kumaon, (*Wallich*, Cat. Herb. Ind. 2031).
AFGHANISTAN. Nuristan: Gusalak, *Edelberg* 35 (n.v.). Nangarhar: Pech (Kandai) to Chigha Serai, 1300 m, *Lamond* 2544. Paktia: Shalizan and Halibkalla, *Aitchison* 147, 293.

*The previous parts have been published in the following periodicals:
I. Arbok Univers. Bergen, Math.-Naturv. ser., 1963, 18 : 1–56 (1964).
II. Nytt Mag. Bot. 12 : 123–134 (1965).
III. Notes Roy. Bot. Gard. Edinb. 26 : 407–425 (1965).
IV. Bot. Notiser 119 (1966).
V. Acta. Hort. Gotob. 28 : 57–63 (1966).

W. PAKISTAN. Swat: Shangla resthouse, 2050 m, *Lamond* 1728. Dera Ismail Khan: Sulaiman range, Fort Sandeman to Dera Ismail Khan, c 1800 m, *Lamond* 1490 (specim. ad *A. bracteosam* vergens).
Range: Kashmir, Kumaon, Swat, N. E. Afghanistan.

**2. A. bracteosa** Benth. in Wall., Plant. Asiat. Rar. 1 : 59 (1830).
Type: Nepal, (*Wallich*, Cat. Herb. Ind. 2032).
AFGHANISTAN. Nuristan: Gusalak, *Edelberg* 1552 (n.v.).
W. PAKISTAN. Swat: Jabba valley, E of Kolaila, 2200 m, *Lamond* 1767; Utror, 2200 m, *Lamond* 1854. Kohat: Kohat pass, 900 m, *Lamond* 1528. Chitral: Rumbur, 2550 m, *Bowes Lyon* 674; Dir, *Harriss* 16491.
Range: Nepal, Kumaon, Punjab, Swat, Chitral, Tibet, N.E. Afghanistan.

Closely allied to, and scarcely specifically separate from, the previous species and with a similar distribution, *A. bracteosa* is apparently more frequent at the eastern and *A. parviflora* at the western end of the species area. Neither species is known from the northern side of the Himalayan-Hindu Kush massif.

**2. A. chamaecistus** [Ging.] ex Benth., Lab. Gen. et Sp. 698 (1834).
Type: 'Persia, *Olivier*'.
AFGHANISTAN. Maymana: Darrah Abdullah, forming dense tufts, fls. purplish violet with greenish yellow markings, 1200 m, *Hedge & Wendelbo* W. 3704. Herat: Badghis, *Aitchison* 549.
Range: Transcaucasus, Iran, N. W. Afghanistan.

The leaf shape in this species, throughout its range, may be oblong–elliptic, entire or toothed, narrow linear or tridactyloid-pinnate. With the limited material available there does not seem to be any correlation between geography and leaf shape, and although the Darrah Abdullah specimen in facies and leaf shape (but not in floral characters) is very different from much of the Persian material and from the Badghis plant, it is possibly a lush-growing variant of a very variable species.

## CALAMINTHA Mill., Gard. Dict. Abr. ed. 4 (1754).

1. Annual, 7–15 cm; corolla minute, almost equalling calyx
1. *C. debilis* (Bge.) Benth.
\+ Perennial more than 20 cm; corolla longer than calyx . . 2
2. Calyx c 6 mm; ± procumbent plants with lax verticils
2. *C. umbrosa* (M. Bieb.) Benth.
\+ Calyx more than 8 mm; ± erect plants with dense verticils
3. *C. vulgaris* (L.) Druce

**1. C. debilis** (Bge.) Benth. in DC., Prodr. 12 : 232 (1848).
Syn.: *Thymus debilis* Bge. in Ledeb., Fl. Alt. 2 : 391 (1830).
*Satureia debilis* (Bge.) Briq. in Pflanzenfam. 4, 3a and 3b: 302 (1897).
Ic.: Ledeb., Fl. Ross. 5 : t.438 (1834).
Type: "Hab. in umbrosis prope fortalitium Alexandrowsk et in deserto soongoro-kirghisico circa mont. Kent.". *Ledebour* (LE—n.v.).

AFGHANISTAN. Paktia: Ali Khel, *Aitchison* 545 (n.v.).
RANGE: Caucasus, W. Siberia, C. Asia, Afghanistan.

The solitary Afghan record requires confirmation.

**2. C. umbrosa** (M. Bieb.) Fisch. & Mey., Ind. Sem. Hort. Petrop. 6 : 6 (1840).
Syn.: *Melissa umbrosa* M. Bieb., Fl., Taur.-Cauc. 2 : 63 (1808).
*Clinopodium umbrosum* (M. Bieb.) Koch in Linnaea 21 : 673 (1848).
*Calamintha repens* (Don) Benth. in DC., Prodr. 12 : 233 (1848).
TYPE: Caucasus: "circa Ananur et Duschet" *Steven* (LE–n.v.).
AFGHANISTAN. Kabul: Paghman, *Neubauer* 701 (n.v.)
W. PAKISTAN. Chitral: Arandu SW of Drosh, 1200 m, *Stainton* 2311; Chitral Mastuj track, Kaghosi, 1500 m, *Stainton* 2417.
RANGE: Caucasus, Iran, Afghanistan, Himalayas, Assam, Burma.

**3. C. vulgaris** (L.) Druce in Ann. Scot. Nat. Hist. Soc. no. 60 : 224 (1906).
Syn.: *Clinopodium vulgare* L., Sp. Plant. 587 (1753).
*Calamintha clinopodium* Benth. in DC., Prodr. 12 : 233 (1848).
*Satureia vulgaris* (L.) Fritsch, Exs. Fl. Österr. 477 (1909).
Described from Europe.
AFGHANISTAN. Kabul: Paghman, 2700 m, *Hedge & Wendelbo* W. 4376. Nuristan: Nishei, 1600 m, *Edelberg* 786 (n.v.)
W. PAKISTAN. Chitral: Ziarat, 2130 m, *Stainton* 2544.
RANGE: Europe, N. Africa, S. W. Asia, Himalayas.

Some of the variants of this species closely approach *C. umbrosa*. A review of the two species throughout their ranges is much needed. *C. integerrimum* Boriss., a narrow segregate of *C. vulgaris* from C. Asia, is very close to the specimens cited above.

**CHAMAESPHACOS** Schrenk, Enum. Pl. Nov. 27 (1841).

**C. ilicifolius** Schrenk l.c. 28. 3 : Trans. Linn. Soc. 2 ser., 3 (1); t. 42 (1888).
TYPE: Kazakhstan, near Lake Balkash, *Schrenk* (LE—n.v.).
AFGHANISTAN. Herat: Hari-rud valley, common, banks of river, *Aitchison* 299, 617.
RANGE: C. Asia, Kopet Dag, N.E. Iran (?), N. W. Afghanistan.

This distinct annual is probably more widespread in N. W. Afghanistan than the two known gatherings would suggest.

**DRACOCEPHALUM** L., Gen. Plant. ed. 5 : 258 (1754).

The close connections between the high alpine flora of N. E. Afghanistan and the Tian Shan, Pamir-Alai, Karakoram and Kashmir region are clearly illustrated in *Dracocephalum*. Six of the species considered here grow in most or all of the regions and the affinities of the remaining four, endemic to Afghanistan, are with species from those areas.

1. Calyx bilabiate with one large upper tooth and four smaller lower teeth . . . . . 2
\+ Calyx bilabiate with three upper teeth and two lower teeth or scarcely bilabiate . . . . . 6
2. Leaves simple with crenate margins; basal leaves ± cordate with petioles at least as long as laminae . . . . . 3
\+ Leaves pinnatifid or pinnatisect; basal leaves usually absent or if present, not as above . . . . . 5
3. Corolla under 15 mm long; calyx 6–8 mm long . 4. *D. nutans* L.
\+ Corolla 18–35 mm long; calyx 10–17 mm long . . . 4
4. Bracts pectinate-aristate; corolla violet-blue; basal leaf laminae 6–8 cm long . . . . . 2. *D. wendelboi* Hedge
\+ Bracts sub-entire; corolla yellow; basal leaf laminae 1·5–2 cm long 3. *D. glechomifolium* Dunn
5. Plant prostrate; bracts subentire; leaf laminae under 5 mm 1. *D. paulsenii* Briq.
\+ Plant erect-ascending; bracts aristate; leaf laminae over 10 mm 5. *D. aitchisonii* Rech. f.
6. Calyx scarcely bilabiate with subequal teeth . . . . 7
\+ Calyx bilabiate with unequal teeth . . . . . 8
7. Stamens ± clearly exserted; plant erect-ascending 9. *D. stamineum* Kar. & Kir.
\+ Stamens included; plant caespitose . 10. *D. kafiristanicum* Bornm.
8. Annual (cultivated or near cultivation) . . 6. *D. moldavica* L.
\+ Perennial . . . . . 9
9. Corolla violet-blue; at least some leaves pinnatifid; basal leaves often absent; plant up to 50 cm high . . 7. *D. bipinnatum* Rupr.
\+ Corolla white; leaves simple with crenate or serrate margins; basal leaves long petiolate; plant up to 20 cm, often much less 8. *D. heterophyllum* Benth.

**1. D. paulsenii** Briq. in Bot. Tidsskr. 28 : 238 (1907). Ic.: l.c. fig. 4.
SYNTYPES: Tadzhik S.S.R., Pamir. Bordo-ba, 3500 m, *Paulsen* 619; Tshatir Tash, 4200 m, *Paulsen* 784; near Jashil, 3800 m, *Paulsen* 991 (all at C—n.v.)
W. PAKISTAN. Chitral: Owir, 3800 m, open bare ground, *Bowes Lyon* 880.
RANGE: Chitral, Karakoram, Pamir-Alai, Tian Shan, Sinkiang.

This species is closely related to *D. discolor* Bge. from the Altai and Angara-Syan. Lipsky (Ann. Hort. Petrop. 26 : 600, 1910) considered them conspecific but there are good reasons for maintaining them as separate species. The teeth of the bracts and calyces in *D. paulsenii* are acuminate whereas in *D. discolor* they are mucronate-subulate; in addition, the corolla in *D. paulsenii* is 10–12 mm long and 13–15 mm in *D. discolor*.

*D. paulsenii* is a member of a group of closely allied species that stretches across the whole of Asia from NE to SW. *D. palmatum* Steph. grows in the extreme NE of the USSR; *D. pinnatum* L., *D. origanoides* Steph., *D. bungeanum* Schischk. & Serg. and *D. discolor* in the Angara-Syan, Tian Shan, Altai region; *D. paulsenii* in the Pamir-Alai, Tian Shan, Chitral, Karakoram; *D. aucheri* Boiss. in N. Persia and SE Turkey; *D. botryoides* Stev. in the Caucasus.

Almost all are high alpine species, similar in facies, indumentum, calyx and corolla characters. They are an interesting example of vicarious species extending over a very wide area.

**2. D. wendelboi** Hedge **sp. nov.** (Plate 6)

Affinis *D. grandifloro* L. et *D. formoso* N. Gontsch.: a priore caulibus, foliis et bracteis viridibus glabris recedit; ab altera floribus violaceis et minoribus, pedicellis brevioribus, bracteis longioribus et latioribus recedit; ab ambabus calycis labio superiore inferioribus vix latiore.

*Herba* perennis, basi indurata. *Caules* erecti, 30–50 cm alti, simplices, quadrangulares, tenuiter sulcati, glabri, basi purpureo-tincti. *Folia* glabra vel pilis paucissimis simplicibus provisa, viridia, crassiuscula. *Folia radicalia* longe (5–10 cm) petiolata; lamina late triangulari-ovata vel oblongo-ovata, 6–8 × c 3·5 cm, margine crenata, subtus glandulis sessilibus; subtus nervatura distincta. *Folia caulina* ovato-oblonga, minora, 3–4-paria, inferiora petiolata, superiora sessilia in folia floralia transeuntia. Verticillastri in inflorescentiam subcapitatam approximati. *Bracteae* virides, nervis violaceis, late ovatae, calyce paulo longiores, utrinque pectinato-aristatae, dentibus ad 3 mm longis. *Bracteolae* minutae, lineares, pubescentes, ad 3 mm longae. *Pedicelli* c 1 mm longi, pubescentes. *Calyx* tubulosus, 15–17 mm longus, 15–nervius, breviter pubescens et parce glanduloso-punctatus, ± ad trientem inconspicue bilabiatus; labium superius unidentatum, oblongo-lanceolatum, acuminatum; labium inferius in dentes quatuor lanceolatos acuminatos fissum. *Corolla* c 35 mm longa, violacea, extra puberula, tubo in parte inferiore (c 14 mm) angusto intus piloso in calyce incluso in parte superiore valde (c 10 mm diam.) inflato-dilatato; labium superius apice bilobum; labium inferius galea vix brevius, subdeflexum, lobis lateralibus rotundatis, mediano dilatato apice emarginato. *Filamenta et antherae* glabrae, vix exsertae. *Stylus* glaber, stigmatibus aequalibus. *Nuculae* c 3·5 mm, trigonae. Floret Jun.

AFGHANISTAN. Bamian: N side of Hajigak pass, wet meadow, fls bluish violet, 3000 m, *Hedge & Wendelbo* W. 4672 (holo E, iso BG); Koh-i-Baba, near Kaloo, fields, *Griffith*. Parvan: S. side of Salang pass, riverside path, 2400 m, *Lamond* 2112.

RANGE: C. Afghanistan.

Although no material of *D. formosum* has been seen, the comprehensive original description leaves little doubt that it is the closest ally of the new species. *D. wendelboi* differs in the smaller (not 40–43 mm) and violet (not rose-lilac) corollas, the shorter pedicels, the larger pectinate-aristate bracts and the glabrous filaments. *D. formosum* was described from N of Dushanbe in Tadzhikistan and is apparently only known from that area (cf. Not. Syst. Leningrad 7 : 101, 1938). The relationship of *D. wendelboi* with *D. grandiflorum* L. is more distant and the two species can readily be separated by the obvious indumentum and oblong leaves of the latter.

The type gathering was made in a wet meadow together with *Ligularia persica* Boiss., *Parnassia cabulica* Planch., *Pedicularis dolichorrhiza* Schrenk, *Ranunculus pulchellus* C. A. Mey. and *Swertia* sp. The Hajigak locality is, at c. 68° E, the most westerly record of the genus in Afghanistan. Westwards, the next *Dracocephalum* species, *D. aucheri* Boiss., occurs in NE Iran at c 55°E.

It is a pleasure to name this distinct species after my Norwegian travelling companion, Prof. Per Wendelbo now at the Göteborg Botanic Garden.

**3. D. glechomifolium** Dunn in Kew Bull. 122 (1921).
TYPE: W. PAKISTAN: Chitral: Madaglast, 4200–4500 m, *Toppin* 564 (K.—n.v.)
RANGE: Chitral.

Compared by Dunn in the original description to *D. imberbe* Bge. but said to differ in the loose capitula and the yellow decurved corollas, *D. glechomifolium* is only known from the original gathering. This species will be discussed in a later paper.

**4. D. nutans** L., Sp. Plant. 596 (1753).
Syn.: *D. nuristanicum* Rech. f. & Edelb. in Biol. Skr. 8, 1 : 43 (1954). Ic.: l.c. fig. 25.
TYPE: "Hab. in Sibiria" (LINN-photo!).
AFGHANISTAN. E*: Nuristan: Elasoon, *Edelberg* 1672 (holo of *D. nuristanicum*-photo!); *ibidem 1723*; Chetras, *Edelberg* 835; Parum to Kamdesh, *Edelberg* 1091; Urura pass, 3000 m, *Neubauer* 607.
W. PAKISTAN. Chitral: Showar Shun, E of Baroghil pass, 4000 m, fls. mauve, stems red, *Stainton* 3011; Drosh (Beorai), 4300 m, *Bowes Lyon* 196; Khot An, N of Mastuj, 4000 m, *Stainton* 2849; Golen (Krui Uts), 4300 m, *Bowes Lyon* 111; Rumbur, 2300 m, *Bowes Lyon* 222; Tirich Mir, Shokor Shal, 3500 m, *Wendelbo*.
RANGE: throughout much of the N. European territories of the USSR, Siberia, C. Asia, Mongolia, Sinkiang, Afghanistan, N. W. Pakistan, Kashmir.

This is a variable species throughout its range particularly in the inflorescence. The type specimen has a long clearly interrupted spike whereas in many of the specimens cited above the inflorescence is condensed and subcapitate. All transitions occur and there are no grounds for recognising the latter, often high alpine, form as anything more than a habitat variant.

**5. D. aitchisonii** Rech. f. in Biol. Skr. 8, 1 : 42 (1954). Ic.: l.c. fig. 24.
TYPE: Afghanistan: Paktia: Hariab district (Sikaram), common from 2750 m to 3350 m, *Aitchison* 573 (holo G, iso K)
AFGHANISTAN. Kabul: Kabul to Gardez, c 23 km from Gardez, Altimur pass (Kotal Tera), fls mauve-purple, 2600–2700 m, *Lamond* 2401. Parvan: Panjshir valley, Darrah Mukeni, rock crevices, fls white, 2300 m, *Hedge & Wendelbo* W. 5117.
RANGE: E. Afghanistan.

*D. nodulosum* Rupr. from Dzungaro-Tarbagatai, Tian Shan, Pamir-Alai and Sinkiang is undoubtedly very closely allied to *D. aitchisonii* and further gatherings in Afghanistan may show that the two species are conspecific. With the available material of *D. aitchisonii* the only constant differences appear to be the more or less capitate inflorescence, the rounded leaf lobes and the larger more pronouncedly aristate bracts of the Afghanistan species. In addition, the corolla is yellow or yellowish-white in *D. nodulosum* and purplish-blue in *D. aitchisonii*.

*Rechinger in Biol. Skr. 8, 1 : 4 (1954).

**6. D. moldavica** L., Sp. Plant. 595 (1753).
TYPE: "Hab. in Moldavica" (within present-day Moldavian SSR, south of the Ukraine; presumably a cultivated specimen—LINN. photo!).

The native distribution of this species is uncertain but it is apparently wild in E. Siberia. It has been cultivated as a medicinal or ornamental plant in Asia and C and S Europe for several centuries (cf. Hegi, Flora Mittel-Europa 5, 4 : 2361, 1927); the records of *D. moldavica* from Peshawar in W. Pakistan (R. R. Stewart in litt.) and Soviet Vakhan (Paulsen in Bot. Tidsskr. 28 : 242, 1907) probably refer to cultivated plants.

**7. D. bipinnatum** Rupr. in Mem. Acad. Sc. St. Petersb. 7, 4 : 65 (1869). Ic.: Komarov, Fl. URSS 20, t. 26 fig. 3 (1954).
Syn.: *D. ruprechtii* Rgl. in Acta Hort. Petrop. 6: 363 (1879).
TYPE: Kirgiz SSR. "In montibus Turkestaniae orientalis a Wernoje usque ad Borotalem a declivibus montium alatavicorum dschungaricorum usque ad juga Thianshan frequentissimum. *A. Regel, Fetisow, Kuschakewicz, Larinow*".
AFGHANISTAN. Badakshan: Bam Kotal, 2700 m, *Lindberg* 862.
W. PAKISTAN. Chitral: Tirich Gol, 3200 m, *Bowes Lyon* 1074; Owir An, S. E. Tirich Mir, 3350 m, *Stainton* 2761.
RANGE: Tian Shan, Pamir-Alai, Sinkiang, Chitral, Gilgit, Afghanistan.

This handsome species with reddish calyces and large (c 35 mm) violet-blue corollas was not previously known from either Afghanistan or Chitral. The specific epithet is misleading because the leaves are never bipinnate but are deeply lobed, pinnatifid or simply pinnate. In the illustration cited above, a plant with pinnate leaves and linear segments is drawn; in the Chitral plants, the leaves are deeply lobed or pinnatifid.

**8. D. heterophyllum** Benth., Lab. Gen. et Sp. 738 (1835–36).
Syn.: *D. pamiricum* Briq. in Bot. Tidsskr. 28 : 239 (1907). Ic.: l.c. fig. 5.
TYPE: Kashmir?: "Hab. in Indiae Orientalis septentrionalis montibus; in schistosis mobilibus Koo-khio-ghang. *Jacquemont*" K (photo!)
AFGHANISTAN. Badakshan: Wakhan, Pamir pass E of Sarhad, scree, 4100 m, *Roemer* 335.
RANGE: Tian Shan, Pamir-Alai, Sinkiang, NE Afghanistan, Tibet, Kashmir, Nepal.

The Afghanistan specimen has slightly smaller floral parts and broader leaves than in the average of examined Himalayan material but *D. heterophyllum* is a very variable species and there seems no reason to accord the single Wakhan plant separate taxonomic status. In the Himalayas, *D. heterophyllum* grows in a great variety of habitats—stream side, near cultivation, grassy slopes and bare screes. The Wakham record is an interesting extension of its range; further collecting in Hunza, Gilgit and Chitral should reveal its presence there.

**9. D. stamineum** Kar. & Kir. in Bull. Soc. Nat. Mosc. 15 : 423 (1842).
Syn.: *D. pulchellum* Briq. in Bot. Tidsskr. 28 : 241 (1907). Ic.: l.c. fig. 6.
*Fedtschenkiella staminea* (Kar. & Kir.) Kudr. in Bot. Mat. Gerb. bot. Uz. SSR, 4 : 3 (1941).

TYPE: Dzungaria: "in summis alp. Alatau ad. fl. Sarchan" *Karel. & Kiril.* (LE—n.v.)
AFGHANISTAN. Badakshan: Wakhan, Noshaq district, 4000 m, *Roemer* 215; Pamir pass, 4100 m, *Roemer* 342.
RANGE: Dzungaro-Tarbagatai, Tian Shan, Pamir-Alai, Sinkiang, E. Afghanistan, Tibet, Kashmir, Gilgit.

This is a distinct and very aromatic species (like *Melissa*) and is easily recognised by the subequal calyx teeth, the exserted stamens and the small leaves (up to 15 mm but often much less). The degree of staminal exsertion varies from 0·5 mm to 4 mm.

In his field notes, Roemer observed that this species was throughout Wakhan on argillaceous moraines from 3900 to 4000 m. Although usually regarded as a *Dracocephalum*, it differs considerably from almost all other members of the genus and could equally well be placed in *Nepeta*.

**10. D. kafiristanicum** Bornm. in Bot. Jahrb. 66 : 247 (1934).
TYPE: Afghanistan: E. Nuristan (Kafiristan), above the tree line, 3400–3500 m, *Manger* 32 (coll. *Leydack*—B, n.v.)
RANGE: Nuristan.

Only known from the original gathering, this species was said by Bornmüller to be similar in facies to *D. discolor* Bge. but clearly differing in the subentire leaf margins and entire bracts. Although the type has not been seen, *D. kafiristanicum*—on the basis of caespitose habit, small (c. 4 × 2 mm) entire leaves, subequal calyx teeth and included stamens—apparently occupies an isolated position in the genus.

**ELSHOLTZIA** Willd. in Botanisches Magazin (ed. Roem. & Usteri) 4, 11 : 3 (1790).

**E. densa** Benth., Lab. Gen. et Sp. 714 (1835).
Syn.: *Paulseniella pamirensis* Briq. in Bot. Tidsskr. 28 : 246 (1907).
TYPE: Kashmir and Tibet. "Hab. in India Orientali septentrionali: in glareosis ad Ovelia, Rici, et Yonnedeh- Seursing, *Jacquemont*".
AFGHANISTAN. Badakshan: W. Wakhan, Yamit, a field weed throughout W. and C Wakhan, 2800 m, *Roemer* 267. Parvan: Panjshir valley: Shanez, 2550 m, *Hedge & Wendelbo* W. 5331; Mukeni, wet ground in birch wood, 2400 m, *Hedge & Wendelbo* W. 5304.
W. PAKISTAN: Chitral: Rosh Gol, NE Tirich Mir, 2440 m, *Stainton* 2812.
RANGE: Nepal, Tibet, Kashmir, Ladak, Chitral, NW Frontier provinces, E. Afghanistan, Pamir.

Although not recorded before from Afghanistan, the specimen which Briquet mistakenly described in a new monotypic genus *Paulseniella* was collected by Ove Paulsen very close to the Afghanistan border in Soviet Vakhan.

**EREMOSTACHYS** Bge. in Ledeb., Fl. Alt. 2 : 414 (1830).

Our knowledge of *Eremostachys* in Afghanistan is closely linked with the history of the country's botanical investigation. In Boissier's Flora Orientalis (1879) only two species were recognised; Rechinger's Symbolae Afghanicae

(1954) records ten species; in this account nineteen species are dealt with from Afghanistan and two more from adjacent parts of W Pakistan. Further collecting will almost certainly change this total.

With a total of about seventy species, *Eremostachys* has its maximum concentration of species (c 40) and sections (12 out of 15) in the Pamir-Alai—Tian Shan region. Radiating outwards from here, the number of species drops steadily towards the periphery of its range. Fig. 1 shows the species density and illustrates how closely the distribution of the genus fits within the generally accepted limits of the Irano-Turanian region. Other genera that have comparable species concentrations and distributions are *Dionysia**, *Perowskia* and *Eremurus*†.

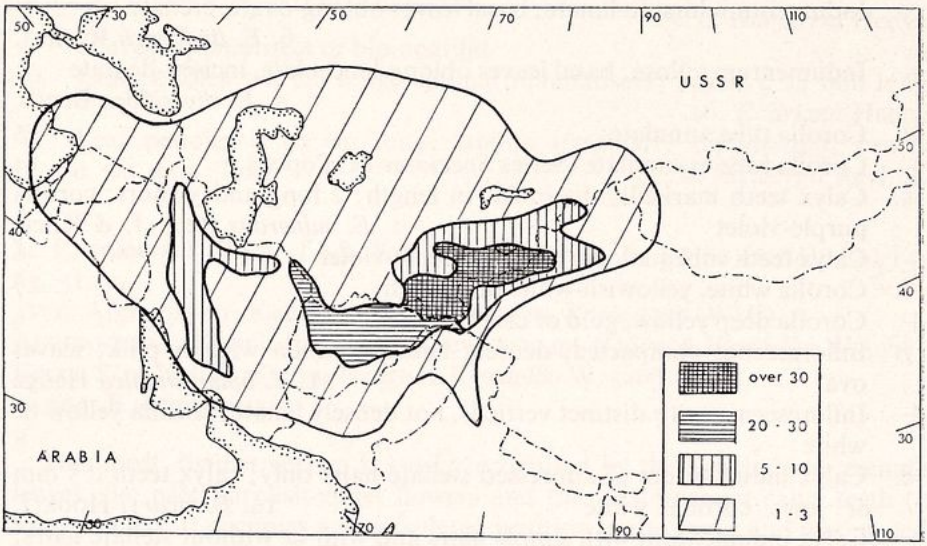


FIG. 1. Species frequency and total distribution of *Eremostachys*.

Many of the numerous taxonomic problems in *Eremostachys* are within the area under review; towards the peripheral regions of the distribution area, the problems dwindle and the species, for the most part, are more distinct. Much of the difficulty in reaching a satisfactory classification results from a paucity of 'good' characters. For example, the indumentum (normally a fairly stable character in the Labiatae) may consist, in different plants of the same species, of simple, stellate, dendroid or glandular hairs. Calyx structure too is very variable within a species. Added to the difficulty of finding stable characters is the difficulty of collecting adequate herbarium specimens. Several species are up to almost 2 m and often when a plant is in fruit there is little left of the leaves. The ideal herbarium specimen and field note would cover the following:

1. the root system e.g. fibrous, napiform or tuberous, 2. basal leaves and their variation, 3. height of plant, 4. branching system and whether single-stemmed or clump-forming, 5. corolla colour (in more detail than merely 'yellow')

*Wendelbo in Arb. Univ. Bergen, Math-Naturv. Serie 5 : 1964.
†Wendelbo l.c. 3 : 1961.

and variation—in many species the colour changes considerably on drying, 6. nutlets.

M. Popov's comprehensive monograph (Nouv. Mém. Soc. Nat. Mosc. 19 : 1–166, 1940) has been used as the basis for this provisional account but it is clear that only field studies and cultivation experiments will help to resolve the outstanding problems.

1. Flowers in lax cymes or in 2-flowered verticils . . . . . 2
\+ Flowers in 4–12-flowered verticils . . . . . 4
2. Verticils 2-flowered; spines of calyx teeth less than 3 mm
20. *E. regeliana* Aitch. & Hemsl.
\+ Flowers in lax cymes; spines of calyx teeth 5–7 mm . . . 3
3. Indumentum hirsute-lanate; basal leaves oblong-ovate, crenate
6. *E. lindbergii* Rech. f.
\+ Indumentum villose; basal leaves oblong-lanceolate, incised-dentate
5. *E. thyrsiflora* Benth.
4. Corolla tube annulate . . . . . 5
\+ Corolla tube exannulate (Series *Speciosae* M. Popov) . . 14
5. Calyx teeth markedly dissimilar in length: 2 long and 3 short; corolla purple-violet . . . 1. *E. vulnerans* Rech. f. & Koeie
\+ Calyx teeth subequal; corolla not purple-violet . . . . 6
6. Corolla white, yellowish-white or pinkish . . . . . 7
\+ Corolla deep yellow, gold or clear yellow . . . . . 9
7. Inflorescence compacted, densely lanate; corolla whitish pink; leaves oval . . . . . 21. *E. badakshanica* Hedge
\+ Inflorescence with distinct verticils, not densely lanate; corolla yellow or white . . . . . 8
8. Calyx indumentum of adpressed stellate hairs only; calyx teeth 0·5 mm or less; corolla white . . . . . 19. *E. vicaryi* Hook.f.
\+ Calyx indumentum with simple hairs and with or without stellate hairs; calyx teeth more than 1 mm; corolla white or yellowish-white
18. *E. labiosa* Bge.
9. Bracts c 2 cm long . . . . . 10
\+ Bracts less than 1·5 cm long . . . . . 11
10. Teeth of fruiting calyx spreading or subrecurved; inflorescence axis glabrescent; verticils compact . . 3. *E. ghorana Rech.* f.
\+ Teeth of fruiting calyx erect; inflorescence axis pilose or glabrescent; verticils ± loose . . . . 4. *E. persimilis* Aitch. & Hemsl.
11. Calyx indumentum of long capitate glandular hairs and long eglandular hairs; stems glabrous . . . . 2. *E. hissarica* Regel
\+ Calyx indumentum without long capitate glandular hairs; stems with an indumentum, or glabrescent or glabrous . . . . 12
12. Plant glabrous . . . 9. *E. gymnoclada* Rech. f. & Koeie
\+ Plant with an indumentum . . . . . 13
13. Bracts and calyces rigid-coriaceous on maturity; inflorescence axis glabrescent . . . . . 8. *E. loasifolia* Benth.
\+ Bracts and calyces ± herbaceous on maturity; inflorescence axis arachnoid-lanate . . . . 7. *E. laciniata* (L.) Bge.
14. Calyx c 27 mm long; bracts 25–27 mm 17. *E. rastagalensis* Hedge
\+ Calyx less than 23 mm long; bracts less than 20 mm . . . 15
15. Corolla tube included . . . . 10. *E. superba* Benth.

\+ Corolla tube exserted . . . . . 16
16. Leaves oblong, subentire or pinnatifid; calyx teeth subrecurved in fruit . . . . . 14. *E. bamianica* Rech. f.
\+ Leaves pinnate or pinnatisect; calyx teeth suberect in fruit . . 17
17. Plants 5–15 (–30) cm high; verticils often scarcely distinct from each other . . . . . 18
\+ Plants (35–) 40–60 cm high; verticils distinct . . . . 19
18. Basal leaves longer than inflorescence; corolla c 40 mm 11. *E. acaulis* Rech. f.
\+ Basal leaves shorter than inflorescence; corolla c 30 mm 12. *E. sanglechensis* Rech. f.
19. Leaves pinnatisect; flowers fading to brownish red after anthesis 15. *E. calophyta* Hedge
\+ Leaves bipinnatisect or bipinnatifid . . . . . 20
20. Leaf petioles 3–4 cm long; lamina bipinnatisect; bracts c 14 mm long 16. *E. ariana* Hedge
\+ Leaf petioles c 10 cm long; lamina irregularly bipinnatifid; bracts c 10 mm long . . . . 13. *E. edelbergii* Rech. f.

**1. E. vulnerans** Rech. f. & Koeie in Biol. Skr. 8, 1 : 52 (1954). Ic.: l.c. fig. 31.
TYPE: Afghanistan: Kabul: Paghman, 2200 m, *Koeie* 2307 (W' C).
AFGHANISTAN. Kabul: Paghman valley, 3000 m, *Hedge & Wendelbo* W.5061; Farza, S. of Istalif, 1850 m, *Hedge & Wendelbo* W. 3288.
RANGE: E. Afghanistan.

This most distinct species is easily recognised by the simple large crenate leaves, the pale purplish-violet flowers and the very unequal calyx teeth (2 long 3 short). It occupies a very isolated position in the genus and was placed by Rechinger in the monotypic series *Vulnerantes* Rech. f. & Koeie. *E. vulnerans* apparently has a very limited distribution: of the eleven known gatherings only one, from Farza, is not from the Paghman valley. At Paghman, it is not an uncommon plant on rocky slopes and cliff ledges.

**2. E. hissarica** Regel in Acta Hort. Petrop. 9 : 542 (1886).
TYPE: Tadzik SSR: Pamir-Alai, Hissar, near Hakimi, *Regel* (LE,K—n.v.)
AFGHANISTAN. Qataghan: N. side Salang pass, up to 2 m, 1500 m, *Lamond* 2268; Salang valley, nearly 2 m, 2100 m, *Furse* 6565. Badakshan: valley above Faizabad, obs. *Furse*.
RANGE: Pamir-Alai, N. Afghanistan.

One of the tallest of all *Eremostachys*, *E. hissarica* is easily recognised by the glabrous stems, the pedunculate cymes, the flat oblong-lanceolate bracts and the calyx indumentum of long spreading simple hairs and shorter capitate glandular hairs. Although Popov (p 70) states that the corolla colour is purple with yellow margins, the field notes of the cited specimens give the colour as "gold with a dark brown tube and throat" and "yellow, tinged bronze". The closest ally of *E. hissarica* is the Pamir-Alai endemic *E. albertii* Regel. In Afghanistan, the first gathering of *E. hissarica* was made by Bukinitsch in the Salang region during Vavilov's expedition of 1926 and 1927.

**3. E. ghorana** Rech. f. in Anzeig. Math.-Naturwiss. Kl. Öst. Akad. Wiss. 15 : 429 (1964).
TYPE: Afghanistan: Ghorat: Kuh Tscheling—Sefid-Daraq prope Parjuman, 2500 m, *Rechinger* 19079 (holo W).
RANGE: C. Afghanistan.

Although the only specimen of *E. ghorana* is inadequate, consisting of withered leaves and fruiting stems, it appears to be a distinct species without obvious allies. Rechinger suggested that it is within the *E. labiosa* alliance, but the very widely separated verticils, the long flat very spiny bracts, the hard spiny calyx teeth and the c 8 mm long nutlets are quite different from any form of *E. labiosa*, the only member of Series *Tuberosae* in Popov's monograph. More material of this interesting plant is needed to determine its nearest ally but on the basis of the long bracts it may be closest to *E. persimilis* Aitch. & Hemsl. Another specimen with very long bracts is *Koeie* 3898 (Afghanistan, Herat, Farah-Shin Dand, Jija). It is impossible to give it a name as it only consists of a few calyces and fragments of leaf but the shape of the calyx, truncate at the apex, is quite different from either *E. ghorana* or *E. persimilis*; it may be a new taxon.

**4. E. persimilis** Aitch. & Hemsl. in Trans. Linn. Soc. 2 ser., 3 (1): 98 (1888).
TYPE: Afghanistan: Herat: Badghis, *Aitchison* 464 (holo—K).
AFGHANISTAN. Herat: 60 miles S. of Herat, 1050 m, *Furse* 5464.
RANGE: N. W. and W. Afghanistan.

A distinct and rare (or seldom collected) species with a limited distribution. The Furse specimen, cited above, is a much smaller plant (only c 20 cm high) than the Aitchison specimens and differs in the all over indumentum of soft short simple hairs and the longer spines (c 8 mm) on the calyx teeth.

**5. E. thyrsiflora** Benth. in DC., Prodr. 12 : 548 (1848).
TYPE: Afghanistan/W. Pakistan: *Griffith* (K).
AFGHANISTAN. Kandahar: Kandahar, *Kerstan* 2251. Kandahar/Ghazni: Ghazni to Mukur, 1800 m, *Hay* 187.
W. PAKISTAN. Quetta to Chaman, Yaro, cornfield, 1450 m, *Lamond* 1000; Peshin, *Lace* 3591.
RANGE: S. W. Afghanistan, W. Pakistan.

The lax cymes with very long peduncles forming large panicles give this species a unique appearance. It is also distinct on account of the 3–3·5 cm bracts, the long calyx teeth (c 6 mm) and the yellowish labellum with a brownish-purple galea. *E. thyrsiflora* appears to be restricted to habitats in or near cultivation. There are 3 Griffith sheets of this species: (1) with the number 492 and no further information (this is the specimen cited by Bentham, although number 492 is 'Crucifera' in Griffith's field notes); (2) from Noorook which is near Kandahar; (3) from Quetta and Killa Putoolah which is between Quetta and Kandahar on the Afghanistan side of the frontier.

**6. E. lindbergii** Rech. f. in Anzeig. Math.-Naturwiss. Kl. Öst. Akad. Wiss. 15 : 428 (1964).
TYPE: Afghanistan: Orozgan, *Lindberg* 818 (holo—W).
RANGE: C. Afghanistan.

Only known from the type gathering, *E. lindbergii* is related to *E. thyrsiflora* but differs in the simple leaves with regularly crenate margins, the lanate indumentum and the smaller floral parts.

**7. E. laciniata** (L.) Bge. in Ledeb., Fl. Alt. 2 : 416 (1830).
Syn.: *Phlomis laciniata* L., Sp. Plant. ed. 2 : 819 (1762).
TYPE: "Hab. in Oriente". *Tournefort* (LINN.-photo!)

The following determinations are doubtful. The specimens in 'A' are rather intermediate between *E. laciniata* and *E. loasifolia* Benth. but differ from both in smaller size and from *E. laciniata* in the less dense indumentum on the inflorescence axis. A consideration of the variation within the complex throughout its range (including such species as *E. laciniata*, *E. iberica* Vis. *E. labiosiformis* (M. Pop.) Knorr., and *E. loasifolia*) is needed before a definitive name can be applied. They are, for the present, informally designated.
A. AFGHANISTAN. Bamian: inter Bulola et jugum Shibar, 2600–2800 m, *Rechinger* 16861; west side of Shibar pass, 2800 m, *Hedge & Wendelbo* W. 4193; inter jugum Kotal Deraz Kol et Panjao prope Mandigak, *Rechinger* 18682. Kabul: Panjao, 2700 m, *Hedge & Wendelbo* W. 4949.
B. AFGHANISTAN. Herat: Obeh, *Lindberg* 64 : 1962.

From its description and one specimen that has been examined, *E. labiosiformis* appears to be closely related to the Obeh plant. They share the feature of a longer lower corolla lip than the upper but the Obeh plant has larger corollas. More material is needed. *E. labiosiformis*, regarded by Popov as a vairety of *E. laciniata*, is according to Knorring (Fl. URSS 21 : 26, 1954), restricted to the Kopet Dagh.

**8. E. loasifolia** Benth. in DC., Prodr. 12 : 547 (1848).
Syn.: *E. acanthocalyx* Boiss., Diagn. 3, 4 : 49 (1859);
*E. cabulica* Rech. f. in Feddes Repert. 48 : 161 (1940). Ic. l.c. tab. 303, fig. 1.
*E. vacillans* Rech. f. in Biol. Skr. 8, 1 : 50 (1954).
TYPES: Afghanistan; Nuristan, *Griffith* 79; Pakistan,: Quetta, Koshuk pass, *Griffith* 449.
AFGHANISTAN. Kabul: Kabul to Gardez, Altimur pass, 2700 m, *Lamond* 2390; west of Panjao, Kotal-e-Akhsarat, 3000 m, *Hedge & Wendelbo* W. 4975; Kabul, *Collett* 42; Koh-i Asamai, 1900 m, *Hedge & Wendelbo* W. 2725; Sher Darvassa, *Gilli* 3621. Parvan: Panjshir valley, 1750 m, *Hedge & Wendelbo* W. 3011; Salang pass, S side, 1850 m, *Lamond* 2061; near Charikar, *Codrington* 55. Nuristan: Varma, Edelberg 521 (type of *E. vacillans*). Ghazni: N. of Sangi-Masha, *Rechinger* 17599.
W. PAKISTAN. Peshawar: Landi Kotal, *Lowndes* 708. Quetta: Kan, *Lace* 3852. Kurrum: Alizai, *Aitchison* 16. Waziristan: Wana, *Lowndes* 658.
RANGE: Afghanistan, W. Pakistan.

Considerable confusion has surrounded the application of this specific name and of those now considered as synonyms of it. Bentham in his original description of *E. loasifolia* stressed the hispid leaf segments with borage-like hairs; when Boissier described *E. acanthocalyx*, based on a Stocks specimen from Doubund in Baluchistan, he emphasied the calyx indumentum of stellate hairs and separated it from *E. loasifolia* on the absence of borage-like hairs. In Flora Orientalis, Boissier gave as a synonym of *E. loasifolia* the unrelated

*E. stocksii* Boiss. and his description and diagnosis of *E. loasifolia* referred not to this species but to *E. stocksii*. Bornmüller, when he described *E. dielsii* (conf. *E. labiosa*), and Popov, in his monograph, both realised Boissier's error and kept *E. loasifolia* and *E. acanthocalyx* separate. Popov who did not see material of *E. stocksii* or *E. loasifolia* placed them both in Series *Laciniatae* and created the new Series *Acanthocalyces* to accommodate *E. acanthocalyx* on the basis of its unequal-rayed stellate calyx indumentum and spiny calyx teeth. Rechinger described *E. cabulica* from a rather fragmented Honigberger specimen and using Regel's monograph (Acta Hort. Petrop. 9: 529–571, 1886) came to the conclusion that it was a distinct species without close allies. He later described *E. vacillans* from adequate material but with only the descriptions of *E. acanthocalyx* and *E. loasifolia* for comparison.

The main reason for this confusion has clearly been the inadequacy (and scarcity) of the original specimens and the fact that the original descriptions have been consulted rather than the specimens. With a fairly comprehensive range of material for study including much recently collected material, the picture of the variation range is much clearer. *E. loasifolia* is a very variable species in its indumentum (the most stressed character in the descriptions of its synonyms) but no more so than several other *Eremostachys* species. Usually there is dense indumentum of very long intertwined simple hairs on the petioles, base of stem and some of the lower leaves. The hairs are generally soft in texture and not 'borage-like'. The indumentum on the inflorescence axis, floral leaves and calyces is usually dense in the young state but gradually falls off as the plant matures and when the nutlets are ripe the axis and calyces are almost glabrous. Rarely the calyx indumentum consists of stellate hairs. The adpressed bracts (usually 2 or 3 fused at their base) and the calyx teeth are tipped with stiff spines. *E. loasifolia* is a tall species up to almost 2 m usually with several stems, a branched inflorescence axis and bright yellow flowers with a trace of reddish brown on the inner surface of the galea.

**9. E. gymnoclada** Rech. f. & Koeie in Biol. Skr. 8, 1 : 48 (1954).
TYPE: Afghanistan: Herat: Qala Nau, 700 m, *Koeie* 3861 (W, C, E).
AFGHANISTAN. Maymana: between Maymana and Belceragh, fls. deep yellow with brownish hood, 900 m, *Hedge & Wendelbo* W. 3675.
RANGE: N. W. Afghanistan.

*E. gymnoclada* is closely allied to *E. loasifolia* but on the basis of the two known gatherings differs in the larger calyces and corolla, the shorter bracts and the almost complete absence of indumentum (except on the corolla).

**10. E. superba** (Royle ex) Benth. in Hook. Bot. Misc. 3 : 381 (1833).
TYPE: India: Garwhal, Kheere pass, *Royle*.
W. PAKISTAN. Swat: 10 km S. of Saidu Sharif at Balogram, 800 m, *Lamond* 1671; Mingora to Madyan, 950 m, *Lamond* 1689. Chitral: Drosh, 1350 m *Stainton* 2260.
RANGE: Garwhal, Shiwalik range, Kangra, Swat, Chitral.

Relatively little material of *E. superba* has been available for study and as a result its range of variation is uncertain. Of the specimens cited above, only the Chitral plant is in flower and its corollas are considerably smaller than those of *E. superba* from further east. The Chitral and Swat plants may represent a new taxon close to *E. superba* but better specimens are necessary.

**11. E. acaulis** Rech. f. in Feddes Repert. 48 : 161 (1940). Ic. l.c. tab. 303 fig 2.
Syn.: *E. laciniata* Bge. var. *brevicaulis* Rgl. in Acta. Hort. Petrop. 9 : 552 (1886).
*E. speciosa* Rupr. var *brevicaulis* (Rgl.) Popov in Nouv. Mem. Soc. Nat. Mosc. 19 : 101 (1940).
TYPE: Afghanistan, Kabul, *Honigberger* (holo, W).
AFGHANISTAN. Parvan: E. side of Shibar pass, fls deep yellow, 2600 m, *Hedge & Wendelbo* W. 3307. Kabul: Siah Sang, 3100 m, *Hedge & Wendelbo* W. 4610; Kabul to Gardez, 3000 m, *Lamond* 2362. Paktia: Gardez to Khost, W. of Satekandau pass, 2700 m, *Lamond* 2440. Bamian: inter Bulola et jugum Shibar, 2800 m, *Rechinger* 16851. Ghazni: N.N.E. of Sang-i Masha, 3300 m, *Rechinger* 17653; 20 miles N.E. Ghazni, gold flowers, *Furse* 5660. Badakshan: S.E. of Faizabad below Anjuman pass, fls. deep yellow, *Furse* 6294.
W. PAKISTAN. Kurrum: Hariat, *Aitchison* 449, 486. Gilgit?: *Giles* 192.
RANGE: Afghanistan, W. Pakistan, Pamir-Alai, Tian Shan.

Although this plant was regarded by Popov as a subalpine and alpine variety of *E. speciosa* Rupr. I prefer in the meantime, to maintain it as a separate species. It is certainly very close to *E. speciosa* but from field observations and study of many herbarium sheets, it is characterised by the single short flowering stems (5–30 cm) and the deep yellow corollas. In leaf division, indumentum and the shape of the calyx lobes it is most variable.

Many of the difficulties in series *Speciosae* (no. 10–17 in this account) can only be satisfactorily resolved by field studies throughout the range of the series and while there is no doubt that *E. acaulis*, *E. edelbergii*, *E. bamianica*, *E. sanglechensis* and *E. calophyta* are all closely allied species possibly only segregates of a "*E. speciosa*" macrospecies, with the material available (i.e. without examining the great bulk of C Asiatic material) they are worth maintaining, provisionally, at species level.

**12. E. sanglechensis** Rech. f. in Biol. Skr. 8, 1 : 49 (1954). Ic. l.c. fig. 29.
TYPE: Afghanistan: Badakshan, Sanglech, *Koelz* 12640.
RANGE: N. E. Afghanistan.

This is a microspecies of the *E. speciosa* complex which further collecting may show to be untenable. From the single gathering it appears to be a recognisable species but very closely related to *E. acaulis*. It was collected at 3950 m, which is one of the highest recorded altitudes for the genus in Afghanistan.

**13. E. edelbergii** Rech. f. in Biol. Skr. 8, 1 : 46 (1954).
Syn.: *E. speciosa* Rupr. var. *bipinnatifida* (Rgl.) M. Pop. in Nouv. Mem. Soc. Nat. Mosc. 19 : 100 (1942).
TYPE: Afghanistan: Nuristan, Pashki, 2600 m, *Edelberg* 947 (holo—C, iso-W).
AFGHANISTAN. Parvan: Panjshir valley, west side of Anjuman pass, 3700 m, *Hedge & Wendelbo* W. 5497.
W. PAKISTAN. Chitral: Birmogh Lasht, 2600 m, *Bowes Lyon* 724; Chitral—

Mastuj track, Reshun, 1830 m, *Stainton* 2450; Tirich Mir, Shokor Shal, 3600 m, *Wendelbo*.
RANGE: N. E. Afghanistan, Chitral, Pamir-Alai.

Very closely related to *E. acaulis*, this species differs in its taller growth and usually more dissected leaves. Popov regarded it as a variety of *E. speciosa* which occurred throughout the range of the species.

**14. E. bamianica** Rech. f. in Biol. Skr. 8, 1 : 45 (1954). Ic. l.c. fig. 26.
TYPE: Afghanistan: Bamian: Bamian valley, 2450 m, *Codrington* s.n. (holo—BM).
AFGHANISTAN. Bamian: Band-i Amir, ad lacum Band-i Panir, 2800 m, *Rechinger* 18336; in valle Darreh Shikar, *Rechinger* 16717; Band-i Amir, fls. deep yellow, *Hedge & Wendelbo* W. 4755; Bamian, *Hedge & Wendelbo* W. 4645.
RANGE: C. Afghanistan.

The affinities of this species are with *E. speciosa* and its allies and not with species of series *Laciniatae* as Rechinger suggested in the original description. It appears to be a distinct species recognised by the oblong toothed or lobed leaves and the c 2 mm spines on the calyx teeth.

**15. E. calophyta** Hedge **sp. nov.**
Affinis *E. acauli* Rech. f. sed caulibus multis altioribus, calycibus corollisque maioribus, verticillastris remotis differt.
Radix ignota. Caules multi, simplices, c 40 cm alti, obtuse quadrangulares, erecti, pilis longis albis eglandulosis arachnoideo-lanati. Folia radicalia petiolis c 10 cm longis; lamina ambitu oblongo-elliptica, ad 15 × 4·5 cm, pinnatisecta segmentis oblongis irregulariter crenatis, utrinque pilis stellatis et simplicibus. Folia caulina 2–paria similia. Verticillastra 8–10–flora, 3–nata, remota, superiora approximata, laxe arachnoideo-lanata. Bracteae oblongo-lineares, c 10 mm longae, calyci adpressae, mucronatae. Calyx c 20 mm longus, tubulosus, pilis eglandulosis arachnoideo-lanatus, dentibus mucronulatis c 1 mm. Corolla c 45 mm longa, flava, tubo distincte exserta, intra exannulata sed glandulis brevibus; labium superius c 20 mm longum, strigoso-villosum; labium inferius galea vix brevius. Nuculae ignotae.
AFGHANISTAN: Badakshan: east side of Anjuman pass, 3800–4000 m, *Hedge & Wendelbo* W. 5456 (holo–E, iso–BG.).

The new species is allied to *E. acaulis* but differs in its height, the clump forming habit and the larger floral parts. In the field it looked very different from *E. acaulis* and other than the habit of the plant the most obvious distinguishing feature was the colour of the corollas which turned brownish red after anthesis. It is, however, very closely allied to *E. acaulis* and *E. speciosa* (cf. remarks under *E. acaulis*) and further gathering may show that *E. calophyta* is a high alpine variant.

**16. E. ariana** Hedge **sp. nov.**—Plate 7.
Affinis *E. speciosae* Rupr. et *E. edelbergii* Rech. f. sed foliis bipinnatisectis segmentis angustioribus, petiolis brevioribus, verticillastris remotis differt.


PLATE 6. Type specimen of *Dracocephalum wendelboi* Hedge. Inset: dissections of calyx and corolla.


PLATE 7. Type specimen of *Eremostachys ariana* Hedge.

Radix ignota. Collum lanatum. Caulis erectus, simplex, c 35 cm altus, pilis eglandulosis arachnoideo-lanatus. Folia radicalia petiolis 3–4 cm longis; lamina ambitu lineari-oblonga usque ad 12 × 3 cm, bipinnatisecta, segmentis angustis irregulariter dentata, utrinque pilis brevibus simplicibus eglandulosis et irregulariter stellatis. Folia caulina 1–paria, similia sed minora. Verticillastra 2–6–flora, 3–4–nata, remota, superiores paulim approximata albolanata. Bracteae oblongo-lineares, c 14 mm, calyci adpressae, tenuiter acuminatae vix mucronatae. Calyx tubulosus c 20 mm longus, inferne lanuginosus superne pubescens, sine glandulis vel pilis stellatis, dentibus spinulosis 2 mm longis. Corolla c 40 mm longa, lutea, tubo exserta intra exannulata; labium superius c 15 mm longum, villosum; labium inferius galea paulo brevius. Stamina subaequalia. Nuculae ignotae.

AFGHANISTAN. Parvan: Panjshir valley, between Chimar and Shalzur, dry slopes, 3000 m, *Hedge & Wendelbo* W. 5395 (holo—E, iso—BG).

*E. ariana* is similar in appearance to the otherwise unrelated *E. iliensis* Rgl. of series *Gymnocalyces* M. Pop. Its closest allies are *E. speciosa & E. edelbergii* but it can be immediately distinguished by the narrow erect bipinnate leaves with short petioles, the small narrow segments and the clearly separated verticils.

**17. E. rastagalensis** Hedge **sp. nov.**

Affinis *E. bamianicae* Rech. fil. sed indumento non denso, calycibus corollisque maioribus, bracteis planis longioribus recedit.

Radix ignota. Caulis simplex, c 35 mm altus, quadrangularis, sulcatus, pilis paucis eglandulosis brevibus. Folia basalia erecta; petiolus 12–14 cm longus; lamina ambitu lanceolata, integra vel irregulariter pinnata, utrinque pilis brevibus simplicibus et stellatis. Folia caulina 1–paria, petiolata. Verticillastra 6–10 flora, 3–4–nata, inferiora valde remota, superiora approximata. Bracteae lineari-oblongae, rigidae, pungentes, calyces aequantes, tomentosae. Calyx tubulosus, 27 mm longus coriaceus, lanato-pubescens, dentibus in mucrones pungentes c 1 mm longos excurrentes. Corolla c 40 mm longa, lutea, tubo vix exserta, intra exannulata; labium superius c 16 mm villosum; labium inferius vix brevius ad 22 mm latum, late trilobatum. Stamina subaequalia. Nuculae c 7 mm longae.

AFGHANISTAN. Parvan: Panjshir valley, Darrah Rastagal, dry slopes, 3200 m, *Hedge & Wendelbo* W. 5219 (holo—E, iso—BG).

The new species is clearly different from *E. bamianica* and, in addition to the differences given in the diagnosis, can be recognised by the bracts fused at their bases and the erect not spreading teeth of the fruiting calyx. It is apparently not clearly related to any other species in series *Speciosae* but more gatherings are needed.

**18. E. labiosa** Bge., Labiat. Pers. 79 (1873) in clavi.

Syn.: *E. stocksii* Boiss., Diagn. 3, 4 : 48 (1859).
*E. dielsii* Bornm. in Bot. Jahrb. 66 : 240 (1934).

TYPE: Iran (LE—n.v.)

IRAN. Khorassan: Meshed, 1000 m, *Schmid* 6186; Kopet Dagh, inter Kučan et Jugum Alamli, 1600 m, *Rechinger* 4801.

AFGHANISTAN. Maymana: 20 km W of Maymana, 500 m, *Hedge & Wendelbo* W. 3629; between Belčeragh and Darrah Abdullah, 1100 m, *Hedge & Wendelbo* W. 3694. Herat: Obeh, 1700 m, *Koeie* 3667; Badghis, *Aitchison* 355. Mazar-i-Sharif: inter Chashma-e Shafal et Aq Kupruk, *Rechinger* 16258. Qataghan: near Dushi, *Hedge & Wendelbo* W. 3489, *Furse* 5979. Badakshan: near Faizabad, *Furse* 6180. Kabul: Kabul, *Hay* 120; 30 miles S.S.W. Kabul, 2400 m, *Furse* 5698. Ghazni: Robat, *Lindberg* 262.
W. PAKISTAN: *Lace* (without number or locality).
RANGE: N.W. Iran, Kopet Dagh, Kara Kum, Syr Darya, Pamir-Alai, Tian Shan, Afghanistan, W. Pakistan.

This is a common plant throughout its area. Although variable in leaf shape and indumentum, *E. labiosa* can generally be recognised by the lower lip of the corolla clearly longer than the hood and the numerous tubers on the roots; the flower colour is usually white with a yellow lip. Popov, citing the variants of *E. labiosa*, states that this colour form is common in the southern part of the species range. *E. labiosa* grows in a variety of habitats: grassy, soil and rocky slopes, cornfields and graveyards.

Although the holotype of *E. dielsii* has not been seen, a fragmentary duplicate specimen at Kew shows bracts, calyces and a calyx indumentum within the variation range of *E. labiosa*.

**19. E. vicaryi** [Benth. ex] Hook. f., Fl. British India 4 : 695 (1885).
TYPES: W. Pakistan: Peshawar, *Vicary* (K); Jhelum, Salt range, *Aitchison* 36 ; 386 (K); Baluchistan, *Lace*.
W. PAKISTAN. Quetta: Duki to Gumbaz, 900 m, *Lamond* 1338; near Harnai, *Lace;* Kingri to Mekhtar, Sulaiman range, 1500 m, *Lamond* 1406. Dera Ismail Khan: Manikjawa to Dhana Sar, *Lamond* 1488. Bannu: Bannu to Kohat, 650 m, *Lamond* 1515. Dera Ghazi Khan: Fort Munro, 1850 m, *Lamond* 1404. Hazara: between Havelian and Haripur, *Burtt* 517. Kalat: Khuzdar to Wad, c 30 km from Khuzdar, 1150 m, *Lamond* 204.
RANGE: W. Pakistan.

This species has several characteristic features: the calyx indumentum consists of tightly adpressed stellate hairs (without any simple hairs), the calyx teeth are c 0·5 mm and usually less, the flowers are white often drying pale purplish-brown and lastly, an unusual feature in the genus, the corolla tube is clearly pouched. In other characters, such as height, leaf size and shape, leaf and stem indumentum, there is considerable variation. *E. vicaryi* grows in such different habitats as cliff ledges, rocky slopes, bare plains and roadside. In our area, it and *E. thyrsiflora* are the most southerly species of the genus.

Although the formal citation of this species has always been given as *E. vicaryi* Benth. in Aitchison, Catal. Pl. Punjab et Scinde 119 (1869), only the name occurs at this reference and the first valid publication and description of *E. vicaryi* was by Hooker in the Flora of British India.

**20. E. regeliana** Aitch. & Hemsl. in Trans. Linn. Soc. 2 ser, 3 (1) : 99 (1888).
TYPE: Afghanistan: Herat: Hari-rud valley, *Aitchison* 290 (K, C, LE).
IRAN. Khorassan: inter Djenaran et Kucan, 1200 m, *Rechinger* 4693.
IRAN/AFGHANISTAN. Between Meshed and Herat, 900 m, *Furse* 5316.

AFGHANISTAN. Herat: Quala Nau—Sauzah, 1400 m, *Koeie* 3926; Chisht, *Koeie* 3708. Maymana; between Andkhui and Sheberghan, semi-desert, 450 m, *Hedge & Wendelbo* W. 3572.
RANGE: Mountain Turkmenia, Pamir-Alai, N. E. Iran, N. W. Afghanistan.

Very variable in indumentum and leaf shape, *E. regeliana* can be recognised by the single-flowered cymes, the subulate, spiny-tipped bracts up to $\frac{3}{4}$ the length of the calyx, the included corolla tube and the white (rarely yellow) flowers. It often grows in sandy soil.

**21. E. badakshanica** Hedge **sp. nov.**

Affinis *E. tianshanicae* M. Pop. et *E. phlomoidi* Bge. sed foliis maioribus arachnoideis, non hirsutis, verticillis dense gossypino-lanatis vix distinctis corollis albo-roseis distincte differt.

Radix napiformis. Collum dense lanato-tomentosum. Caulis erectus robustus, pumilus, c 20 cm altus, simplex, pilis longis eglandulosis simplicibus patentibus (4–5 mm longis) lanatus. Folio radicalia petiolis laminae aequantis, basi lanatissimis; lamina ovata basi leviter cordata, c 12 × 8 cm, margine irregulariter crenata, supra pilis longis crispulis, subtus ad nervos pilis subrigidis simplicibus, inter nervos pilis brevibus adpressis stellatis. Folia caulina 1–paria, breviter petiolata. Verticillastra 6–flora, c 5–nata, densa, spicastrum formantia. Bracteae subulatae herbaceae non rigidae, c 5 mm longae. Calyx c 14 mm longus, tubuloso campanulatus, pilis eglandulosis longissimis simplicibus dense lanatus, dentibus brevibus mucronulatis 1·5 mm, utrinque truncato-bialatis. Corolla c 25 mm longa, albo-rosea, tubo inclusa intra annulata; labium superius c 12 mm longum, strigoso villosum; labium inferius trilobum lobo mediano lateralibus vix majore. Stamina subaequalia. Nuculae ignotae.
AFGHANISTAN. Badakshan: Faizabad, 1500–2100 m, fls. pinky-white, *Furse* 6264 (holo—K)

*E. badakshanica* clearly differs from all other Afghanistan species in its dwarf habit, the simple leaves, the dense lanate, compacted inflorescence and the pinky-white flowers. Its relatives are apparently with such Pamir-Alai species as *E. phlomoides* and *E. tianshanica* in series *Ovalifoliae* M. Pop. Although no specimens of these species have been available for comparison Popov's comprehensive descriptions leave little doubt that the new species is a distinct one and probably allied to *E. phlomoides*. It clearly differs in the larger leaves, the very dense inflorescence and the flower colour. The base of the filaments and the adjacent parts of the corolla tube are quite densely covered with glandular tubercles; although this is not mentioned in the descriptions of *E. phlomoides* or *E. tianshanica*, it is a character of doubtful diagnostic value.

## DISTRIBUTION MAPS

The following 'spot' maps give the known distribution of all *Eremostachys* species in the area under review.

**GONTSCHAROVIA** Boriss in Not. Syst. Leningrad 15 : 321 (1953).

This genus will be discussed in a future paper (in Notes Roy. Bot. Gard. Edinb.).

**HYMENOCRATER** Fisch. & Mey., Ind. Sem. Hort. Petrop. 2 : 39 (1835).

**H. sessilifolius** Benth. in D.C., Prodr. 12 : 406 (1848).
TYPE: Afghanistan. in regno cabulico, *Griffith* 485 (K).
AFGHANISTAN. Kabul: Kabul to Gardez, c 100 km from Kabul, 2700 m, *Lamond* 2170; Sarai Sarkharit between the Unai and Hajigak passes, 2950 m, *Hedge & Wendelbo* W. 4576; Deh Kundi, 2700 m, *Edelberg* 1910 (n.v.). Bamian: Band-e Amir, fls. violet, 2900 m, *Hedge & Wendelbo* W. 4768; W of Shibar pass, 3000 m, *Hedge & Wendelbo* W. 4214.
W. PAKISTAN. Quetta: Quetta to Chaman, Khojak pass, *Lamond* 1073; Urak, *Lace* 3753.
RANGE: Afghanistan, W. Pakistan.

Although there are strong reasons for regarding all the Afghanistan and W. Pakistan plants as one species it is very difficult to decide the limits of *H. sessilifolius* outwith this area. *H. elegans* Bge. and *H. argutidens* Rech. f., both described from the Khorassan region, are certainly very close to *H. sessilifolius* and some Afghan plants have been determined, wrongly in my opinion, as such. They are only doubtfully specifically different. The differences between *H. sessilifolius* and *H. elegans* mentioned by Boissier certainly do not hold—e.g. the fruiting calyces in *H. sessilifolius* are often purple-violet coloured and the leaves of *H. elegans* are often sessile.

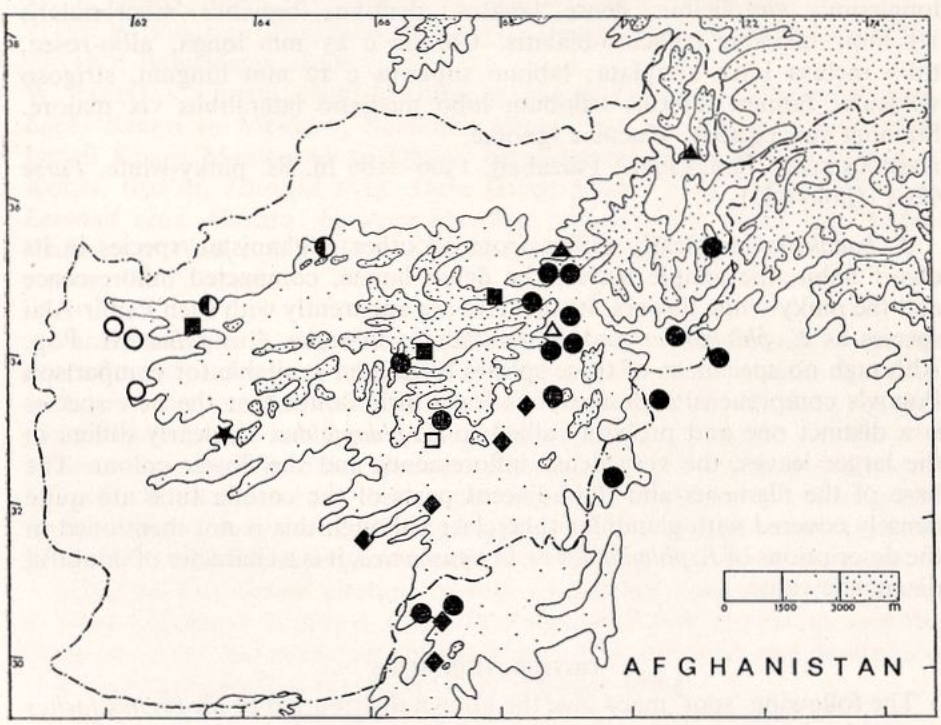


FIG. 2.
Distribution in Afghanistan and W. Pakistan of : 1, △, *E. vulnerans* Rech. f. & Koeie: 2, ▲, *E. hissarica* Rgl.: 3, ★, *E. ghorana* Rech. f.: 4, ○, *E. persimilis* Aitch. & Hemsl.: 5, ◆, *E. thyrsiflora* Benth.: 6, □, *E. lindbergii* Rech. f.: 7, ■, *E. laciniata* (L.) Bge.: 8, ●, *E. loasifolia* Benth.: 9, ◐, *E. gymnoclada* Rech. f. & Koeie.

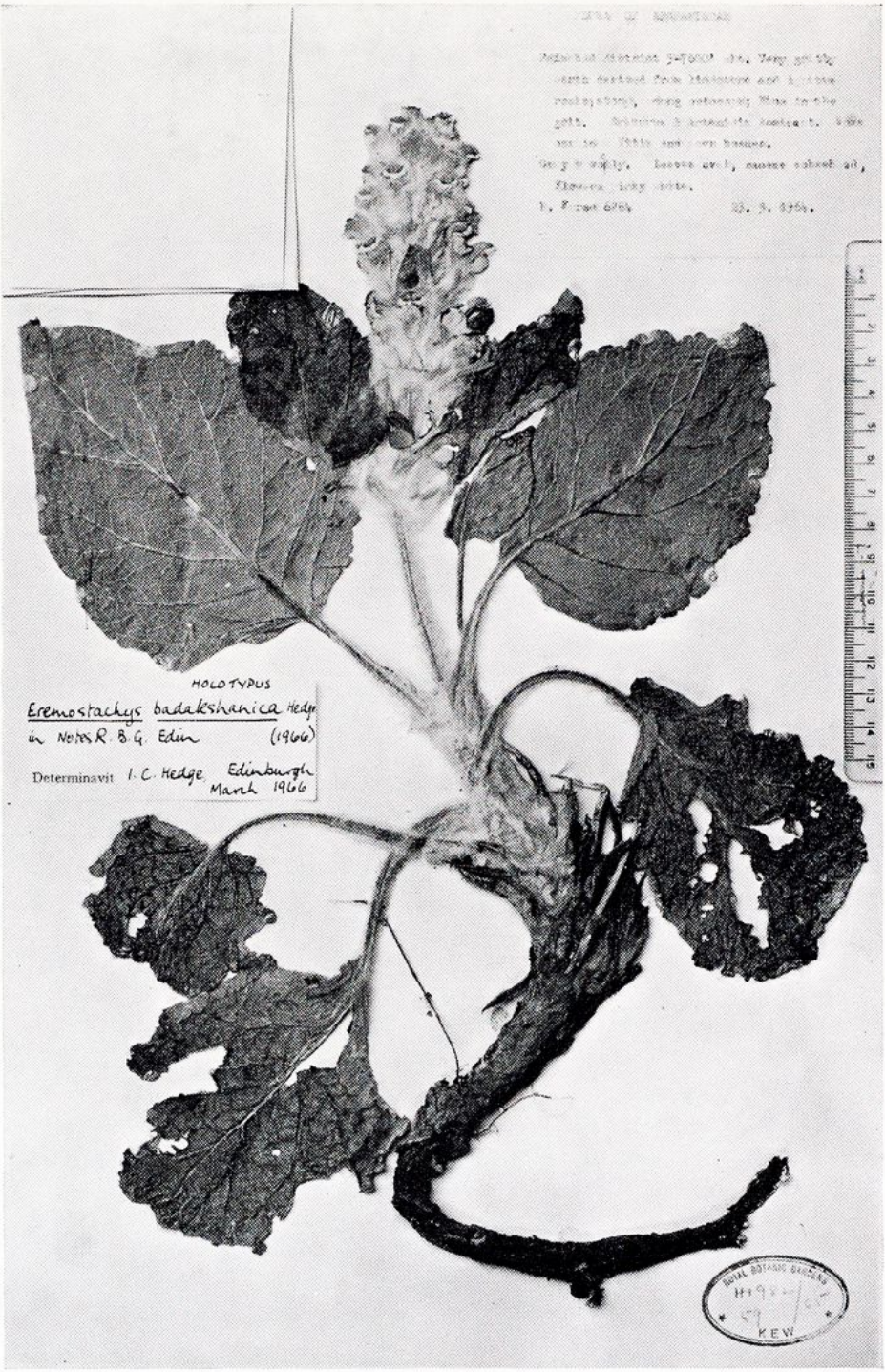


PLATE 8. Type specimen of *Eremostachys badakshanica* Hedge.

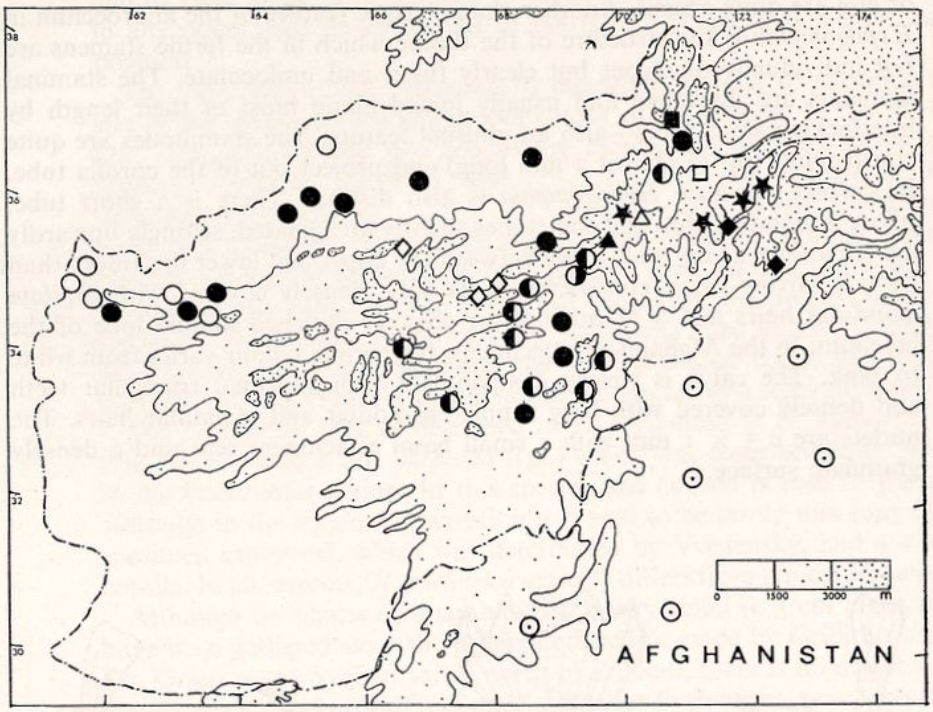


**FIG. 3.**

Distribution in Afghanistan and W. Pakistan of: 10, ◆, *E. superba* Benth.: 11, E. ◐, acaulis Rech. f.: 12, □, *E. sanglechensis* Rech. f.: 13, ★, *E. edelbergii* Rech. f.: 14, ◇, *E. bamianica* Rech. f.: 15, △, *E. calophyta* Hedge: 16, ▲, *E. ariana* Hedge: 17, ◑, *E. rastagalensis* Hedge: 18, ●, *E. labiosa* Bge.: 19, ⊙, *E. vicaryi* Hook. f.: 20, ○, *E. regeliana* Aitch. & Hemsl.: 21, ■, *E. badakshanica* Hedge.

**HYPOGOMPHIA** Bge. in Bull. Acad. Sc. St. Petersb. ser 7, 18 : 30 (1873).

**H. turkestana** Bge., l.c. Ic.: fig. 4

Syn.: *H. nana* Hook. in Benth. & Hook., Gen. Plant 2 : 1201 (1876)!
*H. turkestana* var. *elatior* Rgl. in Acta Hort. Petrop. 9 : 610 (1886)!
*H. turkestana* var. *nana* (Hook.) Rgl., l.c.
*H. elatior* (Rgl.) Vass. in Komarov, Fl. URSS 20 : 492 (1954).

TYPE: Uzbek SSR: in montosis circa Tashkent, *Krause* (P—n.v.)

AFGHANISTAN. Badakshan: Faizabad district, 1050 m, *Furse* 6228. Qataghan: N. of Baglan, *Hedge & Wendelbo* W. 4430; near Doshi 1200 m, *Hedge & Wendelbo* W. 3493; 10 miles W. Doshi, 1050 m, *Furse* 5915. Bamian: Syghan valley, *Grant*.

RANGE: Syr-Darya, N. Afghanistan, Tian Shan, Pamir-Alai.

One of the most distinct Labiate genera in S.W. Asia, *Hypogomphia* is the only 2-staminate genus in Asia (and possibly throughout the World) in which the posterior stamens are fertile and the anterior are reduced to staminodes. In, for instance, *Salvia*, *Ziziphora*, *Perowskia*, *Dorystoechas* and *Rosmarinus*, the posterior stamens are sterile and reduced to small staminodes

or else are quite absent. Another characteristic feature of the androecium in *Hypogomphia* is the structure of the thecae which in the fertile stamens are not individually divergent but clearly fused and uniloculate. The staminal filaments are thickened and usually joined along most of their length by interlocking small hairs—also an unusual feature. The staminodes are quite conspicuous (up to almost 2 mm long) and project out of the corolla tube. In corolla structure *Hypogomphia* is also distinct. There is a short tube, pilose-annulate within and sometimes slightly invaginated, strongly upwardly curved above, a very wide angle between the upper and lower lips (more than 90°), a narrow galea, constricted at its base, densely covered with capitate glandular hairs and a broad, not, or scarcely pouched middle lobe of the labellum. In the Afghanistan specimens, the corolla colour varies from white to pink. The calyx is clearly campanulate with subequal triangular teeth and densely covered with long simple eglandular and glandular hairs. The nutlets are c 3 × 1 mm with a small basal attachment scar and a densely granulate surface.

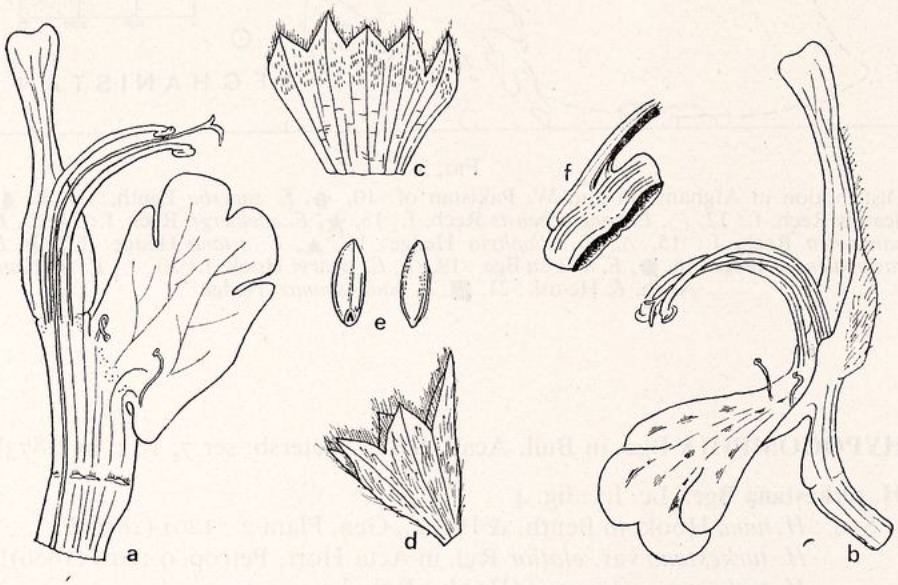


FIG. 4. *Hypogomphia turkestana* Bge.
a. corolla dissected; b. corolla; c. calyx dissected; d. calyx; e. nutlets.
All × 5 f. anther × 20.

On the basis of the characters listed, *Hypogomphia* has no apparent allies. In general appearance and to some extent in calyx structure, *H. turkestana* resembles some annual species of *Stachys* such as *S. spinulosa* Sibth. & Sm. and also *Thuspeinantha brahuica* (Boiss.) Briq. In all other characters, however, there is no similarity at all. By the Briquet classification of Labiate genera in the Pflanzenfamilien, *Hypogomphia* is, on the basis of the posterior stamens longer than the anterior, a member of the *Nepeteae* beside *Nepeta*

and its close allies, *Dracocephalum*, *Lallemantia* and *Hymenocrater*. Here, as in any other tribe or subsection of the family, it occupies a most isolated position.

The variability of *H. turkestana* is essentially limited to variation in the size of the plant and the length and colour of the corolla. In the Fl. URSS (20 : 492, 1954) where two species are recognised, they are keyed out as follows: "corolla (5) 8–10 mm.....*H. turkestana* Bge."; "corolla (12) 15–20 mm.....*H. elatior* (Rgl.) Vass." In the material examined, a comparable range of size has been observed (though not as high as 20 mm) although the bulk of the specimens have the larger corollas. In the smaller corolla forms, in the specimens examined, the anthers were sterile e.g. in *H. nana* and a specimen of *H. turkestana* cited in the Fl. URSS. On the evidence available, therefore, the small-flowered plants are frequently male-sterile sex forms and should not be recognised as a separate species.

The only other species described in *Hypogomphia* is *H. bucharica* Vved. (syn. *H. turkestana* var. *purpurea* Rgl.) which was described from Mirshade in the Pamir-Alai region. In this species, the corolla is rose or purple and although in the original description it is said to be 20–27 mm long the only specimen examined, which was determined by Vvedensky, had a c 17 mm corolla. In all respects, *H. bucharica* scarcely differs from typical *H. turkestana*.

Although no plants comparable to the very small (c 3 cm high) *H. nana* have been gathered since the original collection made by Griffith's colleague Dr. Grant in the Syghan valley north of Bamian, there is no doubt that it is merely an extremely dwarf and male-sterile sex form of the more typical plant.

**HYSSOPUS** Linn. Gen. Plant. ed. 5 : 248 (1754)

**H. officinalis** L., Sp. Plant. 569 (1753) s.l.
TYPE: without provenance (LINN—photo!).

There are two recognisable taxa in the material examined from our area. However, because of the paucity of specimens and consequent lack of knowledge of the local variation, they are not given formal status.

(A.) Leaves oblong or lanceolate-oblong; calyx dark violet.
AFGHANISTAN. Parvan/Qataghan: Salang pass, 2300 m, *Stainton* 5068.

This agrees with *H. seravschanicus* (Dub.) Pazij (Ind. Sem. Hort. Bot. Univ. As. Med. 4, 1954).

(B.) Leaves linear; calyx green.
W. PAKISTAN. Chitral: Drosh Gol, S. of Drosh, 1820 m, *Stainton* 3181. Quetta: Ziarat, 2430 m, *Lace* 4012.

A critical review is needed of the 9 species of *Hyssopus* recognised in the Flora URSS (21 : 448–461, 1954). Some of them appear very similar to the numerous variants of the European *H. officinalis*.

**LAGOCHILUS** [Bge. ex.] Benth., Lab. Gen. et Sp. 640 (1834).

1. Leaves simple, entire or subentire, c 1 cm long; fruiting calyces c 12 mm long . . . . . 1. *L. cuneatus* Benth.
\+ Leaves pinnately or palmately divided, c 2–3 cm long; fruiting calyces 20–28 mm long . . . . . 2. *L. cabulicus* Benth.

**1. L. cuneatus** Benth. in DC., Prodr. 12 : 515 (1848).
TYPE: W. Pakistan, Peshawar, Attock, *Griffith*. (K)
W. PAKISTAN. Peshawar: Peshawar to Torkham, Khyber pass, pendant on cliff, 650–900 m, *Lamond* 1596; Landi-Kotal, *Nath* 15435.
RANGE: Peshawar region.

This very distinct and seldom collected species with a very limited distribution is the most southern of the genus, which has its greatest number of species in the Tian Shan—Pamir-Alai region.

**2. L. cabulicus** Benth., in DC., Prodr. 12 : 515 (1848).
Syn.: *L. nuristanicus* Rech. f. & Edelb. in Biol. Skr. 8, 1 : 58 (1954).
Ic.: l.c. fig. 35.
TYPE: Afghanistan: Kabul: Koord Cabul, Huft Kotal (near Lataband), *Griffith*. (K).
AFGHANISTAN. Badakshan: Minjan pass, Iskan, 2700 m, *Edelberg* 2199 (type of *L. nuristanicus*); Wakhan, Quazi-Deh, 3150 m, *Roemer* 120. Parvan: Panjshir valley, Shanez, frequent, 2550 m, *Hedge & Wendelbo* W. 5339.
W. PAKISTAN. Chitral: Gohkir, 2750 m, *Bowes Lyon* 892; Ojhor Gol, S. of Tirich Mir, 2450 m, *Stainton* 2741; *Giles*.
RANGE: S. Transcaucasus, Kopet Dagh, E. Afghanistan, Chitral, Kashmir.

The relative lengths of the calyx tube and teeth vary from 5 : 11 mm in the type to 11 : 11 mm in the Shanez specimen; the calyx teeth vary from rounded to acute. *L. cabulicus* usually grows on dry slopes forming dense tufts up to 1 m across.

**LALLEMANTIA** Fisch. & Mey., Ind. Sem. Hort. Petrop. 6 : 52 (1839).

1. Corolla 9–11 mm long, dark violet blue, tube exserted; awns of bracts c. 4–7 mm long . . . . . 1. *L. baldshuanica* Gontsch.
\+ Corolla 7–8 mm long, light blue, blue-violet, mauve or white; awns of bracts c 1–4 (–5) mm long . . 2. *L. royleana* (Benth.) Benth.

**1. L. baldshuanica** Gontsch., Izv. Tadzhik. Bazy Bot. 2 : 184 (1936).
Described from Pamir-Alai. (Type, LE—n.v.).
AFGHANISTAN. Qataghan: 10 miles N. of Dushi, annual vegetation, 750 m, *Furse* 5962, 5978. Badakshan: Barak district, Warduj valley, 1800 m, *Furse* 6410, 6266.
RANGE: N.E. Afghanistan, Pamir-Alai.

This species had not been recorded from Afghanistan before. In addition to the differences given in the key, it differs from its closest ally, *L. royleana*, in being taller (up to 45 cm) and sturdier.

**2. L. royleana** (Benth.) Benth. in DC., Prodr. 12 : 404 (1848).
Syn.: *Dracocephalum royleanum* Benth. in Wall., Pl. Asiat. Rar. 1 : 65 (1830).
TYPE: "Hab. in Indiae Orientalis provincia Kunawar, *Royle*" (K).

AFGHANISTAN. Herat: Herat to Kushk, 1100 m, *Furse* 5395. Kandahar to Ghazni, 1350 m, *Furse* 5607. Kabul: Sher Darwasa, 1800 m, *Hedge & Wendelbo* W. 2898; Kabul to Lataband, 1900 m, *Lamond* 1950. Bamian: Doab, 1440 m, *Hedge & Wendelbo* W. 3373. Parvan: Panjshir valley, Shanez, 2500 m, *Hedge & Wendelbo* W. 5522.
W. PAKISTAN. Quetta: Bolan pass, 1500 m, *Lamond* 888; Fort Sandeman to Wana, 1500 m, *Lamond* 1443. Kalat: Quetta to Sibi, 1400 m, *Lamond* 728. Peshawar: Khyber pass, *Halcro Johnston* 48. Chitral: Chitral village, *Stainton* 2206; Lutko, 2400 m, *Bowes Lyon* 799; Bundai, *Harriss* 16539.
RANGE: Lower Volga, Caucasus, Iran, Afghanistan, W. Pakistan, throughout C. Asia, Punjab.

A widespread species without much morphological variation but with considerable variation in flower colour.