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MATERIALS FOR A FLORA OF TURKEY XXXIV: Boraginaceae, Gentianaceae, Solanaceae

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ABSTRACT. New taxa are described in Boraginaceae, Gentianaceae, and Solanaceae; new combinations are made and nomenclatural and taxonomic discussion given for various genera in the first two families. A new species is described in Solanaceae (*Lycium anatolicum* A. Baytop & R. Mill), as are three new species in Boraginaceae (*Onosma pulchrum* H. Riedl, *Solenanthus formosus* R. Mill and *Paracaryum artvinense* R. Mill), and one in Gentianaceae (*Gentianella holosteoides* N. M. Pritchard). In Boraginaceae new infraspecific taxa are described in *Alkanna*, *Nonea*, *Omphalodes* and *Paracaryum*, new combinations made in *Alkanna*, *Anchusa*, *Paracaryum* and *Rochelia*, and discussion of synonymy given in *Trachelanthus*. In Gentianaceae there is a new subspecies in *Gentiana*, and a new variety and subspecific combination in *Gentianella*.

INTRODUCTION

As a result of the preparation of accounts of various genera in the Boraginaceae, Gentianaceae and Solanaceae for *Flora of Turkey* vol. 6, it is necessary to publish here various new taxa and new combinations, and to discuss some taxonomic and nomenclatural matters. This paper contains contributions by the following authors: A. Baytop, D. F. Chamberlain, J. R. Edmondson, A. Huber-Morath, R. R. Mill, N. M. Pritchard and H. Riedl. Unless otherwise indicated, all specimens cited have been seen.

I am indebted to the Royal Botanic Garden for their continued collaboration on the Flora of Turkey project, and to the directors or owners of various herbaria for the loan of material used in the preparation of volume 6. Thanks are due to the Science Research Council (United Kingdom) for maintaining their support for the Flora project, thus enabling J. R. Edmondson and R. R. Mill to be employed as Research Assistants.

BORAGINACEAE

Alkanna

A. HUBER-MORATH*

Alkanna areolata Boiss. var. **sublaevis** Hub.-Mor., **var. nov.**

A typo speciei nuculis laevissimis vel verruculis minimis sparsis obsitis differt.

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Turkey. B1 Manisa: Magnesia (Manisa), in regione subalpina montis Sipylos (Yamanlar Da.), 700–900 m, 10 vi 1906, *J. Bornmüller* 9807, *pro parte* (holo. B).

Known only from the type collection, which is part of a mixed gathering also including typical *A. areolata* Boiss. var. *areolata*.

Alkanna tinctoria (L.) Tausch subsp. **glandulosa** Hub.-Mor., **subsp. nov.**
A typo speciei planta pilis minutis glanduliferis dense vestita differt.
Turkey. B2 Kütahya: Uşak to Çivril, fallow field 43 km SE of Uşak, 1100 m, 15 vi 1954, *Huber-Morath* 12521 (holo. hb. Hub.-Mor.).

Anchusa

D. F. CHAMBERLAIN

Anchusa leptophylla Roemer & Schultes, Syst. Veg. 4:90 (1819) subsp. **incana** (Ledeb.) Chamb., **comb. et stat. nov.**
Syn.: *A. incana* Ledeb., Fl. Ross. 3, 1:117 (1847).
A. angustissima C. Koch in Linnaea 22:633 (1849).
A. aspera Boiss. in Ann. Sci. Nat. 4, 2:243 (1854).
A. boissieri Bornm. & Guşul. in Bul. Fac. Ştiinţe Cern. 1, 2:242 (1927).

Anchusa leptophylla Roemer & Schultes subsp. **tomentosa** (Boiss.) Chamb., **comb. et stat. nov.**
Syn.: *A. linearifolia* Hochst. in Lorent, Wanderungen 334 (1865) non d'Urv. (1822).
A. lorentii A.DC., in DC., Prodr. 10:52 (1845).
A. tomentosa Boiss., Diagn. ser. 2, 3:133 (1856).

Anchusa azurea Miller, Gard. Dict. ed. 8: no. 9 (1768) var. **macrocarpa** (Boiss. & Hohen.) Chamb., **comb. nov.**
Syn.: *A. macrocarpa* Boiss. & Hohen. in Boiss., Diagn. ser. 1, 4:42 (1844).
A. italica Retz. var. *macrocarpa* (Boiss. & Hohen.) Guşul. in Bul. Fac. Ştiinţe Cern. 1:273 (1927).

Anchusa azurea Miller var. **kurdica** (Guşul.) Chamb., **comb. nov.**
Syn.: *A. italica* Retz. var. *kurdica* Guşul. in Bul. Fac. Ştiinţe Cern. 1:274 (1927).

Anchusa L. subgenus **Hormuzakia** (Guşul.) Chamb., **comb. et stat. nov.**
Syn.: *Hormuzakia* Guşul. in Publ. Fac. Soc. Nat. Bucar. 6:8 (1923), *pro gen.*

Anchusa L. subgenus **Phyllocara** (Guşul.) Chamb., **comb. et stat. nov.**
Syn.: *Phyllocara* Guşul. in Bul. Fac. Ştiinţe Cern. 1:120 (1927), *pro gen.*

Anchusa L. subgenus **Limbata** Chamb. & R. Mill, **subgen. nov.**
Herba biennis, albo-hispidissima. *Calyx* ad medium divisus, lobis lanceolatis, acutis. *Corolla* actinomorpha, limbo valde reducto, lobis nullis sed

margine paulo crenulato. *Fornices* ad summum tubi insertae, e fauce valde exsertae. *Nuculae* obliquae, areola basali.
Type species. *Anchusa limbata* Boiss., Diagn. ser. 1, 11:99 (1849).

A. limbata Boiss. is a distinctive species on account of its much reduced corolla limb and exserted scales. This reduction of the corolla lobes gives the corolla its characteristic appearance, unique in *Anchusa*, meriting the recognition of a new subgenus to accommodate this remarkable species. It is only known at present from the type gathering [Turkey C3 Antalya: inter Adalia (Antalya) et Jenidje Khan (Kayadibi), 2 iii 1845, *A. von Heldreich* 468 (holo. G)].

Nonea

A. BAYTOP*

Nonea pulla (L.) DC. subsp. **scabrisquamata** A. Baytop, **subsp. nov.**

Subsp. *monticolae* Rech. fil. affinis, sed faux corollae intus ± glabra, fornicibus breviter rigido-ciliatis.
Turkey. B9 Van: Çavuştepe, Urartu kalesi, 16 vi 1973, *T. Baytop* 26014 (holo. ISTE). A7 Gümüşane: col 10 km E of Gümüşane, 1830 m, *Furse & Synge* 16. A8 Gümüşane/Erzurum: Bayburt to Erzurum, Kapuklu valley, v 1853, *Huet*. B5 Kayseri: Erciyas Da., 2150 m, *Sorger* 64–25–19. B7 Sivas: Kizil Da., 2150 m, *Lamond* 2628. C6 Maraş: Berit Da., 1525 m, *Balls* 1082. C10 Hakkari: Nehil çayi, 48–55 km from Hakkari to Yüksekova, 1600–1700 m, *D.* 44896.
N Iraq, W & NW Iran.

When examining the specimens identified by K. H. Rechinger fil. as *Nonea pulla* (L.) DC. subsp. *monticola* Rech. fil. (Ann. Naturh. Mus. Wien 55:15, 1947) together with other Anatolian specimens of *Nonea pulla*, I saw that this material could be further divided into two groups, according to the structure of the corolla throat.

In one group, the faucal appendages (scales) and throat are long-hairy. Since this group includes the type of subsp. *monticola* Rech. fil. [Turkey, A4 Çankiri: in regione alpina abietina montis Ilkas-dagh inter Çankiri et Tossia, 2000–2150 m, 20–23 vi 1929, *J. & F. Bornmüller* 14439] I retain this name for the first subspecies.

In the second group, the scales have only short, stiff hairs, as in the type specimen of the undescribed *N. armena* Boiss. & Huet (in Boiss., Fl. Or. 4:167, 1875, pro syn.) cited as a synonym of *N. pulla* subsp. *monticola* Rech. fil. '*N. armena* Boiss. & Huet' was based on a gathering from A8 Gümüşane/Erzurum: Kapuklu valley, v 1853, *Huet*.

Nonea macrantha (H. Riedl) A. Baytop, **stat. nov.**

Syn.: *Nonea pulmonarioides* Bornm. in Beih. Bot. Centralbl. 61B: 93 (1941) non Boiss. & Bal. (1875).
Nonea pulla (L.) DC. subsp. *macrantha* H. Riedl in Österr. Bot. Zeitschr. 110:531 (1963).

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N. macrantha is distinguished from *N. pulla* by having the corolla up to 18(–20) mm, the style frequently longer than the calyx, and the anthers at the same level as the hairy ring in the corolla throat. In my opinion, it deserves specific status.

Omphalodes

J. R. EDMONDSON

Omphalodes luciliae Boiss., Diagn. ser. 1, 4:41 (1844).

O. luciliae, together with the closely related Pisidian endemic *O. ripleyana* Davis, is only distantly related to other members of the genus; it is a distinctive member of the chasmophyte community in the mountains of central Greece, W & S Anatolia, N Iraq and W Iran. It occurs almost exclusively in limestone crevices. The species is weakly differentiated into four ± allopatric subspecies:

1. Lamina of basal leaves 12–25×6–15(–21) mm, base cuneate and decurrent into petiole . . . . . subsp. *luciliae*
\+ Lamina of basal leaves (15–)20–45×(8–)12–35 mm, base ± truncate, abruptly narrowed into petiole 2
2. Calcareous tubercles not or weakly developed, leaves often distinctly glaucous; lamina of basal leaves elliptic-oblong . . subsp. *scopulorum*
\+ Setulose calcareous tubercles usually well developed on oldest leaves, lamina green or only slightly glaucous; lamina of basal leaves ovate 3
3. Nutlets ovate to orbicular in outline, rounded at apex, with a distinct incurved wing c. 1 mm . . . . subsp. *cilicica*
\+ Nutlets triangular-ovate in outline, distinctly broader than long and with subacute apex, incurved wing narrow and indistinct, c. 0·4 mm . . . . . subsp. *kurdica*

subsp. **luciliae.** Fig. 1.

Lectotype (designated here). [Turkey. C2 Denizli] Cadmi orientalis supra Colossam (Honaz Da. above Honaz) ubi parietes rupium verticales humidiusculas et ad septentrionem versas latissimis laetisque ornat tapetibus, [vi 1842], *Boissier* (holo. G—not seen; iso. E, K).

The species was described from three syntypes: two were collected on Mt Cadmus by Boissier in 1842, and the third was a gathering of Pinard's from Caria. It is necessary to typify the species by one of the Boissier gatherings because of the geographical differentiation shown by the species, and to ensure that the epithet '*luciliae*' continues to be applied to the narrow-leaved taxon which is widely cultivated in rock gardens.

subsp. **scopulorum** Edmondson, **subsp. nov.** Fig. 1.

Folia glauca, non vel parce tuberculata. Lamina foliorum basalium ad 35(–45)×25(–35) mm, elliptico-oblonga, ad basin ± abrupte in petiolum truncata; petiolum plerumque lamina plus quam triplo longior.

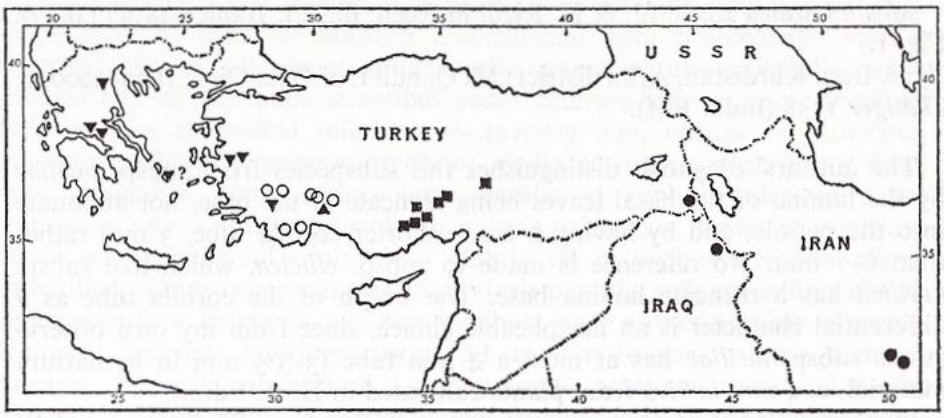

FIG. 1. Distribution of *Omphalodes luciliae*: ○ subsp. *luciliae*; ■ subsp. *cilicica*; ● subsp. *kurdica*; ▼ subsp. *scopulorum*. ▲ Distribution of *O. ripleyana*.

Turkey. B1 Manisa: fentes des rochers perpendiculaires situés audessous du sommet occidental du Mont Sipyle (Manisa Da.), audessus de Magnésie (Manisa), 19 vi 1854, *Balansa* 367 (holo. G; iso. K).
Representative specimens. Greece. Mt Parnassi media, vii 1855, *Guiccardi*, Heldr., Fl. Graeca Exsicc. no 2977 (E). Turkey. B1 Manisa: Mt Sipylus (Manisa Da.), 1200 m, 10 vi 1906, *Bornmüller* 9793 (E, WU); *ibid.*, *Aucher* 2596 (K).
Greece (Olympos, Parnassos, Kiona; Tilos (Tenos)—questionable), W Anatolia.

A record from Mt Stavros, on the Cycladean island of Tilos (*Heldr.* 1179, fide Rech. fil., Fl. Aegaea p. 444, 1943) seems doubtful both on geographical and ecological grounds. The plant is otherwise confined to three of the highest mountains in C Greece and is found characteristically in moist crevices of steep limestone cliffs.

subsp. **cilicica** (Brand) Bornm. in Feddes Rep. 49:249 (1940). Fig. 1.
Syn.: *O. luciliae* Boiss. var. *cilicica* [Hausskn. & Siehe pro sp.] Brand in Engler & Prantl, Pflanzenreich 48 (IV.252):107 (1921).
Type. Turkey. C5 Niğde: Bulgar Magara, 2700 m, 1896, *Siehe* 505 (iso. E, WU).

O. cilicica Hausskn. & Siehe is a *nomen nudum*, and thus cannot be used as the basionym of a subspecific combination. The name was distributed with a Siehe gathering from Bulgar Magara which Brand later chose as the type of his var. *cilicica*. Bornmüller's subspecies is therefore treated here as a combination based on var. *cilicica* Brand, since the latter was cited as a synonym of Bornmüller's intended basionym, *O. cilicica* Hausskn. & Siehe.

Hayek, in 'Plantae Sieheanae' (Ann. Naturh. Mus. Wien 28:175, 1914) treated '*O. cilicica* Hausskn. & Siehe' as a synonym of *O. luciliae*, citing Siehe's record from a slightly different locality from the one on the original labels at E and WU: 'Schluchten des Antitaurus bei Bereketli, 2500 m, *Siehe* 190'. There can be no doubt that the same gathering is involved.

subsp. **kurdica** Rech. fil. & H. Riedl in Rech. fil., Fl. Iranica 48:97 (1967). Fig. 1.
Type. Iraq. Kurdistan, Arbil district: Mt Qandil E of Qala Diza, 1800–3000 m, *Thesiger* 1158 (holo. BM).

The authors' diagnosis distinguishes this subspecies from subsp. *luciliae* by the lamina of the basal leaves being truncate at the base, not attenuate into the petiole, and by having a much shorter corolla tube, 3 mm rather than 6–7 mm. No reference is made to subsp. *cilicica*, which like subsp. *kurdica* has a truncate lamina base. The length of the corolla tube as a differential character is an inexplicable choice, since from my own observations subsp. *luciliae* has at most a 4 mm tube (3–3·5 mm in herbarium material, c. 4 mm *in vivo* from plants cultivated in Hort. Edin.).

Further material of *O. luciliae* is now available from SE Turkey and W Iran—Turkey, C10 Hakkari, Sat Da., 3200 m, *Fedden & McColl* 37 (K); W Iran, Bakhtiari, Zardeh Kuh, Laleh Sabz, 4140 m, *Archibald* 3008 (E); Tang-e Sirdan between the Kurang and Bazuft valleys, 4140 m, *Archibald* 3048 (E): first records from Iran. These gatherings, together with Thesiger's collection from N Iraq, represent a significant eastward extension of the species' range and geographically correlated variations are to be expected. *Archibald* 3048, a mainly fruiting specimen, has a distinctly triangular-ovoid nutlet, the apex subacute and the wing very narrow and scarcely encroaching onto the disc. In material of all three western subspecies, the wing is broader and more distinctly incurved. Fedden & McColl's and Thesiger's gatherings match Archibald's in habit, and can thus be regarded as the same subspecies which is weakly delimited from subsp. *cilicica*. Subsp. *kurdica* is notable for its high altitudinal range, occurring at 3200 m in Turkey, up to 3000 m in Iraq and at over 4000 m in Iran.

Omphalodes ripleyana Davis in Notes R.B.G. Edinb. 22:82 (1956). Fig. 1.

This species is known only from a single mountain in Pisidia (Bozburun Da.), and is sympatric with *O. luciliae* subsp. *luciliae*. It differs in its constantly milk-white corolla (occasional albinos have been reported in the mainly blue-flowered *O. luciliae*), and in a number of fruiting characters which are sufficiently marked to warrant its retention as a separate species. The calyx of *O. ripleyana* is accrescent to c. 12 mm in fruit, with patent lobes and a saucer-shaped united portion; in *O. luciliae* the fruiting calyx reaches only 6 mm diam., with incurved lobes and a cup-shaped tube. The nutlets of *O. ripleyana* have a fimbriate incurved margin (entire in *O. luciliae*), a character shared by *O. cappadocica* (Willd.) DC.

Onosma

H. RIEDL*

Onosma pulchrum H. Riedl, **sp. nova** (Sect. **Asterotricha** Boiss.)

Ab omnibus speciebus sectionis corolla demum (in sicco quidem) intense coerulea, distributione pilorum in superficie corollae et indumento foliorum manifeste diversum.

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Herba perennis (vel biennis?). *Caules* 30–35 cm alti, simplices vel subsimplices, basi residuis foliorum emortuorum anni praecedentis vestita, coerulescenti- vel nigrescenti-suffusi, setis sparsis patulis tuberculis parvis insidentibus vel tuberculis carentibus obsiti, ceterum breviter appresse pilosi. *Folia* basalia et caulina inferiora 10–40×7–9 mm, obtusa vel subacuta, oblongo-spathulata, margine revoluto; media et superiora 20–30×5–6(–7) mm, ±anguste oblongo-lanceolata; basalia et caulina inferiora supra subtusque setis e tuberculis stellatim pilosis orientibus, media et superiora supra setis e tuberculis minoribus glabris vel maioribus stellatim pilosis orientibus, subtus tuberculis stellatim pilosis parvulis setis carentibus obsita. *Inflorescentia* e cincinnis 2–3 terminalibus, post anthesin valde elongatis formata. *Bracteae* inferiores usque ad 20 mm longae, ceterae minores, lineares. *Pedicelli* sub anthesi 1–4 mm longi, postremo usque ad 6 mm elongati. *Calyx* florifer 17–18 mm longus, fructifer usque ad 21 mm elongatus lobis linearibus usque ad 1·5 mm latis, prope basin subpatule, ceterum appresse setulosis, ad basin fere liberis. *Corolla* primo rosea vel rubro-lilacina, demum intense coerulea basi dilutius coerulea, 24–25 mm longa, cylindrico- vel clavato-campanulata, in lobis et secus lineas a lobis basin versus pilosa. *Antherae* inclusae, filamentis paulo breviores, apice sterili bidentato. *Nectarium* indistinctum glaberrimum. *Nuculae* 2–3 mm longae, manifeste rostratae, laeves.

Turkey. C6 Adana: a Yarpuz orientem versus, Nur Da., 1000–1600 m, 5 v 1973, *F. Sorger* (holo. hb. Sorger).

This beautiful new species with unusually deep blue flowers was collected in June and seems to flower from the second half of May to the first half of June. Contrary to most of the other species known, it grows in deciduous forest more than 1000 m above sea level.

Paracaryum

R. R. MILL

Studies of the genera *Paracaryum* (DC.) Boiss. and *Mattiastrum* (Boiss.) Brand, which will be reported in a forthcoming paper, have led me to the conclusion that *Mattiastrum*, which was separated by Brand (Feddes Rep. 14:150–156, 1915), should be re-united with *Paracaryum*.

Many of the necessary combinations still need to be made by the author. Only those affecting Turkish taxa are published here, along with descriptions of a new section, a new species and a new subspecies.

The genus is here considered to comprise four subgenera, one of which is monotypic and endemic to Afghanistan. Representatives of each of the three other subgenera occur in Turkey.

Paracaryum subgen. **Mattiastrum** (Boiss.) R. Mill, **stat. nov.**

Syn.: *Paracaryum* (DC.) Boiss. sect. *Mattiastrum* Boiss., Diagn. ser. 1, 11:130 (1849).

Mattiastrum (Boiss.) Brand in Feddes Rep. 14:150 (1915), *pro parte incl. typ.*

Mattiastrum (Boiss.) Brand sect. *Macromattiastrum* Brand, *l.c.*

Paracaryum sect. *Macromattiastrum* (Brand) M. Popov in Fl. URSS 19:550 (1953).
Type. *P. calycinum* Boiss. & Bal. in Boiss., Diagn. ser. 2, 6:261 (1859).

Paracaryum paphlagonicum (Bornm.) R. Mill, **comb. nov.**
Syn.: *Mattiastrum paphlagonicum* Bornm. in Mag. Bot. Lap. 30:69 (1931).

Paracaryum racemosum (Schreb.) Britten in Journ. Bot. 44:343 (1906) var. **scabridum** (Rech. fil.) R. Mill, **comb. et stat. nov.**
Syn.: *Mattiastrum scabridum* Rech. fil. in Ann. Naturh. Mus. Wien 58:51 (1951).

Known only from the type gathering (Turkey C6 Hatay/Syria: Syria borealis, Mons Amanus, 1525 m, vii 1906, *Haradjian* 566, holo. G; iso. K). Rechinger (*l.c.*) distinguished *M. scabridum* from all other species of *Mattiastrum* sect. *Macromattiastrum* Brand by its lax, sparse indumentum, hairs with tuberculate bases, narrow corolla scales with trilobate apex, and very narrowly linear anthers. Comparative studies have, however, shown that the anthers are similar to those of other taxa of *P.* subgen. *Mattiastrum*, both in form and insertion. Trilobate corolla scales identical to those of *M. scabridum* occur in *P. racemosum*. Indeed, the two taxa cannot be separated by floral morphology and possess similar nutlets. Hence, *M. scabridum* is considered to be conspecific with *P. racemosum*, within which the sparsely hairy, glabrescent leaves justify its recognition as a distinct variety.

Paracaryum subgen. **Mattiastrum** (Boiss.) R. Mill sect. **Laxiflora** R. Mill, **sect. nov.**
Syn.: *P.* sect. *Modestomattiastrum* (Brand) M. Popov series *Lophoptera* M. Popov in Fl. URSS 19:594 (1953), *nomen illegit., pro parte*.

A sect. *Mattiastro* corolla parva, tubo calycem non vel vix tamen excedenti, stylo incluso differt; ad subgen. *Modestomattiastrum* (Brand) H. Riedl trasiens, a quo fornicibus elongatis, staminibus supra basin fornicium insertis bene differt.

Corolla parva, breviter campanulata, 3–6 mm longa, tubo quam calyce paulo breviore, limbo quam tubo breviore vel aequale. Fornices elongatae. Stamina inclusa vel paene exserta, ad faucem inserta, antheris oblongis. Stylus brevis, inclusus vel paene exsertus.
Type. *P. laxiflorum* Trautv. in Acta Horti Petrop. 3:274 (1875).

P. laxiflorum can be considered as a link between subgenera *Mattiastrum* and *Modestomattiastrum*, resembling most species of the former in its elongate scales with the base of the anthers borne above them, but distinguished from most species by the small corolla. While it is close to subgen. *Modestomattiastrum* in general habit and in nutlet and style characters, its floral morphology is very different.

Paracaryum subgen. **Modestomattiastrum** (Brand) R. Mill, **stat. nov.**
Syn.: *Mattiastrum* (Boiss.) Brand sect. *Modestomattiastrum* Brand in Feddes Rep. 14:152 (1915).
Paracaryum (DC.) Boiss. sect. *Modestomattiastrum* (Brand) M. Popov in Fl. URSS 19:593 (1953), *pro parte incl. typ.*
Mattiastrum (Boiss.) Brand subgen. *Modestomattiastrum* (Brand) H. Riedl in Rech. fil., Fl. Iranica 48:112 (1967).

All the Turkish taxa belong to sect. *Modestomattiastrum* [Syn.: *Mattiastrum* (Boiss.) Brand subgen. *Modestomattiastrum* (Brand) H. Riedl subsect. *Modestomattiastrum* H. Riedl, *op. cit.* 112 et subsect. *Caespitosa* H. Riedl, *op. cit.* 117 (1967)].

Paracaryum amani (Rech. fil.) R. Mill, **comb. nov.**
Syn.: *Mattiastrum amani* Rech. fil. in Ann. Naturh. Mus. Wien 58:50 (1951).

Paracaryum artvinense R. Mill, **sp. nov.**
Species affinis *P. himalayensi* (Klotzsch & Garcke) C. B. Clarke sed nuculis ala glochidiato-denticulata differt; a *P. lithospermifolio* (Lam.) Grande corolla parva fornicibus minutis bene distinguitur.

Herba biennis hirsuta caulibus compluribus ascendentibus ramosis 17–20 cm alta. *Indumentum* caulium dimorphicum; pilis longioribus superne antrorse adpressis, inferne antrorse-patentibus; pilis brevioribus antrorse adpressis. *Folia* basalia emarcida, lamina c. 10 cm × 4 mm, anguste obovata, sensim in petiolum quam laminam paulo longiorem attenuata; caulina sessilia, anguste oblonga, lamina 22–27 × 4 mm, superiora anguste ovata descrescentia; indumentum foliorum subvillosum adpressum, pilis longioribus e basibus tuberculatis insidentibus. *Cincinni* terminales et axillares, in statu fructifero valde elongati laxissimi, axillares simplices, terminales bifurcati. *Pedicelli* floriferi 1·6–2·2 mm, fructiferi valde elongati ad 7·5–10.5 mm. *Corolla* caerulescens vel albida, minutissima, 2·5–3 mm, tubo quam limbo paulo longiore; limbus ad basin divisus lobis oblongis obtusis. *Fornices* minutae, 0·25 × 0·3 mm, in parte medio constrictae, basi late triangulares, apice rotundatae. *Antherae* c. 1 mm. *Nuculae* 8–9 × 7–8 mm, suborbiculares, disco glochidiato-echinulato, ala 2·1–2·3 mm lata margine denticulato dentibus incurvatis. *Stylus* in statu fructifero 2–2·8 mm. *Grana pollinis* heterocolpata, tricolporata, oblonga, ad equatorem constricta, c. 9 × 5 μm, in diametro polare c. μm. *Fl.* Jun.
Turkey. A9 Çoruh: Ardanuç to Kordevan Da. (Artvin to Ardahan), eroded shaly banks, 1100 m, 26 vi 1957, *Davis & Hedge, D.* 30085 (holo. E; iso. K).

P. artvinense is of isolated taxonomic affinity among the Turkish species. It seems to be related to the *P. himalayense* complex of E Afghanistan to Pamir-Alai. It resembles *P. himalayense* (Klotzsch & Garcke) C. B. Clarke in its untidy, much-branched habit, its minute sky-blue flowers, and the small dumb-bell-shaped pollen, characters separating it from all other Turkish species. The form of the nutlet is different to that of *P. himalayense*, however, being similar to that of *P. lithospermifolium* (Lam.) Grande from Anatolia. The habit and floral morphology clearly differentiate it from the latter species. The species is known only from the type gathering, and grows in a locality where some other very rare species occur.

Paracaryum cristatum (Schreb.) Boiss., Diagn. ser. 1,11:131 (1849) subsp. **carduchorum** R. Mill, **subsp. nov.**

A subsp. *cristato* limbo corollae quam tubo longiore, fornicibus maioribus, disco nuculae glochidiis sparsis brevibusque differt.

Herba biennis, caule hirsuto, pilis plerumque±brevibus sparsisque. *Folia* saepe pallide virentia in sicco. *Pedicelli* floriferi 2·3–6 mm, fructiferi elongati 4–13 mm. *Fornices* (0·4–) 0·6–0·7×(0·7–) 0·9–1·3 mm. *Nuculae* (8–) 9–12·5× 7–10 mm, disco sparse et breviter glochidiato; ala dentibus marginalibus obtusis, rariore acutis; stylus fructifer (1·6–) 2·8–4·5 mm, sub stigmate capitato±ventricosus.

Turkey. B9 Bitlis: Nemrut Da. above Söğürt, 2130 m, *Davis & O. Polunin, D.* 23519. Ağri: 5–10 km from Hamur to Tutak, 1650 m, *Davis* 44117. Van: 8 km from Van to Erçek, 2100 m, *Davis* 44423. C9 Hakkari: Zab gorge, 12 km from Hakkari to Van, 1250 m, *Davis* 44863. C10 Hakkari: Nehil Çayi, 48–55 km from Hakkari to Yüksekova, igneous slopes, 1600–1700 m, 14 vi 1966, *Davis* 44889 (holo. E; iso. K); Yüksekova to Şemdinli, *Trelawny* 1059.

The new subspecies approaches *P. kurdistanicum* (Brand) R. Mill (see below), to which *P. cristatum* is closely related. It resembles *P. kurdistanicum* in its long fruiting pedicels but is distinguished by its smaller flowers and by the nutlets with scattered minute tubercles on the dorsal surface of the wing (as in subsp. *cristatum*). Although the material cited by Riedl has not been seen, his excellent description of *P. cristatum* as it occurs in N Iran and N Iraq (Riedl in Rech. fil., Fl. Iranica 48:113, 1967) clearly refers to subsp. *carduchorum*.

As here understood, *P. cristatum* subsp. *cristatum* is apparently endemic to Turkey. It is distinguished from subsp. *carduchorum* by coarser, denser indumentum; leaves (*in sicco*) usually dark or greyish green; pedicels in fruit 1·5–4 mm; corolla limb equal to or shorter than tube; corolla scales smaller (0·4–0·5×0·7–1 mm); nutlets 8–10·5×6·5–9·5 mm, with disc densely long-glochidiate; style in fruit 1·3–3·5 mm,±narrowed beneath the stigma. As all these differences are normally correlated, the majority of specimens can be confidently referred to one or other of the subspecies, even if either flowers or fruit are lacking. In a narrow zone near Van G., where the two taxa overlap, intermediates occur (B8 Erzurum: Ilica to Tercan, 2000 m, *Davis* 30874. B9 Bitlis: Tatvan to Tuğ, 1800 m, *Davis* 22316).

Paracaryum kurdistanicum (Brand) R. Mill, **comb. nov.**

Syn.: *Mattiastrum kurdistanicum* Brand in Feddes Rep. 14: 154 (1915).

Paracaryum lithospermifolium (Lam.) Grande in Bull. Orto Bot. Nap. 4:183 (1914).

1. Corolla tube longer than or subequalling limb; limb lobed±to base; scales 0·6–1(–1·2) mm broad at base . . . . subsp. *lithospermifolium*

\+ Corolla tube shorter than or subequalling limb; limb not lobed to base; scales 1·1–1.4 mm broad at base 2

2. Stems numerous, decumbent to ascending,±tufted . . . subsp. *cariense* var. *cariense*

\+ Stems few, tall, erect . . . . subsp. *cariense* var. *erectum*

P. lithospermifolium subsp. **cariense** (Boiss.) R. Mill, **comb. et stat. nov.** var. **cariense**

Syn.: *Omphalodes cariensis* Boiss., Diagn. ser. 1, 4:41 (1844).
Paracaryum myosotoides (Labill.) Boiss., Diagn. ser. 1, 11:130 (1849) *pro parte excl. typ. quoad plantas turcicas, creticas.*
P. cariense (Boiss.) Boiss., *l.c.*

Tufted, 5–18 cm. Stem hairs antrorsely adpressed above. Corolla tube shorter than or subequal to limb, limb not lobed to base; lobes (0·6–)1·6–1·9×c. 2 mm; scales 0·5–1×1·1–1·4 mm.

Syntypes. [Turkey C2 Denizli] in pinguibus regionis alpinae Cadmi orientalis (Honaz Da.), vi 1842, *Boissier* (G, n.v.); in Caria interiori, 1843, *Pinard* (G, n.v.).

Turkey (mainly S and SW Anatolia). B5 Adana: d. Feke, Bakir Da. at top of Sencan De., 2100–2200 m, *Davis, Dodds & Çetik, D.* 19398. B6 Adana: d. Saimbeyli, Bozoğlan Da. above Obruk Y., 2100 m, *Davis* 19740. C2 Muğla: Girdev Da., 2400 m, 5 viii 1947, *Davis* 14036; Çal Da., W ridge, 35 km N of Fethiye, 2100 m, 9 viii 1968, *Lambert & Thorp* 589; Sandras Da. at Gökçe ova, *Davis* 13531. C2 Antalya: Boz Da., 9 vii 1883, *Pichler* 466; d. Gebiz, Bozburun Da., 2200 m, *Davis* 15905; d. Kemer, Tahtali Da., 2200 m, *Davis* 15049 C3 Konya: Ak Da., 5 vii 1860, *Bourgeau.* C4 Konya: Bulgar Dagh (Bolkar Da.), Kizil Tepe, 2300 m, *Kotschy* 144. C5 Içel: Gusguta valley, *Kotschy* 39 p.p. Niğde: Masmutlidagh, 2800 m, vii 1907, *Siehe* 1100. Ala Da., Narpiz gorge, 3050 m, 8 vi 1964, *Wood & Gibson* 188, 191; Ala Da., Demir Kazik, 29 viii 1965, *Findlay* 156. Adana: Karli boğazi, 1800 m, 1896, *Siehe* 321.

Greece, Crete, Cyprus, Turkey.

var. **erectum** R. Mill, **var. nov.**

A var. *cariense* habitu erecto, caulibus paucis elatioribus hispidissimis, limbo corollae saepe ad basin divisa differt. *Herba* erecta 13–24 cm alta, hispidissima setis patentibus. *Tubus corollae* limbo 3–5-plo longior; lobi 0·6 mm. *Nuculae* c. 9 mm diametro.

A7 Gümüşane: Stavrosdere, 17 vi 1894, *Sintenis* 5836. B7 Erzincan: 20 km NW or Erzincan, c. 1400 m, *M. Zohary* 87414 (HUJ). C6 Maraş: Akher Dagh (Ahir Da.), 790 m, 2 vi 1834, *Balls & Gourlay, B.* 961 (holo. E; iso. K).

Turkey (Inner Anatolia, mainly confined to 'Anatolian Diagonal').

P. lithospermifolium is exceedingly polymorphic. Subsp. *lithospermifolium* [Syn.: *Cynoglossum lithospermifolium* Lam., Encycl. 2:238, 1786; *C. myosotoides* Labill., Icon. Pl. Syr. 2:6, t. 2, 1791; *Mattiastrum lithospermifolium* (Lam.) Brand in Feddes Rep. 14:155, 1915, *pro parte incl. typ.*] is restricted to Lebanon, Anti-Lebanon and Hermon. It is distinguished from subsp. *cariense* by stem indumentum retrorsely adpressed throughout; corolla tube subequal to or longer than limb; limb lobed±to base, lobes 1·1–2×1·2–1.6 mm; corolla scales 0·8–1·2×0·6–1(–1·2) mm. Boissier originally gave the name *Omphalodes cariensis* to forms of *P. myosotoides* (Labill.) Boiss. with an entire nutlet wing. As here recognised, denticulate- and entire-winged forms occur in both subspecies of *P. lithospermifolium*, although they have not been seen in the same gathering. High mountain forms of subsp. *cariense*

var. *cariense* (C5 Niğde: Ala Da., 3000 m, *Markgraf* 11227; Narpiz gorge, *Wood & Gibson* 198) have densely sericeous-villous leaves and subentire nutlet wing; they approach *P. reuteri* Boiss. & Hausskn. (Amanus) but are never tomentose or lanate as in that species. The two subspecies are connected by subsp. *cariense* var. *erectum*, which is also closely similar to *P. cappadocicum* Boiss. & Bal. in habit.

Paracaryum polycarpum (Rech. fil.) R. Mill, **comb. nov.**

Syn.: *Mattiastrum polycarpum* Rech. fil. in Ann. Naturh. Mus. Wien 58:52 (1951).

Rochelia

J. R. EDMONDSON

Rochelia disperma (L. fil.) C. Koch var. **microcalycina** (Bornm.) Edmondson, **comb. et stat. nov.**

Syn.: *R. microcalycina* Bornm. in Mitt. Thür. Bot. Ver., N.F. 21:79 (1906).
R. karsensis M. Popov in Spis. Rast. Gerb. Fl. SSSR 13:66 (1953).

The variety is endemic to Anatolia. It differs from typical *R. disperma* by having pedicels deflexed to recurved in fruit, and a smaller fruiting calyx. A closely related species, *R. bungei* Trautv., differs from *R. disperma* by the same characters, but unlike var. *microcalycina* the hairs on its calyx are hooked, as in var. *disperma*. It is doubtful whether the type of hairs on the calyx is an adequate basis for the delimitation of species in this group, which has suffered from over-splitting.

Solenanthus

R. R. MILL

Solenanthus formosus R. Mill, **sp. nov.**

Species nobilis *S. circinnato* Ledeb. affinis sed statura elatiore, indumento caulium longiore rigidiore, corolla paulo longiore, filamentis subaequilongis, nuculis maioribus glochidiis omnibus subaequalibus tuberculis albidis numerosis multicellularibus differt.

Herba perennis, hirta, 100–150 cm alta vel ultra. *Caulis* erectus, crassus, leviter striatus, pilis lutescentibus ad 2 mm longis, inferne subretrorse patentibus, molliter hispidus. *Folia* dense strigillosa, pilis c. 0·3–1·5 mm longis, e basibus calcaratis insidentibus; basalia (ut videtur) lamina late ovata, apice obtusa; cauline sessilia, inferiora late ovata vel oblanceolata, mediana ± elliptica, 13·5–19 × 2–3·5 cm, basi attenuata, margine integro, superiora multo breviora, late ovata, 2–3 × 1·2–1·5 cm, apice obtusa, basi truncata. *Cincinni* pernumerosi, in thyrsum ramosissimum dispositi; rami ± verticillati, hispidi, pilis adpressis antrorsis flavo-virentibus vividis vestiti. *Calyx* lobis etiam pilis densis flavo-virentibus ornatis, 4–5 mm longis, ovatis, in statu fructifero non vel vix accrescentia. *Corolla* pallide azurea (in sicco), 7·5–8·5 mm, lobis acutis, 1·5–1·8 × 0·7–0·8 mm; filamenta subaequilonga, 8–9 mm, infra fornices c. 1 mm inserta, corollam superantia; antherae subglobosae,

0·9×0·7 mm; fornices angustae, 0·8 mm longae, basi sagittatae. *Stylum* 9–10 mm, calycem duplo longior. *Nuculae* aureo-virides, patelliformes, 9–10 mm diam., facie dorsali glochidiis densis papillatis c. 1 mm longis et tuberculis paulo elevatis refertis, laterali et ventrali dense glochidiata; glochidia marginalia eis faciei dorsalis subaequalia. *Fl.* Jun.
Turkey. C10 Hakkari: Sat Da. between Varegöz and Sat G., 2300 m, yayla pasture, flowers bluish white, 27 vi 1966, *Davis* 45597 (holo. E; iso. K); 40 km from Yüksekova to Şemdinli, 1600 m, rocky igneous slopes of wooded gorge, 15 vi 1966, *Davis* 45140.

This new *Solenanthus* appears to be most closely related to *S. circinnatus* Ledeb., a widespread species which also occurs on Sat Da. It is distinguished from *S. circinnatus* by the subequal filaments and the nutlets having all glochids subequal (in *S. circinnatus* the marginal glochids are much longer than those of the dorsal surface). The broadly ovate, not oblong, upper cauline leaves, together with the narrower faucal scales with sagittate bases, easily differentiate it from *S. stamineus* (Desf.) Wettst., the only other species of the genus recorded from Turkey. The specimens of *S. formosus* exhibit a conspicuous yellowish green stem indumentum of long setiform hairs which distinguishes it further from the allied species, both of which have a shorter, softer, grey to whitish indumentum.

A colour transparency of a fruiting plant in the same population as the type, taken in the field by Davis, is preserved at Edinburgh. This slide clearly shows the strongly branched, subverticillate inflorescence, and basal leaves (lacking in the pressed material) can also be seen. The other cited specimen is in fruit.

Trachelanthus

R. R. MILL

Trachelanthus cerinthoides (Boiss.) Kunze in Bot. Zeitung 8:665 (1850).
Syn.: *Solenanthus cerinthoides* Boiss., Diagn. ser. 1, 11:127 (1849).
Trachelanthus kurdicus Boiss., Fl. Or. 4:271 (1875).
T. foliosus Tristram, Surv. W. Pal. 367 (1884).
Solenanthus cerinthoides var. *kurdicus* (Boiss.) Post, Fl. Syria 537 (1896) [excl. fig. 519].
S. kurdicus (Boiss.) Gürke in Engler & Prantl, Pflanzenfam. 4, 3a:104 (1893).
Lindelofia cerinthoides (Boiss.) Brand in Engler, Pflanzenreich 78 (IV.252):80 (1921).
L. kurdica (Boiss.) Brand, *l.c.* 82.
Turkey. B8 Muş: Teng valley nr Muş, schistose alpine slopes, 1980 m, *Kotschy* 463 [sphalm. 493 in descr.] (type of *T. kurdicus*). C9 Hakkari: Cilo Da. in gorge between Cilo Y. and Diz De., rocky slope, 10 viii 1954, *Davis & O. Polunin, D.* 24249. C10 Hakkari: Cilo Da., Serpil De., 24 viii 1956, *Deutschmann s.n.*

Boissier (1875) stated that *T. kurdicus* seemed to differ from *T. cerinthoides* by its much broader, more obtuse leaves which are broadly auriculate, and by nutlets with longer glochids. Brand (1921) separated *T. kurdicus* from

T. cerinthoides by its much larger nutlets, and by nodding (not erect) fruiting pedicels. Riedl in *Fl. Iranica-Boraginaceae* 136 (1967) maintained *T. kurdicus* as a separate species on the basis of the type specimen, which in fact came from E Anatolia.

Little material has been seen from Turkey, but despite this the differential characters used by Boissier and Brand break down. The Deutschmann gathering has large nutlets characteristic of *T. kurdicus*, but otherwise resembles *T. cerinthoides*. The pedicel character noted by Brand may simply be an age effect. In the present state of knowledge, therefore, the best solution seems to be to treat the two taxa as conspecific.

GENTIANACEAE

N. M. PRITCHARD*

Gentianella

SEASONAL DIMORPHISM IN GENTIANELLA. Throughout the range of sect. *Gentianella*, closely related pairs of species occur in which the morphological differences seem to be correlated with time of flowering (and thus, often, with altitude). Early flowering plants ('aestival') tend to have fewer internodes, more obtuse leaves and few, long-pedicelled flowers; later flowering plants ('autumnal') have many internodes, more acute leaves and numerous crowded flowers. This pattern of variation occurs in all the main groups, and intersects the more traditional taxonomic boundaries. The result is a complex intergrading pattern of variation in Europe and Asia, including Turkey, within which many segments, apparently genetically distinct, can be recognised. The pattern is complicated further by geoclinal variation, especially within *G. germanica* (Willd.) Börner *s.l.*, which extends from Britain to Caucasia. Within this cline the better-marked variants, often occurring as seasonal-dimorphic pairs, ought probably to be recognised as vicarious subspecies. In general, however, this has not been done; a great variety of names, at many different ranks, has been published, with resulting taxonomic and nomenclatural confusion. The Turkish plants are in the Flora treated as a species, *Gentianella caucasea* (Loddiges ex Sims) Holub, but it is probable that *G. caucasea*, *G. bulgarica* (which may occur in NW Turkey), *G. lutescens*, *G. austriaca* and others would be best regarded as vicariads within *G. germanica s.l.*

Gentianella ciliata (L.) Borkh. subsp. **blepharophora** (E. Bordz.) Pritchard, **comb. et stat. nov.**

Syn.: *Gentiana blepharophora* E. Bordz. in Trudy Bot. Sada Jur'ev 13:21 (1912).

Gentianella holosteoides [Schott & Kotschy ex] Pritchard, **sp. nov.**

G. holosteoides in omnibus partibus minor est quam *G. amarella* (L.) Börner, et praesertim floribus dimidio minoribus, saepius tetrameris. Haec species internodiis paucioribus (2–3), ramulis unifloris a rosula basalia exorientibus et corollae squamulis minimis vel deficientibus quoque diversa est.

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Herba annua (vel biennis?). *Caules* breves, 1·7–6 cm alti, plerumque e base ramosi; caulis principalis 2–3 internodiis, floribus terminalibus lateralibusque, lateralibus longe pedicellatis. *Folia* basalia spathulata; *caulina* sessilia, ad 15×4 cm, lanceolata usque lineari-lanceolata, apice acuta. *Flores* saepius 4-meri. *Calyx* 5–8 mm longus, ad c. ⅔ divisus, lobis ± inaequalibus, lobo longissimo quidem corollae tubum superante. *Corolla* caerulescens, (6–)9–12 mm, lobis subacutis, 2·5–3 mm longis, verosimiliter suberectis. *Capsula* sessilis vel subsessilis. *Fl.* Aug.
Turkey. C5 Niğde: in humidis fontium prope Bulgar Magara substrato dioritico, 8000′ [2438 m], viii 1853, *Kotschy* 285 (holo. K; iso. WU); *ibid.*, 2700 m, 1895, *Siehe* 287, 288; *ibid.*, 2500 m, *Balansa* 713; *ibid.*, *Kotschy* 208 ('*Gentiana consobrina* Schott & Kotschy'—*nomen nudum*).

One of a group of geographically isolated species within the *Gentianella amarella* (L.) Börner complex, e.g. *G. columnae* (Ten.) Holub and *G. albanica* (Jáv.) Holub. The type gathering was originally distributed as '*Gentiana holosteoides* Schott & Kotschy, Anal. bot. III'. The name was never validly published, because only the first volume of Schott & Kotschy's *Analecta* ever appeared. Boissier apparently considered it synonymous with *G. aurea* L., a member of sect. *Arctophila*, and he also included in *G. aurea* L. another Kotschy gathering from the same locality which Kotschy distributed under the name '*Gentiana* (*Amarella*) *consobrina* Schott & Kotschy'; Kotschy thus placed the two gatherings in separate sections of the genus.

The presence of small scales in the mouth of the corolla is almost the only formal difference between what are now sections *Gentianella* and *Arctophila* of *Gentianella*. It is at best only a marker difference; there are several species of sect. *Gentianella* in which the scales are poorly developed, and at least one [*G. lipskyi* (Kuzn.) Holub] in which they are said to be wanting. In general, however, plants of the two sections are usually of rather different facies, and the sections are more or less natural taxonomic groupings.

Gentianella umbellata (Bieb.) Holub in Folia Phytotax. Geobot. 2:118 (1967) subsp. **longicarpa** (Gilli) Pritchard, **comb. et stat. nov.**
Syn.: *Gentiana longicarpa* Gilli in Feddes Rep. 63:327 (1960).
Type. Afghanistan: Sard darra [Zard Darreh] in der Koh-i-Baba, Sumpfweise, von Bächlein durchflossen (*Trichophoretum atrichi*), 3350 m, 27 viii 1951, *A. Gilli* [3070a] (holo. W).
Turkey. B9 Van: 30 km from Başkale to Hoşap, 2600 m, *Davis* 45926; C10 Hakkari: Cilo Tepe, 3050 m, *Davis* 24038.

The Turkish material does not fully match the description of *G. umbellata* Bieb. by Schiman-Czeika in *Flora Iranica* 41:20 (1967). The flowers are often smaller than in typical material from Caucasia and N Iran. In its mode of branching it resembles *G. longicarpa*, with arcuate-ascending and many-flowered lateral branches. Both taxa are illustrated in plate 2 of *Fl. Iranica*. *G. longicarpa* also differs from *G. umbellata*, according to *Fl. Iranica*, by its capsule being more distinctly exserted from the corolla in fruit. Both characters are likely to vary according to the degree of maturity of the plant, and might be considered a weak basis for separation of species. *G. longicarpa* is therefore treated here as a subspecies of *G. umbellata*.

Gentiana

Gentiana verna L. subsp. **pontica** (Soltok.) Hayek, Prodr. Fl. Balc. 2:419 (1930).

Syn.: *G. angulosa* Bieb., Fl. Taur.-Cauc. 1:197 (1808).
G. pontica Soltok. in Öst. Bot. Zeitschr. 51:168 (1901).
G. verna L. var. *pontica* (Soltok.) Kuzn., in Fl. Cauc. Crit. 4:352 (1904).

Lectotype designated here. Turkey A7 Trabzon: Zigana Da., 23 v 1894, *Sintenis* 5626 (WU; E).

Turkey. A8 Rize: Ikizdere to Ispir, 3000 m, *Stainton & Henderson* 6209. A9 Çoruh: Yalnizçam pass, 2440 m, *Apold et al.* 152. B10 Kars: Büyük Ağri Da., 2745–3660 m, 11 viii 1910, *B. Post*. USSR. Georgia: Lechkhumi, mt Khvamli, 14 vii 1958, *Kemularia-Nathadze*.

Gentiana verna L. subsp. **balcanica** Pritchard, **subsp. nov.**

A subsp. *verna* calyce latiore alato recedit; a subsp. *pontica* differt longitudine corollae (20–)28–37(–39) mm [non (38–)40–46 mm, subsp. *pontica*]; utrique foliis basalibus angustioribus, ellipticis vel ovatis, longitudine plerumque plus quam $2\frac{1}{2}\times$ latitudine, apice subacuto differt.

Type. Jugoslavia. Bosnia: in alpinis montis Hranicava, solo calc., iv 1885, *G. Beck* 99—as *Gentiana angulosa* Bieb. var. *chalybea* Beck—(holo. E).

Representative specimens. Albania: distr. Scutari, ad summum jugum m. Zukali, 16 vi 1897, *A. Baldacci* 33. Bulgaria: in m. Rhodope ad Bela Čerkva, vi 1901, *V. Střibrny*. Greece: Cara tach, pag. Gramaticova prope Vodena, 1900 m, iv 1909, *I. Dimonie*. Romania?: Maja Pupuks, 2200–2300 m, 17 vii 1936, *F. Lempberg* 262. Turkey: A2(A) Bursa: Ulu Da., *Bornmüller* 1899: 5299. A4 Kastamonu: Ilgaz Da., 2010 m, *Davis* 21572.

G. verna in the Balkans differs from typical material from the Alps (subsp. *verna*). Hayek, *Prodr. Fl. Balc.* 2:419 (1930), who first treated it as a distinct subspecies, based its name on *G. pontica* Soltok., which was described from a number of syntypes collected mainly in northern Turkey (hence the name '*pontica*') but which included one gathering from the Balkans (Bulgaria): Šipka Balkan, *Urumoff*. It is clear from Soltoković's description that *G. pontica* was intended to apply mainly to the northern Turkish and Caucasian subspecies; indeed, a gathering from NW Turkey, which is now placed in subsp. *balcanica* (Ulu Da., 1899, *Bornmüller* 5299) is described by Soltoković as "transitional with *G. tergestina*" [*G. verna* subsp. *tergestina* (G. Beck) Hayek, *l.c.* 420] with broadly winged calyx and narrowly lanceolate rosette-leaves). By typifying *G. verna* L. subsp. *pontica* (Soltok.) Hayek with a specimen from A7 Trabzon, I wish to restrict the application of the name to the northern Turkish and Caucasian subspecies. It follows that a new name is required for the Balkan subspecies, i.e. subsp. *pontica* sensu Tutin in *Fl. Europaea* 3:62 (1972) non (Soltok.) Hayek.

A name which has often been applied to both Balkan and Turkish material of *G. verna* is *G. angulosa* Bieb. [syn.: *G. verna* var. *angulosa* (Bieb.) Kuzn.]. Indeed, the same name, but with sometimes different authors (e.g. *G. angulosa* Wahlenb.) has long also been used to describe large-flowered plants from the Alps. Kuznetsov and Grossheim restrict the name *G. angulosa* to plants from

the main range of the Caucasus; it is replaced in Transcaucasia by *G. pontica* in their treatments. *G. angulosa* is said to resemble *G. pontica* (subsp. *pontica* hic) in corolla size, but Balkan plants (subsp. *balcanica*) in rosette leaf shape and size. However, corolla size, leaf size and shape and calyx wings are all variable in *G. verna*. I prefer to treat *G. angulosa* and *G. pontica* as a single taxon which forms an eastern vicariad in the *G. verna* group.

G. oschtenica (Kuzn.) Woron. (syn.: *G. verna* var. *oschtenica* Kuzn.) appears to be a yellow-flowered form of subsp. *pontica*. It occurs in Caucasia, but has not been reported from Turkey.

In SE Turkey and N Iran, plants occur with relatively small corollas but with basal leaves within the range of size of subsp. *pontica*. The status of these gatherings remains problematical.

SOLANACEAE

Lycium

A. BAYTOP & R. R. MILL

Lycium anatolicum A. Baytop & R. Mill, **sp. nov.**

Species *L. europaei* L., *L. depresso* Stocks et *L. petraeo* Feinbrun affinis; a *L. depresso* filamentis pilosis, bacco atrorubrobrunneo differt; a *L. europaeo* calyce bilabiato dentibus inaequalibus, filamentis pilosis, margine loborum corollae sparse tantum ciliata recedit; a *L. petraeo* spinis foliosis, calyce plerumque multo breviore, filamentis subaequalibus, tubo corollae parte inferiore anguste cylindrica calycem superante distinguitur.

Frutex spinosus, 1–2 m altus, glaber, ramis ramulisque rigidis pallide canescenti-stramineis, spinis crassis foliosis. *Folia* ramorum elongatorum solitaria alterna, ea ramorum abbreviatorum fasciculata bina vel terna, omnia anguste oblonga vel oblanceolata, 1–5 cm longa, 1–5(–8) mm lata, rugoso-striata, nervis lateralibus inconspicuis, apice subacuta, ad basin in petiolum brevissimum attenuata vel cuneato-subsessilia margine integerrimo. *Flores* axillares solitares vel in fasciculos 2–3(–5) dispositi. *Pedunculi* tenues, paulo curvati rariore subrecti, 2–18 mm longi, glabri. *Calyx* campanulato-calathiformis, (2–)2·5–3(–3·5) mm longus, bilabiatus, dentibus quinque late triangularibus obtusis inaequalibus dente medio labii superioris minuto. *Corolla* pallide violacea, 9–11(–12) mm longa; tubus 6–7 mm longus, parte superiore infundibulari, inferiore anguste cylindrica 5 mm longa, calycem superans, intus glaber vel ad insertionem staminum sparse pilosus; limbus tubo 2–3-plo brevior lobis margine sparse ciliatis; filamenta subaequalia basi ad partem liberam faciei adaxialis brevipilosa, antheris valde exsertis. *Bacca* atrorubrobrunnea, globosa, 3–4 mm diametro. *Fl.* May–Jul.

Turkey. (C & E Anatolia).

B3 Eskişehir: 3 km S of Çifteler, 870 m, 28 viii 1974, roadside hedge, *A. Baytop* ISTE 30815 (holo. ISTE; iso. E); *ibid.*, *A. Baytop* ISTE 28961; *ibid*, *A. Baytop* ISTE 30651; Eskişehir, 800 m, *A. Baytop* ISTE 30656. B4 Ankara: Dikmen hill nr Ankara, *Davis* 13203; Dikmen, Keklikpinar, 1150 m, *A. Baytop* ISTE 30536; Keskin, 1100 m, *A. Baytop* ISTE 30606; *ibid.*, *A. Baytop* ISTE 30928. B4 Kirşehir: Kirşehir to Kaman, Aydinlar, 1190 m, *Ünsal* ISTE 30532; Kaman to Bala, Karakaya, 950 m, *Ünsal* ISTE 30533. B5

Kirşehir: Ozbağ, nr Kirşehir, 1050 m, *Ünsal* ISTE 30531; B5 Nevşehir: Nevşehir, 1200 m, *A. Baytop* ISTE 27102; *ibid.*, *A. Baytop* ISTE 30590; *ibid.*, *Davis* 19157; Gülşehir, 850 m, *A. Baytop* ISTE 30601; Avçilar to Göreme, *A. Baytop* ISTE 30594; Nar, 3 km N of village, 1200 m, *Roper* 108. B5 Kayseri: Develi, 1150 m, *A. Baytop* ISTE 20291; Kayseri to Boğazköprü, 1050 m, *Ünsal* ISTE 30529. B5 Yozgat: 5 km from Yozgat to Kirikkale, *A. Baytop* ISTE 29669; Yozgat, *Curtis* 101. B7 Erzincan: 22 km E of Erzincan, *Hub.-Mor.* 14252. B9 Van: Erciş to Ahlat, Arinkar, *Alptekin* ISTE 26637. C7 Urfa: Birecik, 450 m, *Sint.* 1888:287.

The new species, apparently endemic, is rather widespread in Inner Anatolia and belongs to the Irano-Turanian element. It has previously been confused with *L. depressum* Stocks, *L. europaeum* L. and even with *L. ruthenicum* Murray. A search of Turkish material under these names in other herbaria may reveal records additional to those cited. *L. depressum* and *L. europaeum* also occur in Inner Anatolia, while in Turkey *L. ruthenicum* is restricted to the East. All three species are widespread in SW Asia.

L. anatolicum is most closely related to *L. depressum* and to *L. petraeum*, recently described from Jordan (Petra) by Feinbrun (1968). The following key can be used to distinguish *L. anatolicum* from its allies:

1. Filaments glabrous 2
\+ Filaments hairy at base 3
2. Branches densely and shortly pubescent when young; corolla 9–14 mm, throat pubescent . . . . . *L. europaeum*
\+ Branches glabrous; corolla 7–10 mm, throat glabrous *L. depressum*
3. Corolla throat hairy; base of filaments lanuginose . *L. ruthenicum*
\+ Corolla throat glabrous; base of filaments sparsely pilose . 4
4. Tube 6–7 mm long, lower narrowed part exserted from calyx; calyx 2–3 mm long; spines leafy . . . . *L. anatolicum*
\+ Tube c. 5·5 mm long, lower narrowed part included in calyx; calyx c. 4 mm long; spines leafless . . . *L. petraeum*

One of us (A. B.) observed that ripe berries are rarely produced in Turkey by either *L. anatolicum* or *L. europaeum*. Most of the berries of *L. anatolicum* fall before completely mature. The rare ripe ones are globose and very dark reddish-brown in colour (almost black) in contrast to those of *L. europaeum* which are said to be red and subglobose.