

# STUDIES IN THE GESNERIACEAE OF THE OLD WORLD

## XIV: THE SEEDLING STAGES OF AESCHYNANTHUS

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The anomalous seedling morphology of many Old World Gesneriaceae was first recorded in the genus *Streptocarpus* by Caspary\* in 1858, and has since been widely reported in other genera.† These, however, have been almost exclusively genera of the subtribe *Didymocarpeae*. The subtribe *Trichosporeae*, consisting characteristically of trailing epiphytes, are less commonly cultivated and are normally increased by cuttings. Fritsch dealt with only one species, under the name *Trichosporum coccineum* (obtained from Haage & Schmidt as *Aeschynanthus coccineus*—a species of

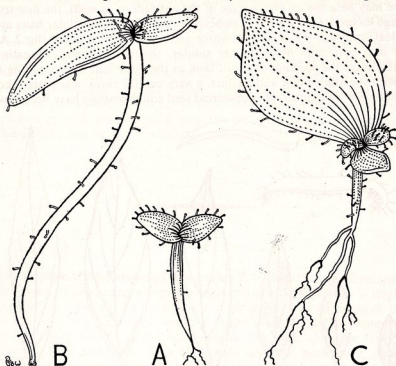


FIG. 1. Seedlings of *Aeschynanthus maculatus* at three stages of development. A & B,  $\times 16\frac{1}{2}$ ; C,  $\times 6$ .

\* See Verhand. Nat. Hist. Vereins, Rheinf. xv (1858) and Flora, 1859, p. 120. Caspary's account antedates that of C. W. Crocker (in Journ. Linn. Soc. Bot. v, 65-66: 1860) which was reported as the first record in an earlier paper in this series (Notes R.B.G. Edinb. xxi, 188:1954). Crocker was, however, the first to realize that the condition occurred in caulescent members of the family as well as in the rosulate and the permanently unifoliate species of *Streptocarpus*.

† Fritsch, K. Die Keimpflanzen der Gesneriaceen. Jena, 1904.

doubtful identity) and of this he reports that there was nothing remarkable in the young seedling. In the older seedling he recorded the transition from hairy to glabrous leaves, which took place suddenly at the seventh leaf pair, and the more gradual lengthening and narrowing of the leaf.

Recently we have had the opportunity of studying seedlings of a species of *Aeschynanthus* from Assam: these were collected for us by Dr. G. Panigrahi at the request of Mr. Seshagiri Rao Rolla, F.L.S., and our best thanks are due to these two gentlemen. The species concerned is probably *Aeschynanthus maculatus* Lindl., or perhaps *A. sikkimensis* (C. B. Cl.) Stapf if that species is really distinguishable; specific limits amongst these species of *Aeschynanthus* are somewhat uncertain and nothing useful can be said about them until better material becomes available for study.

The seedlings of this *Aeschynanthus* germinated with perfectly normal equal cotyledons (fig. 1, A), but very soon showed the enlargement of one of them characteristic of so many of these Gesneriaceae (fig. 1, B & C). In nine seedlings the enlarged cotyledon finally averaged 11 mm. in length (range 7–15 mm.) and 6.5 mm. in breadth (range 5–7 mm.). Whereas the hypocotyl and the margins of the cotyledons bear glandular hairs (and there may be a few on the surface of the cotyledons as well), the first true foliage leaves are quite densely pubescent with mostly eglandular hairs and the leaf is more or less elliptic in outline and has recurved margins (fig. 2, A). The next two pairs of leaves are similar, though gradually elongating. At this stage the seedling does not look as though it can have anything to do with the adult plant and, in fact, a very careful check was undertaken to make certain that no other gesneriad seed could possibly have been sown

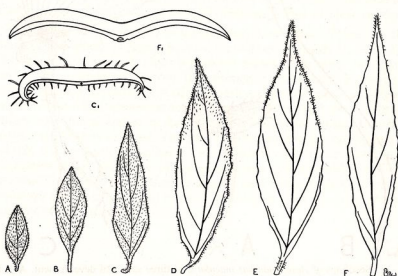


FIG. 2. Successive seedling leaves of *Aeschynanthus maculatus*, A being from the first post-cotyledonary pair: all nat. size. C1 & F1, diagrammatic transverse sections of corresponding leaves,  $\times 4\frac{1}{2}$ : the upper zone is colourless hypoderm.

by mistake! A little patience would have provided convincing proof that these were really the seedlings of the *Aeschynanthus*, for from the fourth leaf pair onwards (fig. 2, D, E, F) there was a rapid transition towards the

adult leaf form, which is very similar to the last stage shown but completely glabrous. Parallel with the transition from hairy to glabrous leaves there is a passage from densely glandular hairy internodes through others with a decreasing indumentum until the adult glabrous internodes are reached. The colourless, water-storing hypoderm which is a well-known feature of the adult leaves of *Aeschynanthus* forms an even larger proportion of the leaf tissue in the juvenile leaves (fig. 2, C1).

The observations reported here in the post-cotyledonary stages of the main axis confirm those of Fritsch except that he describes the transition from juvenile to adult foliage as being much more abrupt.

There is a further interesting observation to be added, however. These seedlings are producing lateral shoots from the axils of the juvenile leaves and these lateral shoots bear just the same series of leaf-forms as the main axis; their lower leaves are recurved at the margins and pubescent, the later ones approach the mature form. It may be remarked that when mature plants branch the leaves of the lateral shoots do not show any juvenile characters; at least not in other species of the genus which are in cultivation at Edinburgh, for example *A. Lobbianus* and *A. Hosseusii*.

The inequality of the cotyledons, now described, is of considerable systematic interest as it ties the very distinct tribe of the *Trichosporeae* more closely to the rest of the Old World Gesneriaceae. Unlike most of the strictly herbaceous species, however, the *Aeschynanthus* seedlings, though they develop into caulescent plants, do not develop a mesocotyl. Such species as *Streptocarpus caulescens*, *Chirita lavandulacea*, etc., develop this mesocotyl through axial growth carrying the larger cotyledon up above the level of the smaller one. Clearly there are possibilities of discovering characters of systematic value if only the observations on the seedlings of these plants can be made sufficiently extensive.

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There are good things about this work: but there is a rather considerable balance of bad things, too. It is good to find a broad concept of genera and to find infrageneric groupings used properly by being keyed out first. Dr. Hermann's comprehensive views of *Triticum*, which here includes

\* Flora von Nord- und Mitteleuropa, von Friedrich Hermann. Stuttgart, Gustav Fischer Verlag, 1956. Pp. xii + 1154. Price 96 DM.