the plant. Aside from special cases of this kind, there is some variation of position, as noted by Loewi (3, page 998) in the leaf of *Cinnamomum*, in which the abscission plane was found, in a very few instances, to lie in the neighbourhood of 2 mm. above the expected position. In *Hamamelis* there are two parallel separation zones a short distance apart. The leaf is first set free by the upper one in the autumn, and in the early spring following a short segment is thrown off (Tison 2). Practical identity of position is attained only in those forms possessing a differentiated layer of tissue, such as that in *Polygonum*, *Syringa* and *Zizania*, in which it happens that the abscission plane lies, but why it should do so is not clear. On the other hand we can very surely say that in many, if not in most instances, there is no slightest suggestion in the histological structure of the organ of a specialized abscission layer (*e.g.*, *Vitis*, *Spiraea*, *Philadelphus*, *Hydrangea*), and we may say, with Loewi, that abscission is a physiological response, adaptive if you please, to stimuli, and is not conditioned by a predetermined structure.

The falling away of the leaf, far from being an economical process, is a necessary response to conditions imposed. To be sure, acids of silica and lime usually assumed to be useless, occur in double the usual quantity in falling leaves, while there is a decrease, due to movement into the stem, of nitrogen salts. The conclusions of Ramann, (4) do not, however, accord wholly with those of Combes (1911), who has held that a migration of substances prior to leaf-fall does not occur, nor are those remaining in the fallen leaf to be considered *a priori* as non-utilizable. Much, he maintains, remains which might have been used. The leaf may in this respect be compared to dead and exfoliated bark, which also is not devoid of useful materials. Foods (starch, sugar) are certainly lost in floral parts and in fruits which have suffered abscission—*e.g.*, starch is lost with the corolla of *Gossypium*.

The abscission of cotyledons normally occurs in the aroid *Cryptocoryne ciliata* and in the mangrove (*Rhizophora*) (Goebel, 6). These plants are viviparous; their embryos withdraw the overplus of foods from the cotyledons, which, after abscission, remain within the fruit. The seedling then shifts for itself, finding anchorage in the soft mud of the shore line habitat. There are, however, other viviparous seedlings which are released from the parent plant without separation of the cotyledons (*Podocarpus*, Lloyd, 7).

Such adaptive behaviour may be matched by examples of disharmony. The "calamander," a sort of teak (*Diospyros ahrsuta* L.), of Ceylon, is one such. Abscission of the cotyledons