HISTOGENESIS OF THE VENATION PATTERN IN THE LEAVES OF POLYALTHIA LONGIFOLIA

BY M. V. RAMJI

(Department of Botany, Presidency College, Madras-5, India)

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INTRODUCTION

This contribution embodies the results of studies on the ontogeny and pattern of venation in the leaves of Polyalthia longifolia. The structure of the shoot apex and the initiation of foliar primordia have already been dealt with in an earlier paper (Ramji, 1960). Foster's review (1952) on the topic illustrates the occurrence of considerable range of variation in the development and the adult pattern of vascularisation in the leaves of angiosperms. Subsequent to Foster's review, Pray (1954, 1955 a, b, c) has reported the development of foliar vasculature in some liliaceous and magnoliaceous members.

OBSERVATIONS

As has been reported earlier (Ramji, 1960), the leaf primordia in Polyalthia longifolia arise in an alternate pattern, the initiation of the appendage taking place in the second tunica layer. The apical growth of foliar primordia ceases when they have attained a length of about 770 microns. The lateral expansion of the lamina is brought about by the activity of the marginal meristem. The sub-marginal-initial cell divides anticlinally giving derivatives to the abaxial and adaxial hypodermal layers of the lamina. The adaxial hypodermal layer, by further divisions, contribute to the middle layer of cells. The constituent cells of this layer elongate considerably in the direction of the thickness of the leaf. The initiation of the procambium takes place in some of these cells (Fig. 1).

The venation pattern of the leaf is pinnate, the secondary veins traversing obliquely from the midrib and anastomosing with adjacent ones by tertiary veins near the margin. The procambium in the petiole and in the costa is differentiated during the apical growth of primordium, whereas the time of origin of this tissue in the veins of other categories is postponed until the formation of the lamina.