

contains the most important centres of the species of this genus. We might quote from DeCandolle's excellent monograph<sup>1</sup> the data as follow: Spanish Peninsula: 18 species, 6 endemic. Italy and Dalmatia: 36 species, 11 endemic. Greece and Asia Minor: 36 species, 21 endemic. France, Corsica and Sardinia: 13 species, none endemic.

With regard to Siberia, 11 species are known from Ural, 10 from Altai, and 7 from Baikal. Nevertheless, the number of arctic species is extremely small, viz.: *C. uniflora* L., *C. lasiocarpa* DC., *C. rotundifolia* L., var. *arctica* Lge., and *C. groenlandica* Berlin? and strange to say, *C. orthoceras* is absent from Russia and Siberia with the only exception of Konyam bay, where Kojima found it, Nova Zembla, and Arakantschetscheue island (*C. Wright*).

Still the species occurs in Scandinavia, Sweden, Bergen, Greenland, the north coast of this continent, including the archipelago, and extends from Labrador to Alaska, and south to the Colorado Rocky mountains.

By the structure of the flower and the capsule, besides by the habit, *C. uniflora* appears to be an ally of *C. cenisia* L., a native of the alpine regions of the Alps. But it shows no immediate affinity with *C. lasiocarpa* Cham. except "capsula lateraliter versus apicem dehiscente." DeCandolle regards *C. lasiocarpa* as an ally of some Siberian species, notably *C. Adami* Bieb. and *C. dasyantha* Bieb., but it differs from these, however, by the sinuses of the calyx being only minutely appendiculate; *C. lasiocarpa* is a native of the alpine summits of the high-northern Rocky mountains and of the northwest coast and islands; *C. dasyantha* (*C. pilosa* Pall.) inhabits Alaska and the Aleutian islands, Kamtchatka and eastern Siberia; *C. Adami*, on the other hand, is a native of Caucasus.

We have thus in these species of *Campanula*, represented in the arctic regions, a commingling of types among which *C. uniflora* occupies a somewhat isolated position; considering the wide distribution on this continent where it is either arctic or alpine, it seems probable that *C. uniflora* is a member of the old glacial vegetation, and that the centre of its distribution was located in the arctic regions of this continent. The occurrence of this species in Scandinavia is one of the several cases which Nathorst has mentioned as demonstrating the probable road of migration of the American element across Greenland to Iceland and Scandinavia. With regard to *Campanula rotundifolia*, this is not an arctic type, judging from its predominant distribution southward, but the species is evidently one of those that accompanied the arctic flora on its retreat to the north. But in the arctic regions *C. rotundifolia* has developed a type, "*C. groenlandica* Berl.," which together with the variety *arctica* Lge. thus represents the species in the far north.

As regards *C. lasiocarpa* on the northwest coast, this is undoubtedly of Siberian origin, as indicated by DeCandolle, and the same is the case of *C. dasyantha*. The analogy in floral structure, through which these appear to be related to the Caucasian *C. Adami*, is one of the many instances of analogous structures being possessed by plants at stations ever so remote and resulting, sometimes I believe, in the development of identically the same species.

If we finally consider the Compositae, a score of species is all that the expedition brought home from the north coast, and nowhere in the arctic is this family much in evidence in proportion to its size, some 12,000 species having been described. From arctic Russia and arctic Siberia we have only record of about 50 species according to Ledebour (l.c.), while from the small area of arctic Scandinavia Hartman (l.c.) has enumerated about 50 species, 18 of which are *Hieracia*; in Greenland the family is represented by about 30 species 10 of which are introduced weeds, principally at the colony Ivigtut.

<sup>1</sup> Alphonse DeCandolle: Monographie des Campanulinées. Paris, 1830.

<sup>2</sup> Kärleväxter, insamlade under den Svenska Expeditionen till Grönland 1883, l.c. p. 50.