

**BOTANICAL NOTES ON THE CANARY ISLANDS VI. THE *ECHIUM*
DECAISNEI - *ECHIUM FAMARAE* COMPLEX (BORAGINACEAE)**

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RESUMEN

Una nueva especie leñosa de *Echium*, *E. famarae* LEMS y HOLZAPFEL, ha sido descubierta en las Islas Canarias orientales de Lanzarote y Fuerteventura. *Echium famarae* es muy emparentada a *E. decaisnei* y se distingue de ésta en la morfología de las hojas, el complemento de trichomos, la posición de los estambres y en hábito general.

INTRODUCTION

The flora of the Canary Islands consists of approximately 1550 species of vascular plants, 440 of which are endemic to the Islands (LEMS, 1960, 1961). The genus *Echium* is represented by more than 20 species, most of them endemic shrubs. This study deals with the biology of a new species of *Echium* found on Lanzarote and Fuerteventura, the two islands nearest the African coast.

The new species was discovered while the authors were in search of *Echium stenosiphon*, reported by PITARD and PROUST (1908) to be found on the cliffs of Famara, Lanzarote². We located several low, compact shrubs, resembling

(1) Deceased March 17, 1968.

(2) *E. stenosiphon* was originally described by Webb from the Cape Verde Islands. The voucher specimens for the Pitard collection from Famara (Pitard no. 264), annotated *E. stenosiphon*, were studied by the senior author at the herbarium of the Royal Botanic

E. decaisnei W. & B. at Famara. *Echium decaisnei* had been reported by BOLLE (1893) from Lanzarote and Fuerteventura. Careful comparison of material of *E. decaisnei* from Gran Canaria and samples from Famara, and from similar cliffs near Pico de la Zarza, Fuerteventura, showed that the material from Fuerteventura and Lanzarote constitutes a distinct species on the basis of leaf morphology, trichomes, calyx, position of the stamens and general growth form.

DESCRIPTION OF THE SPECIES

Echium famarae nov. sp. (Sectio Pachylepis Coincy).

Frutex tripedalis caulibus crassis, glabris; foliis oblongis vel oblanceolatis obtusis vel acutis, nitentibus, viridibus, subtus glabris, supra minutissime et adpresse aculeatis, margine plana, inermi. Paniculae terminales, ovatae, bracteatae. Flores secundae, albae, intus lineis violaceis ornatae; calyx glaber, 5-lobatus, laciniis inferioribus lanceolatis, superioribus late rotundatis, connatis per 2/3 longitudinus; corolla 5-lobata, lobis subaequalibus, rotundatis, extus minute pilosa, ad basim tubi annulo glabro, amlitudine uniformi; stamina exserta, incurva, filamentis glabris in corollae tubum inserta, superiori ad basim lateralibus paululum altioribus, inferioribus in medio tubo; ovarium 4-lobatum, stylo staminibus longiori, piloso, apice 2-fido. Calyx fructifer foliaceus, nuculis fuscis triquetris, gibbosis. Typus in monte «Pico de la Zarza» dicto insulae Fuerteventura invenitur, species etiam in rupibus «Famara» dictis insulae Lanzaroteae habitat.

Branched woody plant (lámina 1) with short, thick, rather succulent stems reaching a height of about 1 meter after 15 years. Branches brownish gray, smooth, glabrous. Leaves thick in tight spirals near the tips of the branches, 4 to 14 cm long, 1 to 4 cm wide, the margin entire, smooth, the tip obtuse to acute, the blade oblanceolate, gradually narrowed to the base; the upper epidermis shiny green, glabrous except for scattered flat pustules which become more evident in dry material; the lower epidermis glabrous. Inflorescence dense, consisting of scorpioid cymes 3-6 cm long, arranged along an axis 10-20 cm long, the lower cymes with leafy bracts. Flowers sessile along the branches, subtended by lanceolate bracts. Calyx foliaceous, 5-lobed, the upper 3 lobes connate 2/3 to 4/5 the length of the calyx, broad, obtuse, the lower 2 lanceolate, obtuse, connate 1/6 to 1/3 of the calyx length; the calyx at anthesis 8-10 mm long, glabrous except for a few short appressed spines along the veins, the margin short ciliate. Corolla 12 to 14 mm long, creamy white

Garden at Kew, England, and at the Musée Naturelle, Paris, and found to be members of the herbaceous species, *Echium lancerottensis* LEMS and HOLZAPFEL (1968 b) and not of the woody half-shrub species, *E. stenosphon*.

with purplish lines in the throat, 5-lobed, the lobes broadly rounded, $\frac{1}{4}$ the length of the corolla; corolla tube wide, funnel shaped slightly bulging below, otherwise almost radially symmetric, annulus a glabrous membranous ridge at the base of the tube; corolla glabrous inside, very sparsely short pubescent outside. Stamens 5, the filaments glabrous, adnate to the corolla tube, 13 mm long, curved upward; the upper stamen arising from near the base, the lateral pair $2\frac{1}{2}$ mm beyond the base and fused with the corolla by a membranous fold, the lower pair about 4 mm above the base, not fused with the tube; anthers 0.9 mm long, versatile. Ovary 4-lobed, the style about 16 mm long, pilose along the basal $\frac{2}{3}$; the stigmatic branches about 0.6 mm. Fruiting calyx to 15 mm long containing 1 to 4 brown nutlets, pointed, with prominent warts and teeth along the angles, 3 mm long. Locality: Montaña de Jandia, 1 km west of Pico de la Zarza, Fuerteventura, elevation 600 m; found along ledges and in soil pockets of cliffs facing northwest, dominated by *Odontospermum sericeum*. The type, Lems 6952 (figure 1), has been deposited in the herbarium of the Faculty of Pharmacy, University of Madrid; duplicates of the types (isotypes) are on file at the U. S. National Herbarium, Washington, D. C., the herbarium of the Royal Botanic Garden, Kew, England, and the herbarium of the University of Michigan, Ann Arbor, Michigan, U. S. A.

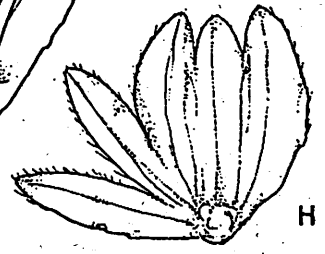
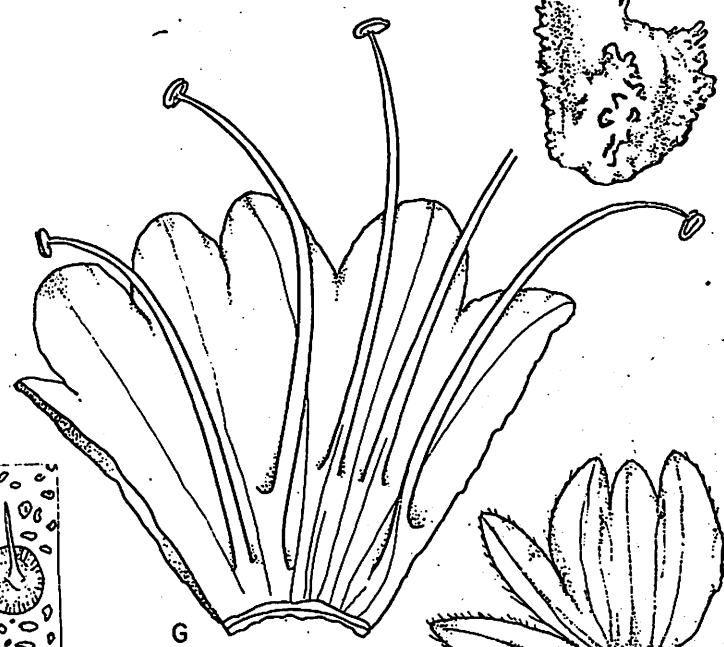
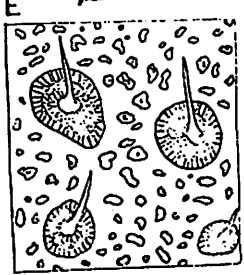
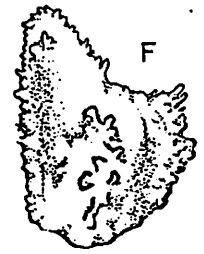
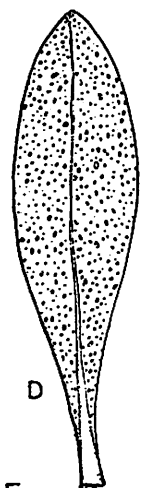
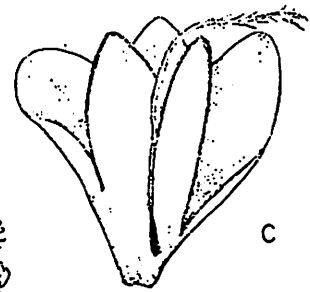
TAXONOMY

The new species is obviously closely related to *Echium decaisnei*, and was confused with it by BOLLE (1893). It may be well to discuss the reasons for distinction of a new species. The final verdict on the validity of the species will come from extensive cross pollination experiments in the genus *Echium*; these have not been performed. In the field, intermediates between species growing together (*E. strictum* with *E. webbia* and *E. leucophaeum*) have never been reported. But experimentation with materials from different islands is certainly required. In the absence of such data, these are good reasons for distinction of a new species: leaf morphology, trichomes and geographic distribution. LEMS and HOLZAPFEL (1968a) point out the significance of trichomes in the Canarian *Echiums*, and show that the trichomes of *E. famarae* are most similar to those of *E. gentianoides* in morphology and coverage. *Echium gentianoides* is the only other near-glabrous species in the genus. Like *gentianoides*, spines are not found on the lower epidermis of *E. famarae* while they are common (coverage 10-40 %) on the lower epidermis of *decaisnei*. The leaf shape of *Echium decaisnei* from Gran Canaria ranges from lanceolate to linear-lanceolate, but does not include the abruptly pointed oblanceolate spatulate type seen in *E. famarae*; the leaf texture of plants grown in both the field and greenhouse under similar conditions is much thicker in *E. famarae* than in

LAMINA I

Echium famarae Lems and Holzappel. A: flowering branch, B: flower, C: fruiting calyx, D: leaf, E: upper epidermis with pustular spines, F: seed, G: corolla opened along apical petal, H: calyx opened below lateral sepal.

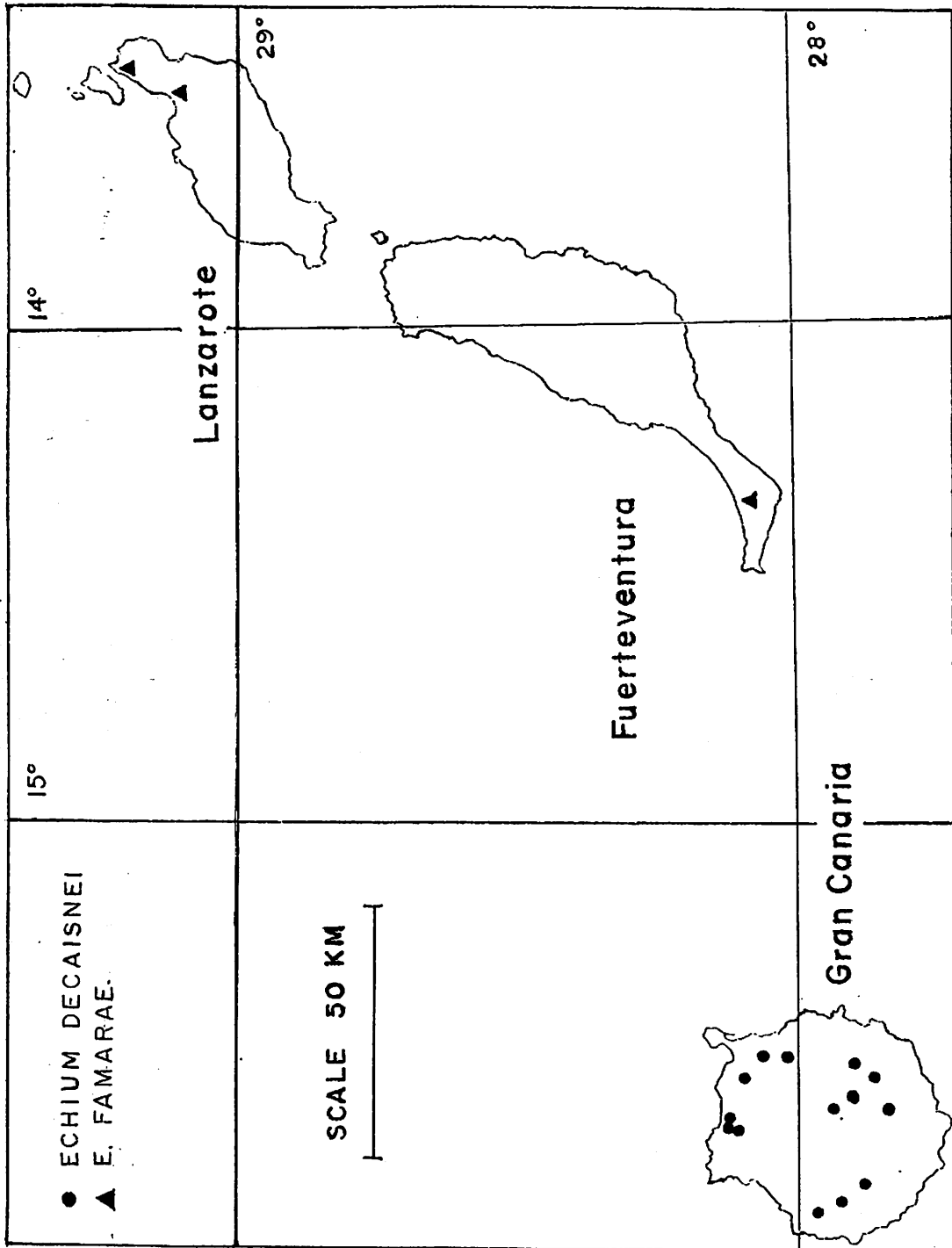
LAMINA I



LAMINA II

Distribution of *Echium famarae* Lems and Holzapfel (triangles) and
E. decaisnei W. & B. (circles).

LAMINA II



decaisnei. Although in the field, *E. famarae* is a slower growing, denser shrub, the two species grow at similar rates in the greenhouse.

GEOGRAPHIC IMPLICATIONS

The distinction of *E. famarae* as a new species has interesting geographic implications. The two localities on Lanzarote and Fuerteventura are 160 km apart at opposite ends of the volcanic ridge formed by these islands; a more continuous distribution is impossible because none of the intervening terrain is sufficiently elevated and steep to intercept clouds and moisture. The disjunct occurrence of *E. famarae*, as well as other cliff species (*Aichryson tortuosum*, *Alsine platyphylla*) suggests that the eroded islands were once more continuously mountainous. This reasoning becomes all the more cogent when it is remembered that the distance between the two localities of *E. famarae* is greater than the 85 km. which separate the localities of *E. decaisnei* from the type locality of *E. famarae* on Fuerteventura (figure 2).

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