

of 4.5 dm in *C. connexa* down to about 0.5 dm in *C. frigida*. In habit the first four species are characterized by a branched, though few-headed, stem; whereas in *C. frigida* the stems are all scapiform. Other differences might be mentioned. Nevertheless, it seems very probable that these five species all descended from a few very close species which in turn arose from a common ancestor. In addition to the common characteristics mentioned above, it should be noted that the receptacular paleae are always setiform, and there is considerable similarity in the floral morphology, particularly in size of corolla, anther tube, and appendages, and in the pappus setae, which are fine and soft. Furthermore, *C. connexa* is recognized definitely as a bridging species, since it exhibits considerable resemblance in habit of the plant, the leaves, and involucre to *C. songorica* and *C. sonchifolia* of sec. 10. One of these two species is endemic in Turkestan and the other in the Caucasus. The distribution of sec. 16 (fig. 184) is consistent with the hypothesis that these species were derived from the same line as sec. 10; and it indicates that the progenital species, from which these present-day species evolved, was widely distributed in S.W. Asia, and that spatial isolation has been an important factor in the evolution of these species.

*Key to the Species of Section 16*

- Cauline leaves several, large; involucre 12–15 mm long, 6–10 mm wide; style branches 2.5 mm long; achenes 7–8.5 mm long. . . . . 125. *C. connexa*, p. 618
- Cauline leaves few, bractlike; involucre 9–12 mm long, 3–6 mm wide; style branches 1–1.5 mm long; achenes 4.5–7 (mostly 5–6) mm long.
- Stems shaftlike, branched near the summit; leaves canescent-tomentulose or glabrous or finely pubescent with very short yellow hairs.
- Leaves glabrous or pubescent with short fine yellow hairs; corolla 16 mm long; anther tube 5 mm long; style branches yellow; achenes stramineous, 6–7 mm long, 0.6–0.7 mm. wide, 20-ribbed. . . . . 126. *C. saheni*, p. 620
- Leaves canescent-tomentulose; corolla 11–12 mm long; anther tube 3.75 mm long; style branches green; achenes dark brown, 4.5–5 mm long, 0.5–0.6 mm wide, 10-ribbed. . . . . 127. *C. purpurea*, p. 622
- Stems low, branched near the base or scapiform; leaves densely pubescent with white or yellow setules.
- Leaves pubescent with white glandless setules; longest outer involucre bracts about  $\frac{1}{3}$  as long as the inner; achenes stramineous, the marginal longer and wider than the inner. . . . . 128. *C. elbrusensis*, p. 626
- Leaves pubescent, especially on the lower face, with yellow setules; longest outer involucre bracts  $\frac{1}{4}$ – $\frac{2}{3}$  as long as the inner; achenes light brown, all about the same size. . . . . 129. *C. frigida*, p. 628

125. *Crepis connexa* nom. nov.

(Fig. 185.)

Perennial, 4.5 dm high; caudex slender, woody, simple or divided at summit; caudical leaves few, ascending, up to 20 cm long, 4 cm wide, oblanceolate, acute, gradually attenuate into a long-winged petiole, entire, finely gland-pubescent on both sides; lower cauline leaves similar, middle cauline leaves up to 12 cm long, 4 cm wide, lanceolate, acute, sessile, subamplexicaul to auriculate-amplexicaul, denticulate to coarsely runcinate-dentate, sparsely pubescent or glabrescent; stem erect, terete, faintly striate, glabrous, paniculately 1–4-branched from below or above the middle, branches remote, divaricately ascending, pedunculate or 2-headed; peduncles 4–20 cm long, stout, arcuate,  $\pm$  swollen toward summit, strongly constricted just below the head, 1–2-bracteate, glabrous; heads erect, rather large,

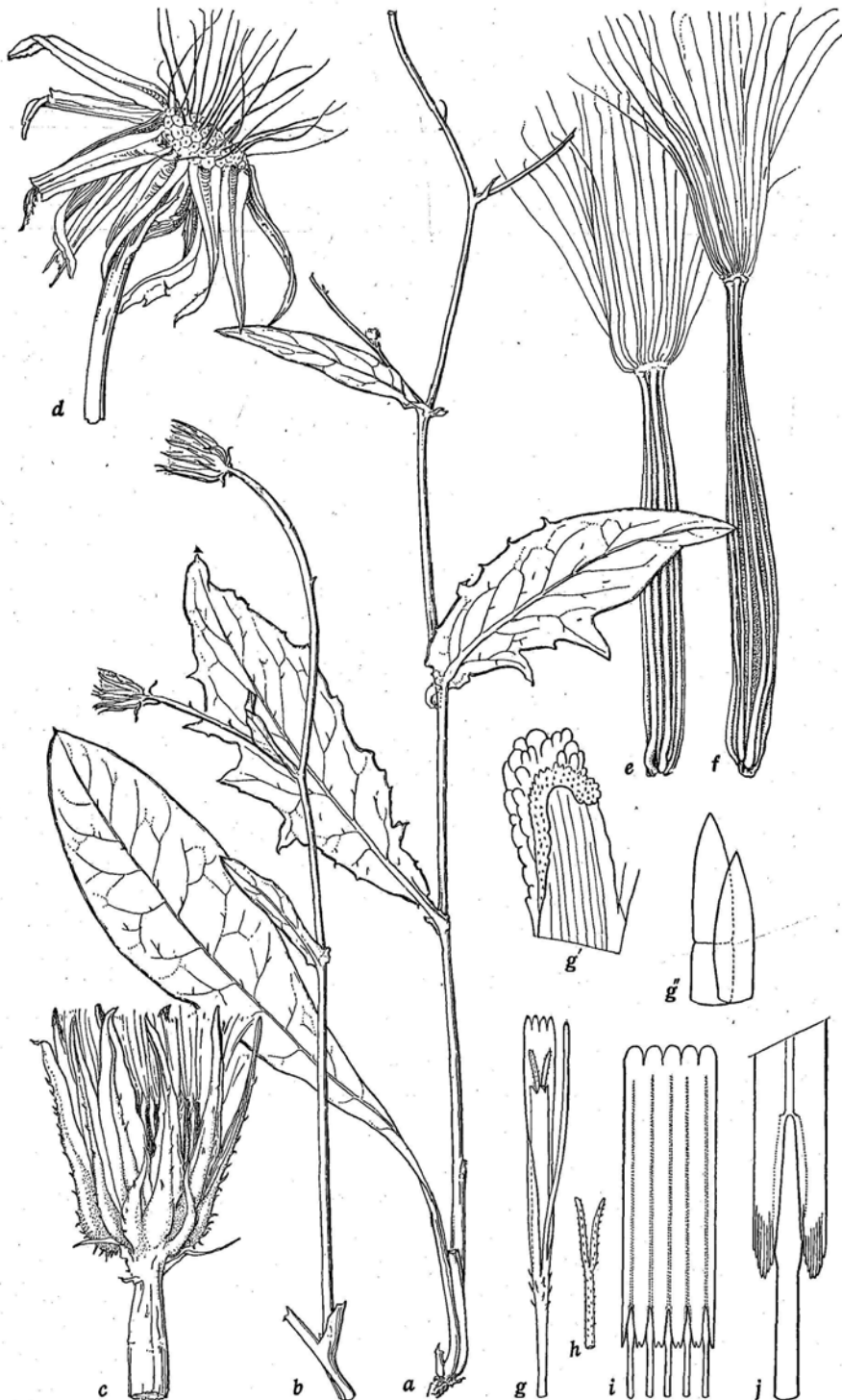


Fig. 185. *Crepis connexa*, from type (Bo): a, stem, with basal and cauline leaves,  $\times \frac{1}{2}$ ; b, flowering branch,  $\times \frac{1}{2}$ ; c, fruiting head,  $\times 2$ ; d, old head, showing paleae,  $\times 2$ ; e, f, marginal and inner achenes,  $\times 8$ ; g, floret lacking ovary,  $\times 4$ ; g', detail of ligule tooth,  $\times 50$ ; g'', trichomes on corolla tube,  $\times 50$ ; h, part of style, with branches,  $\times 4$ ; i, anther tube,  $\times 8$ ; j, detail of appendages,  $\times 32$ .

many-flowered; involucre campanulate to cyathiform, 12–15 mm long, 6–10 mm wide at middle in fruit, ultimately reflexed; outer bracts 5–6, unequal, longest  $\frac{1}{2}$ – $\frac{2}{3}$  as long as inner bracts, linear, acute, like the inner bracts scarious toward base and black near apex, with a median dorsal row of short coarse setae; inner bracts 12–14, lanceolate, acute, becoming strongly carinate dorsally and spongy-thickened toward base in fruit, glabrous on inner face; receptacle nearly flat, alveolate with low membranous walls, each alveole subtended by a setiform palea, the paleae longer than the achenes, not exceeding the pappus; corolla about 13 mm long; ligule 2-parted, the main part about 1 mm wide and 4-toothed, the smaller segment 0.25 mm wide, 1-toothed; teeth 0.5 mm long, gland-crested, anteriorly labiate; corolla tube about 4 mm long, pubescent near summit with very stout several-celled simple or compound trichomes (somewhat like those of *C. sonchifolia*); anther tube  $5.5 \times 1.5$  mm dis., appendages about 0.7 mm long, oblong, acute, united; filaments 0.5 mm longer; style branches 2.5 mm long, 0.2 mm wide, attenuate at tip, yellow; achenes uniform, light brown, 7–8.5 mm long, subterete,  $\pm$  attenuate toward summit, with slightly expanded pappus disk, constricted at the oblique pale-calloused base, 10-ribbed, the ribs rather prominent, rounded, muriculate, extending to pappus disk; pappus white, 4–5 mm long, 1–2-seriate, rather fine, soft, deciduous. Flowering June; flowers yellow.

*Lagoservis hieracioides* Boiss. et Haussk., ex Boiss., Fl. Orient. 3: 883. 1875.

N.W. Persia, mountains of Kurdistan, at 1830 m alt., on calcareous rocks. The only locality given by the collector that I have been able to locate is Avroman Dagh, which is on the Persian-Iraq frontier.

Monomorphic.

Persia: Kurdistan, Schahu Mts., *Haussknecht 621* (Bo, UCf) type; Kurdistan, Avroman Mts., and Schahu Mts., *Haussknecht* in 1867 (B).

#### Relationship

*C. connexa*, as its name implies, must be considered as a bridging species. It connects this section and sec. 10, since it is obviously related to *C. sonchifolia* and *C. songorica*. The pollen grains of *C. connexa* are 3-pored and fairly regular in size, indicating that it is a diploid species; but the size is rather large, 30–37.5 $\mu$  in diameter, average 34 $\mu$ . It is certainly the most primitive *Crepis* species with a paleaceous receptacle; and it is considered to be a connecting species between sections *Lagoservis* and *Pterotheca*, on one hand, and the more primitive epaleaceous sections, on the other.

#### 126. *Crepis sahendii* Boiss. et Buhse

Nouv. Mem. Soc. Nat. Mosc. 12: 141. 1860. (Fig. 186.)

Perennial, 1.5–3 dm high; caudex 0.5–3 cm wide, simple or 1–4-divided, woody, covered with dark brown bases of old leaves, prolonged into a straight slender taproot, leafy at summit; caudical leaves ascending, 3–12 cm long, 0.8–3 cm wide, oblanceolate, acute or acuminate, dentate to runcinate-pinnatifid with narrow acute often salient lateral segments, gradually attenuate into a narrowly winged petiole, broader at base, glaucous, glabrous or finely pubescent with very short yellow hairs; cauline leaves few, bractlike; stems 1–6, slender, erect, terete, striate, glabrous, cymosely 1–2-furcate near summit, branches pedunculate; peduncles 1–7 cm long, slender, arcuate, glabrous or sparsely pubescent near head; heads erect, medium, many-flowered; involucre cylindric-campanulate, 9–12 mm long, 4–6 mm wide at middle in fruit,  $\pm$  pubescent with pale yellow curled glandless hairs; outer bracts 10–12, unequal,  $\frac{1}{3}$ – $\frac{1}{2}$  as long as the inner, lanceolate, acute; inner bracts 13–17,