

VIII. DEFINITION OF THE CONCEPT 'INFLORESCENCE',
WITH SPECIAL REFERENCE TO LIGNEOUS PLANTS

A colloquium at the Rijksherbarium, Leyden, on September 27, 1962, held by Dr. F. Weberling, Mainz, on the subject of the interpretation of the inflorescence according to Prof. Troll's ideas, stimulated me to reconsider this concept.

It appears to me that the term inflorescence, as for example defined in Jackson's Glossary as "the disposition of flowers on the floral axis" is a merely phytographical concept. If it is attributed more than purely descriptive value, it should have a morphological basis. In the descriptive sense it is morphologically confusing. We call the inflorescence of Ananas or Sphenoclea a spike, but we define the flowering parts of Melaleuca, Callistemon, or Pentaphylax also as spikes, which they are, but merely by superficial appearance. In the latter cases the spike is morphologically of an essentially different nature, namely the tip of a twig, covered with closely set, solitary, lateral flowers (uniflorous inflorescences), each in the axil of a small bract, whilst vegetative growth of the tip of the twig is arrested temporarily during anthesis, to burst forth from the vegetative end bud post-anthesis.

Much attention has been paid to the distal morphology of inflorescence, whether it is "closed", according to Jackson "definite, when each axis in turn is terminated by a flower, as in a cyme", or "open", according to Jackson "indefinite, when the floral axis is capable of continuous extension, as in a raceme".

The arresting of the growth of a twig, during anthesis, by a pseudo-terminal inflorescence, as in Melaleuca, is of course not in the least confined to spikes. It occurs also in paniculate, thryoid or cymose inflorescences. Dr. P.W. Leenhouts described it to occur in Canarium; it is also found in Turpinia, where in the middle of the inflorescences the arrested terminal bud is concealed between the insertions of the peduncles which after anthesis are pushed aside and appear to be laterally inserted. In descriptive botany this 'detail' is often neglected, but it is essential for the real understanding of morphology. In Celastraceae the arrest of the terminal bud of a twig during anthesis is rather common.

Much less attention has been paid, however, to the basal delimitation of an inflorescence; where does it "begin"?

In herbaceous plants this is generally no problem, but in ligneous plants it is sometimes difficult or even impossible to define where an inflorescence, according to Jackson's definition, starts due to the fact that below a terminal or pseudo-terminal inflorescence lateral shoots are also terminated by an inflorescence and participate in forming the

"large, leafy panicle or compound inflorescence" as it is generally circumscribed. The more the leaves in such inflorescences are reduced and fall into the category "bracts", the more one is, in descriptive botany, inclined to view the whole as one compound inflorescence. Out of many examples I mention for example Hippocratea, Celastrus, Clematis, etc. The true nature of the 'stalks', i.e. whether they have stem- (twig-)nature or represent real peduncles, is sometimes clearly discernible by their structure (herbaceous or woody) or by a different indumentum, its absence and presence respectively, but in other cases the inflorescence is superficially just a continuation of the lateral twig.

The crucial test whether an inflorescence is terminal or lateral - that is to solve the problem whether 'lower peduncles' really belong to the 'inflorescence' or are separate inflorescences in their own right - it seems to me, can be well observed only post-anthesin, the decisive criterion being whether vegetative growth is continued, or at least potentially possible, that is in other words, whether the stem-nature of the twig is continued distally of the inflorescence or not.

This does not mean, of course, that if twig growth is continued or potentially possible, this will always lead to extension into long or strong lateral branches. Many brachyblasts bearing flowers and only bracts or reduced leaves will never attain sizeable dimension and may eventually reduce or finally arrest their growth post-anthesin, or end in a thorn. But there is, to give an example, morphologically an essential difference between a brachyblastic-like lateral inflorescence of a Hoya and that of Couroupita or a Rapanea respectively; in Hoya the inflorescence is a true inflorescence, which never grows through, also when no fruit is set; in Rapanea it is a pseudo-inflorescence, viz a very short, lateral twig with solitary lateral flowers, distally continued by a terminal bud with limited capacity of vegetative growth. A flowering brachyblast of Rapanea is by all means homologous with, and a specialized condition of a leafy flowering twig with solitary lateral flowers as found in other species of the genus which never produce brachyblasts.

The occurrence of vegetative parts in an inflorescence does not hamper, of course, the definition of a true inflorescence; under any definition there are in all or almost all inflorescences vegetative parts, viz bracts or reduced leaves, although they may be suppressed in a few cases (most Cruciferae, Juncaginaceae sensu Hutchinson, etc.); sometimes they are showy as apically on the scape of Ananas. Also vegetative bodies may be produced in an inflorescence, normally (or by teratologies) in the form of bulbils or plantules (sometimes from transformed floral initials) as for example in Dioscorea,

Chlorophytum, Agave, etc., but these vegetative parts are ephemeral and take no part in the extension of structure of the individual mother plant.

The considerations given above have led me to a new (?) definition of an inflorescence based on morphological features, namely that it is "the specialized fertile part(s) of an individual plant which post-anthesis does (do) not participate in the vegetative extension of the individual", and is hence either shed or withering away.

I have the idea that this will be useful as a basis for morphological considerations and for phytographical purpose.

Besides being a chronicle, this Bulletin serves as a forum of opinions and readers, specially those working with ligneous tropical plants, are invited to a discussion.

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