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STUDIES IN THE FLORA OF ARABIA XVIII: Crucianella in Saudi Arabia

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ABSTRACT. A new record of *Crucianella membranacea* Boiss. (Rubiaceae) from Saudi Arabia is given. This species is compared with *C. aegyptiaca* L. and *C. ciliata* Lam., both species new to Saudi Arabia. *C. arabica*, sp. nov., from the Asir Mountains, is described and its affinities are discussed.

The only species of *Crucianella* so far recorded from Saudi Arabia is *C. membranacea* Boiss. De Marco & Dinelli (1974) cite this species without precise locality, whereas Migahid (1978) describes it from the central region of Najd and from the eastern region, between Dahna and the Arabian Gulf. Other references to species of *Crucianella* from 'Arabia petraea' (cf. Boissier, 1875; Blatter, 1921; and Mouterde, 1980) concern N Egypt and Sinai.

In spring 1981 *C. membranacea* was gathered again by Chaudhary in north central Saudi Arabia near Hail (RAWRC!). It is a low branched annual of sandy steppes, with scabrid leaves in whorls of 6 and small yellowish pentamerous flowers 4–7 mm long, easily distinguishable from other therophytic species of *Crucianella* by its recurved, falcate and broadly membranous bracts. This Saharo-Sindian species has a range stretching from N Egypt, Sinai, Negev and Edom to the Arabian peninsula, where it is apparently widespread.

A second species with pentamerous corollas, *C. aegyptiaca* L. (syn. *C. herbacea* Forssk.), hitherto unknown from Arabia, has recently been collected by Mrs I. S. Collenette (on red rocky rubble and sand, between Wejh and Al Ula, iii 1986) in the NW of the peninsula. It is a low, greyish green, diffuse plant, with rough stems and scabrous leaves, in whorls of 4–6. Its creamy flowers with purplish limb are up to 8 mm long and sometimes exceed the straight bracts. *C. aegyptiaca*, a mainly S Mediterranean species, ranging from Morocco to the coasts of Syria, Israel, Cyprus and Egypt, penetrates here into the Saharo-Sindian region.

C. ciliata Lam. was found by Mrs I. S. Collenette in 1985, on Jabal Dibbagh in NW Saudi Arabia (RAWRC!; Fig. 3). This is a slender plant, clearly distinct from *C. membranacea* and *C. aegyptiaca* by having minute tetramerous corollas up to 2·5 mm long, appressed bracts with thickened and strongly ciliate margins, and vesiculose-rugose mericarps. It grows in mountain steppes and rock crevices, from the coastal region of Egypt to Sinai, Negev, Edom, NW Saudi Arabia, Syria, Lebanon and further on to W and S Iran. Consequently, *C. ciliata* is also a Saharo-Sindian species (and does not belong to the Irano-Turanian element, as stated by Feinbrun-Dothan, 1978).

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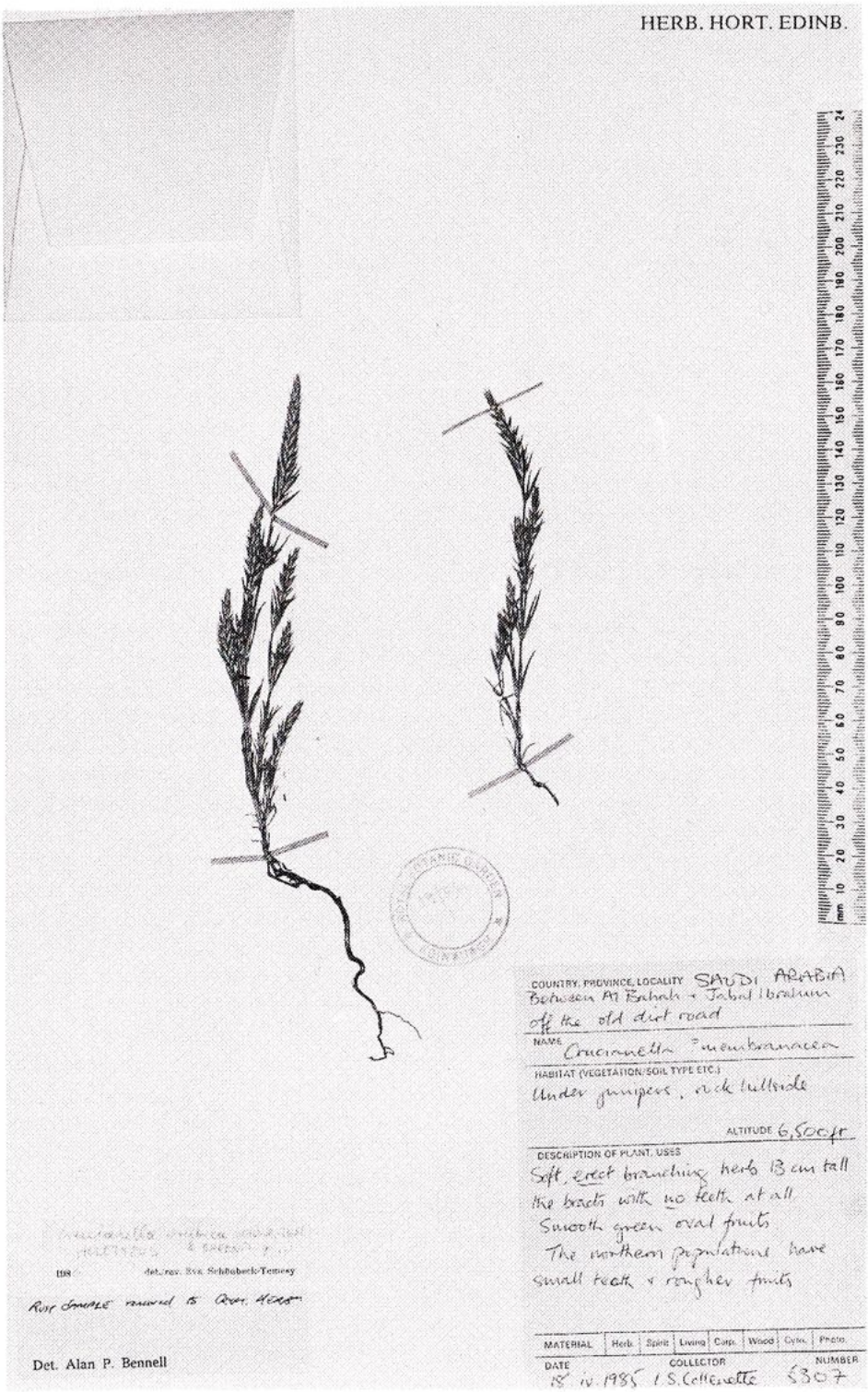

FIG. 1. *Crucianella arabica* (Holotype, E).

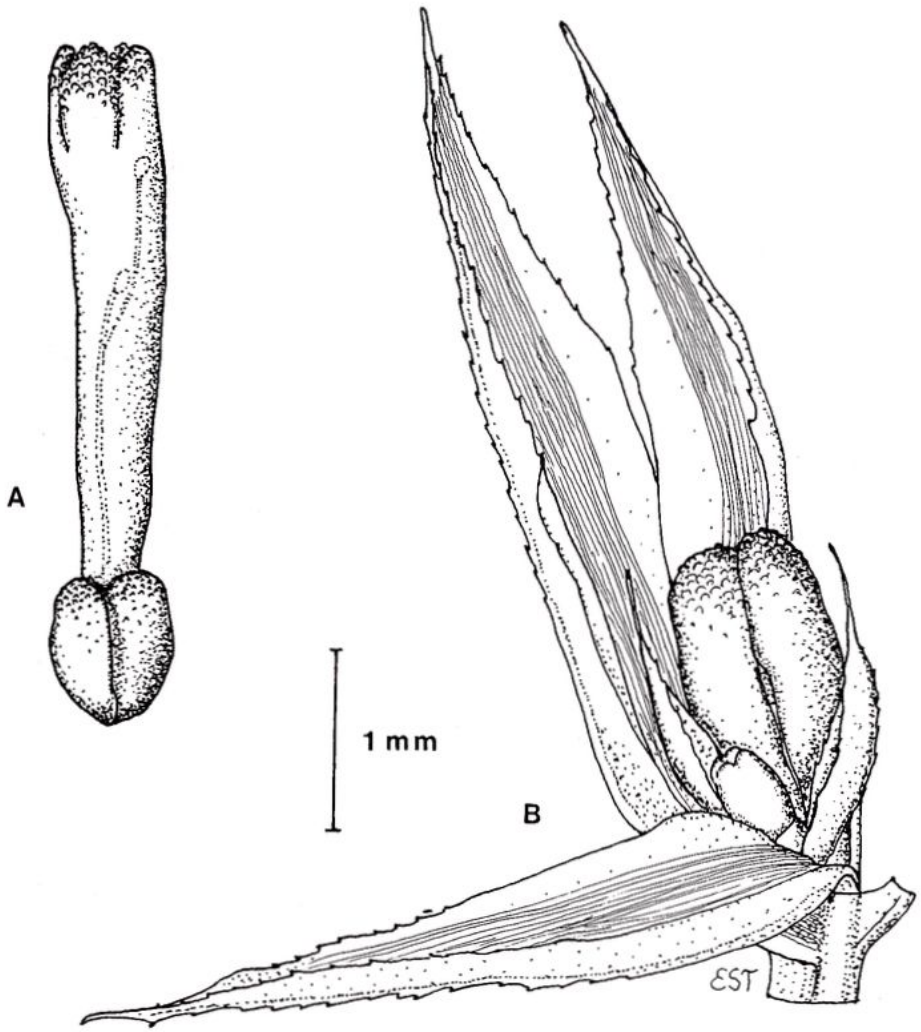

FIG. 2. *Crucianella arabica*: A, flower; B, partial inflorescence.

Crucianella arabica Schönb.-Tem. & Ehrend., **sp. nov.** Figs. 1–3.

C. angustifoliae L. similis, sed foliis quaternis multo scabrioribus ac floris secundi rudimento distincta.

Planta annua coeruleo-viridis, 7–15 cm alta. *Caulis* ± erectus quadrangulus, interdum parte superiore subalatus, angulis retrorse scaber usque sublaevis, basi interdum circumcirca scaber, saepe jam paulo supra basin ramosus, ramis suberectis. *Folia* 4-na basi subconnata, 9–18 × 0·5–1·6 mm, lineari-oblanceolata usque -lanceolata, subulato-acuminata, apice hyalino 0·3–0·4 mm longo, margine revoluto ac supra dense antrorse scabra, subtus laevia, nervo parte anteriore excepto prominenti usque alato. *Thyrsi* reducti spiciformes saepe jam e caulis basi orientes, breviter pedunculati, anguste pyramidales, verticillis floralibus densis, infimis tantum paulo remotis. *Flores* tetrameri in axillis bractearum sessiles, prophyllis binatis, saepe floris rudimento in axillo unius, iterum prophyllis binatis sed minimis. *Bracteae* liberae anguste triangulari-lanceolatae, alato-carinatae, secus carinam ac

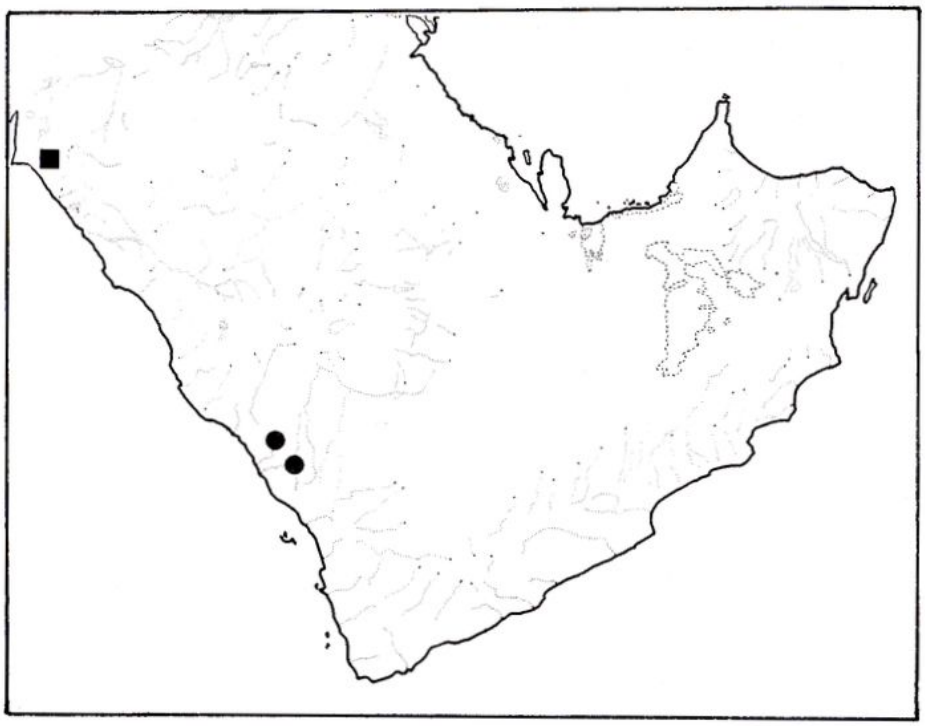

FIG. 3. Distribution of *Crucianella arabica* ● and *C. ciliata* ■ in the Arabian peninsula.

marginem antrorse scabridae, subulato-acuminatae, apice hyalino 0·3–0·5 mm longo; inferiores ad 10 × 1·5 mm, margine albido-membranaceo partis herbaceae c. dimidium aequanti, superiores 5–7 × 1–1·5 mm, margine membranaceo parti herbaceae aequali usque eam superanti, apicem versus saepe cito attenuato. *Corolla* flavescens c.3 mm longa, glabra, tubulosa, bractea paulo brevior usque eam subaequans, limbi c.0·4 mm longi lobis oblongis introrse appendiculatis, extus papillosis. *Mericarpia* c.2·5 mm longa, obovoideo-oblonga, minute papillosa.

Crescit in rupestribus graniticis regionis Oleae, in juniperetis; 1900–2000 m. Floret iv.

Typus: Saudi Arabia: Between Al Bahah and Jabal Ibrahim, c.2000 m, 18 iv 1985, *Collenette* 5307 (holo. E, iso. RAWRC).

Distribution: SW Saudi Arabian: Asir Mountains. (Fig. 3).

Specimen seen: 25 km N Al Alayyah (19°50′N 41°55′E), 1900 m, 18 iv 1982, *Baierle et al.* 82-1827 (BSB).

This is a montane species of the South Arabian Domain of the Sudano-Zambesian region (Wickens, 1976) which obviously has no links with other taxa of *Crucianella* in the Arabian peninsula. The only species morphologically approaching it is the Medit.-Submedit.-Irano-Turanian *C. angustifolia* L. which occurs in open forests or macchie from the W Mediterranean through Anatolia, the Caucasus and Talish to N Iran. It is similar to *C. arabica* in its bluish-green colour, short tetramerous flowers and the structure of its white-margined bracts, but differs in having less scabrid leaves in whorls of 6–8 and in the absence of flower rudiments besides the main flower.

C. membranacea is strongly distinct in habit, its recurved bracts and pentamerous flowers. *C. aegyptiaca* L. has scabrid leaves as in *C. arabica* but often in whorls of 6, and deviates mainly by its pentamerous corollas, more greyish colour and divaricate branchings. *C. ciliata* with likewise tetramerous flowers differs clearly in its verrucose mericarps and less dense inflorescence.

Crucianella, a genus of Irano-Turanian origin (cf. Ehrendorfer, 1971), has several therophytic representatives in the Medit.-Submedit. and the Saharo-Sindian regions, but *C. arabica* apparently is the only species penetrating into the S Arabian Domain of the Sudano-Zambesian region.

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