

abundance of the plastids in the normal pegs and their scantiness in the abnormal ones, it may be inferred that these bodies or the organs of perception that respond to gravity and bring about positive geotropic movement. The plastids appear first after fertilisation. If they are not formed at that time, the peg grows quite erect. In some pegs, the number and the size of the plastids get diminished, or they might disintegrate, after a period of normal growth; and then the peg curves upwards and becomes negatively geotropic. The function of the plastids is not analogous to that of the freely moving starch grains in certain grass roots, where they are said to bring about curvatures due to internal excitement set up by them (Statolith theory of geotropism). Unlike the starch grains, the plastids are confined to the upper part of the lumen of the cell. Their exact nature and the reason why after a period of normal functioning, they become affected and functionless, in certain rare instances, are not known; further study is expected to throw light on this very interesting subject.

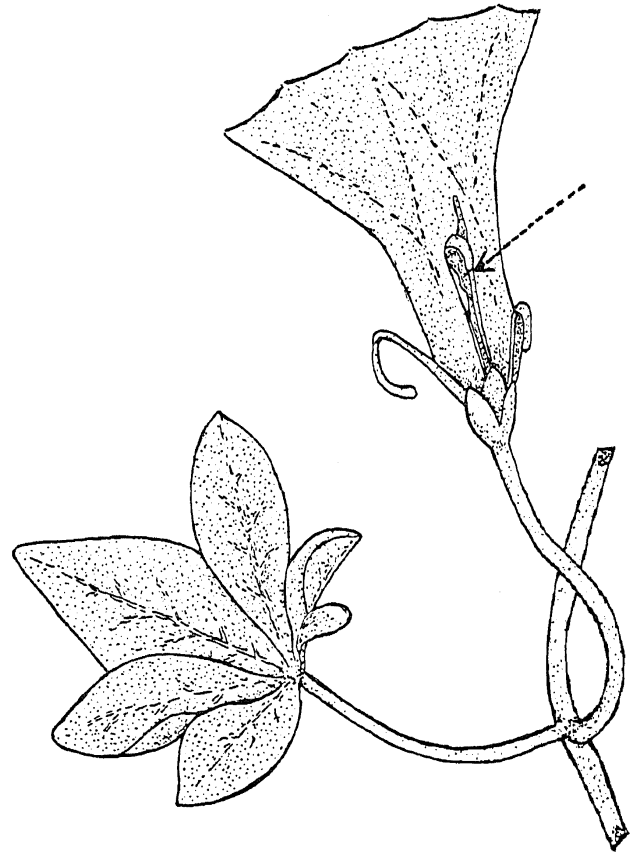
The abnormal pegs did not produce any pods and seeds possibly for want of medium of sufficient resistance. In a set of experiments conducted in the Oil Seeds Section, the developing gynophores were made to enter artificially made up media. For this bamboo tubes about six inches long and about an inch in diameter and having a node septum at one end to act as bottom, were filled each with wet and dry, ordinary soil, stiff clay, sterilised sand, powdered wood charcoal, saw dust, cotton wool and also water separately. Empty tubes, dry and moist, were also set up. The tubes were buried in the soil to keep them in position and were covered with circular paraffined straw boards to make the tubes dark inside. Small perforations just to allow the passage of the gynophore were provided. Pods developed uniformly in the soil, clay and powdered charcoal irrespective of the medium being moist or dry; but pods did not form in the other media, *vis.*, saw dust, cotton wool and air, possibly for want of sufficient resistance.

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Duplicate Corolla in *Ipomœa palmata* Forsk.
Ipomœa palmata Forsk is a common garden convolvulus in Bombay. Ordinarily its flowers have a single infundibuliform corolla.

Recently, a plant of this species has been observed putting forth flowers which bear five additional free petaloid structures about



3 cm. long and 0.5 cm. broad, arising outside and jointly with the base of the corolla. The facing of this new whorl is inside out.

This additional development in a large number of flowers on a single plant is worth registering.

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Studies in the Development of the Pollen Grain and Embryo Sac of *Wolffia arrhiza*.

THIS interesting plant—the smallest angiosperm known—is seldom seen flowering. In November, 1933, the writer found it flowering abundantly near Agra. A study of the development of the gametophytes revealed several important differences from those of *Lemna minor* (Caldwell, 1899).¹

Microsporogenesis and Male gametophyte.—The stamen, in early stages, consists of a very short filament and a spherical anther containing a mass of homogeneous cells