

TABLE I  
Efficacy of systemic granular insecticides on  
*Nephotettix virescens*

Days after inoculation	Per cent mortality (48 hr after caging)				
	Carbofuran	Fensulfenthion	Phorate	Mephosfolan	Control
3	100	100	100	100	2
6	100	100	100	100	0
9	100	100	100	100	0
12	100	100	100	87	1
15	95	100	90	73	1
18	90	69	82	72	2

days (Table I). Mephosfolan was slightly inferior in efficacy compared to the rest.

Pathak *et al.*<sup>4</sup>, however, reported that the insecticide phorate was very effective in controlling tungro virus disease under field conditions and the same insecticide is least effective in the present studies, of course, under nethouse conditions.

The leafhoppers should make at least a single probing before they die due to systemic insecticidal application. Ling<sup>3</sup> reported that even a single probing by a viruliferous insect can cause a seedling to get infected. Theoretically even if the insecticide is present in the tissue, the vector should be capable of introducing the virus successfully. As the present results show that carbofuran can prevent virus infection, either the chances of virus infection by a single probing may not be sufficient or the insect may die so quickly even without completion of single probing.

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VARIATIONS IN THE STRUCTURE AND ONTOGENY OF THE STOMATAL APPARATUS OF THE COTYLEDONARY INTERNODE OF *COMMELINA BENGHALENSIS* L.

IN a study of the epidermis and its ontogeny in the cotyledonary internode of *Commelina benghalensis* L., the author came across several variations in the stomatal apparatus<sup>1</sup>. This internode, which lies between the cotyledonary node and the node of the first leaf, is invariably buried to various extent in the soil. The buried nature of the internode accounted for the variations in the structure of the stomatal apparatus since such variations are absent in aerial internodes.

The norm stoma has a pair of bean-shaped guard cells; the latter in turn are surrounded by 6 subsidiary cells, of which 4 lie parallel to the guard cells (2 on either side) and 2 lie terminal to them (one on each side)<sup>1-3</sup>. Several deviations are seen and these involve not only the number of subsidiary cells but also their relative disposition (Fig. 1). The subsidiary cells may be more than 6 (upto 8) or less than 6 (upto 4).

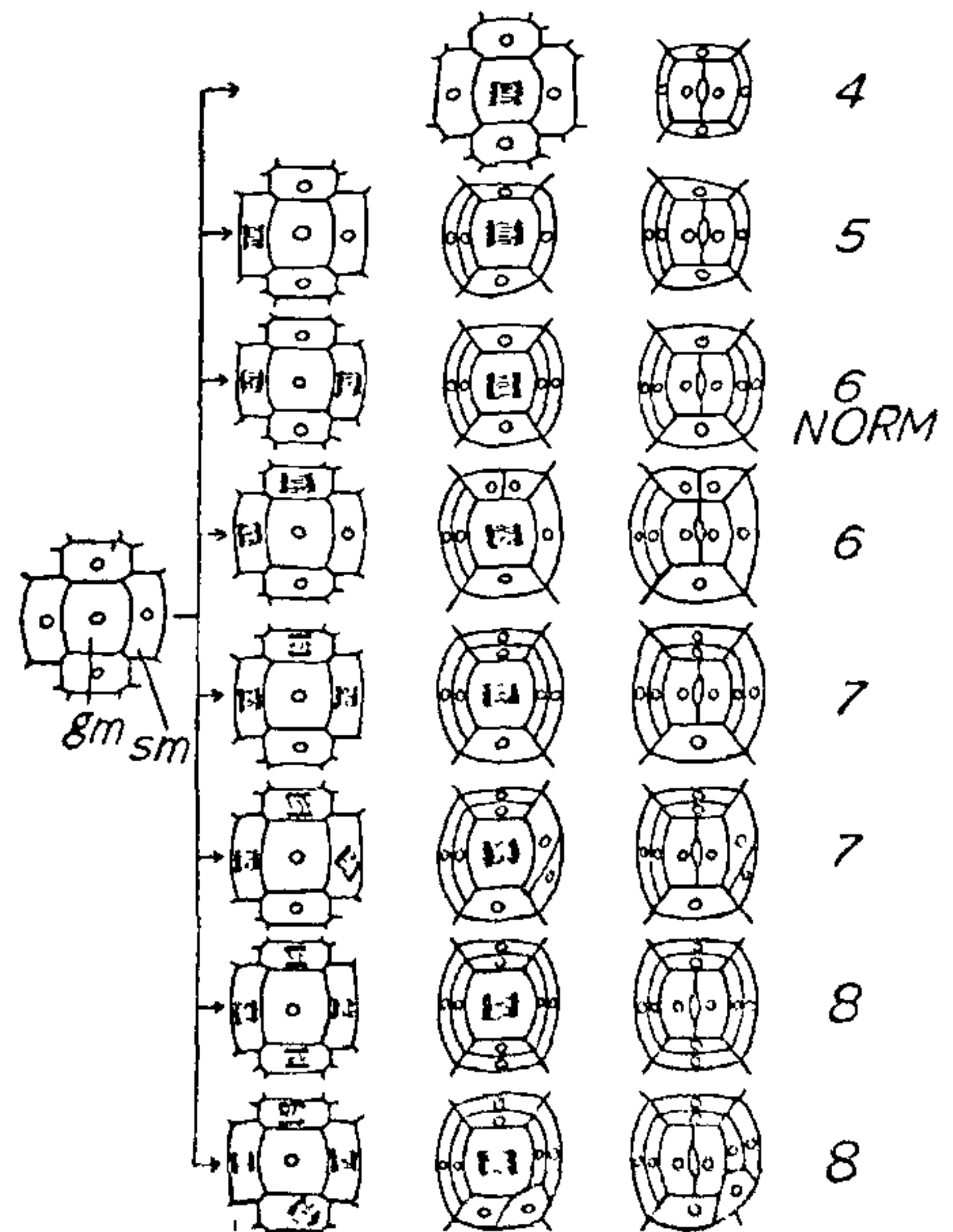


FIG. 1. Schematic representation of the different types of stomata and their ontogeny in the cotyledonary internode of *Commelina benghalensis*. The numbers in the figure represent the number of subsidiary cells. gm—Guard cell mother cell; sm—subsidiary cell mother cell.

For example, in a counting of 100 stomatal apparatuses 39 had 6, 33 had 7, 22 had 8, 5 had 5 and 1 had 4 subsidiary cells.

Ontogenetic studies of these variations indicate that all the types of stomatal apparatuses start as a five-celled structure, with a central guard cell mother cell surrounded on all four sides by 4 subsidiary cell mother cells. If none of these 4 subsidiary cell mother cells divide further, the mature stomata come to possess 4 subsidiary cells only. Depending upon the number of these mother cells dividing, the mature stomata have 5 to 8 cells. The deviations in the disposition of the subsidiary cells is due to the plane in which the subsidiary cell mother cells divide during the ontogeny of the stomata (Fig. 1).

The present report indicates that there is no fixity in the mature structure and the ontogenetic pathway of the stomatal apparatus. It negates the genetical basis for stomatal development as has been claimed by Stebbins and Jain<sup>2</sup>. As in the present case, environmental changes due to the buried nature of the plant organ, lack of light, excessive etiolation and other factors may bring about ontogenetic interpolations so as to result in deviated structures at maturity.

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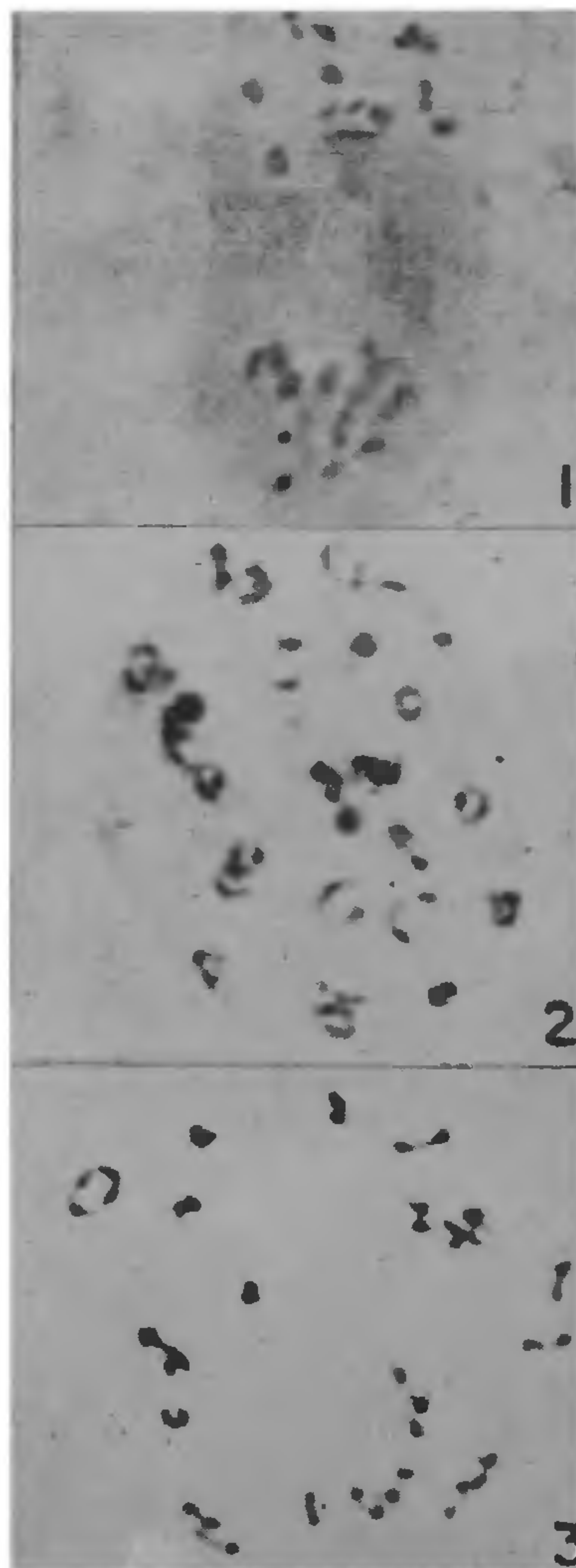
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#### A CASE OF CYTOMIXIS IN *SOLANUM NIGRUM* L. COMPLEX

In the report under study binucleate pollen mother cells and cells with double the number of chromosomes were observed in a plant of F<sub>2</sub> progeny of the cross *S. americanum* × *S. nigrum* (2x). The plant was isolated and a preliminary cytological study was made.

Observations revealed all conditions from a partial union of two adjacent pollen mother cells to a complete loss of identity of the cells (Figs. 1, 2 and 3). This resulted in the formation of cells with double the number of chromosomes. The nuclei in the tetra-

ploid cells continued their prophase meiotic development, forming well defined diakinesis and metaphase I figures. The homologics in some cells were expressed by the synaptic union of chromosomes to form multi-



FIGS. 1-3. Fig 1. Two PMC's in the process of fusion. Fig. 2. Fused PMC's at diakinesis showing 12 bivalents in each nucleus. Fig. 3. A tetraploid PMC at MI showing 17II + 2III + 2IV. Note also separating quadrivalents.