ON TERATOLOGICAL FEATURES IN SOME PLANTS

TERATOLOGICAL features are often taken as the basis for explaining various problems concerning the evolution of the floral parts. Many of the modifications are construed to be reversions to ancestral types indicating the primitive state. Many flowers of *Cucurbita maxima* collected by the author were found to be virescent. In the centre of the flower leafy structures with stalk and blade developed due to proliferation (Fig. 1) or the continued growth of the pedicel. Similar abnormal features have been noticed by Kausik (1938) in *Trichosanthes anguina*, another member of the *Cucurbitaceæ*. In the male flowers the anthers which are usually synantherous had separated. The connate condition disappears and this phenomenon termed dialysis seemed to be a common feature in the malformed flowers.

FIG. 1
Abnormal flower of *Cucurbita maxima* Linn.

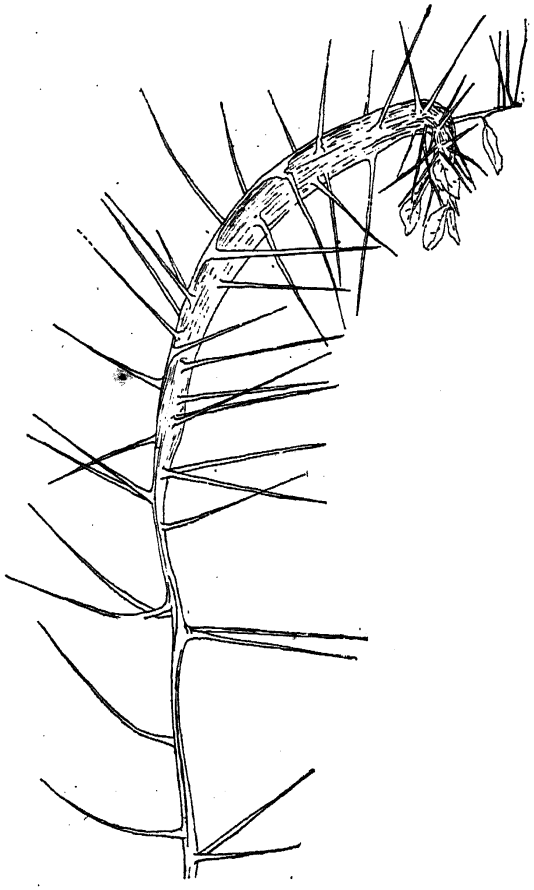

FIG. 2
Shoot of *Flacourtia sepiaria* Roxb. showing fasciation

The flowers of *Grangea madaraspatanensis* Poir are normally bright yellow. In many cases the floral parts become foliaceous and in place of the ray and disc florets small leaves were observed in the capitulum. This phyllody of the florets was accompanied by virescence of the petals, with the result that no patch of yellow colour could be observed in any part of the inflorescence.

Fasciation of stem was noticed in the case of *Flacourtia sepiaria* Roxb. The plant is a thorny shrub growing in waste places. Some of the branches had lost their prestine form and had assumed a flattened condition. The branchlets had fused and this was manifest by the position of the axillary spines (Fig. 2). Worsdell (1915) is of opinion that fasciation is the result of superabundant nutrition. Large number of buds that arise in close proximity develop simultaneously exerting mechanical pressure on each other, and become "grafted" together to form a single shoot.

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THE GENUS *DRAPARNALDIOPSIS*[1] SMITH AND KLYVER

THIS genus was established in 1929 in America on the discovery of an alga by Smith and Klyver, who named it *Draparnaldiopsis alpinis*.[1] Besides this American species, the only other species, so far recorded, is *Draparnaldiopsis indica*,[2] which Professor Y. Bharadwaja described from Benares. The genus shows great specialization in its somatic organization among the Chætophoroales, of which it is one of the important members. It is on this account that Professor F. E. Fritsch, F.R.S., of the London University, selected *D. indica* Bharadwaja for the frontispiece of his classical book *Structure and Reproduction of the Algæ*.[3] Only the morphology of the two species was described, and the study of the reproduction and cytology was not attempted. The present writer has, therefore, made a detailed investigation, both in natural and artificial cultures, of the various stages in the life-history of the local species, *Draparnaldiopsis indica* Bharadwaja.

The alga possesses well-defined asexual and sexual methods of reproduction, effected by

means of motile swarmers. The quadri-flagellate macrozoospores, the quadri- and bi-flagellate microzoospores, and the biflagellate gametes have been recognised. The first two are invariably asexual in nature, whereas the more or less similar gametes from different plants fuse in pairs to form zygospores, which germinate directly to give rise to new plants. The reproduction of this plant is, therefore, similar to that of *Ulothrix zonata* Kützing[3] and *Fritschiella tuberosa* Iyengar.[4] The ecological factors determining swarmer-formation have also been studied. A complete account of the investigations in this respect has recently been published in the *New Phytologist*.[5]

A further study of the cytology of the alga is under investigation, but the data so far obtained show that there are two types of plants,—the asexual diploid plants possessing eight chromosomes and the haploid sexual ones bearing four chromosomes. The two types of plants are exactly similar to each other in external features and, therefore, *D. indica* Bharadwaja possesses an isomorphic alternation of generations.

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THE EXTERNAL GENITALIA OF *ALEURODIDAE*

IN a previous note[1] published in this journal attention was drawn to the uncommon variety exhibited by the antennæ among the whiteflies. The external genitalia also present a certain amount of diversity of structure, which should provide a reasonable basis for a systematic revision of the group, based on the characters of the adult. Numerous morphologists like Muir,[2] Snodgross,[3] etc., have emphasized the importance of genitalia in the generic and specific determinations of several groups of insects; and the whiteflies appear to conform to other insects in this respect. The external genitalia of a male as a rule consist of a pair of parameres broad at the base, tapering and incurved distally. The aedeagus is also wider at the base, tapering gradually to its free end. A glance at the diagram will show the variability exhibited by the parameres as well as the aedeagus in some representative examples. *Dialeurodes trilobitoides* Q and B[4] (Fig. 1 *b*) seems to have an unmodified aedeagus which tapers gradually to its tip. In *Dialeurodes eugeniæ* Maskell near the distal end of the aedeagus there is a short cylindrical outgrowth (Fig. 1 *a*). *Taiwanaleyrodes indicus* Singh has a small conical protuberance close to the distal end (Fig. 1 *g*) and in *Aleurotuberculatus psidii* Singh there is a four-lobed outgrowth in the same position (Fig. 1 *f*). In *Aleurotuberculatus minuta* Singh and *Trialeurodes bicolor* Singh the tip of the aedeagus is curved and hook-shaped (Fig. 1 *d* and *e*). The aedeagus of *Aleurotulus maculata* Singh is bulbous and swollen distally with a fine jet at the end (Fig. 1 *h*). Lastly the aedeagus of *Dialeurodes glomerata* Singh is forked distally (Fig. 1 *c*). These characteristic features of the genitalia appear to be constant in the several individuals examined.

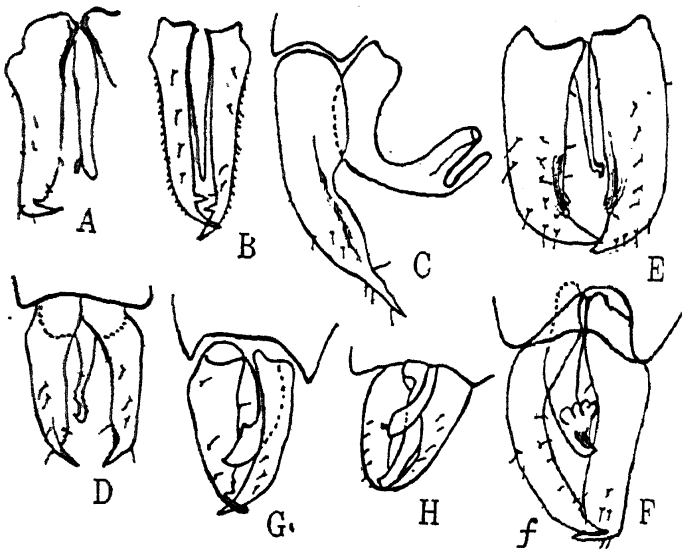

FIG. 1

The functional significance of this variability is difficult to comprehend. The parameres are employed to open out the valves of the ovipositor at the time of copulation, and the aedeagus for the transference of the sperms, and the variability of these structures may have some relation to the corresponding structures on the abdomen of the female; but no such variations have been noticed in the females which have been examined so far. Despite their unknown function, the systematic importance of these structures is obvious.

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March 18, 1943.

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