

Smith<sup>5</sup> reports a mosaic disease of *Malva sylvestris* L., the common mallow, where the affected leaves are slightly distorted, and occasionally show blistering. Boncquet and Stahl<sup>6</sup> report that mallow, *Malva rotundifolia*, harbours the virus of curly top of the sugar-beet. Carsner<sup>7</sup> has succeeded in transmitting the curly-top of sugar-beet to *Malva parviflora*.

Of special significance in this connection is Owen's<sup>8</sup> description of a mosaic disease of *Malachra alceifolia* of the Malvaceæ, where, in the young leaves, the veins alone are cleared. He describes also a mosaic of *Triumfetta lap-pula* (Tiliaceæ) showing conspicuous vein-clearing and very sharply defined inter-veinal chlorosis, the two symptoms frequently occurring together on the same leaf. In *Hibiscus esculentus* in Trinidad, the chlorosis is inter-veinal without veinal chlorosis<sup>8</sup>; *Sida* spp. show inter-veinal chlorosis and a very limited amount of vein-clearing. Owen<sup>8</sup> considers the mosaic of *H. esculentus* in Trinidad to be not the same as in India, and to be not of much economic importance.

Since the mosaic disease on *Malvastrum coromandelianum* Garcke, is characterized by a clearing of the veins, a symptom characteristic of the mosaic of *Hibiscus esculentus* in India, there is a possibility of this weed acting as an alternate host for the virus of bhendi mosaic.

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in Mysore, Bangalore, S. V. VENKATARAYAN.  
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### THE DERMAL SCUTES OF MABUYA DISSIMILIS HALLOWELL

In *Mabuya dissimilis*, the scales are enforced by a system of underlying bony scutes, which, Sibtain<sup>1</sup> claimed, "are not definitely marked off from each other at the boundary lines, but are interconnected by means of narrow bridges". Although I have carefully studied the skin of this lizard in alizarin-stained preparations

(Fig. 1) and have examined single separated

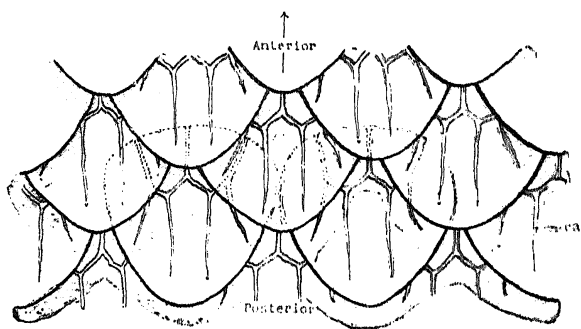


FIG. 1. A piece of normal tail of *Mabuya dissimilis* showing the disposition of scales in relation to scutes. ( $\times 8$ ) ca., canal.

scutes (Fig. 2) under the microscope, I have failed to discover the interconnecting bridges. The appearance in whole preparations which

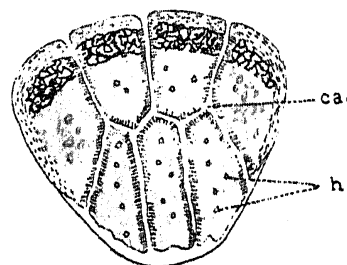


FIG. 2. An isolated caudal scale of *Mabuya dissimilis* stained with alizarin and mounted in canada balsam, ( $\times 12$ ) ca., canal; h., hole.

Sibtain perhaps mistook is due to the overlapping edges of contiguous scutes having been made extremely transparent in the preparations.

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1. Sibtain, *Proc. Ind. Acad. Sci.*, B, 1938, **8**, 67.

### A LATENT VIRUS IN TOMATO

A VIRUS which is often carried symptomlessly in tomato, was recovered during inoculation experiments in connection with the studies on "Smalling Disease of Tomato". Inoculations were done on tomato plants grown in the insect-proof house and it was observed that although the Smalling disease is not sap-transmissible the plants so inoculated developed a faint and fleeting mottle. Repeated inoculations showed that this virus could be recovered from large number of tomato plants in the field including those not affected by Smalling disease. The Smalling disease has, however, been shown to be insect-transmitted, the vector being the white fly (*Bemisia tabaci*).

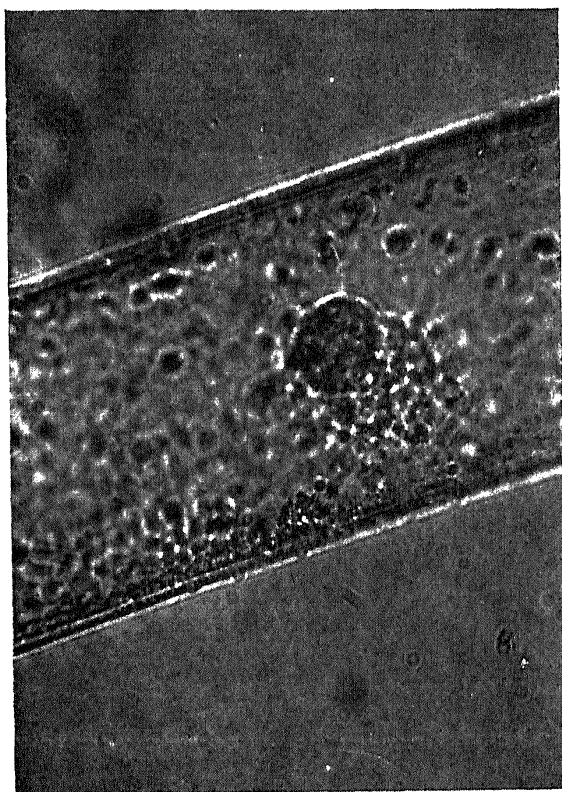
The tomato plants in the field were of the variety, *Suttons' early market*, and the same variety was used throughout the experimental work. For studies on the properties of the

virus, tobacco plants of variety *White Burley* were used since these plants exhibited clear symptoms of the disease. Inoculations were done by rubbing the standard extract on the leaves of healthy plants using carborundum powder as abrasive.

*Lycopersicum esculentum* Miller. Tomato:—

The tomato plants in the insect-proof house develop a very faint mottling six to twelve days after inoculation. At times the younger leaves of these plants appear pale. The symptoms, however, are transient and after the disappearance of the symptoms the plants look perfectly normal though the virus is carried throughout their life.

Infected tomato plants develop intracellular inclusions, i.e., typical X-bodies and cubical crystals. The inclusions are usually more prominent in the epidermal hair. Fresh material mounted in water was employed for this purpose. The X-bodies develop only in some of

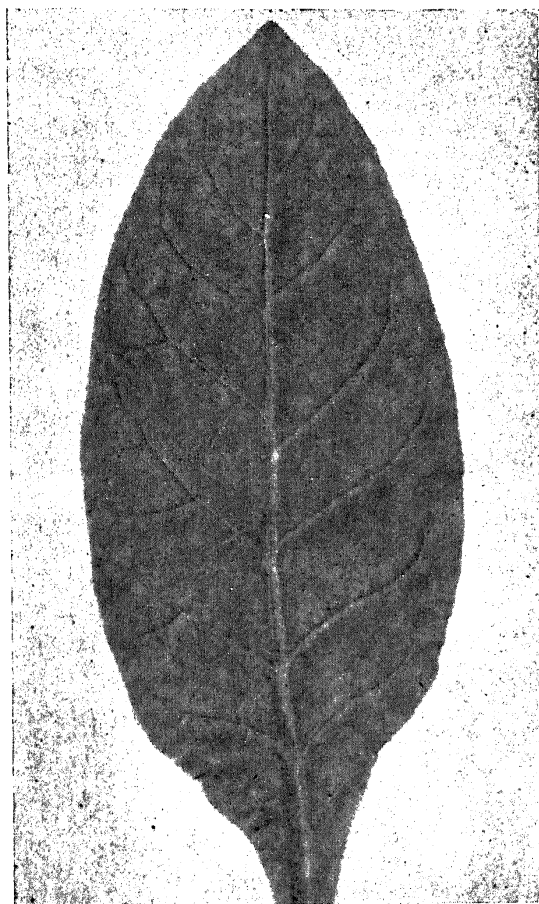


the cells, usually in the lowermost two cells, and they lie in close association with the nucleus. There is only one X-body in a cell. The nuclei of these cells in which the X-bodies are formed are enlarged and slightly deformed. Often they appear as lobed structures and usually persist in the cell. Only in very rare cases were cells observed with X-bodies in which the nuclei have completely degenerated. In most of the cases the nucleus acquires a sort of depression in which the X-body lodges. The X-bodies were found to develop in the same manner as described by Sheffield.<sup>1</sup> Prior to the formation of the X-body numerous granules appear in the cell which are carried along with the streaming cytoplasm. These granules gradually increase in number and accumulate near the nucleus and finally aggregate to form the typical X-body (Fig. 1). They are usually round and their average diameter is

about 25  $\mu$ . The crystalline blocks are cubical and their number varies in different cells. The size of crystals also varies in different cells, the bigger ones measuring about 6  $\mu$ . In some cells the crystals are found in close association with disintegrating X-bodies.

*Nicotiana tabacum* L. var. *White Burley*:—

The symptoms develop from six to twelve days after inoculation in the form of light green mottling which generally starts from the tip and periphery of the inoculated leaves. It gradually spreads on the entire leaf and finally to all the other leaves (Fig. 2). Usually the



symptoms remain for a longer period, though ultimately these disappear. The plants, as in the case of the tomato, appeared perfectly normal after the symptoms had been masked.

A number of other Solanaceous plants were tested for the host range of the virus. *Harrison's special* and *German Samsun* varieties of tobacco exhibit similar symptoms as that on *White Burley*.

*Nicotiana rustica* L., *Nicotiana sylvestris* Spengaz and Comes, *Nicotiana glutinosa* L., *Capsicum annum* L., *Solanum tuberosum* L. and *Datura stramonium* L. failed to develop any obvious symptoms of infection. Faint mottle was, however, observed on *Solanum nigrum* L.

The virus is rendered innocuous by exposing the expressed sap of the diseased tobacco plants to 59° C. for ten minutes. It withstands dilution up to 1:10,000 and retains infectivity in extracted sap for 24 hours at room temperature. The experiments were conducted during the months of January and February in Delhi.

At one stage of the investigation and causal virus was suspected to be a weak strain of