

A SYNOPSIS OF THE ASIAN SPECIES OF CONSOLIDA
(RANUNCULACEAE)

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AS USED IN THE TITLE of this paper, "Asian" refers to the mainland only and does not include the islands in the Aegean Sea and in the eastern Mediterranean, the plants of which are already treated in Tutin et al., *Flora Europaea*, vol. 1. 1964, and in Davis, *Flora of Turkey*, vol. 1. 1965.

Material of Asian species has been studied as it exists in the principal herbaria of the United States. Considerable work was done in the library of the Arnold Arboretum and Gray Herbarium of Harvard University. Some months were spent in London working at the British Museum (Natural History) and at the Royal Botanic Gardens, Kew, in both of which institutions, as at Harvard, very great courtesy and help were given me. The British Museum secured for my use large loans of herbarium sheets from the Royal Botanic Garden, Edinburgh, and the Komarov Institute, Leningrad. I spent some time also in the Muséum National d'Histoire Naturelle, Paris, where again every courtesy was extended. Smaller loans, largely for individual species, have been obtained from various places and acknowledgment is made in discussion of the species concerned. To all the curators and keepers and to the librarians to whom I am indebted, I express my very great appreciation.

In citing herbarium material I employ the symbols given in *Index Herbariorum* (Lanjouw and Stafleu, Reg. Veg. 31. 1964) as follows:

- A Arnold Arboretum of Harvard University, Cambridge, Massachusetts, U. S. A.
- BH Bailey Hortorium, Cornell University, Ithaca, New York, U. S. A.
- BM British Museum (Natural History), London, Great Britain
- CAS California Academy of Sciences, San Francisco, California, U. S. A.
- E Royal Botanic Garden, Edinburgh, Great Britain
- F Field Museum of Natural History, Chicago, Illinois, U. S. A.
- GH Gray Herbarium of Harvard University, Cambridge, Massachusetts, U. S. A.
- K The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, Great Britain
- LE Herbarium of the Komarov Botanical Institute of the Academy of Sciences of the U. S. S. R., Leningrad, U. S. S. R.
- MICH University Herbarium, University of Michigan, Ann Arbor, Michigan, U. S. A.
- MO Missouri Botanical Garden, St. Louis, Missouri, U. S. A.
- NA United States National Arboretum, Washington, D. C., U. S. A.
- NY The New York Botanical Garden, New York, U. S. A.
- P Muséum National d'Histoire Naturelle, Paris, France
- PH Academy of Natural Sciences, Philadelphia, Pennsylvania, U. S. A.

- uc Herbarium of the University of California, Berkeley, California, U. S. A.
 us Department of Botany, United States National Museum, Smithsonian Institution, Washington, D. C., U. S. A.

Because of space limitations the large number of herbarium sheets examined is not cited, but an appendix is given with names of collectors, collection numbers, and the taxa to which referred. It should be emphasized that the present treatment is not revisional in nature, but rather synoptic. It is concerned with keying out and describing the Asian species, so that identification can be made of plants collected. Therefore, there is no attempt to set up sections within the genus, a thing which should be done only when the African and European species are also considered.

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THE GENUS CONSOLIDA

Lindley (Jour. Hort. Soc. London 6: 57. 1851), in writing about *Consolida aconiti*, said "Forskahl regarded this curious plant, it is said, as an Aconitum; Linnaeus considered it a Delphinium. In reality it is neither the one nor the other. Its united petals and long sepaline spur, are at variance with the distinct hammerheaded petals and convex back sepal of Aconite. Its petals being reduced to two, and those completely combined into one, equally remove it from Delphinium. That the petaline body is really composed of 2 parts only seems to be proved by its origin, which looks as if opposite the back sepal in consequence of the union of the two contiguous edges of the lateral petals. But it is completely separated from the front sepals, with which it does not in any degree alternate. These considerations lead to the conclusion that the old genus *Consolida* should be re-established, and by no means confounded with *Delphinium* proper."

This statement from Lindley seems to me to be about as clear as any that can be made, even now. One wonders why it has taken so many years to recognize *Consolida* as a genus, but it may well be due to the fact (P. H. Davis, Notes Bot. Gard. Edinburgh 26: 172. 1965) that there was a "widespread belief that *Delphinium* should be typified by *D. consolida* L. *Delphinium* should, in fact, be typified by *D. peregrinum* L. and *Consolida* by *D. consolida* (i.e. *Consolida regalis* S. F. Gray)." At any rate, some of the most recent floras dealing with Eurasian plants, as Tutin et al., *Flora Europaea* 1: 216-217. 1964, and Davis, *Flora of Turkey* 1: 119-134. 1965, give generic status to *Consolida* and I am following their procedure.

DESCRIPTION OF THE GENUS CONSOLIDA (DC.) S. F. GRAY¹

Consolida, as a genus, S. F. Gray, Nat. Arr. Brit. Pl. 2: 711. 1821. As a section of *Delphinium*, DC. Syst. 1: 341. 1817. As a subgenus of

¹ Pubescence. Pubescence is a conspicuous and often useful means of characterizing the various species of *Consolida*. The hairs may be white or yellow. White hairs may

Delphinium, Huth, Bot. Jahrb. 20: 337. 1895; Dalla Torre & Harms, Genera Siphonogamarum 165. 1901.

Plants annual. Leaves palmately laciniate. Inflorescence racemose or paniculate, the pedicels subtended by bracts and each usually bearing 2 bracteoles. Flowers zygomorphic. Sepals 5, petaloid, the posterior one spurred, the lateral pair and lower pair not. "Petal" one, apparently representing the fused superior petals of *Delphinium*, sometimes called "honey-leaf" or "nectary," subentire to 3-5-lobed, bearing a single nectariferous spur extending into the sepal spur. The lower petals of *Delphinium* aborted and not represented. Stamens in 5 spirally arranged series, the filaments more or less broadened, the anthers short. Carpel 1, forming a follicle.

TYPE SPECIES, *C. regalis* S. F. Gray (*Delphinium consolida* L.).

A highly specialized genus of over 40 species, ranging from the western Mediterranean to central Asia in arid and semiarid regions. Several species are cultivated and escape from gardens in many other parts of the world.

KEY TO THE SPECIES OF CONSOLIDA

1. Spur and "petal" lacking. 29. *C. rugulosa*.
1. Spur and "petal" present.
 2. "Petal" mostly 5-lobed (usually with 1 generally bifid upper lobe, 2 intermediate and 2 lower lateral lobes); spur more or less coiled or circinate at apex; main stem a continued axis through the whole plant with numerous, rather short, very slender lateral branches.
 3. Flowers ca. 23 mm. long, including the spur; sepals blue; pubescence of stems retrorse-appressed; plant to 5 dm. tall; pedicels 2-8 cm. long. Iran. 1. *C. teheranica*.
 3. Flowers 10-16 (-20) mm. long, including the spur.
 4. Spur uncinately-saccate to almost straight; intermediate lobes of "petal" sharply triangular.
 5. Follicles 14-17 mm. long; spur uncinately, 4-5 mm. long. Mardin, Turkey. 8. *C. saccata*.
 5. Follicles 5-10 mm. long; spur almost straight, 8 mm. long. Turkestan. 9. *C. barbata*.
 4. Spur circinate involute at the tip; intermediate lobes of the "petal" not sharply triangular, except in *C. anthoroidea*.
 6. Intermediate lobes of "petal" protruding and longer than the shortly bifid upper lobe; follicle 8-10 mm. long, 3-4 mm. wide. E. Turkey to Iran, Jordan. 7. *C. anthoroidea*.

be appressed (usually retrorsely so) or spreading, and in the latter case, may be gland-tipped or not. But the yellow hairs are quite different from those I have met in most groups of plants. Ordinarily they are not gland-tipped, but are strongly enlarged toward the base and apparently are glandular in nature, since good collection labels sometimes state that plants bearing such hairs are viscid. So far as I can see, then, a glandular condition may arise when the slender white spreading hairs are gland-tipped or when there occur the yellow hairs which tend to be strongly enlarged toward the base.

6. Intermediate lobes of "petal" shorter than or subequal to the upper lobe.
 7. The intermediate lobes of the "petal" acute.
 8. Lower lobes of "petal" more or less approximate to the intermediate lobes, ovate; intermediate lobes broadly triangular; follicle semiovate, 6–9 mm. long, 2–3 mm. wide. Anatolia to Lebanon. 2. *C. scleroclada*.
 8. Lower lobes of "petal" separated from the intermediate lobes by a broad sinus; intermediate lobes narrowly triangular, sharply acute; follicle linear to linear-oblong.
 9. Follicle linear-oblong with rounded abruptly rostrate apex, 10–13 mm. long; stem appressed-canescens. Central Anatolia. 5. *C. stenocarpa*.
 9. Follicle linear, with gradually rostrate apex, 15–22 mm. long; stem with whitish spreading hairs. Dardanelles. 6. *D. aconiti*.
 7. The intermediate lobes of the "petal" obtuse.
 10. Stem velvety with whitish spreading hairs mixed with glandular ones; sinus between lateral and intermediate lobes of "petal" ca. $\frac{1}{4}$ as wide as deep. Thrace to Galatia. 3. *C. thirkeana*.
 10. Stem strigulose; sinus between lateral and intermediate lobes of "petal" ca. $\frac{1}{2}$ as wide as deep. Transcaucasia, Armenia, Iran. 4. *C. hohenackeri*.
2. "Petal" almost entire to 3-lobed (with 1 often bifid upper lobe and 2 lateral lobes); habit not as above, the stem either branched below or not diffuse above; "petal"-spur not circinate at apex.
 11. Pedicels shorter than sepals at anthesis, sometimes elongating in fruit; bracteoles minute, often looking like additional lobes to the subtending bract; stem leafy, the flowers often from most axils; follicle nearly straight, subterete.
 12. The lateral lobes of the "petal" at right angles to the terminal lobe, longer than wide; spur 5–9 mm. long; flowers deep violet to blue or rose.
 13. The lateral lobes ca. 1.5 mm. long, the terminal lobe ca. 4 mm. long; sepals 13–18 mm. long. Turkey (Caria and Lycia through Phrygia and Cappadocia to Paphlagonia). 10. *C. raveyi*.
 13. The lateral lobes of the "petal" 4–5 mm. long, about equal to the terminal lobe; sepals 10–13 mm. long.
 14. "Petal" more or less cruciate, the lateral lobes abruptly narrowed to the base. Turkey (Cilicia). 11. *C. cruciata*.
 14. "Petal" more kite-shaped, more or less triangular, since the lateral lobes gradually narrow to the base. South-eastern Anatolia to Syria.
 15. Bracteoles multifid; sepals 10–13 mm. long; blade of "petal" 12 mm. wide. Turkey to Syria. 12. *C. axilliflora*.
 15. Bracteoles entire; sepals 6–8 mm. long; blade of "petal" 10 mm. wide. Syria. 13. *C. gombaultii*.

12. The lateral lobes of the "petal" directed somewhat forward toward the apex of the "petal"; spur 16–25 mm. long; flowers whitish to pinkish.
16. Expanded "petal" 15–20 mm. wide.
17. Sepals 9–11 mm. long; follicle 17–25 mm. long; main cauline leaves entire. Turkestan and northern Iran. 23. *C. leptocarpa*.
17. Sepals 6–8 mm. long; main cauline leaves divided. Iran, Iraq, Turkestan. 24. *C. persica*.
16. Expanded "petal" 8–11 mm. wide.
18. The expanded "petal" wider near the base, somewhat narrowed toward the tip. Iran. 28. *C. halophila*.
18. The expanded "petal" widened upward.
19. Lateral lobes of "petal" broadly rounded, not at all triangular; expanded "petal" 11 mm. wide. Turkestan to Iran. 14. *C. stocksiana*.
19. Lateral lobes of "petal" more or less triangular; expanded "petal" 8 mm. wide. Transcaucasia to Afghanistan. 27. *C. rugulosa*.
11. Pedicels usually longer than sepals.
20. Bracteoles high on the pedicel, hence extending above the base of the flower; leaf-lobes usually very narrow, ca. 0.5 mm. wide; stems widely and few-branched; lateral lobes of the "petal" more convex on upper edge than on lower.
21. "Petal" entire and subcircular; flowers 15–20 in a raceme. Turkish Armenia. 40. *C. olopetala*.
21. "Petal" more or less lobed; flowers fewer, mostly 3–6 in a raceme.
22. Flowers sulphur-colored; terminal lobe of "petal" 3-toothed. Turkey. 39. *C. sulphurea*.
22. Flowers violet to blue or rose.
23. Spur shorter than blade of sepal, or if equal to it, plant with spreading hairs.
24. Follicle pendent on a recurved pedicel; plant strigose. Eastern Turkey, Iraq. 35. *C. oligantha*.
24. Follicle erect; plant with spreading pubescence.
25. Flowers rose; spur straight, 5–6 mm. long. Lebanon and Syria to Jordan. 33. *C. pusilla*.
25. Flowers violet.
26. Spur almost straight, 6–7 mm. long; "petal" with terminal lobe 3 mm. long. Kashmir. 31. *C. schlagintweitii*.
26. Spur more or less curved, 4 mm. long; "petal" with 3 minute equal lobes. Iran. 30. *C. linarioides*.
23. Spur equal to or longer than the blade of the sepal, if shorter, the plant with appressed hairs.

27. Pubescence spreading; spur ca. twice as long as upper sepal. Iran. . . 29. *C. trigonelloides*.
27. Pubescence appressed.
28. Spur 8–10 mm. long; sepals with a basal claw 3–4 mm. long. Lebanon, Jordan. 36. *C. tomentosa*.
28. Spur 12–24 mm. long; sepals sessile or with a claw ca. 1 mm. long.
29. "Petal" abruptly narrowed at tip into a beaklike upper lobe; rest of "petal" dome-shaped when spread open; spur 18–24 mm. long. 38. *C. armeniaca*.
29. "Petal" either gradually narrowed toward the apex or the upper lobe subequal to the lateral lobes; spur 12–16 mm. long. 37. *C. hellespontica*.
20. Bracteoles usually lower on the pedicel and not extending above the base of the flower.
30. Lateral lobes of "petal" more convex on upper edge than on lower and with the subtriangular terminal lobe making a somewhat dome-shaped structure when spread open; central stem the main axis, with few or no short ascending lateral branches; follicle compressed, somewhat curved, ca. 1 cm. long, the style 4 mm. long; spur much longer than sepals. 34. *C. camptocarpa*.
30. Lateral lobes of "petal" perpendicular to the terminal lobe or pointing somewhat toward the tip of the "petal" when spread out; style 1–3 mm. long.
31. Follicle mostly at least 15–25 mm. long, oblong-cylindrical; style scarcely 1 mm. long; main stem forming an axis into the inflorescence with few side branches; leaf segments very narrow, ca. 0.5 mm. wide.
32. Bracteoles usually below the middle of the pedicel; sepals 12–14 mm. long; spur ca. 15 mm. long. 15. *C. ambigua*.
32. Bracteoles above the middle of the pedicel; sepals 6–12 mm. long.
33. Spur ca. 18 mm. long. . . 25. *C. deserti-syriaci*.
33. Spur 6–10 mm. long.
34. The spur 6–7 mm. long; follicle 10 mm. long. Kashmir. . . 31. *C. schlagintweitii*.
34. The spur 9–10 mm. long; follicle 15 mm. or more long.
35. Median lobe of "petal" longer than wide, the 2 apical lobules rounded; sepals 10–12 mm. long. 16. *C. orientalis*.
35. Median lobe of "petal" about equally long and wide, the 2 apical lobules

- pointed; sepals 6–9 mm. long.
31. Follicles 6–15 mm. long; style longer; plants mostly branched from the base with widespread open habit.
36. Spur 10 mm. or more long, exceeding the sepals.
37. Lateral lobes of "petal" at right angles to the middle lobe, not directed toward the tip of the "petal"; stems strigulose; lower bracts entire. 17. *C. regalis*.
37. Lateral lobes of "petal" directed forward somewhat toward the tip of the "petal"; stems with some spreading hairs in upper parts.
38. The lateral lobes of the "petal" somewhat pointed and semilunate; spur 10–13 mm. long. Armenia. . . 26. *C. cornuta*.
38. The lateral lobes of the "petal" rounded; spur mostly longer.
39. Sepals 10–14 mm. long, narrowed into a claw-like base; bracts lacinate; pedicels glabrous except at the summit. Iraq. 20. *C. oliveriana*.
39. Sepals 9–10 mm. long, scarcely narrowed at the base; bracts entire; pedicels glandular-pubescent. Armenia. 19. *C. glandulosa*.
36. Spur 5–7 mm. long, about as long as the sepals.
40. Flowers blue or violet to rose; sepals 5–8 mm. long; lateral lobes of "petal" rounded, not projecting beyond the middle lobe; filaments glabrous. Asia Minor. 18. *C. incana*.
40. Flowers yellow, especially the "petal"; sepals 4–5 mm. long; lateral lobes of the "petal" semiovate, as long as the median lobe; filaments hairy.
41. Stems strigose, at least below, little or not at all glandular. 21. *C. flava*.
41. Stem with more or less spreading and glandular hairs. 22. *C. deserti*.

1. *Consolida teheranica* (Boiss.) Rech. f. Ann. Naturh. Mus. Wien
51: 376. 1941. FIG. 1, A.

Delphinium teheranicum Boiss. Fl. Orient. 1: 85. 1867.

? *Delphinium intricatum* Pau, Trab. Mus. Ci. Nat. Bot. Madrid 14: 12. 1918.

Annual, to 5 dm. tall, openly and widely branched, retrorse-strigulose throughout, the branches slender, subdivaricate; leaves largely gone by anthesis, multifid into acute linear segments; inflorescence open with scattered flowers, strigulose and with some glandular spreading hairs with basal yellow pustules; lower bracts largely tripartite, to ca. 1 cm. long; the upper subulate, to ca. 5 mm. long; pedicels slender, 2–8 cm. long;

bracteoles 2 or more, subulate, scattered, well below the flower, ca. 2 mm. long; calyx blue, pubescent without, 8–10 mm. long, not unguiculate, the upper sepal lance-ovate, with a circinate-involute pubescent spur ca. 13–16 mm. long and 4–5 mm. wide at the base; lateral sepals oblong-ovate, blue-membranous except on the narrow central pubescent strip, obtuse; lower sepals narrow-ovate, obtuse, more pubescent; “petal” ca. 23 mm. long, including the spur, the terminal lobe subentire, broad, subcrenulate, longer than the intermediate triangular lobes (scarcely 1 mm. long), the membranous lower lobes grown to the intermediate lobes to near the rounded summit; stamens subequal, the filaments ca. 6 mm. long, dilated below, pubescent above; anthers dark, almost 1 mm. long; follicle subcompressed, somewhat reticulate-veiny, rather straight, 12–15 mm. long, 3–3.5 mm. wide, the style an additional 2 mm.; seeds dark, asymmetrically subcylindrical, almost 2 mm. long, with several continuous transverse rows of short scales.

TYPE: “prope Teheran Persiae ad pagum Gulkak”, *Kotschy 884* (w). Not seen.

DISTRIBUTION. Stony places at 1200 to 1300 m., Elburz Mts., n. Iran.

REPRESENTATIVE SPECIMENS: *Rechinger 2015* (κ, US); *Furse 2907* (κ).

2. *Consolida scleroclada* (Boiss.) Schröd. Ann. K. K. Naturh. Hofmus. Wien 27: 44. 1913.

Delphinium sclerocladum Boiss. Diagn. I. 8: 8. 1849.

Delphinium anthoroideum Boiss. var. *sclerocladum* (Boiss.) Boiss. Fl. Orient. 1: 85. 1867.

One to 5 dm. tall, variously branched and pubescent, the ultimate branchlets very slender; leaves multifid into linear lobes, largely gone by anthesis, roundish in outline; bracts multifid, 2–4 mm. long; pedicels to ca. 1 cm. long; bracteoles lance-linear, 2 or more, largely remote from the flowers, to ca. 2 mm. long; sepals yellowish-white to lilac, 7–8 mm. long, not unguiculate, narrow-oblong, ca. 1.5 mm. wide, hyaline on margins, pubescent on median strip; sepal spur circinate-involute at apex, ca. 7 mm. long, 3.5 mm. wide at base; “petal” 5-lobed, 6–7 mm. long, exclusive of the spur, the terminal lobe ca. 2.5 mm. long, broad, entire; intermediate lobes triangular, acute, slightly shorter; lower lobes membranous, more or less approximate to the intermediate lobes, ovate, ca. 3.5 mm. long; filaments 6–8 mm. long, inflated in lower part, more or less pubescent; anthers yellow, ca. 0.6 mm. long; follicle semiovate, compressed, glabrous, reticulate-veined, 6–9 mm. long, 2–3 mm. wide, the style an additional 2.5–3 mm.

Pedicels puberulous with interspersed spreading glandular hairs; plant more or less pyramidal, rigid up to the ultimate racemose branching. Turkey to Syria. Var. *scleroclada*.

Pedicels strigulose, without glandular hairs, sometimes glabrescent.

Branches ascending, the ultimate ones rigid or slender. Turkey, Syria. Var. *rigida*.

Branches, especially the basal ones, widely divergent, the ultimate branchlets slender. Syria, Lebanon. Var. *pumila*.

Consolida scleroclada (Boiss.) Schröd. var. *scleroclada* FIG. 1, B.

Stem puberulous, with spreading glandular hairs among the others; branching racemose, the contour more or less pyramidal, rigid to the ultimate branches.

TYPE: "in montibus demissioribus Syriae borealis inter *Latakiah* et *Aleppum*," Boissier in July (G); not seen.

DISTRIBUTION. Dry slopes below 1700 m., northern Syria, southern Turkey (Cilicia).

SPECIMENS SEEN. Turkey: *Balansa* 730. Syria: *Pinard*, 1846; *Boissier*, June 1866; *Sintenis* 1416.

Consolida scleroclada (Boiss.) Schröd. var. *rigida* (Freyn & Sint.)

Davis, Fl. Turkey 1: 123. 1965.

Delphinium anthoroideum Boiss. var. *rigidum* Freyn & Sint. Öst. Bot. Zeitschr. 41: 363. 1891.

Consolida euphratica Schröd. Ann. K. K. Naturh. Hofmus. Wien 27: 43. 1913.

Delphinium sclerocladum Boiss. var. *pseudo-anthoroideum* Davis & Hossain, Notes Bot. Gard. Edinb. 22: 415. 1958. Type, *Davis* 10030 (E) seen.

Strigulose; branches ascending, the ultimate slender or rigid.

TYPE: Armenia Turcica, Chama ad Euphratem, Ichtik prope Tuzla, *Sintenis* 2969 (W); not seen.

DISTRIBUTION. Dry slopes and steppes, 900–1700 m., southern Turkey to western Syria and the Syrian desert.

SPECIMENS EXAMINED. Turkey: *Post*, 1884; *Siehe* 387; *Davis* 30973, 31688, 31592, 35878; *Bornmüller* 3221. Syria: *Davis* 6477, 10030, 9992.

Consolida scleroclada (Boiss.) Schröd. var. *pumila* (Huth) Munz, comb. nov.

Delphinium anthoroideum Boiss. var. *pumilum* Huth, Bot. Jahrb. 20: 366. 1895.

Delphinium sclerocladum Boiss. var. *pumilum* Hossain & Davis, Notes Bot. Gard. Edinb. 22: 414. 1958.

Branches, especially the basal, widely divergent; stem 4–20 cm. high; lower leaves rather persistent.

LECTOTYPE: Syria, Zebdaine near Damascus, at 5500 ft., June 6, 1858, *Kotschy* 103 (BM); other sheets (K, US).

DISTRIBUTION. At 1200 to 1800 m., western Syria, Lebanon.

SPECIMENS SEEN. *Kotschy* 103; *Bornmüller* 32; *MacDaniels*, 1944; *Bornmüller* 11324.

3. **Consolida thirkeana** (Boiss.) Schröd. Abh. Zool.-Bot. Ges. Wien 4(5): 62. 1909. FIG. 1, C.

Delphinium thirkeanum Boiss., Fl. Orient. 1: 84. 1867.

Two to 3 dm. tall, with rather rigid lateral branches, white spreading pubescence interspersed with yellow glandular hairs with pustular bases;

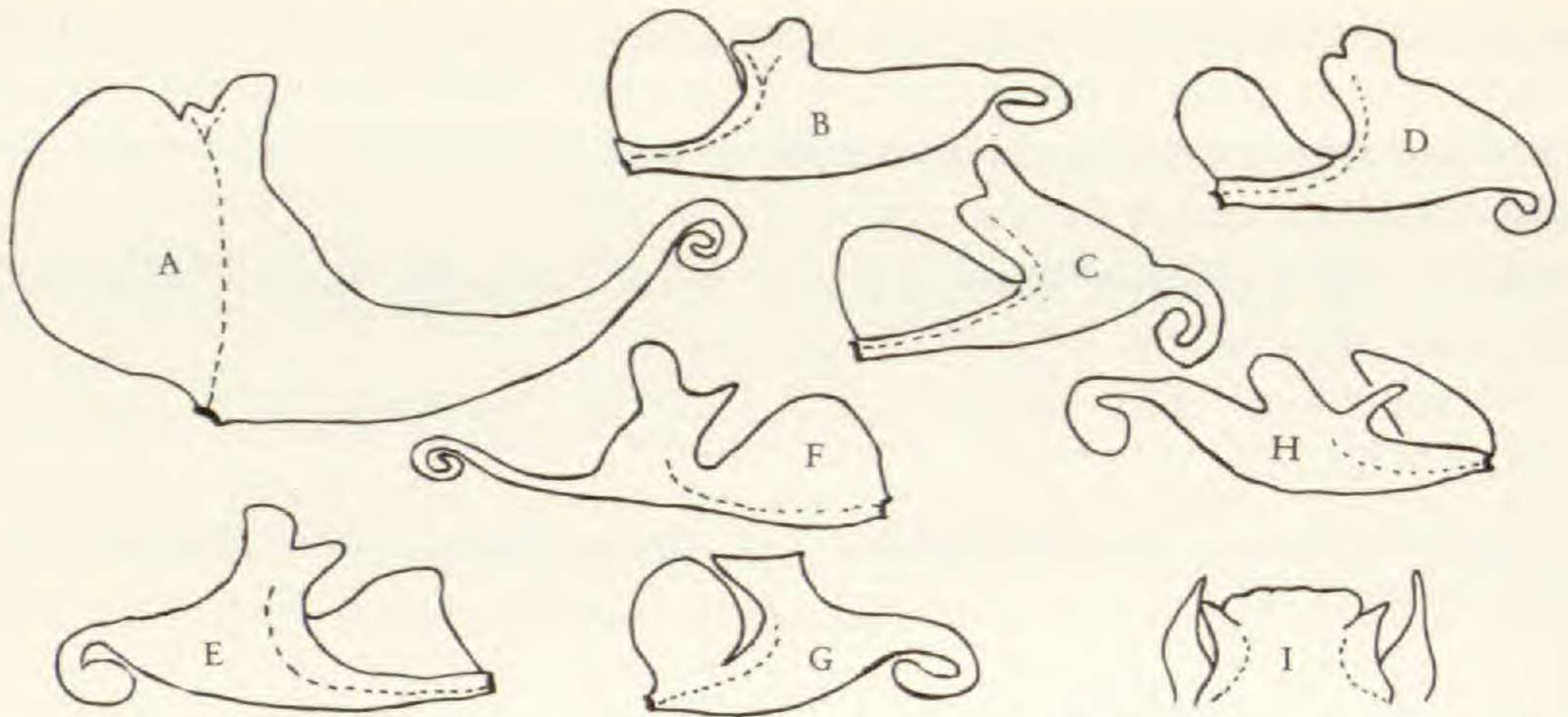


FIGURE 1. *Consolidida* species with "petal" of the 5-lobed type, as seen from the side, the lamina base at the bottom of the dotted line (main vein) and of spur. A. *C. teheranica*, the whole (lamina and spur) 23 mm. long; lamina with terminal lobe at its upper right, intermediate lobe small, rounded lower lobe to left; drawn from *Rechinger 2015* (US). B. *C. scleroclada*, the lamina and spur 13 mm. long; drawn from *Balansa 730* (GH). C. *C. thirkeana*, lamina and spur combined 13 mm. long; from *Wiedemann* (GH). D. *C. hohenackeri*, lamina plus spur 11 mm.; from *Bourgeau 7* (UC). E. *C. stenocarpa*, lamina and spur 14 mm.; from *Balansa 857* (UC). F. *C. aconiti*, lamina and spur 20 mm.; from *Sintenis 678* (BM). G. *C. anthoroidea*, lamina and spur 11 mm.; from *Koelz 18498* (MICH). H. *C. saccata*, lamina and spur 14 mm.; from *Sintenis 1186* (PH). I. *C. barbata*, lamina only, front view with broad terminal lobe, sharp narrow intermediate and basal lobes; from *Gontscharow & Grigoriev 871* (NY).

leaves sessile, small, largely gone by anthesis, laciniate with slender crowded lobes; flowers few, scattered; sepals pale blue, 6–7 mm. long, not unguiculate, the lateral lance-oblong, ca. 2 mm. wide, membranous except for the narrow central strip; lower sepals much the same, asymmetrical; upper sepal, including the spur, ca. 13 mm. long, pubescent, the spur circinate-involute, ca. 6 mm. long, 4 mm. wide at base; "petal" 5-lobed, pale with violet tip, ca. 13 mm. long, including the spur, the terminal lobe shortly bifid with rounded parts; intermediate lobes shorter, obtuse; lower lobes membranous, rounded at tip, asymmetrical, ca. 3.5 mm. broad, separated from the intermediate by a very narrow sinus; stamens to ca. 6 mm. long, the filaments dilated below, more or less pubescent above; anthers ca. 0.6 mm. long; follicle semiovate, more or less compressed, glabrous, somewhat reticulate, the rigid style 2 mm. long; seeds with short scales in continuous bands.

SYNTYPES: "in Bithynia (Thirke!)" and "c. Amasya et Tokat, Wiedeman." Both the collections are at Geneva, but I have been unable to see them. I have seen the *Wiedeman* specimens (GH, K).

DISTRIBUTION. Turkey, from Thrace to Galatia, growing at 500 to 1000 m.

ILLUSTRATION of "petal". DAVIS, *Fl. Turkey* 1: 127. 1965.

COLLECTIONS SEEN. Turkey: *J. Ball*, Oct. 13, 1867; *Sintenis 4882*; *Uvarov 97*; *Bornmüller 13696*.

4. *Consolida hohenackeri* (Boiss.) Grossheim, Fl. Kavkaza 2: 101. 1930. FIG. 1, D.

Delphinium hohenackeri Boiss., Fl. Orient. 1: 85. 1867.

Aconitopsis hohenackeri (Boiss.) Kemularia-Nathadze, Trudy Inst. Bot. Tbilisi 7: 125. 1940.

One to 6 dm. tall, freely branched more or less throughout, retrorse-strigulose except that the upper parts may be subglabrous or with a few hairs with glandular yellow base; ultimate branchlets slender; basal leaves largely gone by anthesis; cauline leaves mostly on lower stems only, lacinate into linear strigulose lobes, subsessile, the leaf-blades largely 1–2 cm. long; bracts mostly entire, subulate, 3–10 mm. long; pedicels 1–3 cm. long, mostly with 2 subulate bracteoles below the flower; inflorescence very open; flowers purple to violet or pale mauve, ca. 1.5 cm. across; sepals lanceolate, ca. 7 mm. long, the spur with a circinate-involute tip and ca. 7 mm. long and 3.5–4 mm. wide at the base, pubescent; lateral sepals lance-elliptic, 3.5–4 mm. wide, mostly membranous except for the strigulose median strip; lower sepals narrower, much like the lateral; "petal" 5-lobed, ca. 11 mm. long, including the spur, the terminal lobes subentire, broad, ca. 1.5 mm. long; the intermediate lobes obtuse, ca. 1 mm. long, the lower separated from the intermediate by a broad sinus, membranous, rounded-oblong and ca. 4 mm. long; filaments 4–5 mm. long, dilated only below, more or less pubescent above; anthers yellowish, ca. 0.7 mm. long; follicle glabrous, semiovate, reticulate-veiny, 6–7 mm. long, 3–4 mm. wide, the beak an additional 3 mm. long; seeds with longish separate scales.

LECTOTYPE: **Turkey**: Prov. Gümüsane, near Baibout in Armenia, July 12, 1862, *Bourgeau* 7 (K); this number seen also (E, P, UC).

DISTRIBUTION. Dry places at 900–1800 m., Turkish Armenia, Transcaucasia, Iran.

ILLUSTRATION. "petal", HOSSAIN & DAVIS, Notes Bot. Gard. Edinb. 22: 416. fig. E. 1958; Davis, Fl. Turkey 1: 127. fig. 1. 1965.

REPRESENTATIVE SPECIMENS. **Transcaucasia**: *Wittman* 93; *Radde* 307. **Turkey**: *Sintenis* 1336, 7110; *E. K. Balls* 1441A; *Davis* 30825, 32613, 30076; *Holmberg* 2408. **Iran**: *Hausknecht*, 1868; *Stapf* 2771.

5. *Consolida stenocarpa* (Hossain & Davis) Davis, Notes Bot. Gard. Edinb. 26: 173. 1965. FIG. 1, E.

Delphinium stenocarpum Hossain & Davis, Notes Bot. Gard. Edinb. 22: 413. 1958.

Slender-stemmed, divaricately branched throughout, 2.5–4 dm. tall, densely retrorse-strigose below and with some spreading hairs with swollen yellow base, sparsely pubescent above; leaves lacinate into linear lobes, strigulose, the lower with petioles ca. 1 cm. long and blades 1–1.5 cm. long, the lower cauline subsessile, rapidly reduced up the stem; bracts sessile, entire to lobed, 3–7 mm. long; pedicels strigulose, 4–6 (–15) mm. long; bracteoles subulate, 1.5–2 mm. long, alternate to subopposite; flowers widely scattered, bluish lilac to pale dirty mauve; sepals 6–7 mm. long,

elliptic, not unguiculate, ca. 3 mm. wide, acute, pubescent and greenish on midrib in the lateral sepals, more generally pubescent on the lower pair; sepal spur pubescent, 6–7 mm. long, 3.5 mm. wide, curved-oblong, circinate involute at the tip; "petal" 5-lobed, 7–8 mm. long, the spur an additional 5–6 mm. long, upper lobe 1.5–1.75 mm. long, bluish, bifid half way into rounded lobes; intermediate lobes narrowly lance-deltoid, 1 mm. long; lower lobes membranous, rounded-oblong, ca. 2.5 mm. long; filaments sparsely pubescent on the inflated lower part; follicle glabrous, linear-oblong, 10–13 by 1.5–2 mm., the style an additional 3–3.5 mm.; seed with short scales.

TYPE: Turkey: Prov. Konya (Lycaonia), between Agabeyli and Korkuyu, *Davis 16638* (E), isotype (K); seen.

DISTRIBUTION. Fallow fields and plains, 900–1300 m., central Anatolia.

ILLUSTRATIONS. "petal"; HOSSAIN & DAVIS, *Notes Bot. Gard. Edinb.* 22: 416, *fig. B, C*. 1958; DAVIS, *Fl. Turkey* 1: 127. *fig. 1*. 1965.

SPECIMENS SEEN. Turkey: *Balansa 857*; *Godfrey & Taysi SH-25*; *Davis 32810, 16643*.

6. *Consolida aconiti* (L.) Lindl. *Jour. Roy. Hort. Soc.* 6: 55. 1851.

FIG. 1, F.

Delphinium aconiti L. *Mantissa* 1: 77. 1767.

Aconitum monogynum Forsk. *Fl. Aegypt-Arab.*, p. xxvii. 1775.

Stiffly much branched, 2–5 dm. tall, with soft, white, spreading pubescence, subglabrate above; cauline leaves short-petioled, roundish in outline, to 2 or 3 cm. long, with many ultimate linear pubescent lobes; lower bracts leaflike, smaller, 3–5-partite, the upper reduced; pedicels very slender, to 3 or 4 cm. long; bracteoles linear, remote from flower, alternate, 3–4 mm. long; flowers few on open branches; sepals ca. 5 mm. long, pale violet with darker median, more or less greenish stripe pubescent without; spur 14–15 mm. long, circinate involute at the apex; "petal" 8–9 mm. long, pale yellow with violet tip, the upper lobe exceeding the acute, narrowly triangular intermediate lobes, the lower lobes separated from the intermediate by a broad sinus; stamens purplish, 5–6 mm. long; anthers dark, oblong, ca. 0.6 mm. long; follicle linear with gradually rostrate apex, 15–22 mm. long, 1.5–2 mm. wide, glabrous, veined-reticulate; seeds few, pyramidal, with elongate scales.

TYPE: "Habitat in Dardanella, *Forskål*"; photograph of specimen in the Linnaean Herbarium seen.

DISTRIBUTION. Below 1100 m., region of the Dardanelles, Turkey.

ILLUSTRATIONS. VAHL, *Symb.* 1: *t. 13*. 1790; DAVIS, *Fl. Turkey* 1: 217. 1965.

SPECIMENS. Turkey: *Aucher 66*; *Sintenis 678*; *Guichard*, July 29, 1962.

7. *Consolida anthoroidea* (Boiss.) Schröd. *Abh. Zool.-Bot. Ges. Wien* 4(5): 62. 1909. FIG. 1, G.

Delphinium anthoroideum Boiss. *Ann. Sci. Nat.* II. 16: 369. 1841.

Delphinium acutilobum Turrill, Kew Bull. 1929: 223. 1929. Based on *Gilliat-Smith 2086* (κ) from near Yam, Tabriz district, Iran; not seen.

Erect, rigidly divaricate, to 8 dm. tall, subglabrous to strigulose below, short spreading-pubescent above and with many yellow-based hairs; leaves 3- to many-parted, the ultimate lobes linear to oblance-linear, the main cauline blades subsessile, ca. 3 cm. long and 5 cm. wide, strigulose; bracts mostly 3-lobed, 7–15 mm. long; pedicels very slender, 1.5–6 cm. long; bracteoles 2–3 mm. long, lance-linear, often more than 2; inflorescence very open, the flowers remote; sepals violet to pale lilac, with greenish tinge toward the apex, pubescent, 6–7 mm. long, not clawed; lateral sepals oblong, rounded apically, 2–3 mm. wide, pubescent along midrib, the 2 lower slightly wider; sepal spur circinately involute at apex, erect, pubescent, ca. 1 cm. long, 5 mm. wide at base; "petal" 5-lobed, more or less rose, the blade 6 mm. long, the upper lobe short, retuse, shorter than the elongate, triangular, divaricate intermediate lobes, the lower lobes membranous, elongate-rounded, almost 4 mm. long; filaments dilated below, slightly pubescent; anthers yellow to orange; follicle glabrous, subcompressed, oblong-obovoid, 8–10 mm. long, 3–4 mm. wide, abruptly narrowed into a style an additional 1 mm. long; seed pyramidal, densely squamate.

TYPE (lectotype by Davis): Syria, *Aucher 65* (G), not seen, but isoelectotypes seen at κ, P.

DISTRIBUTION. Fallow fields and stony slopes, 600–2000 m., Kurdistan in Turkey, Iraq, Iran, to Syria, Lebanon.

ILLUSTRATIONS. HOOKER, *Icon. Pl. V. 2: pl. 3151*. 1932; DAVIS, *Fl. Turkey 1: 127*. 1965.

REPRESENTATIVE SPECIMENS. Turkey: *Aucher 4032*; *Krause 3828*; *Balansa 857*; *Davis 23802*. Iran: *Gilliat-Smith 2365, 2388*; *Koelz 18498*; *Furse 3282, 3283, 3254*. Lebanon: *Berton 217*. Syria: *Gaillardot 389*; *Dinsmore 13024*.

8. *Consolida saccata* (Huth) Davis, *Notes Bot. Gard. Edinb.* 26: 173. 1965. FIG. 1, H.

Delphinium saccatum Huth, *Bull. Herb. Boiss.* 1: 325. 1893.

Rigid, much branched, several dm. tall, the branches divaricate, slender, largely retrorse-strigulose, but with more or less spreading, short, glandular hairs near the tips; leaves of stem palmately multipartite, to ca. 3 or 4 cm. long, subsessile, the segments linear, strigulose, rather few; inflorescence open, with widely scattered, pale yellowish to blue or white flowers; bracts largely 3–5-parted, to ca. 5 mm. long; pedicels very slender, 0.5–3 cm. long; bracteoles entire, several, scattered, to ca. 2.5 mm. long; sepals ca. 10 mm. long, lance-oblong, ca. 3 mm. wide, with broad white hyaline margin, the lateral pair pubescent along the median strip, lower sepals less hyaline and more pubescent, the upper sepal and spur pubescent, the latter 4–5 mm. long, 2.5 mm. wide at base, hooked-saccate, not coiled, at apex; "petal" pale with bluish tip, 5-lobed, ca. 15 mm. long, including

spur, the terminal lobe ca. 3 mm. long, divided half its length, intermediate lobes 1.5–2 mm. long, sharply triangular, outer lateral lobes membranous, 4–5 mm. long, triangular, acute; filaments dilated at base; follicle compressed, glabrous, reticulate-veined, 12–15 mm. long, 3–4 mm. wide, the style an additional 3–4 mm. long.

TYPE: Turkey, Mardin, rocky fields near Rischemil, *Sintenis 1186* (B); the holotype now probably destroyed; isotypes seen at K, MO, P, PH.

DISTRIBUTION. Stony fields, Turkey (E. Mesopotamia, Mardin); northern Iraq.

ILLUSTRATIONS. HUTH, Bull. Herb. Boiss. 1: *pl. 16, fig. 3*. 1893; DAVIS, Fl. Turkey 1: 127. 1965.

REPRESENTATIVE SPECIMENS. Iraq: *Haines W 1218*; *Agnew*, Sept. 1, 1961.

9. *Consolida barbata* (Bunge) Schröd. Abh. Zool.-Bot. Ges. Wien 4(5): 16, 62. 1909. FIG. 1, I.

Delphinium barbatum Bunge, Arbeit. Nat. Ver. Riga 1: 126. 1847.

Delphinium barbatum Bunge var. *hirsutum* Huth, Bot. Jahrb. 20: 391. 1895.

Apparently based on a collection at 800 m., Mt. Karatag, *Regel* in 1882, Turkestan Herb. (LE), which I have not seen.

Two to 8 dm. tall, retrorse-strigulose, erect, the main stem with many short, slender, ascending, side branches throughout its length; leaves numerous along main stem, dissected into linear segments 0.3–0.4 mm. wide, the principal cauline leaves sessile, 1–2 cm. long; bracts divided into linear segments or the uppermost entire, 2–6 mm. long; pedicels 4–15(–30) mm. long, very slender, subglabrous to glandular-pubescent with some hairs yellow and enlarged at the base; bracteoles several, lanceolate, 1–2 mm. long; sepals bearded without, blue, 6–8 mm. long, narrow-ovate, acute, ciliate-bearded at distal margin, the spur ca. 8 mm. long, blue, strigulose or glandular-pubescent, ca. 2.5 mm. wide at base; “petal” whitish with bluish tip, 5-lobed, ca. 8–9 mm. wide, the middle lobe broadly rounded, ca. 4.5 mm. wide, the 2 lateral lobes lance-deltoid, slightly shorter than the median lobe, the outer lobes more membranous, lanceolate, acuminate, ca. 5 mm. long; filaments pale blue, 5–6 mm. long, glabrous; anthers blue, ca. 0.4 mm. long; follicle glabrous, oblong, 5–10 mm. long, reticulate-veined, the style an additional 2.5–3 mm.; seed ca. 1.5 mm. long, narrowly obpyramidal, with transverse rows of scales.

TYPE: Karatau Mts. in upper Sarafschan near Samarkand, Turkestan, Oct., 1841, *Bunge*. The *Bunge* collection at LE is probably the type and has “*Lehmann 38*” on it, as does a specimen at P. I take it this means from the Lehmann herbarium. The LE specimen has a single flower and no leaves; the sepals are ciliate and hide the “petal”; the pedicels are glandular-pubescent.

DISTRIBUTION. Dry places at 700–2000 m., Turkestan.

REPRESENTATIVE SPECIMENS. *Capus 54*; *Regel 52*, 1881; *Komarov*, Aug. 18, 1893; *Gontscharow & Grigoriev 871*.

10. *Consolida raveyi* (Boiss.) Schröd. Abh. Zool.-Bot. Ges. Wien 4(5): 62. 1909. FIG. 2, A.

Delphinium raveyi Boiss. Diagn. I. 1: 66. 1843.

Erect, simple or more often with few upwardly curved branches from the base, 1–4 dm. tall, strigulose and with short spreading white hairs and many yellow pustular-based hairs, leafy throughout; basal leaves short-petioled, ternate, then further divided into linear pubescent segments; lower petioles to 2 or 3 cm. long, the upper ones gradually shorter; lower blades 1–3.5 cm. wide, upper smaller, passing into trifid leafy bracts ca. 1 cm. long or the uppermost linear, entire, green; flowers solitary in most leaf-axils, erect, sessile, each with 2 linear bracteoles at base so that there is a resemblance to a trifid bract; sepals deep violet, ca. 13–18 mm. long, without the spur; upper sepal linear, ca. 2 mm. wide, pubescent on most of outer surface, the pointed spur to ca. 5 mm. long; lateral sepals pubescent on the midrib and narrow claw, the limb ca. 4 mm. wide; lower sepals with broader claw, the limb 3 mm. wide; “petal” 3-lobed, 12–14 mm. long, 3–4 mm. wide, the terminal lobe divided into 2 small lobules 1 mm. long, the lateral lobes ca. 1.5 mm. long; stamens 5–7 mm. long, the filaments oblong-dilated below, narrow above, more or less pubescent; anthers yellow, ca. 0.8 mm. long; follicle reticulate-veiny, soft hairy, 10–12 mm. long, the beak an additional 1.5–2 mm., the body 3 mm. wide, sub-compressed, few seeded; seeds triquetrous, scaly.

TYPE: “in cultis Cariae prope Aphrodisias” [Geyre], *Boissier*, June 1842 (G not seen); isotypes (K, NY, P) seen.

DISTRIBUTION. Steppes, fields, etc., 700–800 m., Turkey from Caria and Lycia through Phrygia and Cappadocia to Paphlagonia.

REPRESENTATIVE COLLECTIONS. Turkey: *Pichler* 22; *Bourgeau* 8; *Balansa* 599, 719, 856; *Bornmüller* 1719, 4027, 13690; *Siehe* 175; *Sintenis* 4293; *Davis* 13010, 36622.

11. *Consolida cruciata* (Hossain & Davis) Davis, Notes Bot. Gard. Edinb. 26: 174. 1965. FIG. 2, B.

Delphinium cruciatum Hossain & Davis, Notes Bot. Gard. Edinb. 22: 422. 1958.

Erect, 1.5–4 dm. tall, simple or with few upwardly curved branches from base, strigulose; cauline leaves with petioles 0.5–1.5 cm. long, the blades ca. as long or longer, ternately laciniate into strigulose linear segments; flowers subsessile in most axils, lilac to pink, drying whitish, 10–15 mm. long; pedicels very short, thick; bracts foliaceous, partite, gradually reduced up the stem; bracteoles 2, trisect, equaling flowers; sepals pubescent, the upper 10–12 mm. long, oblong-spatulate, narrowed into a broad basal claw; the 2 lateral ca. 2.5 mm. wide, the 2 lower rhombic-spatulate, obtuse, clawed; spur pubescent, 5–7 mm. long, ca. 2 mm. wide at base, slightly curved, pointed; “petal” 3-lobed, cruciate, 11.5–12.5 by 9.6–11 mm., purple-nerved, more or less abruptly attenuate at base; terminal lobe

oblong, 3–5 mm. long, with 2 small rounded lobes at tip; lateral lobes rounded-oblong, flaring; stamens unequal, filaments oblong-dilated below, linear and pubescent above; anthers purplish brown, ca. 1 mm. long; follicle erect, 12–17 by 2–3 mm., terete, strigulose, more or less furrowed longitudinally when mature, the style an additional 1.5–3 mm.

TYPE: Turkey, Prov. Adana (Cilicia), Bozanti at 750 m., *Siehe* 362 (E); isotypes (GH, K, P) seen.

DISTRIBUTION. Cilicia, Mersin, Turkey.

ILLUSTRATIONS. HOSSAIN & DAVIS, *Notes Bot. Gard. Edinb.* 22: 422, fig. 4, C & D. 1958; DAVIS, *Fl. Turkey* 1: 127. 1965.

12. *Consolida axilliflora* (DC.) Schröd. *Abh. Zool.-Bot. Ges. Wien* 4(5): 62. 1909. FIG. 2, C.

Delphinium axilliflorum DC. *Syst.* 1: 341. 1817.

Delphinium axilliflorum DC. var. *violaceum* Boiss. *Fl. Orient.* 1: 75. 1867.

With violet flowers; several collections cited; some seen by me.

Delphinium axilliflorum DC. var. *coerulescens* Boiss. *loc. cit.* Flowers pale gray-blue. Two collections cited; one seen by me.

Delphinium axilliflorum DC. var. *minus* Huth, *Bot. Jahrb.* 20: 369. 1895. No collections cited.

One to 6 dm. high, strigulose or glabrescent, the stem erect, mostly subsimple, more or less equally leafy throughout; leaves twice trifid, the lower petioled, the upper sessile, the ultimate segments linear, mostly 1–1.5 mm. wide, strigulose, acute; leaf blades largely 1–2 cm. long; flowers solitary in axils, often from near the base of the plant; pedicels very short; bracteoles subopposite, at base of flower; sepals blue, violet or rose, oblong, obtuse, the lateral and lower pairs 10–13 by 5–6 mm., unguiculate, the lateral with pubescence confined to the median strip; upper sepal narrower, pubescent, the spur slightly curved, pointed, 6–9 mm. long, ca. 2 mm. wide at base; “petal” 3-lobed, kite-shaped, almost 2 cm. long including the spur, the oblong terminal lobe ca. 5 mm. long, with 2 short rounded terminal lobules, the lateral lobes broadly triangular, obtuse, ca. 5 mm. long and wide; stamens unequal, the filaments oblong below, narrowed and more or less pubescent above; anthers brownish, ca. 1 mm. long; follicle more or less glabrescent in maturity, erect and appressed to the stem, ca. 16–20 by 3 mm., longitudinally furrowed when mature, the beak an additional 3 mm.; seeds triquetrous, the broad scales more or less distinct.

TYPE: In Oriente, *Labillardière*; not seen.

DISTRIBUTION. Fields, grassy places, etc., below 1800 m., Turkey (Cilicia to Mesopotamia) to Syria.

ILLUSTRATIONS. DELESSERT, *Icon. Pl.* 1: t. 50. 1820; HOSSAIN & DAVIS, *Notes Bot. Gard. Edinb.* 22: 423. 1958; DAVIS, *Fl. Turkey* 1: 127. 1965.

REPRESENTATIVE COLLECTIONS. Turkey: *Hennipman et al.* 1393; *Balansa* 729; *E. K. Balls* 2243; *Post* 213; *Davis* 28753, 28680, 22135. Syria: *Post* 218; *Kotschy*, March 13, 1841; *Letourneux* 327; *Dinsmore* 20367; *Haradjian* 2266.

13. *Consolida gombaultii* (Thiebaut) Munz, comb. nov. FIG. 2, D.

Delphinium gombaultii Thiebaut, Bull. Soc. Bot. France 81: 114. 1934.

Near to *C. axilliflora*, but glandular-pubescent throughout and also with very short non-glandular hairs; stem erect, simple or slightly branched, 3–5 dm. tall; leafy and flowering from the base; lower leaves 3–4 cm. long, multifid into linear subobtuse segments 1 cm. or so long, ca. 1.5 mm. wide and with very short stubby pubescence; median and upper leaves linear-lanceolate, entire, becoming bracts above, 1–3 cm. long and exceeding the pedicels; pedicels 2–3 mm. long; bracteoles subulate, 2–3 mm. long; flowers small, 8–12 mm. long, arranged in a long slender spike; sepals glandular-pubescent, intensely blue, 6–8 mm. long, oblanceolate, unguiculate; spur ca. 6 mm. long, slightly curved; “petal” pale blue, 3-lobed, the upper lobe bifid, the lateral broader, widespread, pointing slightly forward, the whole “petal” ca. 1 cm. long and broad, its spur almost straight, somewhat shorter than the blade; follicle erect, 10–12 mm. long, 3 mm. wide, short-beaked; seeds gray, squamate.

TYPE: Syria, Djebel Druze, *Gombault 1717*, May 21, 1932 (P); seen.

This species is near *C. axilliflora*, but with shorter pedicels, entire bracts, smaller flowers, shorter follicle, and a more general glandulosity. I have seen no collections other than the type.

14. *Consolida stocksiana* (Boiss.) Nevski in Komarov, Fl. U.S.S.R. 7: 111. 1937. FIG. 2, E, F.

Delphinium stocksianum Boiss. Diagn. II. 1: 12. 1853.

Delphinium stocksianum Boiss. var. *glabrescens* Boiss. loc. cit. 1853. Type, *Griffiths 1376* (K); seen.

Consolida stocksiana var. *glabrescens* (Boiss.) Tamura in Kitamura, Fl. Afghan. 124. 1960.

Delphinium kabulianum Akhtar, Kew Bull. 1938: 86. 1938. Based on *S. A. Akhtar* from near Kabul, Afghanistan (K); seen.

Consolida stocksiana (Boiss.) Nevski var. *kabuliana* (Akhtar) Tamura in Kitamura, Fl. Afghan. 124. 1960.

Plant 2–5 (–7) dm. tall, branched below, cinereous-strigulose and leafy throughout or with more spreading hairs above; lower leaves long-petioled, tripartite into narrowly lobed segments, the lobes oblong-linear, subobtuse; intermediate leaves with shorter petioles or sessile, the segments entire, linear-spatulate, canaliculate, 1.5–4 mm. wide, with mucronate recurved tips; leaves pretty much shed by anthesis; flowers creamy white, in a long lax spike; pedicels to 6 mm. long, minutely bibracteolate at the base; sepals 7–11 mm. long, with violet median stripes, the lateral sepals pubescent on midrib only; spur vertical, 1.6–2.6 cm. long, 4 mm. wide at base, gradually attenuate, somewhat curved; “petal” 3-lobed, ca. 8 mm. high, 11 mm. wide, the middle lobe 2–2.2 mm. long, with 2 rounded terminal lobules; lateral lobes spreading, rounded, slightly turned upward, 2.5–3 mm. long, the spur 16–18 mm. long; stamens 4–8 mm. long; anthers yellow, 0.7–1 mm. long; follicle cinereous, strigose, erect, short, cylindrical, sub-

arcuate, the slender style one-third as long as the body which is 8–10 mm. by 2.7 mm.; seeds brown, subtriangular, regularly rugulose.

TYPE: Fields in Baluchistan, *Dr. Stocks 979* (κ !, isotype; G, holotype, not seen).

DISTRIBUTION. Fields and open places, largely between 1000 and 2000 m., Central Asia: Pamiro-Alai, Turkmannia, Iran, Afghanistan.

REPRESENTATIVE COLLECTIONS. Afghanistan: *Furse 6469, 5942, 5943; Herb. Griffith 42; Kay Beach 5029; Hay 210.* Turkestan: *Regel*, May 1882, and Sept. 21, 1884.

This species is confused with *Consolida rugulosa* and *C. persica*. From the former it should be separable by the more triangular and not rounded lateral lobes of the "petal". From the latter by the narrower "petal", which is 8–11 mm. wide when expanded, not 15–20 mm. It varies in pubescence and flower size. So far as I can see, the plants described as *C. kabuliana* are small and with smaller flowers than in many populations and those called var. *glabrescens* may have a somewhat more glabrescent follicle in maturity.

15. *Consolida ambigua* (L.) Ball & Heywood, Feddes Repert. 66: 151. 1962. FIG. 2, G.

Delphinium ambiguum L. Sp. Pl. ed. 2. 749. 1763.

Delphinium ajacis auct. non L. Sp. Pl. 1: 531. 1753.

Consolida ajacis auct. non (L.) Schur, Verh. Siebenburg. Ver. Naturf. 4: 47. 1853.

Ceratosanthus ajacis Schur, *op. cit.* 46.

Plant subglabrous, especially below, to more or less pubescent, especially above, with short fine appressed or spreading hairs, mostly one-stemmed, 3–10 dm. tall, generally branched above with ascending-horizontal branches; lower leaves long-petioled, the blades commonly 2–5 cm. in diameter, multifid into ultimate more or less linear mucronate segments largely 1–1.5 mm. wide; cauline leaves gradually reduced upward, the upper sessile, often 1–2 cm. long; bracts multifid to entire, the lower often at least as long as the pedicels, the uppermost 2–3 mm. long; inflorescence more or less lax, each branch ending in a few- to many-flowered raceme; pedicels commonly 1–3 cm. long, often about equal to the diameter of the flower; bractlets mostly 1.5–4 mm. long, usually below the middle of the pedicel; flowers blue to rose or white, 2–2.5 cm. across; sepals ovate, attenuate at base, more or less narrowed into an obtuse apex, 12–14 mm. long, more or less pubescent, each with a greenish subapical spot; spur ca. 15 mm. long, straight or slightly curved; "petal" 3-lobed, the central lobe oblong, with 2 short rounded lobules and about 6 mm. long, the 2 lateral lobes rounded, about as long, spur 15–16 mm. long; stamens 6–7 mm. long, the filaments abruptly dilated at the base, glabrous; anthers yellow; follicle pubescent, cylindrical, 16–22 mm. long, the style ca. 2 mm. long; seeds black, ca. 2.5 mm. long, oblong-trigonous, with undulating transverse rows of scales.

TYPE from Mauretania, northwest Africa, a double form in the Linnaean Herbarium 694/4; photograph seen.

DISTRIBUTION. Mediterranean region, but much cultivated and widely escaped as various horticultural forms.

ILLUSTRATIONS. REICHENBACH, *Icon. Fl. Germ.* 4: *pl.* 67, 1840; MAIRE, *Fl. de l'Afrique du Nord* 13: 54. *fig.* 24, 1964.

REPRESENTATIVE COLLECTIONS. Transcaucasia: *Hohenacker* 1838; *F. N. Meyer* 541. Iraq: *Rawi* 10738; *Guest* 247. India: *Giles*, 1885; *Wight* 10, 18; *Falconer* 59; *H. J. Walton*, Aug. 14, 1904; *G. Watt*, March 1878. Honan Island: *Levine* 952, 824, 823.

The question of the application of the name *ambigua* has not been entirely agreed upon. I am following Ball & Heywood (*Feddes Repert.* 66: 151, 1962), Chater (*Tutin et al.*, *Fl. Europaea* 1: 217, 1964), and Davis (*Fl. Turkey* 1: 126, 1965) in using it, but E. Janchen (*Feddes Repert.* 72: 34, 1966) disagrees and believes the Linnaean epithet *ajacis* applies to this taxon.

16. *Consolida orientalis* (Gay) Schröd. *Abh. Zool.-Bot. Ges. Wien* 4(5): 25, 1909. FIG. 2, H.

Delphinium orientale Gay in *Desmoul. Cat. Dordogne* 12, 1840.

Delphinium ajacis L. var. *orientale* (Gay) *Finet & Gagnep. Bull. Soc. Bot. France* 51: 467, 1904.

Delphinium hispanicum Willk. *Prodr. Fl. Hisp.* 3: 969, 1880.

Delphinium orientale ssp. *hispanicum* (Willk.) *Batt. in Batt. & Trab. Fl. Alg.* 15, 1888.

Delphinium orientale var. *brevicalcaratum* *Huth, Bot. Jahrb.* 20: 376, 1895.

Not typified, but several collections cited seem to belong here, such as *Aitchison*, *Falconer*, *Griffith*.

Delphinium bithynicum *Griseb. Spic. Fl. Rumel.* 1: 320, 1843. Type from near Bolu, Bithynia, Turkey; not seen by me. Referred to *D. orientale* by *Boiss.*, *Fl. Orient.* 1: 79, 1867.

Mostly 1-stemmed, simple or branched, especially above, erect, 2–6 dm. tall, the lower parts retrorse-strigose, upper with more or less crisped pubescence, some gland-tipped hairs and some swollen at the base; leaves mostly subglabrous, the lower petioled and early withered, the upper sessile; principal leaves multifid, crowded on the stems, the blades 2–4 cm. long, the segments linear or lance-linear, 1–2.5 mm. wide, more or less ciliolate; flowers few to many, in racemes that are rather dense at anthesis, more open in fruit; bracts green, the lower with linear parts, the upper linear, entire, 5–20 mm. long; pedicels 0.5–4 cm. long, bibracteolate near the summit; flowers 1.5–2.5 cm. in diameter, dark purple to rose or white; the sepals round-ovate to oval or somewhat narrower, ca. 10–12 mm. long, abruptly contracted into a pubescent basal claw almost as long as the blade which is obtuse or rounded at the summit and more or less pubescent; spur ca. 1 cm. long; “petal” usually of same color as sepals, 3-lobed, 8–10 mm. long, the median lobe ovate to oblong-ovate, 2-lobed, somewhat longer than the rounded lateral lobes; stamens 6–7 mm. long, the filaments dilated

at base, with some gland-tipped hairs at upper end; anthers yellow, ca. 1.5 mm. long; follicle strigose, 14–22 mm. long, oblong-cylindric, with some gland-tipped hairs, the style 1.5–2 mm. long; seeds brownish black, obpyramidal, angular, 1.5–2 mm. long, with several undulating transverse rows of short scales.

TYPE: Described from cultivated material originating from the Orient, apparently represented at κ; seen.

DISTRIBUTION. Grain fields and fallow places below 1500 m., Mediterranean region to Turkey, Caucasus, Iran, India, Tibet, central Siberia.

ILLUSTRATIONS. CURTIS, *Bot. Mag.* 169: *pl.* 186. 1952–3; DAVIS, *Fl. Turkey* 1: 129. *fig.* 2. 1965.

REPRESENTATIVE COLLECTIONS. **Caucasus:** *Brotherus* 32; *F. N. Meyer* 541. **Transcaucasia:** *Shevljakov*, June 25, 1935; *Gurvitsch*, July 17, 1936. **Turkestan:** *F. N. Meyer* 572; *Michelson* 217–1911. **Turkey:** *Sintenis* 4137, 420; *Bornmüller* 13692; *Bourgeau* 6; *Balansa* 1133; *Krause* 3397, 3723; *Davis* 30598, 28945, 30079, 31992. **Iran:** *Bunge*, 1858–9; *Furse* 2459, 1920; *Lindsay* 1151; *Rechinger* 4173, 5220, 383. **Afghanistan:** *Herb. Griffith* 47; *Aitchison* 444; *Hay* 239.

Parsa in his *Flore de l'Iran* 1: 431. 1951, proposes *Delphinium orientale* Sims var. *major*, the description of which makes application of the name very uncertain. The terms sepals and petals are baffling.

17. *Consolida regalis* S. F. Gray, *Nat. Arr. Brit. Pl.* 2: 711. 1821.

Delphinium consolida L. *Sp. Pl.* 1: 530. 1753.

Plant 2–12 dm. tall, mostly divaricately and rather finely branched, subglabrous to retrorse-strigulose; radical leaves petioled, early deciduous, the main cauline ones trifid, then again parted into ultimate, linear, mucronate, strigulose lobes 1–5 cm. long; flowers few, in rather open terminal racemes, deep blue or more seldom pink or white; bracts mostly simple, linear, 3–15 mm. long; pedicels very slender, 1–5 cm. long; bracteoles linear, alternate to opposite, often well below the flower, 1.5–4 mm. long; flowers (excluding the spur) 9–16 mm. long; sepals more or less ovate, narrowed at both ends, scarcely or short-unguiculate, strigose mostly along the midrib in the lateral pair; spur 17–22 mm. long; “petal” blue to cream, 3-lobed, 12–15 mm. wide, the spur 16–17 mm. long, middle lobe of limb 3.5–5 mm. high, shortly 2-lobed at apex, each of these lobules often emarginate; lateral lobes rounded, 4–5 mm. long; stamens 4–7 mm. long; filaments dilated on lower portion; anthers 0.6–0.7 mm. long, yellow; follicle to 2 cm. long including the 2–3 mm. long style; seeds dark, with subcontiguous scales in transverse rows.

Sepals 12–16 mm. long, usually light violet-blue; stems often relatively simple; follicle usually twice as long as broad. Central and northwestern Europe to Turkey. Subsp. *regalis*.

Sepals 9–11 mm. long, usually dark violet-blue; stem usually repeatedly branched; follicle usually 3 times as long as wide.

Follicle glabrous. Turkey to southeastern Europe. Subsp. *paniculata*.

Follicle strigose. Around the Caspian Sea and on the north side of the Black Sea. Subsp. *divaricata*.

Consolida regalis subsp. **regalis**

FIG. 2, I.

Stem usually once or twice branched; flowers 22–35 mm. long; sepals 11–15 mm. long, usually light violet-blue, rather close together in the inflorescence; follicle glabrous, usually twice as long as broad.

TYPE LOCALITY: Britain.

DISTRIBUTION. Fallow fields, etc., largely below 1000 m., Europe, Caucasia, rarely in Turkey.

ILLUSTRATIONS. REICHENBACH, *Icon. Fl. Germ.* 4: *pl.* 66. 1840; HEGI, *Ill. Fl. Mittel-Eur.* 3: 487. *pl.* 114. 1909.

REPRESENTATIVE COLLECTION. *Davis 29695.*

Consolida regalis subsp. **paniculata** (Host) Soó, *Österr. Bot. Zeitschr.* 71: 243. 1922.

FIG. 2, K.

Delphinium paniculatum Host, *Fl. Austr.* 2: 65. 1831.

Delphinium consolida L. subsp. *paniculatum* (Host) Busch in Kuznetzow, *Fl. Cauc. Crit.* 3: 44. 1902.

Consolida regalis S. F. Gray subsp. *paniculata* Soó var. *paniculata*, Davis, *Fl. Turkey* 1: 128. 1965.

Ceratosanthus paniculatus Schur, *Verh. Siebenburg. Ver. Naturwiss.* 4: 47. 1853.

Delphinium consolida L. var. *micranthum* Boiss. *Fl. Orient.* 1: 78. 1867. A new name for *D. paniculatum*.

Flowers widely scattered; spur 14–18 mm. long; sepals ca. 1 cm. long, to 6 mm. broad; “petal” ca. 15 mm. wide, the central lobe to 3.5 mm. long, the lateral 4.5–5 mm.; stamens 4–6 mm. long; anthers 0.6 mm. long; follicle 7–11 mm. long, excluding the style, glabrous; seeds angular obovoid, 1.75 mm. long.

TYPE: Jugoslavia, near Cattaro, *Tomasini*. Not seen.

DISTRIBUTION. Cultivated and disturbed places below 1000 m., southeastern Europe to Turkey and Caucasia.

ILLUSTRATIONS. CURTIS, *Bot. Mag.* 159: *pl.* 9435. 1936; DAVIS, *Fl. Turkey*, 1: 129. 1965.

REPRESENTATIVE COLLECTIONS. **Caucasus:** *Czerniakowska*, Aug. 28, 1936. **Turkey:** *Sintenis 4294; Bornmüller 13689; Bourgeau 10; Krause 3878; Balansa 595, 1134; Davis 32787, 13008, 13463, 38961.*

I have seen a number of cultivated specimens, some grown as *Delphinium consolida* some as *D. paniculatum*.

Consolida regalis subsp. **divaricata** (Ledeb.) Munz, comb. nov.

FIG. 2, J.

Delphinium consolida L. subsp. *divaricatum* (Ledeb.) Hossain & Davis, *Notes Bot. Gard. Edinb.* 22: 424. 1958.

Delphinium divaricatum Ledeb. in Eichwald, *Pl. Nov. Caspio-Cauc.* 2: 16. *pl.* 16. 1831.

Consolida divaricata (Ledeb.) Schröd. *Abh. Zool.-Bot. Ges. Wien* 4(5): 25. 1909.

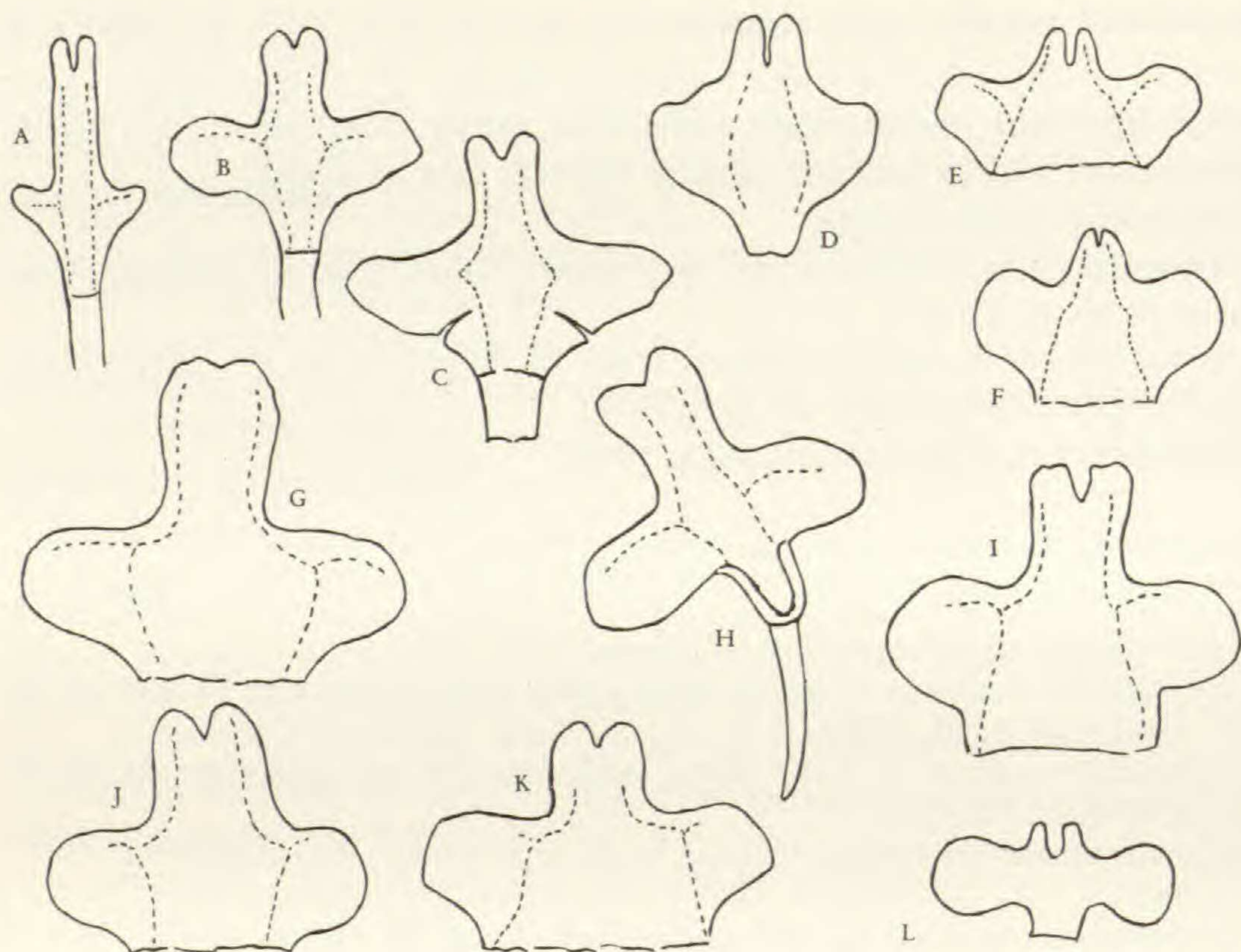


FIGURE 2. *Consolida* species. Drawings show lamina of "petal" of 3-lobed type with lateral lobes perpendicular to terminal lobe, the latter somewhat divided at tip; dotted lines, when shown, indicate principal veins. A. *C. raveyi*, lamina 6 mm. wide; base of spur indicated. B. *C. cruciata*, lamina 11 mm. wide; drawn from *Siehe 362* (GH). C. *C. axilliflora*, lamina 12 mm. wide; from *Balansa 729* (US). D. *C. gombaultii*, lamina 10 mm. wide; from *Gombault 1717* (P). E. *C. stocksiana*, lamina 11 mm. wide; from *Beach 5029* (US). F. *C. stocksiana*, lamina 11 mm. wide; illustrating the form known as var. *kabuliana*. G. *C. ambigua*, lamina 15 mm. wide; from *Levine 824* (GH). H. *C. orientalis*, lamina 13 mm. wide. I. *C. regalis* subsp. *regalis*, lamina 15 mm. wide; from *Taccan* in 1926 (NY). J. *C. regalis* subsp. *divaricata*, lamina 14 mm. wide; from *Rubtzova*, Nov. 3, 1934 (CAS). K. *C. regalis* subsp. *paniculata*, lamina 13 mm. wide; from *Sintenis 4294* (US). L. *C. incana*, lamina 8 mm. wide; from *Post* at Beirut (F).

Consolida regalis S. F. Gray subsp. *paniculata* (Host) Soó var. *divaricata* (Ledeb.) Davis, Notes Bot. Gard. Edinb. 26: 174. 1965.

Delphinium divaricatum Ledeb. var. *gilliati* Turrill, Kew Bull., 1929, according to Parsa, Fl. de l'Iran 1: 432. 1951, but I find no such reference.

Essentially like subsp. *paniculata* in habit and flowers, the central lobe of the violet "petal" 3–4 mm. long; sepal spur 17–20 mm. long; follicle strigose.

TYPE: Near Astrachan, at mouth of the Volga, *Eichwald* (LE); seen.

DISTRIBUTION. Northern Balkans to Iran and Transcaspia, especially in the region surrounding the Caspian and on the north side of the Black Sea.

ILLUSTRATION. EICHWALD, Pl. Nov. Caspio-Cauc. 2: pl. 16. 1831.

REPRESENTATIVE COLLECTIONS. Transcaucasia: *Hejdeman*, May 22, 1930; *Rubt-*

zova, Nov. 3, 1934; *Hohenacker*, 1834; *Koenig 66b*. Iran: *Miss Lindsay 1424*; *Rechinger 6678*; *Harrington 205*; *Furse & Synge 799/16*.

I have seen cultivated specimens of subsp. *divaricata* grown as *Delphinium parryi*, *D. paniculatum*, and *D. divaricatum*.

18. *Consolida incana* (E. D. Clarke) Munz, comb. nov. FIG. 2, L.

Delphinium incanum E. D. Clarke, *Travels 2*: 451. 1812-16.

Delphinium rigidum DC. *Syst. 1*: 344. 1817. Type "in Oriente," *Labillardière* (G?) not seen, but well illustrated in *Delessert, Icon. Pl. 1: pl. 52*. 1820.

Consolida rigida Hayek, *Prodr. Fl. Penins. Balcan. 1*: 315. 1924. *Bornm., Beih. Bot. Centralbl. 31*(Abt. 2): 181. 1914, not valid.

Delphinium exsertum DC. *Syst. 1*: 345. 1817. Based on a *Labillardière* collection which I have not seen, but the 1820 plate (*Delessert, Icon. Pl. 1: pl. 53*) does not reveal any differences from *D. rigidum* except that it is more glabrous.

Divaricately stiff-branched from the base, 2-6 dm. tall, pubescent throughout with short stiffish hairs, some of these in the upper parts gland-tipped, some with yellow swollen bases; lower leaves long-petioled, middle cauline subsessile; blades commonly 2-3 cm. long, multifid into linear-oblong segments, more or less mucronate and ca. 1 mm. wide, pubescent; racemes lax, rather few-flowered; bracts mostly 3-5-lobed, 3-10(-25) mm. long; pedicels commonly 1-2 cm. long, spreading to more or less decurved in fruit; bracteoles 1-3 mm. long, mostly remote from the flower; flowers 12-18 mm. across; sepals dirty white to pale violet to rose, elliptic-ovate, subobtuse, narrowed toward a clawlike base, ca. 5-7 mm. long, somewhat pubescent without, especially on the upper sepal and the lower pair; spur 5-7 mm. long, pubescent; "petal" ca. 8 mm. wide, 3-lobed, pale, the middle lobe 1.5 mm. long, divided three-fourths way to the base, the lateral lobes rounded, ca. 3 mm. in diameter; stamens to 5 mm. long, the filaments glabrous, dilated below; anthers 0.6 mm. long, dark; follicle flattened, more or less reflexed, pubescent, transversely ridged, 7-10 mm. long, 3-3.5 mm. wide, the style an additional 4 mm.; seeds 1.5 mm. long, obpyramidal, dark brownish, with transverse rows of broad scales.

TYPE: The E. D. Clarke collections are at the British Museum (Natural History), but nothing of his material for this species seems to be extant. Huth (*Bot. Jahrb. 20*: 365. 1895) reduced the name *Delphinium incanum* to synonymy under *D. aconiti* L. However, that is a species endemic to the Dardanelles region of Turkey, while Clarke says he found his *D. incanum* at Cana. His description seems best to fit *Consolida rigida* of that region in the opinion of Miss Dorothy Hillcoat and Dr. N. K. B. Robson of the British Museum, to both of whom I am indebted and with whom I agree. It would seem, then, that a neotype must be chosen and I propose: Migdal, Lower Galilee, June 13, 1942, *Peter H. Davis 4819* (neotype, BM; isoneotypes E, K), from the Cana region.

DISTRIBUTION. Below 1500 m. elevation; Israel and Lebanon, western Jordan.

REPRESENTATIVE SPECIMENS of *C. incana* may be cited. **Israel:** *Field & Lazar* 314; *F. T. Meyers* 30. **Lebanon:** *Ehrenberg* 193; *Blanche* 348; *Berton* 222; *Bornmüller* 30.

19. *Consolida glandulosa* (Boiss. & Huet) Bornm. Fedde, Repert. Sp. Nov. Beih. 89: 13. 1936. FIG. 3, A.

Delphinium glandulosum Boiss. & Huet in Boiss. Diagn. II. 5: 11. 1856.

Delphinium glandulosum vars. *lasiostemon* and *leiostemon* Boiss. Fl. Orient. 1: 80. 1867, the former with sparsely ciliate filaments, the latter with them glabrous.

Rather freely and divaricately branched, erect, 3–6 dm. high, finely retrorse-strigulose below, short yellowish-pubescent above, many of these hairs gland-tipped, some stiff and enlarged at the base; lower leaves largely gone by anthesis, petioled, multifid; cauline leaves sessile or subsessile, commonly 2–3 cm. long, the ultimate linear lobes ca. 1.5 mm. broad, pubescent with more or less crisped hairs; racemes rather many, lax, few-flowered; bracts mostly simple, lance-linear, to 5 mm. long; pedicels divaricate, slender, 1–4 cm. long; the bracteoles 2–3 mm. long, near the middle of the pedicel; sepals oblong-spatulate to obovate, scarcely unguiculate, blue-violet with light median strip, crisp-pubescent especially along the middle, 9–10 mm. long, the lateral pair broadest, rounded at the apex, to 7 mm. wide and least hairy; others more pointed and narrower; spur strigose, ca. 2 cm. long, 3 mm. wide at base, horizontal, flexuous, slender; “petal” whitish with violet tinge at apex, ca. 17–18 mm. wide, with 2 lateral rounded lobes ca. 5 mm. wide and curved slightly upward, the median lobe ca. 3 mm. high, bifid at the tip into lobules about 1 mm. long; stamens 5–8 mm. long, abruptly broadly dilated on lower half, whitish, glabrous or nearly so; anther yellow, ca. 1 mm. long; follicle oblong, with transverse elevated lines, appressed-pubescent, 9–11 mm. long, 3.5–4 mm. wide, the style an additional 4 mm. long; seeds grayish, narrowly obpyramidal, ca. 2 mm. long, with several transverse rows of contiguous scales.

TYPE: Fields near Maimansour between Baibout and Erzerum, Turkish Armenia, at 6000 ft., Aug., 1853, *Huet du Pavillon* (G) not seen, but isotypes (BM, K, P, MO, UC) have been examined.

DISTRIBUTION. Open places, 800–1600 m., central and eastern Anatolia excluding Mesopotamia and Kurdistan.

ILLUSTRATION. DAVIS, Fl. Turkey 1: 129. 1965.

REPRESENTATIVE SPECIMENS. **Turkey:** *Balansa* 854; *Romia* 510 and *Bornmüller* 1724 — all labeled var. *leiostemon*. *Sintenis* 1286 (labeled var. *lasio-stemon*). Other collections *Davis* 32616, 31983, 31968, 32715, 31732, 31860; *Bourgeau* 6.

20. *Consolida oliveriana* (DC.) Schröd. Abh. Zool.-Bot. Ges. Wien 4(5): 62. 1909. FIG. 3, B.

Delphinium oliverianum DC. Syst. 1: 341. 1817.

Delphinium cappadocicum Boiss. Ann. Sci. Nat. II. 16: 367. 1841. Based on *Aucher* 74 (P) which I have seen.

Delphinium oliverianum DC. var. *cappadocicum* (Boiss.) Huth, Bot. Jahrb. 20: 389. 1895.

Delphinium hispidum Boiss. Fl. Orient. 1: 82. 1867, in synonymy.

Branched throughout, 1–5 dm. high, glabrous to pubescent with white spreading hairs above, the branches divergent, somewhat angled, often with some hairs with yellow bases; lower leaves petioled, the blades 1–3 cm. long, trifid, the petiolulate divisions multifid into acute, lance-linear lobes 1–2.5 mm. wide; upper leaves sessile, passing gradually into 3–5-lobed bracts 8–20 mm. long; flowers loosely racemose with long intervals between; pedicels mostly 1–4 cm. long, glabrous except at the summit; bracteoles linear, subopposite, 2.5–3 mm. long, with a few hairs near the summit; flowers bluish purple, almost 2 cm. in diameter; sepals at first cream, later bluish purple, loosely white-pubescent, especially on the greenish median strip, 8.5–14 mm. long, narrowed into broad clawlike bases, the upper sepal and lower pair ca. 4 mm. wide, narrowed apically, the lateral pair 5 mm. wide, rounded at the tip; spur straight, 13–17 mm. long, 2.5 mm. wide at the base, pubescent; “petal” cream with purplish tinge at the margin, 3-lobed, 15–18 mm. wide, 10–12 mm. high, the lateral lobes 4–5 mm. broad, upturned, the middle lobe ca. 3 mm. high, cleft almost to the base into 2 oblong lobules; stamens 5–8 mm. long, glabrous, somewhat dilated below; anthers yellow, ca. 0.8 mm. long; follicle appressed-pubescent, more or less compressed, 10–16 mm. long, 3–3.5 mm. wide, transversely nerved, the style an additional 2.5 mm., somewhat curved; seeds obpyramidal, ca. 1.7 mm. long, with transverse rows of scales.

TYPE: Fields between Bagdad and Vermancha, Iraq, *Olivier* (P); seen.

DISTRIBUTION. Hills and fields, 600–1400 m., Turkey, Iraq, and Iran.

ILLUSTRATIONS. DELESSERT, Icon. Pl. 1: *pl.* 51. 1820; DAVIS, Fl. Turkey 1: 129. 1965.

REPRESENTATIVE SPECIMENS. Turkey: *Sintenis* 1187, 2732; *Davis* 28669, 28406, 31026; *Kotschy* 416 (labeled *D. hispidum*, sp. nov.); *Strauss* 3. Iraq: *Field & Lazar* 52, 770, 741; *Gillett* 8305; *Guest* 2757, 3742; *Rawi* 8540. Iran: *Gilliat-Smith* 1734; *Koelz* 18202.

For some time I separated these as two species on the basis of a spur 13 mm. long and flowers at first cream in *Consolida cappadocicum* and spur 15–20 mm. long and flowers more purplish in *C. oliveriana*, but a reexamination of the situation seems to indicate that the two are scarcely separable taxa.

21. *Consolida flava* (DC.) Schröd. Ann. K. K. Naturh. Hofmus. Wien 27: 43. 1913. FIG. 3, C.

Delphinium flavum DC. Syst. 1: 346. 1817.

Delphinium flavum DC. var. *velutinum* DC. loc. cit. (pubescent throughout; bracteoles in middle of pedicel) and var. *glaucum* DC. loc. cit. (glabrous below; bracteoles at base of pedicel). Not typified.

Plant 1.5–4 dm. high, branched from base, densely retrorse-strigose

below, more or less spreading-pubescent above; lower leaves petioled, the blades 2.5–5 cm. long, ternately divided into segments with linear lobes; cauline leaves palmately multipartite, the final divisions linear, very short; bracts entire, short-linear, 4–5 mm. long; pedicels 12–20 mm. long; bracteoles 2, minute, linear-lanceolate; racemes lax, short; sepals 4–5 mm. long, oblong-elliptical, yellow to brown or purplish; spur 4–5 mm. long, straight, bent upward; “petal” wider than long, truncate, 3-lobed, the lateral lobes semiovate, longer than broad, the short-lobulate middle lobe with crimson spots; filaments densely hirsute, 3–4 mm. long; anthers rounded, yellow; follicle cylindrical, strict, viscid-hairy, linear-oblong, attenuate at both ends, many seeded, 10–12 mm. long; style 3–4 mm. long; seeds small, angulate, with separate scales.

TYPE: “In Oriente, verosimiliter in Archipelago. *Olivier*” (P). Seen, the label reading “de Bagdad a Kermancha, Voyage d’Olivier et Bruguière en Orient”; stem very retrorse-hairy below, glandular above only.

DISTRIBUTION. Apparently below 1000 m., Iraq and, less frequently in Syria.

EXAMPLES SEEN. Iraq: *Rechinger* 148, 9907, 19357; *Guest* 787; *Rawi* 22859, 21097, 21258, 21070, 20995, 20427. Syria: Mayadine (Meyadin), *E. S. Brown*, May 26, 1946; *Post*, July 4, 1890.

22. *Consolida deserti* (Boiss.) Munz, Jour. Arnold Arb. 48: 51. fig. 17. 1967. FIG. 3, D.

Delphinium deserti Boiss. Fl. Orient. 1: 83. 1867.

Delphinium flavum DC. var. *deserti* (Boiss.) Finet & Gagnep. Bull. Soc. Bot. France 51: 468. 1905.

Plant 5–30 cm. tall, diffusely branched from below, short viscid-hairy; leaves 5–25 mm. long, short hairy, palmately parted into oblong-linear segments, these again laciniate in the main leaves, the tips sharp; bracts 5–8 mm. long, oblong-linear; pedicels 1.5–3 cm. long; bracteoles near middle of pedicel, 3–5 mm. long; flowers small, yellow; sepals hairy, oblong, 4–6 mm. long; spur straight, 5–6 mm. long; “petal” obcordate, ca. 6 mm. wide, apparently 4-lobed, since the middle lobe is deeply divided, the outer lobes are longer, semi-ovate; “petal” with a row of brownish red spots across the base of the lobes; spur horizontal, equaling the blade, i.e., 5–6 mm. long; filaments sparsely hairy; anthers yellow, rounded, 0.5 mm. long; follicle oblong, viscid-hairy, 6–10 mm. long, 2–2.5 mm. wide, the beak slender, ca. 2 mm. long; seeds oblong, with densely imbricate scales about the cupuliform center.

TYPE: *Bové* 131, from desert between Suez and Gaza, July 1832; this number seen (K, P). It is spreading-hairy throughout on both those sheets. At GH are two *Bové* specimens of July, 1832, from between Suez and Gaza: 131 is virgate, few-branched, ca. 3.5 dm. tall, strigulose and with a spur ca. 1 cm. long. It bears only one flower which seems to have the 2 lower petals unguiculate and with round limb. It is *Delphinium peregrinum* L. There is also at GH a sheet 130, much branched, spreading pubescent, spur

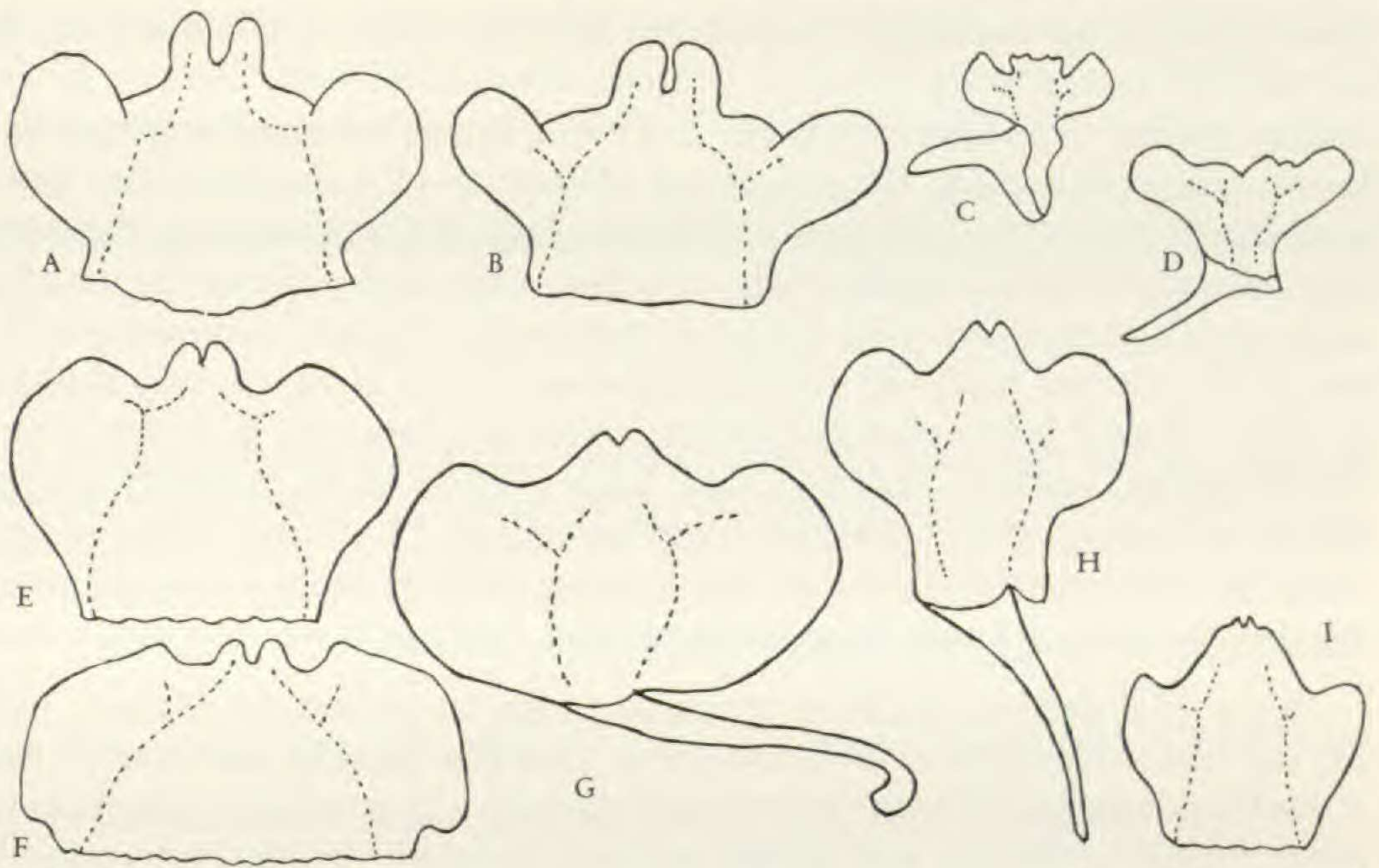


FIGURE 3. *Consolida* species. Drawings show lamina of "petal" of 3-lobed type, with lateral lobes projecting toward the tip of the "petal". A. *C. glandulosa*, lamina 18 mm. wide; drawn from *Huet* in 1853 (US). B. *C. oliveriana*, lamina 16 mm. wide; from *Strauss* in 1896 (US). C. *C. flava*, lamina 6 mm. wide; from *Olivier & Brugière* (P). D. *C. deserti*, lamina 8 mm. wide; from *Uvarov* in 1932 (BM). E. *C. leptocarpa*, lamina 15 mm. wide; from *Sintenis* 283 (GH). F. *C. persica*, lamina 17 mm. wide; from *Herzfeld* 4 (F). G. *C. desertisyrjaci*, lamina 18 mm. wide; drawn from "V.C.R.", from *Jordan* (K). H. *C. cornuta*, lamina 11 mm. wide; from *Davis* 30855 (BM). I. *C. rugulosa*, lamina 8 mm. wide; from *Sintenis* 143 (US).

4 mm. long. At K no. 130 is strigulose, with 1-3 carpels. Apparently labels have been exchanged at GH and their *Bové* 130 should be 131.

DISTRIBUTION. Arabian Desert west of the Gulf of Suez and Red Sea to Iraq.

REPRESENTATIVE SPECIMENS. **Egypt:** Sinai Desert, *M. F. White*, May, 1916. **Israel:** *Meyers & Dinsmore* 7238; *P. H. Davis*, 1942. **Iraq:** *Aucher* 64; *Uvarov*, May 26, 1932.

This species is near to *C. flava* in its low stature and yellowish flowers, but differs in its spreading pubescence and glandulosity.

23. *Consolida leptocarpa* Nevski, *Acta Inst. Bot. Acad. Sci. URSS*, 4: 296. 1937. FIG. 3, E.

Delphinium leptocarpum Nevski in *Komarov, Fl. U.S.S.R.* 7: 110. 1937.

Plant 1-6 dm. high, with several erect or upcurved branches from above the base and below the middle, strigulose below, more spreading-pubescent and more or less glandular above, leafy throughout, the lower leaves lacinate into segments 2-2.5 mm. wide; main cauline leaves oblanceolate, entire, 2-4 cm. long, 5-7 mm. wide; lower leaves petiolate, cauline gradually re-

duced upward, all somewhat pubescent; flowers subsessile, solitary in all but the lower leaf-axils; bracts 1–1.5 cm. long, trifid with obtuse, lance-oblong, lateral segments; pedicels 1–2 mm. long; bracteoles subulate; flowers pale cream-pink, the sepals not clawed, 9–11 mm. long, the upper lance-ovate, pubescent, the spur 22–24 mm. long, 3.5 mm. wide at the base, erect, flexuous; lateral sepals ovate, 5–6 mm. wide, hairy along the midrib; lower sepals lanceolate, more hairy, 3 mm. wide; “petal” trilobed, ca. 15 mm. wide, 10 mm. high, the terminal lobe ca. 2 mm. long, slightly divided at apex; lateral lobes round-truncate; stamens glabrous, 6–8 mm. long, dilated below; anthers yellow, 1 mm. long; follicle strict, scarcely curved above, ca. 2 mm. wide, cylindrical, rugulose-veined, 17–25 mm. long, pubescent, the style an additional 3–4 mm.; upper follicles longer than subtending bracts; seeds 1.5 mm. long, obpyramidal, with pale overlapping scales.

TYPE: “Ad declivia argillosa gypsacea prope trajectum Ak-Davan, June 21, no. 364”, collector’s name not given, possibly Nevski. At κ was seen a specimen labeled “Plantae montium Kuhitang (Turcomania orientalis),” again without collector, but treated as type material. In his description in Fl. U.S.S.R. 7: 110, Nevski cites as representative of the species: *Sintenis* 283, which I have seen (BH, BM, GH, MO).

DISTRIBUTION. Turkestan, northern Iran.

ILLUSTRATION. KOMAROV, Fl. U.S.S.R. 7: 107. *pl.* 8, *fig.* 2. 1937.

REPRESENTATIVE SPECIMENS. Transcaspia: *Sintenis* 283; *Michelson*, 1911. Turkestan: *Fedtschenko* at Tashkent; *Regel*, May 1882 at Samarkand; *Gontscharow*, *Grigoriev & Nikiton* 114 near Bukhara [Bochara]. Iran: *Donaldson* 48.

Formerly treated as *Consolida persica* and *C. rugulosa*, but with longer sepals than the former and broader “petal” than the latter.

24. *Consolida persica* (Boiss.) Schröd. Abh. Zool.-Bot. Ges. Wien 4(5): 17, 162. 1909; Grossheim, Fl. Kavkaza 2: 101. 1930.

FIG. 3, F.

Delphinium persicum Boiss. Ann. Sci. Nat. II. 16: 362. 1841.

Plant 1–3.5 dm. high, widely and divaricately branched, ashy-strigulose throughout, also with some spreading and glandular hairs, especially in the upper parts; leaves small, scattered, strigulose or pubescent, the blades mostly scarcely 1 cm. long, parted into narrow fleshy segments; lower leaves petioled, upper reduced and sessile; flowers largely in upper half of plant; bracts trifid or the uppermost entire, pubescent, commonly 2–8 mm. long; pedicels 2–4 mm. long; the bracteoles subulate, to ca. 3 mm. long; sepals pinkish or whitish, or with a blue tinge, with greenish midribs, not clawed, 6–8 mm. long, the upper sepal lance-ovate, with steeply ascending spur 20–25 mm. long, 4 mm. wide at base, pubescent; lateral sepals oblong-obovate, 3.5 mm. wide, obtuse, pubescent on midrib; lower sepals broadly lance-oblong, 4 mm. wide, obtuse, rather generally pubescent; “petal” 3-lobed, ca. 17 mm. wide, the terminal lobe ca. 1 mm. high, with 2 short oblong lobules, the lateral main lobes rounded, reaching as high as

the terminal one; stamens 6–7 mm. long, glabrous; anthers yellow, 0.8 mm. long; follicle on a pedicel to 5 mm. long, hairy, slightly compressed, ca. 10 mm. long, 2.5 mm. wide, not strongly reticulate, the beak an additional 3 mm. long.

TYPE: *Aucher* 78, Persia circa Amadan; probably at Paris. No. 78 seen (K, P).

DISTRIBUTION. At 1000–2000 m., Armenia to Turkestan, Iran, and Afghanistan.

REPRESENTATIVE COLLECTIONS. Turkey: *Demiriz* 3412 (fide Davis). Russian Armenia: *Szovitz* 420. Turkestan: Herb. Fl. Ross. no. 2751; *Regel*, May, 1882. Iraq: *Field & Lazar* 532; *Haines W* 1543; *Haussknecht*, 1867; *Gillett* 11207. Iran: *Kotschy* 442; *Herzfeld* 4; *Lindsay* 268, 329; *Furse & Synge* 625. Afghanistan: *Clifford* 14. West Pakistan: *Crookshank* 153.

25. *Consolida deserti-syriaci* (Zohary) Munz, comb. nov. FIG. 3, G.

Delphinium deserti-syriaci Zohary, Palest. Jour. Bot. Jerusalem Ser. 2: 155 1941.

Stem solitary, erect, branched, ca. 15 cm. tall, with spreading hairs and dense appressed short ones; cauline leaves petioled, ternate or bifid, the lobes further divided into linear segments 1–1.5 mm. wide and 10 mm. long, pubescent; bracts simple, minute, oblong, glandular-pubescent; pedicels 16–18 mm. long, glandular-pubescent, spreading; bracteoles spreading, oblong, 2 mm. long; flowers remote, 23 mm. long; sepals whitish, the upper ca. 8 mm. long, obtuse, the spur horizontal, narrow, ca. 18 mm. long, saccate-uncinate at apex, white to pink, puberulent; lower sepals oblong-lanceolate, acutish, green, apically scarious, ca. 8 mm. long; "petal" white, ca. 2 cm. wide when spread open, 10 mm. high; lateral lobes broad, rounded, separated from the upper by a rounded sinus 2.5–3 mm. deep; stamens 5–6 mm. long, whitish in dilated lower half, yellowish above, glabrous; anthers yellow, 0.8 mm. long; follicle ca. 17 mm. long, 3 mm. wide, canescent-strigulose and with spreading gland-based hairs, beak 4 mm. long.

TYPE: Between Azra and Damascus, western Syria, *Zohary* 1931. The type was destroyed during the war in Israel and all that remains is a slide with the flower parts spread out. Through the kindness of Professor Naomi Feinbrun of the Hebrew University at Jerusalem I have been sent a photograph of that slide. So far as I can tell, it and the original description agree with a collection from Jordan, without locality, made by "V. C. R.", Feb., 1954, Kew no. 47 (K).

26. *Consolida cornuta* (Hossain & Davis) Davis, Notes Bot. Gard. Edinb. 26: 174. 1965. FIG. 3, H.

Delphinium cornutum Hossain & Davis, Notes Bot. Gard. Edinb. 22: 424. 1958.

Erect, 1.5–4 dm. tall, sparsely branched, strigose below, with spreading

yellowish pubescence above; leaves puberulent, the lower linear-multifid, with blades 12–15 mm. long and petioles 7–9 mm. long; upper blades 20–25 mm. long, the ultimate divisions linear, acute; raceme lax; pedicels 12–25 mm. long, densely pubescent; bracts linear, acute, the lower 9–12 mm. long and sometimes parted, the upper shorter, entire; bracteoles 2–3 mm. long, remote from the flowers; flowers bicolored when dry; sepals bluish, 8–10 mm. long, pubescent and greenish without along the median nerve, the lateral and lower alike, 8–9 mm. long, 4–4.5 mm. wide, ovate, obtuse; spur pubescent, 10–13 mm. long, with slightly decurved tip; “petal” 3-lobed, 11–12 mm. wide, 9–10 mm. long, the median lobe longer than the lateral, deeply emarginate at tip, the lateral lobes semilunate, 5–6 mm. long, rounded and wide at the base, attenuate into an upturned hornlike tip 2–2.5 mm. wide; filaments slightly pubescent, dilated below; anthers purplish-brown; follicle erect, densely strigose, obcompressed, semiovate-oblong, 9–10 mm. long, 3.5–4 mm. wide, with the style an additional 2 mm. long.

TYPE: Turkish Armenia, *Calvert & Zohrab* (holotype E).

DISTRIBUTION. Fields at 1800–1900 m., northern Armenia of Turkey.

ILLUSTRATION. DAVIS, *Fl. Turkey* 1: 129. 1965.

SPECIMEN SEEN. Erzurum: west of Ilica, *Davis* 30855.

27. *Consolida rugulosa* (Boiss.) Schröd. *Ann. K. K. Naturh. Hofmus. Wien* 27: 43. 1913. FIG. 3, I.

Delphinium rugulosum Boiss. *Ann. Sci. Nat.* II. 16: 361. 1841.

Delphinium aucheri Boiss. *loc. cit.* 362. Based on *Aucher* 4030 from south Persia. I would interpret the specimen at Paris to be the type. I have seen it.

Delphinium persicum Boiss. var. *aucheri* (Boiss.) Boiss. *Fl. Orient.* 1: 77. 1867.

Delphinium paradoxum Bunge, *Arbeit. Nat. Ver. Riga* 1: 124. 1847. See discussion below.

Consolida paradoxa (Bunge) Nevski in Komarov, *Fl. U.S.S.R.* 7: 113. 1937.

Simple or with simple branches from the base, erect, largely 1–3 dm. high, with some appressed hairs and numerous spreading ones, especially in the upper part (many hairs glandular at the base); stems rather equally leafy throughout; lower leaves petioled, the cauline largely sessile and to 4 cm. long or the uppermost sessile, all more or less fleshy, 4–3-partite, then again divided into narrow segments more or less dilated upward and to 2.5 (–4.5) mm. wide, subglabrous to somewhat pubescent, acute; flowers solitary in most leaf axils, almost sessile or the pedicels to 2 mm. long; bracteoles 2, entire, 2–3 mm. long; sepals pinkish or greenish white, 7–10 mm. long, the spur more or less flexuous, ascending to erect, pubescent, slender, 17–18 mm. long (rarely lacking); lateral sepals narrowly oblong-ovate, obtuse, scarcely clawed, 3.5–4 mm. wide, pubescent only along the median strip; lower sepals linear-oblong, ca. 2 mm. wide, rather generally pubescent; “petal” 3-lobed, ca. 9 mm. long, the broad more or less blunt-

deltoid terminal lobe more or less erose, the rounded-deltoid lateral lobes almost straight on the upper edge, obtuse, slightly rounded on the outer edges; stamens 6–9 mm. long, the filaments glabrous; anthers yellow, ca. 1 mm. long; follicle erect, shorter than the bracts, subcompressed, hairy, reticulate-veined, 10–15 mm. long, ca. 3 mm. wide, the beak an additional 3 mm.; seeds brownish, obovoid, somewhat angled, ca. 1.6 mm. long, with short pale scales not in very regular transverse rows.

TYPE: *Aucher* 4028, from Lake Urmiah (Ourmiah), Iran; I would suppose the holotype is the specimen at P, isotypes BM, K. All seen.

DISTRIBUTION. At 600–1400 m., Transcaucasia and Transcaspia to northern Iran and to Afghanistan.

ILLUSTRATION. KOMAROV, Fl. U.S.S.R. 7: pl. 8, fig. 4. 1937.

REPRESENTATIVE SPECIMENS. Transcaspia: *Sintenis* 143, 283; *Litwinow* 440. Turkestan: *Sovetkina* 131; *Kusckokewicz*. Iran: *Rechinger* 1011, 789; *Merton* 3884. West Pakistan: *Lace* 3338. Afghanistan: *Aitchison* 310.

In genera like *Consolida*, *Delphinium*, and *Aquilegia* spurlessness occurs apparently as a mutation, not only in cultivation, but also in nature. For example, in *Aquilegia*, refer to Munz, *Gentes Herb.* 7: 134. 1946, for its appearance in spurless garden plants of *A. caerulea* James. Sometimes in nature spurless forms have been given varietal status, as *A. micrantha* var. *mancosana* Eastw. In *Delphinium* I have found the spurless condition in a number of specimens, as in a collection by *H. B. Morse* (NY) from Lungchow, Kwangsi Prov., China and belonging to *D. anthriscifolium* Hance. It lacks both spur and petals. From Africa I have seen a collection of *D. macrocentron* Oliver, *Bally* 1205 (K), with 4 sepals, 2 upper petals without spurs, but with well developed stamens and carpels. In other cases I have noticed plants with both normal flowers and abnormal, sometimes on separate branches. Since *Consolida paradoxa* resembles *C. rugulosa* in its vegetative characters, so far as I can see, I agree with the possibility expressed before (Huth, *Bot. Jahrb.* 20: 373. 1895) that it is simply a spurless form of the latter. Its sepals are a trifle smaller; it lacks petals altogether, but stamens and follicle and seeds are well developed. The type number is *Lehmann* 36 from Turkestan. I have seen specimens (GH, K, P, LE). Another collection, from northern Iran is *Polak*, 1882 (K).

28. *Consolida halophila* (Huth) Munz, comb. nov. FIG. 4, A.

Delphinium halophilum Huth, *Bot. Jahrb.* 20: 487. 1895. New name for *D. freynii* Huth.

Delphinium freynii Huth, *loc. cit.* 372. April, 1895; not Conrath, *Bull. Herb. Boiss.* 3: 36. Jan. 1895.

Delphinium laxiflorum Freyn, *Denkschr. Akad. Wien Math. Naturw.* 51: 293. 1886; not DC. 1817.

? *Delphinium freynii* Huth var. *hirtum* Freyn ex Huth, *loc. cit.* 372. No specimens cited.

Stem flexuous, simple or openly branched below, 6–45 cm. tall, ashy-strigose, leafy throughout; lower leaves trifid, the parts petiolulate and

divided into narrow, obtuse, tripartite lobes; main cauline leaves 1–3 cm. long, the lobes to 2.5 mm. wide; branches floriferous from near the base, more or less glandular-pubescent in the upper parts; bracts sessile, 3-parted, ca. as long as the flowers, the lobes subacute; pedicels to ca. 5 mm. long; bracteoles lanceolate, 2–3 mm. long; sepals elliptic, glabrescent, pale violet-pink to creamy-yellow, 2 mm. wide, obscurely dotted, 5–7 mm. long; spur directed upward, 15–24 mm. long, 5–6 mm. wide at base, obtuse; “petal” 3-lobed, ca. 8 mm. wide, 10 mm. long, the middle lobe emarginate, slightly longer and much narrower than the lateral lobes which are directed slightly forward; follicle erect, 10–13 mm. long, straight, cylindrical, veined, tomentose and spreading-hairy, the beak an additional 2–3 mm.; seeds scaly, transversely angular, 1.5 mm. long, 1 mm. thick.

TYPE: N. Iran, Gussediche on the Teheran road, *Pichler* 1882; holotype, Barbey Herbarium (G) not seen; isotype (K) seen.

DISTRIBUTION. At about 1600–2000 m., northern Iran.

EXAMPLES SEEN. *Furse* 3301; *Bunge*, March 1859; *Gilliat-Smith* 1724, 1914; *L. S. Grown* 1923.

29. *Consolida trigonelloides* (Boiss.) Munz, comb. nov. FIG. 4, B.

Delphinium trigonelloides Boiss. Ann. Sci. Nat. II. 16: 366. 1841.

Bushy, 3–15 cm. tall, branched at base, gray with short spreading pubescence; leaves canescent-pubescent, the cauline with 2–3 linear or linear-spatulate lobes 6–12 mm. long, obtuse or rarely bifid; upper leaves entire, oblong, 4–6 mm. long; bracts oblong, entire, 5 mm. long, 1–1.5 mm. wide; pedicels at tips of branches, remote, 10–12 mm. long at anthesis, 25–30 mm. in fruit; bracteoles oblong, opposite, entire, 4–5 mm. long; flowers bluish; sepals ca. 8 mm. long, oblong-spatulate, obtuse, the upper acute,

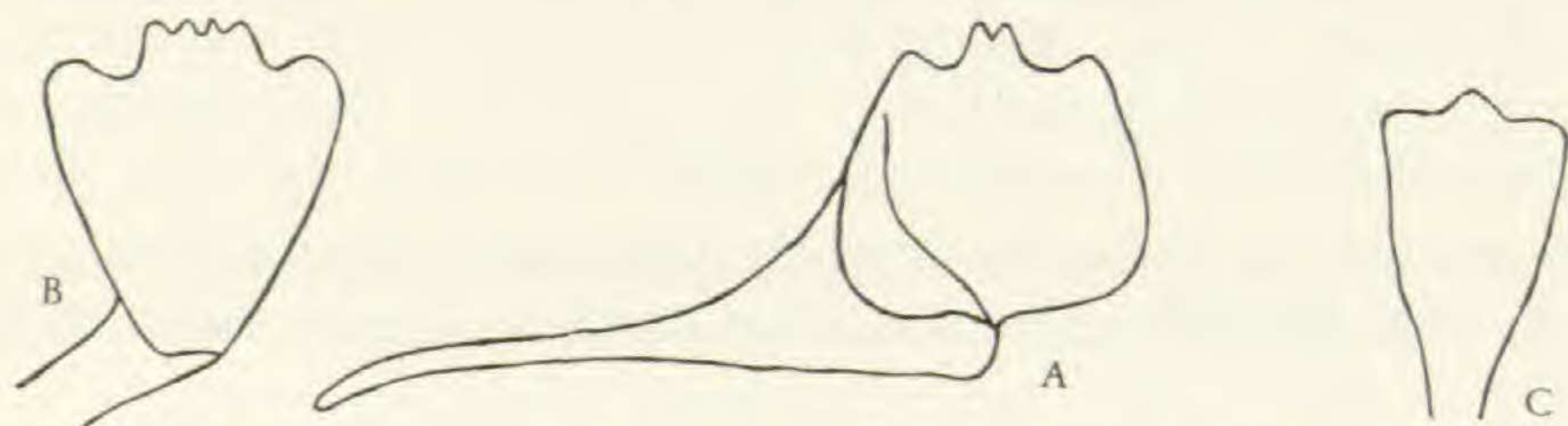


FIGURE 4. *Consolida* species. Drawings show lamina of “petal” of 3-lobed type (and in one case the spur) with lateral lobes greatly reduced. A. *C. halophila*, lamina 8 mm. wide; drawn from *Pichler* in 1882 (K). B. *C. trigonelloides*, lamina 8 mm. wide; from *Aucher* 4033 (P). C. *C. linarioides*, lamina 5 mm. wide; from *Aucher* 4029 (P).

with a straight pubescent attenuate spur 16 mm. long; “petal” obtusely 3-lobed, the middle lobe subtruncate, slightly 3–5-lobulate, smaller than the short rounded lateral lobes; filaments glabrous; follicle cylindrical, appressed-canescant, incurved, 10–12 mm. long, 3 mm. thick, the beak ca. 1.5 mm. long; seeds ca. 1.6 mm. long, pyramido-pentagonal, basally truncate, with transverse white scales in rather irregular arrangement.

TYPE: Southern Iran, *Aucher* 4033 presumably P, isotypes BM, G, K. All these seen. There are no flowers on the BM and K specimens.

No other material seen.

30. *Consolida linarioides* (Boiss.) Munz, comb. nov. FIG. 4, C.

Delphinium linarioides Boiss. Ann. Sci. Nat. II. 16: 368. 1841.

Branched at the base, with spreading soft white pubescence, to 1.5 dm. tall; lower petioles ca. 1 cm. long, the laminae 3-4-parted, the segments with linear-obtuse lobes 0.5-1.5 cm. long; upper leaves sessile, subentire or with 2 lateral lobes, 1-1.2 cm. long; racemes laxly 3-4-flowered; bracts broadly linear, 8-10 mm. long, 1.5-2 mm. wide; pedicels 1-2.5 cm. long; bracteoles 6-8 mm. long, linear, at base of flower; sepals violet, oblong, obtuse; upper sepal acute, 8 mm. long; spur subincurved, ca. 4 mm. long; "petal" scarcely longer than the sepals, tricrenate at apex, the 3 lobules rounded, equal; filaments glabrous, dilated at base, ca. 5 mm. long; anthers yellow, ca. 1 mm. long; follicle densely white-strigose.

TYPE: Ispahan, Iran, *Aucher* 4029; holotype (P) seen; isotype (K) seen.

Known only from the type collection; at least to me. There is some question about how normal the plants of this collection are. The specimen at Kew seems to have one normal flower with oblong sepal and "petal" ca. 1 cm. long and with 3 minute lobes as in my figure, but the other flowers have an abortive spur (2 mm. long, crinkled) and the upper sepal more or less petal-like, but no "petal" developed. Obviously the species is near *C. trigonelloides*, but with quite a different "petal" and with the sepal spur shorter than the sepal-blade instead of twice as long.

31. *Consolida schlagintweitii* (Huth) Munz, comb. nov. FIG. 5, A.

Delphinium schlagintweitii Huth, Bull. Herb. Boiss. 1: 329. 1893.

Plant glabrescent below, pubescent above with some hairs having swollen yellow bases; stem slender, branched, apparently several dm. tall; cauline leaves largely 2-5 cm. long, subsessile, multipartite into linear lobes 0.5-1.5 mm. wide, 1-3 cm. long, more or less strigulose; lower bracts multipartite, upper entire, subulate, ca. 5 mm. long; racemes rather few flowered, rather dense, the pubescence short, stiffish, much of it more or less retrorse; pedicels suberect, 1-1.5 cm. long at anthesis, to ca. 5 cm. in fruit; bracteoles 2.5-3 mm. long, almost or quite touching the flower; spur straightish, 6-7 mm. long, 1.5 mm. thick at the base, somewhat strigose; sepals 6-7 mm. long, deep violet, oblong to ovate, definitely unguiculate, the lateral pair subglabrous except for the ciliate claw, ovate; lower pair narrowed, more generally pubescent, rather pointed; "petal" 3-lobed, the middle lobe ca. 3 mm. high, with 2 lobules, the lateral lobes spreading, the whole "petal" ca. 11 mm. wide; follicle oblong, more or less flattened, densely hairy, ca. 1 cm. long, 3.5 mm. wide; style ca. 1 mm. long.

TYPE: Kashmir, prov. Balti, near Skárdo, at 2300-2500 m., *Schlagintweit* 821, 1856, William Barbey Herbarium (G); isotypes (BM, US) seen.

This is the only material I have seen of this species which is remote in its eastern range for the genus *Consolida*. It somewhat resembles *C. orientalis*, but is much smaller-flowered.

32. *Consolida phrygia* (Boiss.) Soó, Österr. Bot. Zeitschr. 71: 245. 1922. FIG. 5, B.

Delphinium phrygium Boiss. Ann. Sci. Nat. II. 16: 363. 1841.

Delphinium ajacis L. var. *phrygium* (Boiss.) Finet & Gagnep. Bull. Soc. Bot. France 51: 467. 1904.

Consolida orientalis (Gay) Schröd. ssp. *phrygia* (Boiss.) Chater, Feddes Repert. 68: 193. 1963.

Plant 2–5 dm. tall, simple or few branched above, with short spreading, often gland-tipped hairs and rather densely leafy at least in the lower half; basal leaves withered at time of anthesis, with petioles to ca. 2 cm. long, blades 1–1.5 cm. across, multifid into linear, pubescent, mucronate segments ca. 0.5 mm. wide; cauline leaves rather crowded, mostly sessile, with numerous narrow linear segments; racemes 2–10-flowered, to ca. 1 dm. long in fruit, many of the hairs papillose at the base; pedicels mostly 5–7 mm. long, erect; bracts largely linear, entire, 3–6 mm. long, the basal sometimes divided; bracteoles linear, 1–2.5 mm. long, near the base of the flower; flowers violet, rose or white, 10–13 mm. in diameter; sepals somewhat unguiculate at the base, ovate, acutish, pubescent at least along a greenish median strip, ca. 6–9 mm. long; spur straight, pubescent, horizontal, 9–10 mm. long, slender, ca. 1.5 mm. wide at base; “petal” 3-lobed, the central lobes ca. 6 mm. high, rather deeply divided with a broad sinus, lateral lobes rounded-reflexed; spur ca. 9 mm. long; stamens ca. 5 mm. long, the filaments rather abruptly dilated, glabrous; follicles appressed-pubescent, cylindrical, 10–18 mm. long, ca. 4 mm. thick, subterete, the style 2 mm. long; seeds with transverse rows of connate scales.

TYPE: Phrygia (Turkey), *Aucher 71*, not seen.

DISTRIBUTION. Fields in Phrygia and Anatolia, as well as Cyprus, Rhodes.

REPRESENTATIVE SPECIMENS. Turkey: *Pinard*, 1843; *Sintenis 843*.

33. *Consolida pusilla* (Labill.) Schröd. Abh. Zool.-Bot. Ges. Wien 4(5): 62. 1909. FIG. 5, C.

Delphinium pusillum Labill. Icon. Pl. Syr. Rar. Dec. IV. 5: pl. 2, fig. 2. 1812.

Delphinium pygmaeum Poir. in Lam. Encycl. Bot. Suppl. 2: 458. 1812.

Plant 2–8 cm. high, densely soft-pubescent, canescent, simple or divaricately short-branched only near the top; leaves small, to 15 mm. long, 3–5-parted, the lobes lance-linear, obtuse; lower leaves short-petioled; bracts 3-parted, ca. 6 mm. long; pedicels ca. 1 cm. long; racemes dense, with 3–5 violet flowers; bracteoles linear, 6–7 mm. long, extending to above the base of the calyx; sepals elliptic-oblong, obtuse, 8–9 mm. long, the lateral pair obtuse, 2 mm. wide, soft-hairy especially along the midrib;

upper sepals 9–10 mm. long, 4 mm. wide, the spur 5–8 mm. long, horizontal, pubescent, curved; lower sepals 3 mm. wide; “petal” rhombic, ca. 9 mm. wide and high, the middle lobe ca. 3 mm. long, subtruncate and erose at tip, the lateral pair ca. 3 mm. wide; stamens 3–4 mm. long, the filaments broadly winged at base, glabrous; anthers yellow, 0.7 mm. long; follicle oblong, compressed, strigose, 13 mm. long, 2.5 mm. wide, the beak 2 mm. long.

TYPE: Near Damascus at base of Mt. Djebel Cher; an isotype seen (κ).

ILLUSTRATION. LABILLARDIÈRE, *Icon. Pl. Syr. Rar. Dec. IV. 5: pl. 2, f. 2.* 1812.

DISTRIBUTION. Rocky places, Lebanon and Syria to Jordan.

REPRESENTATIVE MATERIAL. Syria: *Post*, May 1, 1900. Lebanon: *Peyron 1453*. Jordan: *Kotschy 737*; *Boissier*, June 1846.

34. *Consolida camptocarpa* (Fisch. & Meyer ex Ledeb.) Nevski in Komarov, *Fl. U.S.S.R. 7: 106.* 1937. FIG. 5, D, E.

Delphinium camptocarpum Fisch. & Meyer ex Ledeb. *Fl. Ross. 1: 58.* 1842.

Delphinium camptocarpum Fisch. & Meyer var. *dasycarpum* Ledeb. *loc. cit.*

Not typified. A collection by *A. Regel* from Turkestan, prope pudicum Rafotak, in 1884, was sent from Leningrad as representing this taxon; (BM, US) seen.

Delphinium camptocarpum Fisch. & Meyer var. *leiocarpum* Ledeb. *loc. cit.*

Not typified. A specimen by *A. Regel* (ρ), collected much later, seems to be this.

Delphinium camptocarpum Fisch. & Meyer β *songoricum* Kar. & Kir., *Bull. Soc. Nat. Mosc. 15: 136.* 1842. A collection “in arenosis Songoriae ad fl. Lepsa,” (se. of Lake Barkasch), *Karelin & Kiriloff 1165* (NY, κ , ρ) seems to be the original one.

Delphinium songoricum (Kar. & Kir.) Nevski in Komarov, *Fl. U.S.S.R. 7: 109.* 1937. *Consolida songorica* (Kar. & Kir.) Nevski in the same reference.

Delphinium camptocarpum Fisch. & Meyer var. *turkomanicum* Bunge, *Arbeit. Naturforsch. Ver. Riga 1: 125.* 1848. Type uncertain, may have been the Karelin collection. But a specimen at Kew from the Bunge Herbarium is labeled as this var. and surely shows what Bunge had in mind.

Delphinium camptocarpum Fisch. & Meyer var. *robustum* Bunge, *loc. cit.* 126.

Referred to synonymy by Nevski, *Fl. U.S.S.R. 7: 109.* 1937.

Delphinium camptocarpum Fisch. & Meyer var. *brevipedunculatum* Boiss. *Fl. Orient. 1: 77.* 1867. Type collected in northern Iran, near Schahrud, *Bunge* (ρ); not seen.

Delphinium stocksianum Boiss. var. *obovatum* Huth, *Bot. Jahrb. 20: 373.* 1895. Based on *Aitchison* from Afghanistan; may belong here.

Delphinium persicum Boiss. var. *regelianum* Huth, *op. cit.* 370. Referred here by Nevski in Komarov, *Fl. U.S.S.R. 7: 109.* 1937. Based on a specimen by *Regel* from Bochara (Bukhara); not seen.

Plant 2–6 dm. tall, erect, mostly with few ascending branches from above the base, with short retrorse-appressed or spreading hairs, not very densely leafy; leaves largely in lower half of plant, mostly petioled, trifid, the segments with 2–3 parts, each of which has 2–3 large coarse terminal

subacute teeth; blades mostly 1–2 cm. long, strigose, the lower petioles longer than the blades, the upper leaves passing into sessile bracts, the uppermost 3–5 mm. long; flowers ca. 5–15 in terminal racemes; pedicels 2–20 mm. long, even longer in fruit; bracteoles setaceous, minute; flowers blue or blue-violet, ca. 17–19 mm. in diameter; upper sepal lanceolate, pubescent, 10–11 mm. long, 2.5–3.5 mm. wide, the spur ca. 18 mm. long, suberect, 4–4.5 mm. wide at the base; lateral sepals rhombic-ovate, 10 mm. long, not unguiculate; lower sepals asymmetrical, ca. 10 mm. by 5 mm., rather well covered with pubescence; “petal” 3-lobed, 10–14 mm. wide when expanded, 8–12 mm. high, the lobes broadly triangular, obtuse, the terminal ca. 3 mm. high, shallowly 2-lobed at apex, the two lateral ca. 4 mm. long, spreading; stamens 6–8 mm. long, glabrous; anthers yellow, 1 mm. long; follicle declined by the recurved tip of the pedicel, curved, more or less pubescent, reticulate-veined, compressed, ca. 10 mm. by 2–3 mm., the style an additional 2–3 mm.

TYPE: Turcomania: “ad latus orientale maris caspii,” *Karelin* (LE); seen.

DISTRIBUTION. Transcaspia and Turkestan to Afghanistan, at 1000 m. or thereabouts.

ILLUSTRATIONS. NEVSKI in Komarov, Fl. U.S.S.R. 7: *pl.* 8, *fig.* 1a, 1b, 1c. 1937.

REPRESENTATIVE COLLECTIONS. Transcaspia: *Dimo* 130; *Litwinow* 4380; *Sintenis* 1301. Turkestan: *Androsow* 2218; *Schischkin*, June 4, 1913. Afghanistan: *Aitchison* 1002.

The recognition of *C. songorica* as distinct does not seem to hold. The chief difference seems to be in the more spreading pubescence and perhaps smaller flowers. It occupies the same region as *C. camptocarpa* and there is great variability in amount and mixture of appressed and spreading hairs.

At Kew is a set of five sheets “Afghanistan, Griffith”, some with “Herb. Lehmann, 1852,” some with no. 1377 and 1377a written on them; all are labeled with a name apparently never published. One sheet has “No. 42”. The plants seem to be unusually robust *camptocarpa*, one with sort of a woody base (long tap root), branching new shoots with broken leaves. The blades are 3–4 cm. long. They are in a type cover, with the unpublished name on the outer folder. More material may reveal a distinct taxon.

35. *Consolida oligantha* (Boiss.) Schröd. Ann. K. K. Naturh. Hofmus. Wien 27: 43. 1913. FIG. 5, F.

Delphinium oliganthum Boiss. Fl. Orient. 1: 80. 1867.

Consolida tomentosa (Aucher) Schröd. subsp. *oligantha* (Boiss.) Davis, Notes Bot. Gard. Edinb. 26: 175. 1965.

Delphinium oliganthum Boiss. var. *brachycentrum* Huth, Bot. Jahrb. 20: 381. 1895. Not typified, but the shortness of the spur would seem to place it here.

Divaricately branched from the base, 1.5–3 dm. high, more or less densely canescent-strigose; lower leaves 1.5–3 cm. long, ternate then divided into mostly linear lobes scarcely 1 mm. broad; upper leaves less

divided; racemes dense, mostly 4–5-flowered; lower bracts trisect, 5–15 mm. long, the upper entire, linear; pedicels 1–3 cm. long; bracteoles 2, linear, 8–14 mm. long, exceeding the base of the flowers; sepals violet or blue, 10–12 mm. long, oblong-elliptical, the upper pointed, pubescent, the spur ca. 6 mm. long, pubescent, bent upward; lateral sepals ca. 12 mm. by 4 mm., obtusish, pubescent on midrib and part of upper edge, narrowed to a long lower part; lower sepals narrower, more pointed and pubescent; “petal” ca. 15 mm. long, purple-striped, rhombic, the terminal lobe triangular, the lateral lobes triangular, spreading; follicle oblong-linear, pendent, strigose, 10–14 mm. long, ca. 2.5 mm. wide, subterete, with some transverse veining, the style an additional 2 mm.; seeds about 1 mm. long, subglobose, with 4–5 rows of more or less contiguous scales.

LECTOTYPE: “Ad segetes prope Aintab, Syriae Bor.” *Haussknecht* (G, not seen; K, P, islectotypes, seen). The Kew specimen is a mixture of *Consolida oligantha* and *C. hellespontica*. Aintab is, of course, now in Turkey.

DISTRIBUTION. Grain and fallow fields, 600–1000 m., Mesopotamian region of Turkey and northern Iraq.

ILLUSTRATION. HOSSAIN & DAVIS, Notes Bot. Gard. Edinb. 22: 419, fig. 2, C. 1958.

REPRESENTATIVE COLLECTIONS. Turkey: *Davis* 22106; *Sintenis* 1131. Iraq: *Field & Lazar* 830, 586, 538; *J. B. Gillett* 8011; *Wheeler & Haines* W 1063; *Rawi* 21818.

There is a question as to whether this species is distinct from *C. tomentosa*, of which it was made a subspecies (Davis, Fl. Turkey 1: 132, 1965). It is supposed to have the sepal blade about twice as long as the spur but, as Davis points out, this condition does not hold for some collections from Iraq. The more erose and plicately folded tip of the terminal lobe and the more spreading lateral lobes of the “petal” seem to me to distinguish it; indeed, to put it very close to *C. hellespontica*.

36. *Consolida tomentosa* (Aucher ex Boiss.) Schröd., Abh. Zool.-Bot. Ges. Wien 4(5): 62, 1909. FIG. 5, G, H.

Delphinium tomentosum Aucher ex Boiss. Ann. Sci. Nat. II. 16: 365, 1841.

Simple or branched from the base, 5–15 cm. high, more or less appressed-canescenscent; lower leaves short-petioled, with 3 linear lobes; upper leaves sessile, 5–8 mm. long; racemes short, lax, 2–6-flowered; bracts 2-parted or entire, 5–6 mm. long; pedicels ca. 1 cm. long, apparently refracted in fruit; bracteoles 2, linear, 4–10 mm. long, at middle of pedicel or above; flowers deep violet to mauve; sepals oblong, acutish, grayish-strigose, ca. 1 cm. long, 3 mm. wide, narrowed rather abruptly to a claw 3–4 mm. long; spur usually 6–8 mm. or more long; “petal” 3-lobed, ca. 1 cm. long and wide, the upper lobe with dark stripes, truncate at apex, the lateral lobes round, somewhat reflexed-spreading.

TYPE: Aleppo, Syria, *Aucher* 76 (P, presumable holotype; seen).

DISTRIBUTION. Dry fields and open places, 500–1200 m., Syria and Lebanon.

ILLUSTRATION. HOSSAIN & DAVIS, Notes Bot. Gard. Edinb. 22: 419. fig. 2, *D.* 1958.

REPRESENTATIVE MATERIAL. Lebanon: *Bornmüller* 11326; *Fox*, June, 1866; *Trench*, May 25, 1945. Syria: *Haradjian* 1849.

37. *Consolida hellespontica* (Boiss.) Chater in Heywood, Feddes Repert. 69: 55. 1964. FIG. 5, I, J.

Delphinium hellesponticum Boiss. Ann. Sci. Nat. II. 16: 366. 1841.

Delphinium hellesponticum Boiss. subsp. *campylopodum* (Freyn) Hossain & Davis, Notes Bot. Gard. Edinb. 22: 419. 1958.

Delphinium campylopodum Freyn, Denkschr. Akad. Wien Math. Naturw. 51: 368. 1856.

Consolida hellespontica (Boiss.) Chater subsp. *macedonica* (Hal. & Charrel) Chater in Heywood, Feddes Repert. 69: 55. 1964.

Delphinium hellesponticum Boiss. subsp. *macedonicum* (Hal. & Charrel) Hossain & Davis, Notes Bot. Gard. Edinb. 22: 419. 1958.

Delphinium macedonicum Hal. & Charrel, in Abdur Rahman Hadji Effendi, Empire Ottoman Géogr. Bot., Faites Nouv. Relatifs à la Prov. Salonique 8. 1892. Based on *Frivaldsky*, Macedonia; seen from NY.

Delphinium paphlagonicum Huth, Bull. Herb. Boiss. 1: 328. 1893. Based on *Sintenis* 4547 (BH, K, NY, P, US; seen).

Delphinium holopetalum Boiss. var. *paphlagonicum* (Huth) Huth, Bot. Jahrb. 20: 381. 1895.

Delphinium oliganthum Boiss. var. *ponticum* Huth, *loc. cit.* Type from Pontus: Amasya, *Bornmüller*, 1889. I do not know whether *Bornmüller* 970, 1889, from Pontus (BM, K, PH; all seen) is the actual type number or not.

Delphinium hellesponticum Boiss. subsp. *aintabense* Hossain & Davis, *loc. cit.* Based on *Post*, June, 1889, from Aintab (Gaziantep), Turkey (BM, MO; seen).

? *Delphinium tomentosum* Auch. in Boiss. var. *longecalcaratum* Post, Fl. Syr., Pal., Sinai, ed. 2, 1: 22. 1932. Apparently based on the same *Post* collection from Aintab, as was subsp. *aintabense* above.

Corymbosely divaricately branched, 1–4 dm. tall, sometimes simple, strigulose throughout; leaves divided into long linear lobes, the lower leaves petioled, withered by anthesis, the middle leaves gradually reduced and subsessile, the upper becoming bracts and the uppermost entire; flowers violet or violet-blue inside, more or less silvery-gray with appressed pubescence outside and with some green on the midribs of the sepals, rather few in number and in fairly lax to rather dense racemes; pedicels 1–4 cm. long, upwardly spreading-incurved; bracteoles 2, linear, 4–15 mm. long, placed just below the flower and growing up around it; sepals more or less lance-ovate, not unguiculate, 10–14 mm. long; spur 12–20 mm. long, slender, pubescent; “petal” light blue to yellowish and violet-nerved, 9–15 mm. long, triangular in outline, 3-lobed, either gradually narrowed toward the more or less erose apex or the upper lobe subequal to the lateral lobes; stamens glabrous; anthers yellow; follicles subterete, strigose, 10–13 mm. long.

TYPE: Ad Hellespontum [Dardanelles], *Aucher* 67 (P, K); seen.

DISTRIBUTION. Grain and fallow fields below 1200 m., Anatolia to north-eastern Greece and northwestern Syrian desert.

ILLUSTRATIONS. HOOKER, *Icon. Pl.* 32: *pl.* 3152. 1932; DAVIS, *Fl. Turkey* 1: 126. 1965.

In 1958, Hossain and Davis (*Notes Bot. Gard. Edinb.* 22: 418) recognized four subspecies in *Delphinium hellesponticum* which they keyed out as follows:

"Petal" 13–15 mm. long, 12–13 mm. wide; plants mostly 2.5–4 dm. high; racemes rather lax. Northern Greece, Paphlagonia, Galatia, etc. in Turkey.
 subsp. *macedonicum*.

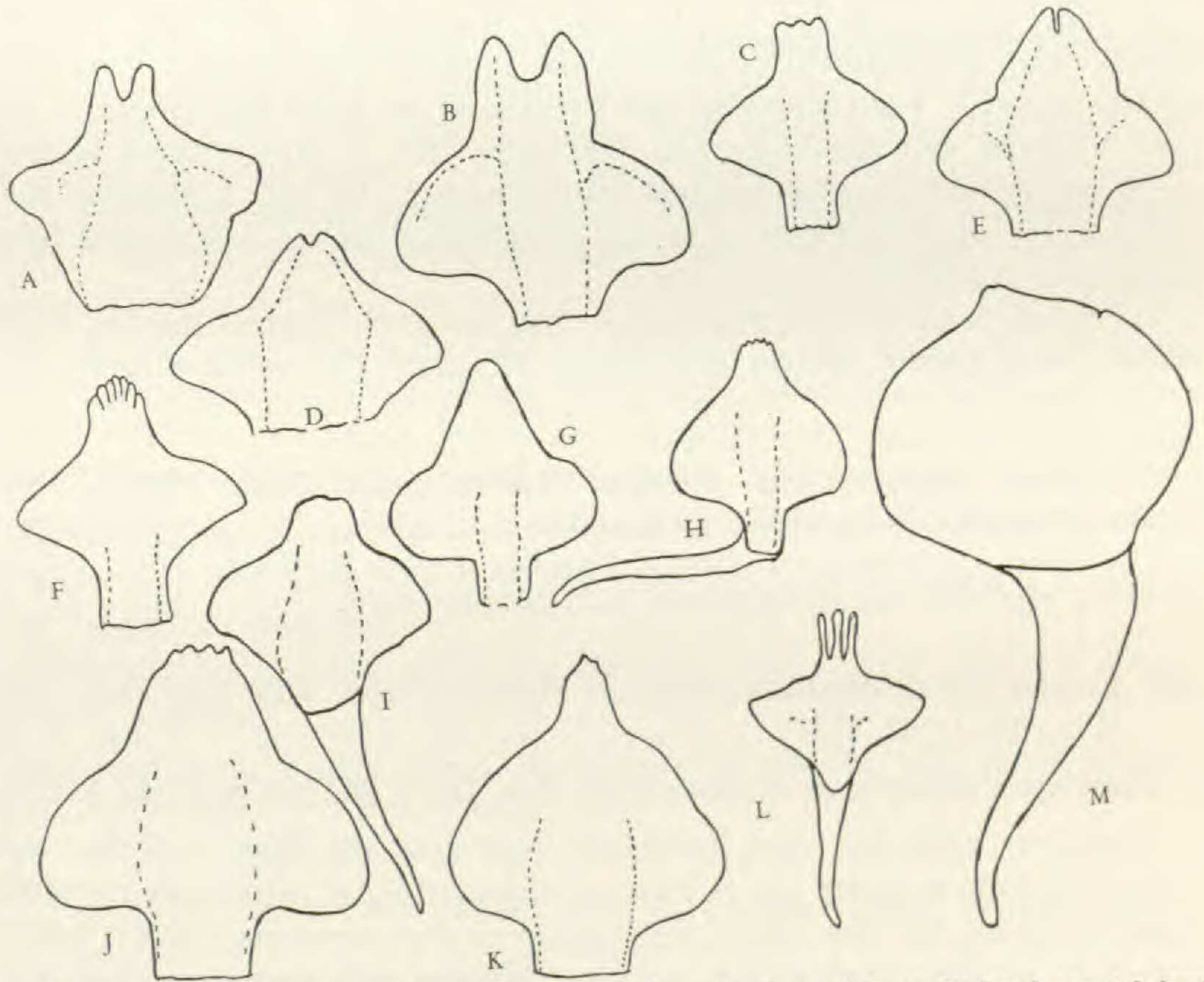


FIGURE 5. *Consolida* species. Drawings show lamina of "petal" in those 3-lobed species in which the lateral lobes turn toward the base of the lamina. A. *C. schlagintweitii*, lamina 11 mm. wide; drawn from *Schlagintweit* 821 (US). B. *C. phrygia*, lamina 12 mm. wide; from *Sintenis & Rigo* 852 (GH). C. *C. pusilla*, lamina 9 mm. wide; from *Boissier* in 1846 (GH). D. *C. camptocarpa*, lamina 14 mm. wide; from *Dimo* 130 (NY). E. *C. camptocarpa*, the form often called *songorica*; lamina 11 mm. wide; from *Regel* (US 2090341). F. *C. oligantha*, lamina 10 mm. wide; from *Field & Lazar* 586 (US). G. *C. tomentosa*, lamina 10 mm. wide; from *Iraq Petroleum Co. no. 3* (F). H. *C. tomentosa*, lamina 9 mm. wide; from *Trent* in 1945 (BM). I. *C. hellespontica*, typical form, lamina 10 mm. wide; from *Davis* 31010 (BM). J. *C. hellespontica*, the form known as *macedonica*, lamina 15 mm. wide; from *Sintenis* 4547 (NY). K. *C. armeniaca*, lamina 13 mm. wide; from *Balls* 1756 (US). L. *C. sulphurea*, lamina 8 mm. wide; from *Hausknecht* at Maras (K). M. *C. olopetala*, lamina 15 mm. wide; from *Davis* 30951 (BM).

"Petal" 9–12 mm. long, ca. 10 mm. wide; plants mostly 1–2 dm. high; racemes rather dense.

Bracteoles 10–15 mm. long; lowest pedicel 25–40 mm. long; raceme of main stem pyramidal, prominent. Aintab [Gaziantep] (Turkey), Aleppo (Syria). subsp. *aintabense*.

Bracteoles 4–8 mm. long; lowest pedicel ca. 15–20 mm. long; raceme of main stem seldom prominent.

"Petal" yellowish when dry, often with pinkish shades, 10–11 mm. long; sepals violet inside. Lycia, Caria, Phrygia (Turkey). subsp. *campylopodum*.

"Petal" usually light blue when dry, often pinkish white, 9–10 mm. long; sepals violet-blue inside. Mostly central Anatolia. subsp. *hellespoticum*.

In the *Flora of Turkey* 1: 133. 1965, Davis says "Additional material breaks down the distinctions between the subspecies previously recognized by the author." I am following him because of his great knowledge of the area involved, but the herbarium specimens that I have studied seemed to fit pretty well into his original four concepts. Of this herbarium material I give some examples using the *Delphinium* names, since some have never been transferred to *Consolida*:

(1) Subsp. *macedonicum*. Paphlagonia: *Sintenis* 4547. Galatia: Ancyra, *Bornmüller* 13693. Pontus: Amasya, *Manisdjian* 652; Sankiri *Bornmüller* 13695, 970.

(2) Subsp. *aintabense*. Turkey: Mt. Dülük, n. of Aintab, *Haradjian* 1415. Syria: Aleppo, *Kotschy*, May 20, 1841.

(3) Subsp. *campylopodum*. Phrygia: *Balansa* 1132. Caria: *Pinard*, 1843. Lycia: *Bourgeau* 7. Cappadocia: *Balansa* 855.

(4) Subsp. *hellespoticum*. Central Anatolia: *Uvarov* 22; *Davis* 31010, 36538, 36430A; *McNeill* 336; *Ratcliffe* 414, 352; *Sintenis* 4979.

38. *Consolida armeniaca* (Stapf ex Huth) Schröd. Abh. Zool.-Bot. Ges. Wien 4(5): 62. 1909. FIG. 5, K.

Delphinium armeniacum Stapf ex Huth, Bot. Jahrb. 20: 380. pl. 7, fig. 9. 1895.

Simple or with few, open branches from near the base, 1–3 dm. tall, strigulose, pale in upper parts; leaves multipartite into rather few narrowly linear lobes ca. 0.5 mm. wide, the laminae to 2 or more cm. broad; bracts tripartite or the upper entire, narrow; inflorescence racemose, few- and open-flowered, more or less cinereous, some of the retrorse-appressed hairs with glandular swollen bases; pedicels mostly 1–4 cm. long, curved-ascending; bracteoles 2, linear, near and surpassing the base of the deep blue to violet-blue flowers; upper sepal ca. 14 mm. by 3 mm., lanceolate, not unguiculate, acute, strigose without, the spur 17–24 mm. long, ca. 3 mm. wide at the base, curved, very slender at the tip; lateral sepals ca. 13 mm. by 6 mm., subobtuse, strigose along the midrib; lower sepals 14 mm. by 4.5 mm., acute, strigose; "petal" ca. 13 mm. wide, 14 mm. high, the tip a narrowed beaklike lobe 3.5–4 mm. long, 2–3 mm. wide, the lateral lobes rounded, the whole rather dome-shaped; stamens 5–10 mm. long, the filaments tinged bluish, glabrous; anthers bluish, 1 mm. long; follicle 12–13 mm. long, appressed-pubescent with long hairs, beak 2.5 mm. long.

TYPE COLLECTION: Sipikordagh toward Bendola, Turkish Armenia, *Sintenis* 3177, 1890 (K, P), seen.

DISTRIBUTION. Dry igneous places, 1200–1800 m., Turkish Armenia.

ILLUSTRATION. DAVIS, Fl. Turkey 1: 129. 1965.

REPRESENTATIVE MATERIAL. Turkish Armenia: *E. K. Balls* 1756; *Davis* 31941; *Sintenis* 1320; *H. de Lesse*, July 26, 1956; *Guichard* T/50/60.

39. *Consolida sulphurea* (Boiss. & Hausskn.) Davis, Notes Bot. Gard. Edinb. 26: 175. 1965. FIG. 5, L.

Delphinium sulphureum Boiss. & Hausskn. in Boiss. Fl. Orient. 1: 81. 1867.

Strigose, slender, 1–2 dm. tall, divaricately few-branched at or near the middle; lowest leaves largely withered by anthesis, midcauline trifid into revolute, strigulose lobes 8–20 mm. long; racemes lax, 2–5-flowered, strigulose; bracts linear, mucronate, 5–6 mm. long; pedicels 7–15 mm. long, the bracteoles near the flower, 4–6 mm. long; flowers sulphur colored; sepals 9–10 mm. long, oblong, strigose, obtuse; spur subcylindric, 5–7 mm. long; “petal” 3-lobed, ca. 8 mm. wide when opened, the median lobe with 3 lobules at the tip, the whole longer and narrower than the lateral lobes; stamens 5–6 mm. long, very wide at the base of the apparently glabrous filaments; anthers 0.6 mm. long, apparently yellowish; follicle on a recurved pedicel, pendulous, white appressed-hirsute, lance-oblong, 8 mm. long, 2.5 mm. wide; seeds with distinct scales.

TYPE: Turkey, near Marasch (Maras) at 1300 m., *Haussknecht*, presumably (G), not seen, but apparent isotypes (P as of July 11, 1865, at 4100 ft., and K) were seen.

DISTRIBUTION. Grassy places and clearings, 750–1300 m., western Mesopotamia, Turkey.

SPECIMEN SEEN. Turkey: Maras-Gaziantep road, June 18, 1960, *K. M. Guichard* T/25/60 (K).

40. *Consolida olopetala* (Boiss.) Hayek, Fedde, Repert. Sp. Nov. Beih. 30: 313. 1924. FIG. 5, M.

Delphinium olopetalum Boiss. Ann. Sci. Nat. II. 16: 364. 1841.

Delphinium holopetalum in Huth, Bot. Jahrb. 20: 381. 1965.

Delphinium holopetalum Boiss. var. *Boissieri* Huth, Bot. Jahrb. 20: 381. 1895.

From Armenia, for which were cited: *Sintenis* 1890 and *Bourgeau* 1862.

Both are *C. olopetala*.

Plant to 3 dm. tall, 3–4-branched above the base, strigulose; lower leaves short-petioled, the main cauline 1–3 cm. long, 3-parted to base, the divisions with numerous setaceous lobes scarcely 0.5 mm. wide; bracts 3-parted into bifid lobes, or entire, 8–12 mm. long; raceme 15–20-flowered, 10–12 cm. long; pedicels arched spreading, 2–4 cm. long; bracteoles 2, near the flower, linear-subulate, 7–10 mm. long; sepals oblong, obtuse, violet-blue, strigose without, 12–15 mm. long, the lateral sepals strigose only on the midrib; spur incurved, longer than the “petal”, i.e. 15–20

mm. long and 3 mm. wide at the base; "petal" more or less entire and sub-circular, pale, ca. 15 mm. in diameter, the spur ca. 16 mm. long; filaments violet, to 8 mm. long; anthers rounded, pale, 1 mm. long; follicle strigose, oblong, straight, erect, to ca. 1 cm. long, 3 mm. wide, the beak 3 mm. long.

TYPE: *Aucher* in herb. Mus. Paris, "probably from Persia" (P); seen.

DISTRIBUTION. Upper Euphrates, probably confined to Turkey.

ILLUSTRATIONS. HUTH, Bot. Jahrb. 20: *pl.* 7, *fig.* 10. 1895; DAVIS, Fl. Turkey 1: 129. 1965.

SPECIMENS SEEN. Turkey: *Davis* 30951, 31909; *Bourgeau* 3.

REPRESENTATIVE EXSICCATAE OF ASIAN SPECIES OF CONSOLIDA

- Agnew Sept. 1, 1961, *saccata*
 Aitchison 145 & 310, *rugulosa*; 1002, *camptocarpa*
 Androsow 2218, *camptocarpa*
 Antonow April 25, 1889, *leptocarpa*
 Aucher 64, *deserti*; 65, *hohenackeri*; 66, *aconiti*; 67, *hellespontica*; 71, *phrygia*; 72, *axilliflora*; 73, *incana*; 74, *oliveriana*; 76, 77, *tomentosa*; 78, *persica*; 4029, *linarioides*; 4028, *rugulosa*; 4031, *regalis* subsp. *divaricata*; 4032, *anthoroidea*; 4033, *trigonelloides*
 Balansa 595, 1134, *regalis* subsp. *paniculata*; 599, 719, 856, 1135, *raveyi*; 729, *axilliflora*; 730, *scleroclada*; 854, *glandulosa*; 855, 1132, *hellespontica*; 857, *stenocarpa*; 1133, *orientalis*
 Balls, E. K. 1441, *hohenackeri*; 1756, *armeniaca*; 2243, *axilliflora*
 Beach, Kay 5029, *stocksiana*
 Becker 30, *camptocarpa*
 Berton 222, *incana*
 Blanche 348, *incana*
 Boissier June 1842, near Aphrodisias, *raveyi*; June 1842, near Laodicea, *regalis* subsp. *paniculata*; June 1846, near Raschaya, *incana*; June 1846, in Antilibanus, *pusilla*; May 1863, *orientalis*; May 1866, *axilliflora*
 Bornmüller 30, 11324, *incana*; 32, *scleroclada* var. *pumila*; 970, 13693, 13695, *hellespontica*; 1724, *glandulosa*; 4029, 13692, 13698, *orientalis*; 1719, 4027, 13690, *raveyi*; 3221, *scleroclada* var. *rigida*; 4031, 13696, *thirkeana*; 11326, *tomentosa*
 Bourgeau 3, *olopetala*; 6, from Elmalu, *glandulosa*; 6, from Baiboul, *orientalis*; 7 (July 4, 1860), *hellespontica*; 7 (July 12, 1862), *hohenackeri*; 8, *raveyi*; 10, *regalis* subsp. *paniculata*
 Bové 131, *deserti*
 Bunge 372, *camptocarpa*; March 1859, *halophila*; April 1859, *rugulosa*; 1858-9, *orientalis*; between Tehran and Tabris, *regalis* subsp. *divaricata*
 Capus 54, *barbata*; 55, 56, *rugulosa*; May 1886, *camptocarpa*
 Chung 1608, *ambigua*
 Crookshank, Helen 155, 414, *orientalis*; 153, *persica*
 Davis, P. H. 4819, *incana*; 3221, 6477, 9992, 10030, 30973, 31592, 31688, 35878, *scleroclada* var. *rigida*; 13010, 36622, *raveyi*; 16638, 16643, 32810, *stenocarpa*; 13463, 37229, 38698, 39136, 39207, *regalis* subsp. *paniculata*; 16678, 22026, 25080, 31017, 31732, 31860, 31983, *glandulosa*; 18721, 19918, 33881, *regalis* subsp. *divaricata*; 18878, 31010, 36430A, 36538, 37241, *hellespontica*; 21041, 28406, 28669, 31026, *oliveriana*; 22106, *oligantha*; 23802, *anthoroidea*; 22135, 28680, 28753, *axilliflora*; 29695, *regalis* subsp. *regalis*; 28945, 30079, 30598, 31992, *orientalis*; 30855, *cornuta*; 30076, 30825, 32613, *hohenackeri*; 30951, 31909, *olopetala*; 35960, *ambigua*; 31941, *armeniaca*
 Dimo 130, *camptocarpa*
 Dinsmore 6030, *incana*

- Donaldson 48, *leptocarpa*
 Falconer 59, *ambigua*
 Fedtschenko July 5, 1897, *barbata*; at Tashkent, *leptocarpa*
 Field & Lazar 52, 371, 741, 770, *oliveriana*; 314, *incana*; 532, 1020, *persica*; 538, 586, 691, 830, *oligantha*
 Furse 2459, *orientalis*; 3254, 3283, 3297, *anthoroidea*; 3301, *halophila*; 2907, *teheranica*; 5341, 5360, *camptocarpa*; 5942, 5943, 6469, *stocksiana*
 Furse & Syngé 292, *orientalis*; 625, 777, *persica*; 799, *regalis* subsp. *divaricata*; 911, *glandulosa*
 Geld 4268, *camptocarpa*
 Gillett, J. B. 8305, *oliveriana*; 8011, 11171, *oligantha*; 11207, *persica*; 11210, *flava*
 Gillett & Rawi 11621, *oliveriana*
 Gilliat-Smith 1575, *orientalis*; 1724, 1914, *halophila*; 1734, *oliveriana*
 Gontscharow & Grigoriev 114, *leptocarpa*; 871, *barbata*
 Görz 857, 866, *regalis* subsp. *paniculata*
 Griffith 42, *stocksiana*; 1376, *rugulosa*
 Grown, L. S. 1923, *halophila*
 Guest 787, *flava*; 2470, 2757, 3742, *oliveriana*
 Guichard 142/62, *aconiti*; T 50/60, *armeniaca*; 25/1960, *sulphurea*
 Haines, R. N. W 1543, *persica*
 Haradjian 1263, 2266, *axilliflora*; 1415, *hellespontica*; 1524, *sulphurea*; 1849, *tomentosa*
 Harris, R. Wheeler 467, 2100, *oliveriana*; 1218, *saccata*
 Haussknecht, in Luristan in 1868, *hohenackeri*; in Kurdistan in 1867, *anthoroidea*; Aleppo in 1865, *axilliflora*; in Ghilan in 1868, *regalis* subsp. *divaricata*; fl. Chabur, May 1867, *oliveriana*; between Erbil & Kirkuk in 1867, *persica*; Kirkuk, May 1867, *oligantha*; Marasch in 1865, *sulphurea*
 Hay 210, 282, *stocksiana*
 Hohenacker, Helenendorf in 1838, *ambigua*; Helenendorf in 1838, *orientalis*; Caucasus in 1834, *regalis* subsp. *divaricata*; pagum Kaelaechan, July 1837, *hohenackeri*
 Horner, S. 155, *oliveriana*
 Huet du Pavillon, near Erzeroum in 1853, *orientalis*; Maimansour in 1853, *glandulosa*
 Jacobs, M. 6812, *oliveriana*
 Karelin in Turcomania, *camptocarpa*
 Karelin & Kiriloff 1165, *camptocarpa*
 Khan, Prance & Ratcliffe 352, 414, *hellespontica*; 759A, *glandulosa*
 Koelz, W. 18202, *oliveriana*
 Komarov, V. L., Varsaminor, Aug. 18, 1893, *barbata*; Pendjakent in 1892, *rugulosa*
 Kotschy 23, 34, 222, *axilliflora*; 103, *scleroclada* var. *pumila*; 351, *regalis* subsp. *paniculata*; 416, *oliveriana*; 737, *pusilla*; Aleppo, May 20, 1841, *hellespontica*; Raschaya to Palmyra in 1855, *incana*
 Kraschennikov 146, *camptocarpa*
 Krause 3397, 3723, *orientalis*; 3488, *regalis* subsp. *paniculata*; 3828, *anthoroidea*; 5126, *hellespontica*
 Lace 3338, *rugulosa*
 Lazar, Y. 371, *oliveriana*; June 13, 1933, *orientalis*
 Lehmann 32, 36, *paradoxa*; 38, *barbata*. I am not certain whether these were collected by Lehmann or are his herbarium numbers.
 Letourneaux, June 22, 1881, *oligantha*
 Levine 823, 952, *ambigua*
 Lindsay, Miss, 260, 1151, *orientalis*; 268, 329, *persica*; 1424, *regalis* subsp. *divaricata*
 Litwinow 440, *rugulosa*; 442, *orientalis*; 4380, *camptocarpa*
 Manisdjian 652, *hellespontica*
 McNeill 336A, *hellespontica*; 336B, *raveyi*
 Meade, E. 171, *oliveriana*
 Merton 3884, *rugulosa*
 Meyer, F. N. 541, 572, *orientalis*
 Meyer & Dinsmore 4030, *incana*; 7238, *deserti*
 Meyers, F. T. 30, *incana*
 Peyron, at Zaur, May 24, 1890, *oligantha*; 1453, *pusilla*; Tarsous, June 6, 1896, *axilliflora*
 Pichler 22, *raveyi*; in 1882, *halophila*
 Pinard, Syria, in 1846, *hohenackeri*;

- Caria in 1843, *phrygia*; Caria in 1843, *hellespontica*
 Post, E. E., at Beirut, in 1876 & 1877, *incana*; 213, 218, 823, *axilliflora*; Mardin in 1899, *oligantha*; Aintab, June 1889, *hellespontica*; Isriyeh, May 1, 1900, *pusilla*
 Radi 307, *hohenackeri*
 Radde in 1867, *orientalis*
 Rawi 8540, *oliveriana*; 21818, *oligantha*; 20427, 20708, 20995, 21070, 21097, 21258, 22859, *flava*
 Rechinger 148, 9907, 19357, *flava*; 383, 4173, 5220, *orientalis*; 6678, *regalis* subsp. *divaricata*; 1011, 789, *rugulosa*; 2015, *teheranica*
 Regel at Tashkent, May 1880 and 52 in June 1881, *barbata*; Samarkand, May 1882 and Tschardschuia, Sept. 21, 1884, *stocksiana*; Samarkand, May 1882, *leptocarpa*; Samarkand, May 1882, *persica*; Turkestan in 1884, *rugulosa*; Turkestan, *camptocarpa*
 Richter 263, *camptocarpa*
 Schischkin, June 4, 1913, *camptocarpa*; June 16, 1916, *oliveriana*
 Schlagintweit 821, *schlagintweitii*
 Siehe 135, *orientalis*; 362, 403, *cruciata*; 175, 548, 550, *raveyi*; 387, *scleroclada* var. *rigida*
 Sintenis 143, *rugulosa*; 301, 1301b, *camptocarpa*; 678, *aconiti*; 283, *leptocarpa*; 832, *axilliflora*; 843, *phrygia*; 1320, 3177, *armeniaca*; 1336, *hohenackeri*; 1131, *oligantha*; 1186, *saccata*; 961, 1187, 2732, *oliveriana*; 2965, *olopetala*; 420, 522, 1746b, 4137, *orientalis*; 4293, *raveyi*; 2969, *scleroclada* var. *rigida*; 4547, 4979, *hellespontica*; 4882, *thirkeana*
 Sovetkina 131, *rugulosa*
 Strauss, Th., 3 and July 15, 1896, *oliveriana*
 Uvazov, B. P., Jezireb, June 2, 1932, *oligantha*; Kirkuk, May 27, 1932, *rugulosa*; Khanagin, May 26, 1932, *deserti*; 95, *regalis* subsp. *paniculata*
 Wiedemann, Anatolia, *regalis* subsp. *paniculata*; Zejradin, in 1932, *rugulosa*
 Wight 18, *ambigua*

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