

Aeschynanthus chorisepala, Orr.

A new Chinese species; with an account of fissuring of its leaves.

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With Plate CXLIV.

Aeschynanthus (Diplotrichium) chorisepala, Orr. Sp. nov.

Species affinis *A. ramosissimae*, Wall. sed calyce usque ad imum in segmenta linearia fisso inter alia differt.

Frutex epiphyticus 30-75 cm. altus. Rami subteretes paulo compressi, decumbentes, nodis radicanter. Folia 10-12 cm. longa, 3-4 cm. lata, late lanceolata vel ovato-lanceolata vel oblonga, apice acuminata, basi late cuneata, petiolo 1-1.5 cm. longo praedita, coriacea, glabra, margine paululo recurva, nervis lateralibus obscuris. Pedunculi axillares 1-4-flori multo abbreviati; bracteae circ. 5 mm. longae, ovatae vel oblongae, tenuiter membranaceae, deciduae; pedicelli 1-2 cm. longi, glabri. Calyx tenuiter membranaceus usque ad basin divisus in segmenta 7 mm. longa, sublinearia vel lineari-oblonga, apice obtusa sparse ciliata. Corolla curvata, 3 cm. longa, laete kermesina; lobi subaequales, rotundati, circ. 5 mm. longi et lati, in medio atro-purpureo-maculati, pilis septatis glandulocapitatis ut tubus conspersi. Filamenta exserta, superne glanduloso-pilosa; antherae 2 mm. longae. Ovarium glabrum; stylus sparsim glanduloso-pilosus. Capsula circ. 25 cm. longa, 3 mm. lata; semina oblonga, rugoso-scabra, prope hilum ditricha, apice monotricha.

"Epiphytic shrubby plant of 1-2½ ft. Flowers fleshy, crimson marked a deeper shade. On rocks and trees, in hills around Teng-yueh, Yunnan, West China. Lat. 25° N. Alt. 6000 ft. August 1913." G. Forrest. No. 11,742. *Type*.

"Prostrate plant of 1-2½ ft. Flowers bright crimson with a purple tip. On rocks in lava bed west of Teng-yueh. Lat. 25° N. Alt. 5000 ft. July 1912." G. Forrest. No. 9138.

Closely allied to *A. ramosissima*, Wall., but with a very distinct calyx of which the segments are almost entirely free

[Notes, R.B.G., Edin., No. XXXVIII, Sept. 1914.]

and are only slightly coherent at the base. They are linear or linear oblong in shape with obtuse apices bearing a few glandular hairs.

Many of the leaves of this new species of *Aeschynanthus* from Yunnan present an unusual appearance. They are tough and leathery in consistency, and are characterised by the presence of numerous elongated slits in the lamina, which, in the specimens examined, are often so regular in their arrangement as to suggest that their formation is not wholly fortuitous.

In many of the leaves, the slits—to the number of six or eight—are present on each side of the midrib, following roughly the direction taken by the lateral veins, but, in some cases, crossing them. In other leaves the slits are more elongated, and run from base to apex of the leaf, parallel to the midrib, and often contiguous to it. The perforation is not always complete, and the upper epidermal layer then appears as a transparent skin over the groove.

With a view to determining the mode of origin, and purpose, if any, of these slits, the structure of the leaf was examined in detail. In the arrangement of its tissues this leaf conforms closely to the leaves of other Gesneraceous species. The upper epidermis is many-layered, and specially adapted for water-storage. The outermost layer is strongly cuticularised, and this layer is further protected by a centrally placed "floor" of cells which have the walls adjacent to the water-containing cells thickened in a manner similar to those of the outermost epidermal layer. Pits are present in this thickened layer, and, by their agency, a supply of water reaches the underlying tissues. These consist of a narrow band of chlorophyll-containing cells, rich in clustered crystals of calcium oxalate, and several layers of spongy parenchyma, containing little or no chlorophyll, and possessing curious tube-like protuberances on their walls. The under epidermis is also strongly cuticularised, with stomata and numerous stalked glands, the latter situated in shallow circular depressions. The cell-walls under these glands are thinner, and, together with the stomatal openings, constitute points of weakness where the slits might originate.

Neither the configuration of the epidermis, nor the construction of the underlying tissues, suggest that the formation of the slits is other than accidental, and they probably owe their origin to an excessive loss of water from the tissues of the leaf. Such "Cracks due to drying" are mentioned by Solereder.*

Drying of the leaf brings about the rupture of the lower epidermis, probably at some point of weakness, and the exposure

* Solereder, Syst. Anat. of Dicotyledons, Engl. Ed. (Oxford Press), ii, 1088.

of the internal tissues, and their partial disorganisation follows, but the structure of the epidermal layer enables the plant to minimise the effects of such an accident. The epidermal cells have their outer and lateral walls thickened, while the inner walls remain unthickened, and the whole layer thus closely resembles the annulus of a fern sporangium, but in an inverse manner. When these cells lose their water, the broken ends of the layer curve naturally inwards, and enclose, and protect the exposed underlying tissue. As disorganisation proceeds, from below upwards, ultimately only the outer layer of the upper epidermis remains, stretched across the fissure. With the gradual increase in tension this layer also ruptures, and, as it is similar in structure to the lower epidermis, its behaviour, as it loses moisture, is identical. The ruptured parts curve inwards, and become closely applied to the outer side of the inrolled lower epidermis. In this way the wound is sealed by a double layer of thick-walled cells, and the internal tissues are protected from further injury.

EXPLANATION OF THE FIGURES IN PLATE CXLIV.

Illustrating Mr. M. Y. Orr's paper on *Aeschynanthus chorisepala*, Orr.

At *a*, a leaf without perforations.

At *b*, a leaf showing slits parallel with the primary veins.

At *c*, a leaf showing slits parallel with midrib.

The plate is taken from a photograph by Mr. R. M. Adam of a dried specimen in the Herbarium of the Royal Botanic Garden, Edinburgh.



AESCHYNANTHUS CHORISEPALA, ORR.

