Studies in the Gesneriaceae of the Old World

III.—The Status of the Genus Ceratoscyphus

BY

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A single specimen of a Chinese plant was described in 1946 by W. Y. Chun (in Sunyatsenia, vi, 276: 1946) as a new genus, *Ceratoscyphus*, allied to *Didymocarpus* subgen. *Chirita*. Chun follows K. Fritsch (in Engler & Prantl, Die natürliche Pflanzenfamilien, iv, 3 B, 146: 1895) in his all-embracing view of *Didymocarpus*, but I prefer the somewhat narrower concepts of C. B. Clarke's treatment (in A. & C. De Candolle, Monographiae Phanerogamarum: Cyrtandreae. 1883), and in the following discussion *Chirita* is regarded as an independent genus.

Chun is undoubtedly correct in placing *Ceratoscyphus* next to *Chirita*. That genus, however, already contains at least half a dozen species which are certainly congeneric with *Ceratoscyphus caeruleus*. These species, or such of them as were then known, were placed by C. B. Clarke in the typical section of *Chirita*, section *Euchirita*. As Clarke had four other sections in this genus, it is clear that the affinity of *Ceratoscyphus* with *Chirita* must be very close.

I have not actually seen material of *Ceratoscyphus*, but Chun's excellent descriptions and illustrations are quite adequate for the present purpose. However, it may be desirable to give his views on the most important characteristics of the new genus in his own words. Chun writes:—

"The peculiar structure of the calyx sets this genus apart from all others so far described in this family. Instead of the usual flattened form, each calyx lobe is metamorphosed into a slender tapering tube abruptly dilated into a small spur-like hood at the base. The hood and tube is produced by the union of two inward folds near the rim of the cup. The inflorescence is cymose, the 3–5 flowers are supported by and partially enclosed in two large foliaceous bracts borne at the apex of short scapes which are more or less concealed among the basal leaves. The central flower in each cluster opens first and is distinctly stalked at anthesis while the lateral flowers, then in bud, are sessile or nearly so. The bilabiate corolla bears two fertile connate stamens on long geniculate filaments, two shorter ones with decurved knob-like sterile anthers, and a fifth reduced to a gland-like staminode. The plant is acaulescent, bearing dimorphic leaves composed of many small, more or less decumbent ones crowded into a basal rosette from which project 4 or 5 very large ones borne on long ascending petioles. Only very old capsules are known, but it is uncertain that they really belong with the flowering specimen. They are long, linear-cylindric, clustered at the apex of a long peduncle.

"*Ceratoscyphus* may be placed for the time being near *Didymocarpus* agreeing with the Subgenus *Chirita* in staminal and stigmatic characters. When ripe fruits are available and they prove to be 4-valved, then the genus should be

transferred to the *Championeae*. From all members of the *Didymocarpinae* and *Championeae* the new genus differs in the horn-like calyx lobes and pilose placentae."

The type species of *Chirita* is *C. urticifolia* [Buch.–Ham. ex] D. Don and this species is fortunately in cultivation at the Royal Botanic Garden, Edinburgh. It is a caulescent herb, decumbent and rooting at the base, with soft, somewhat fleshy, serrated leaves and axillary inflorescences, whose peduncle and pedicels are quite free from the petiole. The calyx is well developed, about 2 cm. long and divided to just beyond the middle into 5 lobes; each lobe is acuminate and the margins of the tip are inrolled to form a sort of hollow horn. The corolla is about 5 cm. long, marked longitudinally with dark purple stripes and with yellow lines on the floor of the throat and tube: internally it is glabrous except for the sides and roof of the throat, which are shortly glandular-pubescent. The corolla-tube is bluntly ridged dorsally on the outside and in the groove so formed on the inside runs the style (there are no outgrowing flaps as in *Ceratoscyphus* and *Chirita Trailliana*). The anthers are glabrous and cohere face to face. The filaments are glabrous except for some very short glandular hairs at the top. The upper part of each filament is rigid and ascends at an angle of 45° from the floor of the corolla tube where it rests on a round swollen tubercle: below this it is thin, twisted and only free from the corolla for about 2 mm. The disc is annular. The ovary is cylindric, glabrous, passing into the shortly pubescent style. The stigma is oblique, deeply bifid, resembling a fish-tail (see Fig. 1a, p. 186).

Chirita urticifolia does possess the tubular-tipped calyx-lobes which Chun emphasised as a fundamental diagnostic feature of *Ceratoscyphus*, yet it differs in certain important details of floral structure, as well as in vegetative habit. Chun's description and photograph of *Ceratoscyphus* show it to be a dwarf herb with the leaves all basal and the flowers borne cymosely on few-flowered scapes. The roof of the corolla-tube has internally two longitudinal folds between which the style lies. These features are characteristic of a group of species of *Chirita*, including *C. brevipes*, *C. macrophylla*, *C. pumila*, *C. speciosa*, *C. Trailliana* and *C. umbricola*. Of these *C. Trailliana* is in cultivation at Edinburgh, and the following descriptive notes will bring out the differences between this group and *C. urticifolia:* they will also serve, in comparison with Chun's description, to confirm that *Chirita Trailliana* and *Ceratoscyphus caeruleus* are certainly congeneric.

Chirita Trailliana is a dwarf herb, the long-petiolate cordate leaves all arising from ground-level; herbarium specimens show that there may be a well-developed creeping stem and the leaves are somewhat scattered, not forming a definite rosette as in so many members of the family. The underside of the leaf-blades and the petioles are reddish and densely covered with spreading hairs and the peduncle and calyx are similarly coloured and provided with hairs. The peduncle itself is about 8 cm. long, equalling the petiole or somewhat exceeding it, at the top it bears a pair of leafy bracts and branches into the characteristic gesneriaceous cymose inflorescence, but the total number of flowers may be only three. The calyx itself is about 2 cm. long, divided almost to halfway into 5 lanceolate-acuminate lobes. The margins of the lobes are inrolled and form a hollow horn for the uppermost 5 mm. of their length. The corolla itself is large, about 7 cm. long, pale mauve on the outside, deep mauve on the inside of the lobes and in the

upper part of the tube, becoming paler towards the base. From the wide open mouth two strongly developed yellow lines run along the floor of the corolla-tube. The hairy anthers cohere face to face. The filaments are glabrous. The upper part of each filament is stiff, rising at an angle of 45° from the corolla-floor where it rests on a much thickened knee: between the knee and the actual point of attachment the filament is much thinner and has a spiral twist. The staminodes of the three upper stamens are present, the lateral pair being well-developed and crook'd at the apex, the median are very small. The disc is small and annular. The ovary is shortly pubescent and the stigma has two oblique spreading lobes (see Fig. 1b, p. 186). From herbarium specimens the capsule is seen to be long and slender, narrowly cylindric.

There is one major discrepancy between Chun's description of *Ceratoscyphus caeruleus* and my observations on *Chirita Trailliana*. This concerns the placentae. Chun describes them as pilose on the inner face and his figure shows this but, curiously, does not show the ovules. In both *C. Trailliana* and *C. urticifolia* I find the placentae to be densely ovuliferous on the fertile flanges, but quite glabrous on the central sterile part. This matter must await further investigation, but I should certainly be unwilling to accept the difference as being of generic value in the face of the many fundamental similarities between the two plants.

The main differences which separate *Ceratoscyphus*, *Chirita Trailliana* and allied species on the one hand and *Chirita urticifolia* on the other lie in the possession by the former of the internal foldings of the corolla, which serve to hold the style in a fixed position, and of bearded anthers. The taxonomic problem is to decide what value is to be attached to these characters. C. B. Clarke recognised four sections of *Chirita* in addition to section *Euchirita* in which, as has been seen, he placed both *C. urticifolia* and the closer allies of *Ceratoscyphus*. The other four sections greatly extend the range of variation of the genus, and their species are far more distinct from *C. urticifolia* than is *Ceratoscyphus*. If, as Fritsch and Chun believe, *Chirita* can reasonably be included in the already large genus *Didymocarpus*, the variability allowed to a single genus is enormous, and the generic characters of *Ceratoscyphus* are trivial in comparison. Its claim to independent generic rank could only be entertained against the background of a completely new classification of the *Chirita-Didymocarpus* complex based on much narrower generic limits. While this is to some degree desirable, there is no indication that the process can be carried to the level at which *Ceratoscyphus* would merit generic rank. In fact the impression given by current work on two other genera of *Gesneriaceae*, *Oreocharis* and *Ornithoboea*, is that there are too many anomalous species in this family to permit the recognition of each group of closely allied plants as a distinct genus. That could only be followed by a most undesirable multiplication of small genera, which would merely serve to confuse rather than clarify the classification. It is clear that *Ceratoscyphus* must disappear from the ranks of the accepted genera.

The next problem is, therefore, whether *Ceratoscyphus* shall be included in *Chirita* section *Euchirita* or be recognised as a distinct section of that genus. There is no doubt that *Ceratoscyphus*, *Chirita Trailliana* and related species are far more closely allied to *C. urticifolia* than they are to any species of the other sections. The differences in details of corolla and anthers are outweighed

by their resemblances and it is therefore proposed to retain these species within section *Euchirita* for the time being. When the whole genus is revised they may be found to merit the rank of a distinct section, for which the name *Ceratoscyphus* could then be revived; on the other hand intermediate species linking them more closely to *C. urticifolia* may come to light.

Attempts to identify the actual plant described by Chun as *Ceratoscyphus caeruleus* have been unsuccessful so far. It therefore seems best to accept it as a valid species of *Chirita*. The epithet *caerulea* is already in use for a Javanese species of section *Microchirita*, and the following new name is therefore proposed:—

Chirita Ceratoscyphus B.L. Burtt, **nom. nov.**

Ceratoscyphus caeruleus Chun in Sunyatsenia, vi, 278 (1946)—non *Chirita caerulea* R. Br. (1840).

KWANGSI. Shang-Hsu Hsien, Shi-Wan-Ta Shan, Nan-Ping Hsiang, alt. 600 m., erect herb along stream on moist sites in densely forested ravine, leaves membranous, dark green above, pale green beneath, flowers deep blue, April 18, 1944, S.H. Chen 4918 [ex Chun—not seen].