

case in one of the *Roscoe* seedlings examined. It is, therefore, evident that the presence of centripetal wood in one vascular strand of the cotyledons of *Brachytilum*, *Roscoe*, and *Alpinia*, is due to the fusing of two small cortical bundles after they have become closely associated with the main strand, but before they are wholly merged in it.

It must be added that there is a tendency for large single tracheides to occasionally make their appearance on the side of the protoxylem remote from the metaxylem throughout the whole course of both bundles, but this is to be observed in the cotyledons of many monocotyledonous families. In *Anemarrhena* isolated tracheides occur scattered between the two bundles, and in *Erythronium grandiflorum*, where there are several laterals, their appearance usually precedes the fusion of two of these; in *Iris* the single strand of fused bundles ends in a brush of these spirally thickened elements, while in *Maianthemum* a group of three tracheides was observed in the ground tissue quite apart from any vascular bundle.

In an organ whose most important function is the rapid passage of food substances to the growing plant, the occurrence of such elements is likely to be an adaptive feature rather than a primitive one, and their frequent but by no means constant association with the bundles in a centripetal position does not necessarily indicate their vestigial nature.

*Summary.* The well-marked mesarch structure of one of the cotyledonary strands in the lower part of the sucking cotyledon of certain Scitamineae is evidently due to the relative movements of the constituent bundles after they have become associated together in a single strand, and is therefore of no phylogenetic importance.

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#### PRELIMINARY NOTE ON APOGAMY IN *PTERIS DROOGMANTIANA*.

—A cytological investigation of the prothallus of this Fern has revealed features of much interest. In the young prothallus, cells each containing two nuclei are common: it appears certain that in this form neither of the paired nuclei has migrated from an adjacent cell, as in every case a nucleus is present in each of the surrounding cells. Our available evidence indicates that the pair of nuclei are formed by the division of the nucleus of an ordinary cell, no cell-wall being laid down between the daughter-nuclei. After division has taken place the two daughter-nuclei remain for some time unfused, but, in most if not all cases, fusion eventually takes place. Stages in the fusion have been observed, and the resultant nuclei are very large and at first often lobed.

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