

MATERIALS FOR A FLORA OF TURKEY: VI

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The new species described below include three from the Munzur Dağları south of Erzincan, a magnificent limestone range that will certainly yield many more novelties when our collections are fully determined and the range has been more thoroughly explored. It is one of the most promising areas for further collecting in Turkey.

Three of the new species of *Campanula* were provisionally worked out by Mr. P. J. B. Woods and Miss S. S. Hooper while attending a vacation course in the practice of taxonomy at Edinburgh in 1958. I am particularly indebted to the directors of the Kew, Geneva and Vienna herbaria for the loan of type specimens, to Dr. A. Huber-Morath for material of the *Convolvulus cataonicus* group and to Miss R. M. Smith for illustrating the latter.

LEGUMINOSAE

Lathyrus karsianus P. H. Davis, **sp. nov.** (Sect. *Orobus* (L.) Taubert Ser. *Albi* Fritsch). Pl. 1.

Affinis *L. armeno* (Boiss. & Huet) Sirj. et *L. cyaneo* (Stev.) C. Koch sed ab amobus foliis pinnatis 2–4-jugis differt; insuper a priore pedunculis longioribus, stipulis longioribus et corolla majore recedit; ab altera caudiculis subterraneis brevissimis, racemis magis numerosis, dentibus calycis brevioribus distinguitur.

Herba perennis, rhizomate caudiculis subterraneis brevissimis lignosis. *Caules* erecti, simplices, 50–60 cm. alti, quadrangulares, sulcati, glabri, superne in pedunculos longos 4–6 in axillis foliorum superiorum ramosi. *Folia* infima bijuga, subdigitata; mediana pinnata, 3–4-juga, rachide (petiolo incluso) 10–17 mm. longa, aristato, foliolis rigidis linearibus acutissimis mucronatis glaucescentibus 5–11-nerviis (nervis 5 subtus valde prominentibus, caeteris $\pm$ obscuris), stipulis semihastatis lanceolato-subulatis 20–28 mm. longis, quam auriculis subulatis 3–4-plo longioribus; summa breviora foliolis angustissimis. *Pedunculi* 4–9 cm. longi, foliis 2(–3)-plo longiores, glabri. *Racemum* breve, 5–7-florum, 3–4 cm. longum et latum (corollis inclusis), pedicellis inter se 2–5 mm. distantibus 3–4(–5) mm. longis. *Bractee* amplae, pallidae, 1–1.5 mm. longae, irregulariter incisae. *Calyx* 6–7 mm. longus, glaber, viridis, pedicellis fere duplo longior; tubus brevis, 4–4.5 mm. longus, fauce obliquo 4–4.5 mm. latus; dentes breves ciliati tubo 2–3-plo breviores, postero-lateralibus late triangularibus 1.5 mm. longis, antero-lateralibus paulo angustioribus 2–2.5 mm. longis, anteriore lanceolato 2–2.5 mm. longo. *Vexillum* lilacino-caeruleum; lamina suborbicularis, basi truncata, c. 12 mm. longa et 15 mm. lata, apice profunde emarginata, erecta; unguis e calyce exserta, 10 mm. longus. *Alae* pallide lilacinae, 20 mm. longae, carinam superantes, lamina late oblonga 10 mm. $\times$ 7 mm. ungui aequilonga. *Carina* pallida; lamina vix rostrata, acuta, 9 mm. longa, sursum arcuata ungue sublongior. *Antherae* 1 mm. longae. *Ovarium* lineare, glabrum, c. 16–

ovulatum. *Stylus* 5 mm. longus, sursum flexus, interne dense barbatulus, superne lateraliter angustissime membranaceo-marginatus vix dilatatus 1 mm. latus, stigmatibus 0.8 mm. lato. *Legumina* linearia, glabra, 3.5–4.5 cm. longa, 4 mm. lata, apice breviter rostrata recurva. *Semina* late oblonga, 3.5 × 2.5 mm., brunnea, crasse nigro-maculata. Fl. Jun.–Jul.

Prov. Kars: Yagmurlu Dağ between Sarikamiş and Karaugan, 2300 m., banks at edge of *Pinus sylvestris* forest and in meadows, perennial, erect, flowers lavender-blue, wings paler, 7 Jul. 1957, *Davis & Hedge* (D. 30 762: holo. E, iso. K); *ibid*, 20 Aug. 1957, *Davis* 32601 (fruct.); Selim-Sarikamiş, *Pinus sylvestris* Gehölz auf Eruptivboden 5 km. NO Sarikamiş, 2,000 m., 12 Jul., 1959, *Huber-Morath* 16201; prope pagum Sarikamiş, 26 Jun. 1910, *T. Roop* (LE); in jugo Saghanluk in via inter Sarikamiş et Bardus, 15 Jun. 1908, *T. Roop* (LE); gorge near post station Promeshutocznaya, in meadow along a small river, *Litwinow* (LE); forests near Saganluk, at Surb-Chacz, 25 Jul. 1886, *Massalsky* (LE).

This tall, very attractive species is probably most closely allied to the east Anatolian *L. armenus* (Boiss. & Huet) Širj. and to *L. cyaneus* (Stev.) C. Koch from Transcaucasia and the adjacent Turkish province of Kars. It differs from both in having manifestly pinnate (instead of subdigitate) leaves and from each in the several characters cited in the diagnosis. In its pinnate leaves it resembles *L. nivalis* Hand.-Mazz. from Turkish Kurdistan, the Anti-Taurus and Munzur Dağ, but this species differs strikingly from *L. karsianus* in its shorter stems that are much branched from the base, fewer-flowered racemes, and particularly in its exceptionally short, broad legumes (28–33 mm. × 5–6 mm.) and larger seeds (5 × 4 mm.).

The taxonomic position and content of Sect. *Orobis* requires reassessment in regard to its relationship with the rest of *Lathyrus* and even with some species of *Vicia* (cf. *V. crocea* (Desf.) Fritsch). It has its centre of speciation in Anatolia where about 19 species occur, 9 of them endemic to Turkey. A few confused species in Series *Albi* Fritsch (revised by G. Širjaev in Bull. Assoc. Russe Rech. Scient. Prague, iii (viii) n. 18 (1936) & v (x) n. 33: 1937) are clarified below.

Lathyrus spathulatus Čel. in Oest. Bot. Zeit. 38, 6 (1888).

Syn.: *Orobis sessilifolius* Sibth. & Sm. var. *stenophyllus* Bornm. in Beih. Bot. Centralbl. 19, (2), 250 (1905). *Lectotype*: Libanon, Gaillardot!

Lathyrus elongatus (Bornm.) Širj. var. *stenophyllus* (Bornm.) Širj. in Bull. Assoc. Russe Rech. Sc. Prague, iii (viii) Sect. Sc. Nat. Math. no. 18, p. 225 (1936).

L. celakovskiyi Širj. in Bull. Soc. Bot. Bulg. 6, 61 (1934), excl. pl. cilicicae.

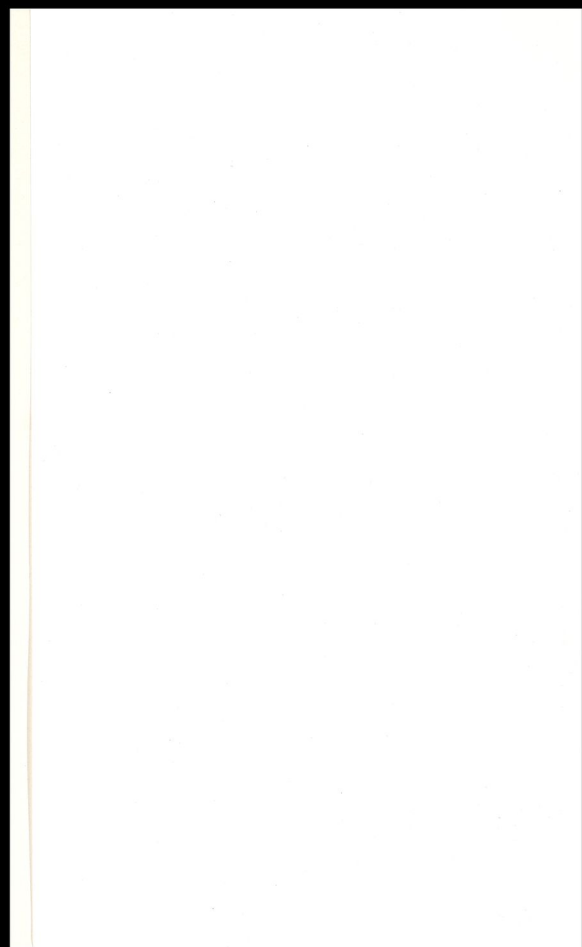
Type. Turkey: in monte Argaeo Cappadociae, rariter in devexis orienti soli obversis, 1540 m., 20 mai 1859, *Kotschy* 207 (? K!).

Lathyrus elongatus (Bornm.) Širj. in Bull. Assoc. Russe Rech. Sc. Prague, iii (viii) Sect. Sc. Nat. Math. no. 18, p. 224 (1936), var. *typica* Širj., *ibid*. p. 225.

Syn.: *Orobis sessilifolius* Sibth. & Sm. subsp. *elongatus* Bornm. in Beih. Bot. Centralbl., 19, (2), 250 (1905).



PLATE 1. *Lathyrus karsianus* P. H. Davis (holotype).



Lathyrus celakovskiyi Širj. in Bull. Soc. Bot. Bulg. 6, 61 (1934),
quoad plantae ciliciae tantum.

Type. Turkey (Cilicia): in Gebirge bei Mersina, *Balansa* (B?, J).

In his revision of Series *Albi* Fritsch, Širjaev wrongly applied the name *Lathyrus spathulatus* Čel. to *L. brachypterus* Čel., a species with large yellow flowers; *L. haussknechtii* Širj. (with subdigitate instead of pinnate leaves) may not be specifically distinct from the latter species. A comparison between the original description and "type specimens" of *L. spathulatus* in several herbaria shows that there must have been a muddle in the distribution of Kotschy's specimens (no. 207 & 15) which led Širjaev to the wrong application of the name. Kotschy 207, as it is represented at Kew, is evidently the species that Čelakovsky described as *L. spathulatus*, although there is some doubt if the locality given on the label (Argaeus=Erciyas Dağ) is correct; that is more likely to apply to *L. brachypterus* Čel. (type: in monte Lokmanni "Dzebbel-Nur" (Amanus?) Ciliciae, Kotschy 15, K! BM!) which has been collected again in the vicinity of Erciyas Dağ (Balls 1403), whereas *L. spathulatus* is apparently confined to Mediterranean territory. It seems likely, in fact, that Kotschy's labels became attached to the wrong plants.

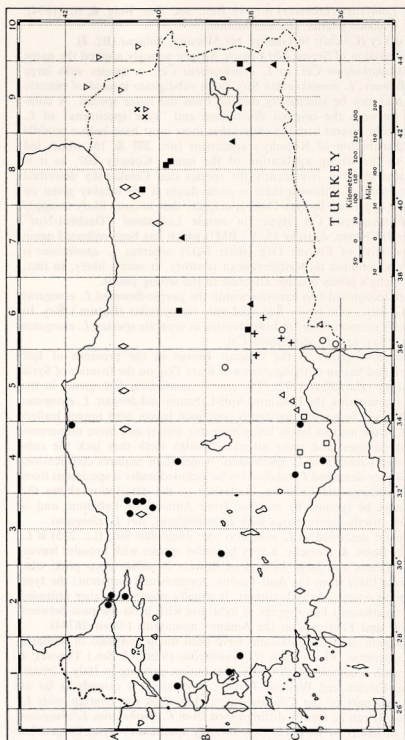
Širjaev recognised two varieties within the purple-flowered *L. elongatus* (Bornm.) Širj.: var. *typica* Širj. and var. *stenophyllus* (Bornm.) Širj. In the writer's opinion these are better treated as separate species, *L. elongatus* (Bornm.) Širj. and *L. spathulatus* Čel.

L. elongatus grows in the Cilician Taurus in the province of İçel (Mersin), and has an outlying station in Kurd Dağ on the frontier of Syria and Turkey (Haradjian 1173). The true *L. spathulatus* Čel. grows in the Amanus mountains, the Lebanon, Anti-Lebanon and Jordan. *L. elongatus* differs from it in having constantly unijugate leaves with longer leaflets (instead of the median leaves being bijugate), longer and more numerous-flowered racemes, and more attenuated calyx teeth that lack the submembranous margin of *L. spathulatus*. A synonym requires clarification. When Širjaev described *L. celakovskiyi* he included under it specimens from Cilicia, Amanus and Lebanon. Reference to the description shows the name must be typified by material from Amanus or Lebanon, and is therefore strictly synonymous with *L. spathulatus*, not *L. elongatus*.

The plant described as *L. elongatus* var. *ovalifolius* Širj. (l.c. 225) is *L. variabilis* Boiss. & Kotschy, a very beautiful species with broader leaves, denser racemes and large bicoloured flowers (*vexillum* deep pink, *alae* and *carina* lilac) from the Anti-Taurus, Amanus and Lebanon; the type specimen is exceptionally luxuriant. It usually grows at higher altitudes than *L. spathulatus* but appears to hybridise with it on the pass between Haruniye and Fevzipaşa in the Amanus mountains (Davis 26784).

L. elongatus and *L. spathulatus* have been much confused in herbaria with *L. digitatus* (M.B.) Fiori (*L. sessilifolius* (Sibth. & Sm.) Tenore), a species with a completely different distribution growing in Italy, Greece, Albania, Crimea and Western Turkey; in Anatolia it extends as far as the eastern part of the Cilician Taurus but does not overlap with *L. elongatus*. It can be readily distinguished from *L. spathulatus*, *L. elongatus* and *L. variabilis* by its linear (not broadly spatulate) style; its petioles are manifestly shorter than in the closely allied *L. cyaneus* C. Koch.

The Turkish distribution of these and other allied blue- or purple-



MAP 1. *Lathyrus* Sect. *Orobus* Ser. *Albi*. Distribution of blue-flowered species in Turkey.

● *L. digitatus* (M.B.) Fiori. ▽ *L. cyaneus* (Stev.) C. Koch. ○ *L. spatulatus* Cel. × *L. karstianus* P. H. Davis. ▴ *L. elongatus* (Bornm.) Sirj. ■ *L. armenus* (Boiss. & Huet) Sirj. □ *L. cilicicus* Hayek & Siehe. ◇ *L. tukhtensis* Cz. + *L. variabilis* Boiss. & Ky. ▲ *L. nivalis* Hand.-Mazz.

flowered species is given in Map 1; on account of frequent misidentification, it is based almost entirely on material examined. As in *Paeonia* and *Aristolochia*, the majority of species are of very local occurrence. The distribution of the group, even when allowance is made for under-collecting, shows several features characteristic of the Turkish flora.

1. The limited distribution of most of the species, often confined to a single phytogeographical region.

2. The outlying stations of *L. nivalis* Hand.-Mazz. in the Anti-Taurus and Munzur Dağ—a pattern shown by many other species centred in Kurdistan.

3. The near-endemism of *L. tukhtensis* Cz. (closely allied to *L. variabilis* Boiss. & Ky.) in a belt of drier country south of the typical wet Euxine (Colchic) territory that extends along the N. Anatolian coast; it is often found growing in oak scrub. This species (with the exception of an outlying station in S.W. Anatolia), is therefore confined to a transitional area between two major phytogeographical regions (Euro-Siberian and Irano-Turanian). The same applies to *L. karsianus*, endemic to a small area on the Armenian Highlands where it associated with *Pinus sylvestris* s.l. Endemics are, in fact, rather frequent in such transitional areas and raise interesting problems as to why this should be.

UMBELLIFERAE

Eryngium ilex P. H. Davis, **sp. nov.** (Sect. *Dryophyllum* Calest. Subsect. *Carlinifolia* Wolff). Pl. 2.

Affinis *E. bungei* Boiss. et *E. carlinoidi* Boiss. sed ab ambobus caulibus humilioribus in corymbum paucicapitatum amethystinum terminatis, foliis brevius spinoso-dentatis caulinis inferioribus petiolo brevi spinoso provisis, bracteis involucrelibus magis numerosis differt.

Herba perennis e radicibus crassis pluricipitis. *Caules* e collo fibroso erecti, 15–30 cm. alti, 2–3 mm. lati, striati, saepe $\pm$ amethystini, superne in corymbum saepe tricapitatum simpliciter ramosi. *Folia basalia* plantae florentis indivisa, petiolata, virescentia; lamina oblonga, coriacea, rigidissima, 40–50 mm. $\times$ 12–18 mm., crebre spinoso-dentata (dentibus simplicibus utrimque 12–20 divaricatis spinoso-acuminatis 2–4 mm. longis), basi rotundata vel truncata, apice ambitu obtusa, unicostata, inferne costa crassa prominenter pinnatim nervosa; petiolus tenuis laevis lamina paulo longior vel brevior. *Folia caulina* inferiora oblonga basalibus similia sed breviter petiolata, petiolo vaginato sursum longe spinoso-marginato; caulina superiora (prophylla corymbum suffulta) opposita, subrecurva, 25–35 cm. longa, tripartita, lobo mediano apice in spinam longam attenuato, lobis lateralibus brevioribus spinoso-dentatis; summa (capitula suffulta) similia sed 2–3-plo minora, magis recurva, lobis lateralibus paucius spinosis. *Corymbum* plerumque tricapitatum, 6–8 cm. latum, ut bractee caeruleo-amethystinum. *Capitula* semiglobosa, 10–15 mm. lata. *Bractee involucreales* 8–9, rigidae, lineares, recte patentem, unicostatae, capitulo 2–3-plo longiores, 15–40 mm. $\times$ 1.5–4 mm., pungenti-acutissimae, lateraliter paucispinosae (spinis utrimque 1–3, tenuibus, 1–6 mm. longis), basi spinis binis tenuissimis patentibus capitulo aequilongis munitae. *Bractee florales* spinoso-subulatae, omnes simplices, calycibus paulo longiores. *Sepala* ovata, longe spinoso-mucronata, mucrone

subaequilongo incluso 4 mm. longa. *Petala* minute papillosa, oblonga, lobulo inflexo paulo brevior triplo angustiore apice serrulata instructa. *Ovarium* ex toto squamis niveo-membranaceis ovatis subacuminatis superne sensim auctis dense imbricatum vestitum. *Fructus* ignotus. Fl. Jul.

Prov. Tunçeli: Munzur Dağ above Ovacik, 2400 m., flowers blue, basal leaves green, 18 July 1957, *Davis & Hedge* (D. 31347; holo. E, iso. K).

This very distinctive new species from eastern Anatolia belongs to Subject. *Carlinifolia* Wolff, hitherto known to contain only two closely allied species, *E. bungei* Boiss. from Iran and *E. carlinoides* from Afghanistan and Beluchistan. *E. ilex* can be readily distinguished from both by its few-headed, blueish corymb with more numerous involucre bracts, and by its shorter-toothed leaves, the lower stem leaves bearing slender spines on the short petiole. The other species in Subject. *Carlinoides* have a broad much-branched and many-headed corymbose panicle like that of *E. billardieri* Laroche, whereas the inflorescence of *E. ilex* resembles that of *E. heldreichii* Boiss.

CONVOLVULACEAE

***Convolvulus huber-morathii* P. H. Davis, sp. nov.** Pl. 3. Fig. 1, b.

Affinis *C. cataonico* Boiss. & Hausskn. sed foliis rosularum angustissimis acutis, sepalis omnibus breviter subulato-cuspidatis recedit.

Planta perennis e caudiculis breviter ramosis lignosis laxae caespitosa. *Caules* floriferi e rosulis basalibus prostrati, 5–15 cm. longi, adpresse canescentes. *Folia* superne glabra, inferne dense adpresse piloso-canescens, ea rosularum linearia versus apicem acutum sensim angustata, uninervia, saepe canaliculata, 3–6 cm. longa, 1.5–2.5 mm. lata, basi longe attenuata membranaceo-marginata, caulina sparsa similia sed 2–3-plo breviora, summa inflorescentiam terminalem suffulcens calyces superantia. *Flores* in axillis superioribus solitariae vel bini, pedunculati vel subsessiles, terminales in fasciculum congestam 3–9-floram conferti. *Bractae* lineari-subulatae calycibus subaequales vel breviores. *Sepala* imbricata, subaequalia, exteriora 6.5–8 mm. longa (cuspidem inclusa), 2–2.5 mm. lata, obovato-oblonga, vix membranaceo-marginata, pilis c. 1 mm. longis molliter subpatentibus hirsuta, superne in cuspidem subulatam virescentiam 1.5–2 mm. longam abrupte angustata, interiora 6–6.5 mm. × 2.5 mm., late obovato-oblonga late membranaceo-marginata abrupte cuspidata. *Corolla* lactea, infundibularis, 16–18 mm. longa, plicis extra adpresse pilosis. *Filamenta* 6–7 mm. longa. *Antherae* 2 mm. longae. *Ovarium* ovatum dense adpresse pilosum. *Stylus* 5–6 mm. longus. *Capsula* ignota. Fl. Jun.

Vilayet Maraş (Cataonien): Göksun—Elbistan, Steppenbügel 27 km. östlich Göksun, 1320 m., 27 Juni 1953, *Huber-Morath* 12605. Prov. Malatya: Doğanşehir, 1400 m., *Astragalus* steppe, flowers white, semiprostrate, 9 June 1960, *Stainton & Henderson* 5471 (holo. E, iso. K).

***Convolvulus carduchorum* P. H. Davis, sp. nov.** Fig. 1, c.

Affinis *C. glabrescenti* Huber-Morath & Davis sed caulibus canescentibus, sepalis angustioribus dorsaliter adpresse pubescentibus, corolla et antheris minoribus, plicis corollae semper adpresse pilosis, ovario pubescenti recedit. A *C. cataonico* forma et indumento sepalorum facile distinguenda.



PLATE 2. *Eryngium illex* P. H. Davis (holotype).

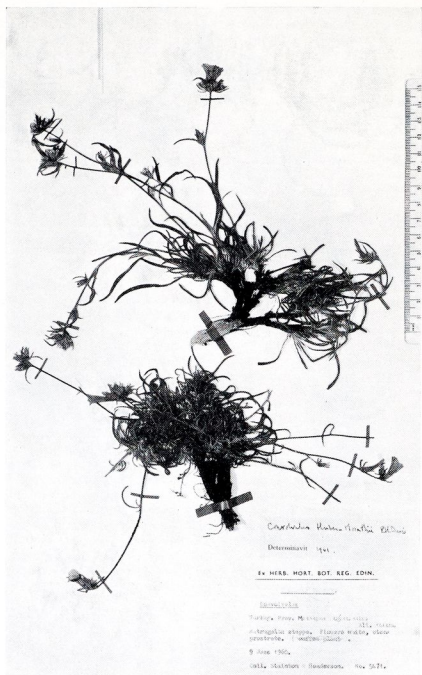
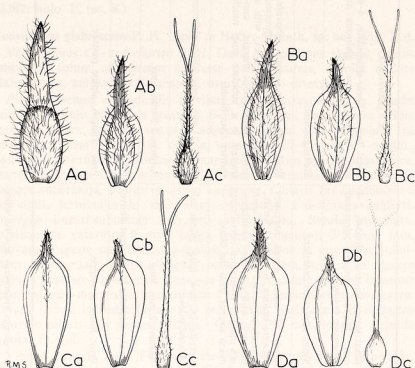


PLATE 3. *Convolvulus huber-morathii* P. H. Davis (holotype).

FIG. 1. *Convolvulus cataonicus* and allied species.

A, *C. cataonicus*. B, *C. huber-morathii*. C, *C. carduchorum*. D, *C. glabrescens*. a, outer sepal. b, inner sepal. c, gynaecium. All $\times 4$.

Planta perennis e caudiculis breviter ramosis lignosis laxae caespitosa. *Caules* floriferi e rosulis basalibus prostrati, 4–14 cm. longi, sparsim adpresse canescentes. *Folia* superne glabra, inferne canescentia, ea rosularum lineari-spathulata, obtusa, uninervia, 10–30 mm. $\times$ 2–4 mm., base longe attenuata membranaceo-marginata, caulina angustiora, acuta, recurva, 5–15 mm. longa, summa inflorescentiam terminalem suffulcuntia calyces saepe superantia. *Flores* in axillis superioribus distantibus solitariae vel bini, breviter pedunculati, terminales in fasciculam congestam 3–7-floram conferti. *Bractae* lineari-subulati calycibus multo breviores. *Sepala* imbricata, subaequalia, 7–8 mm. longa (cuspidem incluso), 2.5 mm. lata, dorsaliter sparsim adpresse pubescentia, anguste obovato-oblonga, anguste membranaceo-marginata, superne in cuspidem subulatam virescentiam 1.5–2 mm. longam abrupte angustata, interiore late membranaceo-marginata exterioribus 1 mm. breviora breviter cuspidata. *Corolla* lactea, infundibularis, 16 mm. longa, plicis extus adpresse pilosis. *Filamenta* 6–7 mm. longa. *Antherae* 2 mm. longae. *Ovarium* ovatum adpresse pubescens. *Stylus* 9 mm. longus. *Capsula* ignota. Fl. Jun.–Jul.

Prov. Bitlis: Bitlis-Tatvan, 1700 m., disturbed steppe, flowering stems

<i>C. cataonicus</i>	<i>C. huber-morathii</i>	<i>C. carduchorum</i>	<i>C. glabrescens</i>
Basal leaves linear-spathulate, 2-3.5 mm. broad, obtuse, sparsely adpressed canescent below.	Basal leaves linear, 1.5-2.5 mm. broad, very acute and attenuated, densely adpressed canescent below.	Basal leaves linear-spathulate, 2-4 mm. broad, obtuse, adpressed canescent below.	Basal leaves linear-spathulate, 4-6 mm. broad, obtuse, glabrous at maturity.
Stems adpressed canescent.	Stems adpressed canescent.	Stems adpressed canescent.	Stems glabrous.
Blade of outer sepals oblong, 3.5-4 mm. × 2 mm., softly spreading-hirsute, without a membranous margin except near the base, attenuate into a lanceolate green appendage as long as blade.	Blade of outer sepals obovate-oblong, 5-6 mm. × 2-2.5 mm., softly spreading-hirsute with a narrow membranous margin, contracted into a subulate cusp much shorter than the blade.	Blade of outer sepals narrowly obovate-oblong, 6 mm. × 2.5 mm., sparsely adpressed pubescent down the back, with a narrow membranous margin, contracted into a cusp much shorter than the blade.	Blade of outer sepals obovate, 7 mm. × 3.5 mm., sparsely adpressed pubescent only near apex, with a narrow membranous margin, contracted in a subulate cusp much shorter than blade.
Corolla 16-18 mm. long, <i>plicae</i> adpressed pilose.	Corolla 16-18 mm. long, <i>plicae</i> adpressed pilose.	Corolla 16 mm. long, <i>plicae</i> adpressed pilose.	Corolla 23 mm. long, <i>plicae</i> glabrous in mature flower.
Anthers 2 mm. long.	Anthers 2 mm. long.	Anthers 2 mm. long.	Anthers 2.5 mm. long.
Ovary adpressed pilose.	Ovary adpressed pilose.	Ovary adpressed pubescent above.	Ovary glabrous.
Prov. Maraş; Berit Dağ.	Prov. Maraş & Malatya, steppe.	Prov. Bitlis, in steppe.	Prov. Tunçeli, alpine pasture.

Comparative table of characters of *Convolvulus cataonicus* and its allies.

prostrate, corolla creamy white, 30 June 1954, Davis & O. Polunin (D. 23382: holo. E, iso. K).

***Convolvulus glabrescens* P. H. Davis & Huber-Morath, sp. nov.** Fig. 1, d.

Valde affinis *C. carduchorum* P. H. Davis sed caulibus glabris, sepalis latoribus solum ad apicem adpresse pubescentibus, corolla majore glabrescente, anthera paulo majore, ovario glabro divergit.

Planta perennis e caudiculis brevibus lignosis laxae caespitosa. *Caules* floriferi e rosulis basalibus prostrati, 6–11 cm. longi, glabri. *Folia* viridia superne glabra, inferne sparsim adpresse pilosa deinde glabra, ea rosularum lineari-spathulata, obtusa, uninervia, 20–45 mm. $\times$ 4–6 mm., basi longe attenuata membranaceo-marginata, caulina sparsa, angustiora, acuta, 20–25 mm. longa, summa inflorescentiam terminalem suffulcencia calyces superantia. *Flores* in axillo superiore solitarii brevipedunculati vel nulli, terminales in fasciculum congestam 1–6-floram conferti. *Bracteae* lineari-subulatae calycibus subaequales. *Sepala* imbricata, subaequalia, exteriora 9 mm. longa (cuspidem inclusis), 3.5 mm. lata, obovata, anguste membranaceo-marginata, superne in cuspidem subulata virescentiam 2 mm. longam ocus angustata, solum ad apicem sparsim adpresse pubescentia, interiora 8 mm. longa late obovata latissime membranaceo-marginata in cuspidem 1 mm. longam abrupte contracta. *Corolla* lactea, infundibularis, c. 23 mm. longa, plicis extus in alabastro adpresse pilosis sub anthesi glabris. *Antherae* 2.5 mm. longae. *Capsula* ignota. Fl. Jul.

Vilayet Tunçeli, distr. Pülümür: Passhöhe Pülümür–Mutu, Alpweide, 1780 m., 7 Jul. 1959, Huber-Morath 15657 (holo. in Herb. Huber-Morath, Basel—*specimen unicum*).

The three cream-flowered *Convolvuli* described above are all allied to *C. cataonicus* Boiss. & Hausskn. (Fig. 1, a), a species that is only known from the type gathering from Berit Dağ in the Anti-Taurus (holotype in Geneva!). Closely related though they undoubtedly are, the differences between them (notably in the form and indumentum of the sepals) are greater than the variation within any related species of *Orient Convolvulus*, so that, despite the limited material available, I am adopting the practice followed by Boissier in his "Diagnoses" and describing them at specific rank. In this connection it is relevant that the diagnostic characters of *C. huber-morathii* are constant in the two gatherings available, although they were collected 90 km. apart. The species form a group of very local vicariads in the Irano-Turanian region of eastern Anatolia, and have presumably diverged from an ancestral stock during geographical isolation. Further collecting is obviously needed before the limits and variability of the complex can be determined and the status of its components finally assessed. The species fall into two groups on calyx indumentum, a character much used for the separation of species in this genus: *C. cataonicus* and *C. huber-morathii* with softly hirsute sepals, *C. carduchorum* and *C. glabrescens* with sparsely adpressed-pubescent sepals. The differences between the taxa are brought out in the accompanying table. It gives me great pleasure to name one of these attractive plants after its discoverer, Dr. A. Huber-Morath, whose Anatolian expeditions have led to the discovery of so many new species.

SCROPHULARIACEAE

Veronica polium P. H. Davis, *sp. nov.*

Affinis *V. polifoliae* (Benth.) Boiss. sed habitu caespitoso, racemis brevioribus, pedicellis longioribus, corolla azurea differt.

Planta nana, caespitosa, suffruticulosa, saxatilis. *Indumentum* caulium et foliorum ob pilos albos 0.8 mm. longos breviter villosa-tomentosum. *Caules* floriferi basi lignosi, erecti vel ascendentes, ad 8 cm. longi, superne dense foliosi, inferne 1 mm. lati defoliati. *Folia* superne regulariter crenatodentata (dentibus 3-4 utrimque praedita), obovata, inferne breviter attenuata, sessilia, 5-10 mm. $\times$ 2-3 mm., ob marginem revolutum ut videtur oblonga angustiora, internodiis 2-3-plo longiora, conferta; folia superiora magis revoluta ut videtur integra. *Racemi* axillares solitarii vel bini, breves, breviter pedunculati, etiam in fructu ad 2.5 cm. longi. *Pedicelli*, *bractae* et *calyces* glanduloso-pubescentes. *Pedicelli* fructiferi erecti, calycibus 2-3-plo longiores, 3-5 mm. longi. *Bractae* obovato-oblongae, integrae, 2-3 mm. longae. *Laciniae calycis* quattuor, subaequales, oblongae, obtusae, 2-2.5 mm. longae. *Corolla* azurea, 7 mm. diam., lobis subrotundis ad 3 mm. latis. *Filamenta* 3.5-4 mm. longa. *Antherae* 1 mm. longae. *Stylus* 2.5-3 mm. longus. *Capsula* 3-3.5 mm. longus, 3-4 mm. latus, calyce paulo longior, obcordata, basi rotundato-cuneata, apicibus loborum rotundis, ad 0.5-1 mm. in sinu valde aperto emarginata, pubescens et sparsim ciliata. *Semina* ignota.

Prov. Bitlis: Pelli dağ above Pelli, 3000 m., growing in cracks of vertical limestone rocks, 7 July 1954, Davis & O. Polunin (D. 22496: holo. E); Pelli dağ, 3000 m., cliffs, flowers bright blue, Davis & O. Polunin (D. 22470).

Allied to *V. polifolia* (Benth.) Boiss., endemic to alpine screes in the Lebanon and Anti-Lebanon, and one of several Kurdish plants showing this geographical relationship (e.g. *Linum triflorum* P. H. Davis and *L. toxicum* Boiss.). Our plant differs from *V. polifolia* in its tufted habit, shorter inflorescences with longer pedicels, and bright blue flowers. The flowers of *V. polifolia* are "white with a pink eye" (Davis 6041A).

Veronica thymoides P. H. Davis, *sp. nov.*

Affinis *V. cineræae* Boiss. et Bal. (praesertim var. *argæae* Stadlmann) sed habitu minus lignoso, racemis brevioribus subcorymbosis (saepè solitariis) glanduloso-pubescentibus, pedicellis longioribus, sinu capsulae angusto profundo differt.

Planta ramis prostratis elongatis tenuiter suffruticulosa, caulibus 0.5-1 mm. latis superne dense foliatis. *Indumentum* foliorum et caulium ob pilos brevissimos crispas dense canescens. *Folia* internodiis c. duplo longiora (in surculis sterilibus axillaribus magis conferta), obtusa, sessilia, manifeste revoluta, in parte superiore obscure crenata (crenis utrimque 1-3), 3-5(-7) mm. longa, ob marginem revolutum ut videtur lineari-oblonga 1-1.5 mm. lata. *Racemi* solitarii alternii pseudo-terminales vel interdum bini oppositi, subcorymbosi, 1-2 cm. longi, laxi, 4-10-flori, breviter glanduloso-pubescentes. *Bractae* obovato-oblongae, integrae, 1.5-2 mm. longae. *Pedicelli* 7-13 mm. longi, erecti, capillares. *Calyx* quadripartitus, lacinii subaequalibus oblongis obtusis 2.5-3 mm. longis. *Corolla* azurea, 9-10 mm. lata, lobis late rotundatis 3-5 mm. latis. *Filamenta* 3-3.5 mm. longa. *Antherae* 1 mm. longae. *Stylus* 3-4 mm.

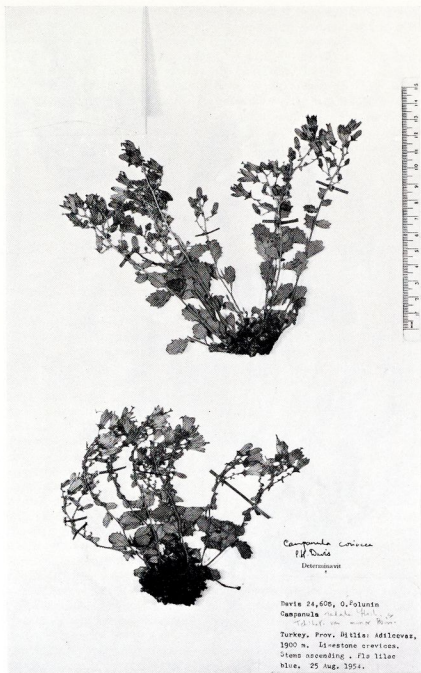


PLATE 4. *Campanula coriacea* P. H. Davis (holotype).



Davis & Hedge. [n. 1950].

Campanula **Hedgeri** P.H. Davis, sp. nov.

Durkey, Prov. Tunceli; 10000 ft above

level. 10000. Dry limestone cliff.

Stems brittle, 1 adpressed to rock.

Flowers lavender-blue. Perennial.

16, 7, 1957.

PLATE 5. *Campanula hedgeri* P. H. Davis (holotype).

Capsula calyce paulo longior, late elliptico-obcordata, 3·2 mm. $\times$ 2·8 mm., basi rotundata, fere ad tertiam partem in sinum profundum angustum abrupte bifida, breviter pubescens, ciliata. *Semina* ignota.

Prov. Van, distr. Gevaş: Artos Dağ, 3400 m., limestone scree, perennial, flowers blue, 15 July 1954, *Davis & O. Polunin* (D. 22886: holo. E).

Most closely allied to *V. cinerea* Boiss. & Bal. (especially var. *argaea* Stadlmann) found mainly in the mountains of Central Anatolia and the Anti-Taurus. From this species *V. thymoides* is distinguished by its trailing, less woody habit, glandular-pubescent, shorter, subcorymbose racemes with longer pedicels, and capsule with a narrow, deeper sinus.

CAMPANULACEAE

***Campanula coriacea* P. H. Davis, sp. nov.** (Sect. *Medium* DC. Subsect. *Triloculares* Boiss. Ser. *Rupestres* Boiss.). Pl. 4.

Syn.: *C. radula* Tchihač. var. *minor* Boiss. in Fl. Or. 3, 909 (1875).

Affinis *C. radulae* Tchihač. sed planta in omnibus partibus minore, indumento brevior, foliis simpliciter dentatis summis ovato-oblongis brevioribus, laciniis calycis brevioribus et latioribus, corolla latiore profundius lobata tubo intus glabro, filamentis brevioribus, antheris haud apiculatis recedit.

Planta perennis, saxatilis, basi caudiculis incrassatis brevibus nodulosis provisa. *Indumentum* caulium et foliorum et calycum breviter et crispule pubescens, interdum insuper hispidulum. *Caules* ascendentes, 3–15 cm. longi, crebre foliosi, sulcati, superne in paniculam subcorymbosam multifloram 2–6 cm. longam 2–4 cm. latam ramosi. *Folia* caulina crassa, firma, internodiis longiora, ovata, obovata vel orbicularia, simpliciter grosse dentata, in petiolos breves attenuata vel subsessilia, mediana 8–23 mm. $\times$ 5–26 mm., summa ramulorum floriferorum bracteoliformia minima ovato-oblonga integra sessilia 1–3 mm. longa recurva. *Flores* in ramulos rigidos 1–3-floros pseudobracteolatos dispositi, floribus lateralibus saepe ad alabastris sterilibus reductis. *Calyx* tubo breviter obconico 2 mm. longo, laciniis anguste triangularibus 2–4 mm. longis patentibus, sinubus obtuse et brevissime reflexis vix appendiculatis. *Corolla* late infundibulari-campanulata, lilacino-caerulea, 9–12 mm. longa, 8–12 mm. lata, extra pubescenti-hispidula, fere ad medium (vel etiam ad duos partes) in lobos ovato-oblongos intus barbato fissa, tubo ampliato intus glabro. *Filamenta* in partibus inferioribus tribus triangularia ciliata, superne abrupte attenuata. *Antherae* lineares filamentis 2·5–plo longiores. *Stylus* exsertus, corolla longior, 1–1½-plo ad apicem longe et dense pilosus, 3(–4)-fidus, stigmatibus deinde recurvis. *Capsula* erecta, late hemisphaerica, 4 cm. longa, trilocularis, valvulis basalibus dehiscens. Fl. Jul.–Aug.

Prov. Bitlis: Adilcevaz, 1900 m., in limestone crevices, stems ascending, flowers lilac-blue, 25 Aug. 1954, *Davis & O. Polunin* (D. 24608: holo. E, iso. K). Prov. Van: Gevaş, 1800 m., in crevices of vertical limestone rocks, leaves thick and hard, flowers lavender-blue, 13 July 1954, *Davis & O. Polunin* (D. 22671); old town of Van, 1800 m., rock ledges, 1 Sept. 1956, *McNeill* 721; Van, vertical crevices of castle rock (limestone), 28 July 1954, *Davis & O. Polunin* (D. 23273); in castello urbis Wan rupestribus praeruptis calcareis alt. 1540 m., *Kotschy* 472 (type of *C.*

radula var. *minor*); Van-Hoşap, Kalkfelsen am rechten Ufer des Micinger 20 km. östlich Hasbaşa, 1920 m., 8 Jul. 1951, Huber-Morath 11077; distr. Başakale, Ispiriz Dağ, 2600 m., rock crevices, 31 July 1954, Davis & O. Polunin (D. 23622). Kurdistan, Layard.

Boissier recognised this plant as a variety of *C. radula* Tchihat. but it differs from the latter (known with certainty only from Iraqi Kurdistan) in so many characters that there seems every justification for treating it as a separate species. The name *C. coriacea* was proposed by Boissier and Kotschy but never validated, Boissier citing it in his Flora as a synonym of *C. radula* var. *minor* Boiss. I am following An. A. Federov (Fl. URSS, 24, 248: 1957) in typifying *C. radula* by Kotschy's specimen from Mt. Gara in Iraqi Kurdistan which fits the original description (supplied to Tchihat-cheff by Fenzl) much better than the syntype from Van (*C. coriacea*). Several recent gatherings of *C. radula* are available from N. Iraq and closely resemble the lectotype. In publishing *C. coriacea* as a new species, I am taking the opportunity to choose a new type. Limited material from Daralaghez in Soviet Armenia suggests that another undescribed species may occur in that area, in floral characters intermediate between *C. radula* and *C. coriacea*. Federov, however, has stressed the variability of this isolated population in relation to habitat.*

The species described as *Tracheliopsis postii* (Boiss.) Buser (from Mardin) is evidently related to *C. radula* and its allies *C. coriacea* and *C. hedgei* P. H. Davis. *Campanula shephardii* Post and *C. amani* Rech. fil. (both from Amanus) must be treated as conspecific with *Tracheliopsis postii*; Rechinger's plant breaks down the distinctions between subsp. *postii* and subsp. *shephardii* (Post) Davis in Notes R. B. G. Edinburgh, 22, 80: 1956. If this species is to be included in *Campanula* (which may prove necessary for the whole of the small genus *Tracheliopsis*), its correct name is *Campanula postii* (Boiss.) Harms.

***Campanula hedgei* P. H. Davis, sp. nov.** (Sect. *Medium* DC. Subsect. *Triloculares* Boiss. Ser. *Rupestris* Boiss.) Pl. 5.

Affinis *C. coriaceae* P. H. Davis et *C. radulae* Tchihat.; a priore foliis summis inflorescentium majoribus, panicula laxiore, corolla angustiore tubuloso-campanulata brevius lobata, stylo incluso differt; ab altera foliis caulinis minoribus simpliciter dentatis basi attenuatis, inflorescentia magis corymbosa, foliis summis ovatis brevibus, laciniis calycis latioribus, tubo corollae angustiore intus glabro, filamentis multo brevioribus, stylo incluso recedit.

Planta perennis, saxatilis, basi indurata ob bases petiolorum persistentes squamosa. *Caules* flexuosi, ad rupes adpressi, fragiles, 5–20 cm. longi, retrorse hirsuti vel etiam pubescentes, foliosi, superne in paniculam laxam 4–15-floram abeuntes, rare ad florem unicum redacti. *Folia* caulina aspero-pubescentia, inferiora petiolata, lamina late obovata obscure repando-dentata, obtusa, 5–20 mm. longa, in petiolum saepe duplo longiorem attenuata, mediana majora late ovata vel orbiculari-elliptica subsessilia repando-dentata 12–35 mm. longa, summa ramulorum floriferorum diminuta bracteiformia sessilia elliptico-lanceolata 3–13 mm. longa subdenticulata. *Flores* in ramulis divergentes 1–3-floros dispositi, alabastris sterilibus subnullis. *Calyx* tubo breviter obconico 2–3 mm.

* I am indebted to Miss J. M. Allford for translating Federov's discussion.

longo et pubescente et hispidulo, laciniis triangulari-lanceolatis 3-6 mm. longis patentibus, sinubus obtuse et brevissime reflexis vix appendiculatis. *Corolla* lilacino-caerulea, anguste tubuloso-campanulata, 13-20 mm. longa, 10-12 mm. lata, extra pubescenti-hirtella, intus glabra, ad quartam partem vel paulo ultra in lobos ovatos acutos fissa, tubo sensim ampliato 3-5 mm. lato. *Filamenta* in partibus inferioribus tribus late triangularia ciliata, superne abrupte attenuata, 2.5 mm. longa. *Antherae* lineares filamentis triplo longiores. *Stylus* inclusus, in dimidio inferiore partis incrassatae pubescens, breviter trifidus. *Capsula* ignota. Fl. Jul.

Prov. Tunceli: Munzur Dağ above Ovacik, 2400 m., dry limestone cliff, stems brittle and more or less adpressed to rock, perennial, flowers lavender-blue, 18 July 1957, *Davis & Hedge* (D. 31358: holo. E. iso. K); Munzur Dağ above Ovacik, 2100 m., limestone cliffs (in shade), 19 July 1957, *Davis & Hedge* (D. 31315). Prov. Erzincan: Keşiş Dağ above Cimin, 2700-2900 m., in igneous rock crevices, 27 July 1957, *Davis* 31634.

An attractive saxatile species allied to *C. radula* Tchihat. (Iraqi Kurdistan) and *C. coriacea* P. H. Davis (Turkish Armenia) but differing from both in the form of its inflorescence, narrower corolla and included style. In the gathering from Keşiş Dağ the indumentum is longer and the corolla smaller than in the Munzur Dağ populations.

It gives me great pleasure to name this plant after Mr. I. C. Hedge who collected with me on the long 1957 expedition and is doing so much to revise the Near East flora.

***Campanula munzurensis* P. H. Davis, sp. nov.** (Sect. *Medium* DC. Subsect. *Triloculares* Boiss.)

Affinis *C. trachyphyllae* Boiss. sed caulibus hirtulis, foliis angustissimis superne adpresse strigulosis, foliis floralibus et laciniis calycis magis attenuatis tenuiter antrorse ciliatis minus recurvis, corolla multo majore laciniis calycinis triplo longiore facile distinguenda.

Herba perennis, saxatilis, pallide virens, nitida, caudiculis crassis squamosis e radice crassa pluricipitis. *Folia caulina* infra spicam congesta, infima rosulam emarcidam formantia, anguste lineari-spathulata vel linearia, uninervia, integerrima, obtusa, 10-35 mm. longa, 0.8-2 mm. lata, supra adpresse antrorse striguloso-hirtula margine antrorse rigide ciliata, infra glaberrima. *Folia floralia* bracteiformia, ovata vel orbiculari-ovata, acuminata, semiamplexicaulia, subcarinata, recurva, sessilia, integra vel sparsim denticulata, ciliata, acumine quam lamina dimidio brevior vel duplo longior sed saepe subaequali. *Flores* subsessiles, erecti, 1-3 in axillis foliorum floralium dispositi, bracteolis binis ovatis subacuminatis tubum calycis aequantibus vel etiam duplo longioribus suffulti. *Calyx* pallida, nitida, glabra, tubo hemisphaerico 2-3 mm. longo, laciniis lanceolatis erectis tubo 1-2-plo longioribus antrorse ciliatis sinubus angustis exauriculatis. *Corolla* anguste tubuloso-campanulata, in sicco lilacino-caerulea, c. 16 mm. longa, 8-9 mm. lata, ad $\frac{2}{3}$ in lobos ovatos acutos fissa, tubo superne 6 mm. lato. *Filamenta* 2.5 mm. longa, anguste ovata, incurva, ciliata, breviter attenuata. *Antherae* lineares, 5 mm. longae. *Stylus* inclusus, glaber, trifidus, stigmatibus deinde recurvis. *Capsula* erecta, hemisphaerica, 4 mm. lata, trilocularis, ut videtur indehiscens. *Semina* ovata, brunnea, 0.8 mm. longa. Fl. Jun.-Jul.

Prov. Tunceli: Munzur Dağ, in Aksu dere above Ovacik, 1800 m.,

crevices of sloping limestone rocks, flowers (faded) lavender-blue, 21 July 1957, *Davis & Hedge* (D. 31482: holo. E, iso. K).

Allied to *C. trachyphylla* Boiss. from the Cilician Taurus and neighbouring Ala Dağ, from which it is readily distinguished (among other characters) by its leaf shape and indumentum, and much larger corolla—three times the calyx teeth instead of scarcely exceeding them. The capsule shows no sign of dehiscence. *C. munzurensis* may be a very rare plant and was seen only on one cliff where it grew with the rather closely allied *C. ptarmicifolia* Lam.

***Campanula hakkiarica* P. H. Davis, sp. nov.** (Sect. *Medium* DC. Subsect. *Triloculares* Boiss.)

Affinis *C. karakuschensi* Grossh. sed caudicibus tenuioribus, foliis utrimque glabris parvis dentatis, floribus duplo majoribus recedit. A *C. bornmuelleri* Náb. foliis glaberrimis, laciniis calycis majoribus erectis longius appendiculatis, corolla duplo majore, capsula haud nutante differt.

Planta perennis, caespitosa, saxatilis; caudices ramosi breves sursum basi foliis emarcidis praediti. *Folia* utrimque glabra, margine interdum ciliata; ea rosulorum basium obovato-oblongeolata in petiolum saepe aequilongum attenuata, lamina 10–30 mm. $\times$ 5–12 mm., obtusa, argute denticulata (dentibus utrimque 5–8(–12)) vel rare crenato-dentata, uninervia, plana; folia caulium floriferorum sparsa, oblonga, sessilia, 5–12 mm. longa, subintegra vel minute denticulata. *Caules* floriferi extra rosulares, ascendentes, superne laxe 1–6-flori, 3–9 cm. alti, glabri. *Flores* in pedicellis longiusculis suberecti. *Calyx* appendiculatus, tubo obconico 4 mm. longo glabro vel ad nervos ciliato, laciniis triangulari-lanceolatis erectis (in fructu patentibus) 7–13 mm. longis glabris vel ciliatis sinibus profundis in appendices lanceolato-subulatis acutissimis tubo 1–2-plo longioribus auriculatis. *Corolla* caerulea, tubuloso-campanulata, 20–30 mm. $\times$ c. 20 mm., extra glabra, laciniis calycis 2–3-plo longior, ad quartam in lobos late ovato-triangulares fissa, tubo intus longe piloso. *Filamenta* 3 mm. longa, in partibus tribus inferioribus late triangularia ciliata, superne abrupte angustata attenuata. *Antherae* lineares, 7 mm. longae. *Stylus* inclusus, trifidus, haud incrassatus, ex toto puberulus. *Capsula* suberecta, trilocularis, valvulis basalibus dehiscens. *Semina* (immatura) elliptico-oblonga, 1.5 mm. longa, complanata, angustissime crassi-marginata. Fl. Jul.-Aug.

Prov. Hakâri: Cilo Tepe, 3000 m., crevices of limestone rocks, fl. blue, 8 Aug. 1954, *Davis & O. Polunin* (*Davis* 24027: holo. K, iso. E); *ibid.*, 3200 m., rock crevices, fl. blue, 8 Aug. 1954, *Davis & O. Polunin* (D. 24124); Cilo Dağ in Diz Deresi, 1750 m., in crevices of limestone rocks, 6 Aug. 1954, *Davis & O. Polunin* (D. 23885).

This beautiful alpine plant is closely allied to the Trans-Caucasian *C. karakuschensi* Grossh. of which we now have material at Edinburgh from Nakhichevan and adjacent Soviet Armenia. *C. hakkiarica* differs from it in having more slender caudices, leaves always glabrous on both sides and with finer dentation, and flowers twice as large; the leaf blades are usually more attenuated. It appears to be less closely allied to *C. bornmuelleri* Náb., differing from it in the characters cited in the diagnosis. It is difficult to say to which Series these species should be referred.

Campanula bornmuelleri was described from Erek Dağ ("Warack-Dar") above Van and Cilo Dağ in Hakâri, Nábělek noting some differences between the plants from these localities. His figure, however, is probably of the Erek Dağ plant (which he cites first), so that Nábělek 2143 from this mountain should be taken as the lectotype. I have not seen this specimen (now in the Bratislava herbarium) but have collected a plant on the same mountain (Davis 22942) which fits Nábělek's description well. *C. bornmuelleri* is rather common in the high mountains of Turkish Kurdistan and, though Nábělek describes the calyx and corolla as hairy, they are in fact more commonly glabrous, except for marginal ciliation on the calyx teeth which are normally spreading, even in flower. In addition to the three gatherings of *C. hakkiarica* from Cilo Dağ, one very variable gathering was made higher up on the same mountain ("Cilo Dağ, 10 km. W. of Cilo Tepe, 3650 m., crevices of limestone rock and scree, very variable in stature, shade and shape of flower, Davis 24176") in which the leaves vary from glabrous to pubescent. At first I thought that this represented a hybrid swarm between *C. hakkiarica* and *C. bornmuelleri*, but further study suggests that it is probably a hybrid swarm between the former and *C. karakuschensis*, a species which differs from *C. bornmuelleri* in having flowers with erect and longer calyx teeth, longer slender appendages, erect capsules, etc. It seems possible that Nábělek's plant from Cilo Dağ may represent part of such a hybrid swarm (or even *C. karakuschensis*?) but that can only be settled by examination of the original material. No specimens in my "hybrid swarm" have leaves that are typical in shape for *C. karakuschensis* but have the more attenuated blade of *C. hakkiarica* and *C. bornmuelleri*.