The failure of tapetum to degenerate at the proper time and provide nutrition to the developing pollen grains may be the cause of pollen sterility to the extent of 27% noticed in this clone. The occurrence of complete pollen sterility due to the persisting tapetum or its delayed generation has already been reported in an exotic clone of cassava[6] and in a number of other plants[2,7,8].

The cells of the endothecial layer remain as parenchymatous without developing the characteristic fibrous thickenings (Fig. 6) in contrast to normal fertile clones. There is complete absence of dehiscence of anthers and the pollen are never liberated in this clone. The failure in the dehiscence of anthers is attributed to the absence of fibrous thickenings in the endothecium. The non-development of fibrous thickenings resulting in non-dehiscence of anthers is reported in orchard-grass[1]. The occurrence of a functionally male sterile clone in cassava is being reported for the first time.

The presence of 73% fertile pollen in the clone presently reported makes it apparently "male fertile" because of the fact the clones having about 50% pollen fertility have been found to effect high seed set. Though this clone is apparently pollen fertile, the absence of dehiscence and retaining the pollen indefinitely inside the anthers make it functionally male sterile.

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DEVELOPMENTAL STOMATOGRAPHY ON *THE FLORAL PARTS OF HYOSCYAMUS NIGER* LINN.

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While abundant information is available regarding vegetative stomatal studies in family Solanaceae, contemporary literature on floral parts of the family is scanty[1–5]. The present paper reports the development and topographical studies of stomata on the calyx, corolla and pericarp of *Hyoscyamus niger* Linn.

The material under investigation was treated with 5% KOH solution for 6–8 hours and subsequently macerated by Jeffery's technique[2]. Whole mounts of epidermal peels, stained with haematoxylin, were examined for ontogenetic and structural details.

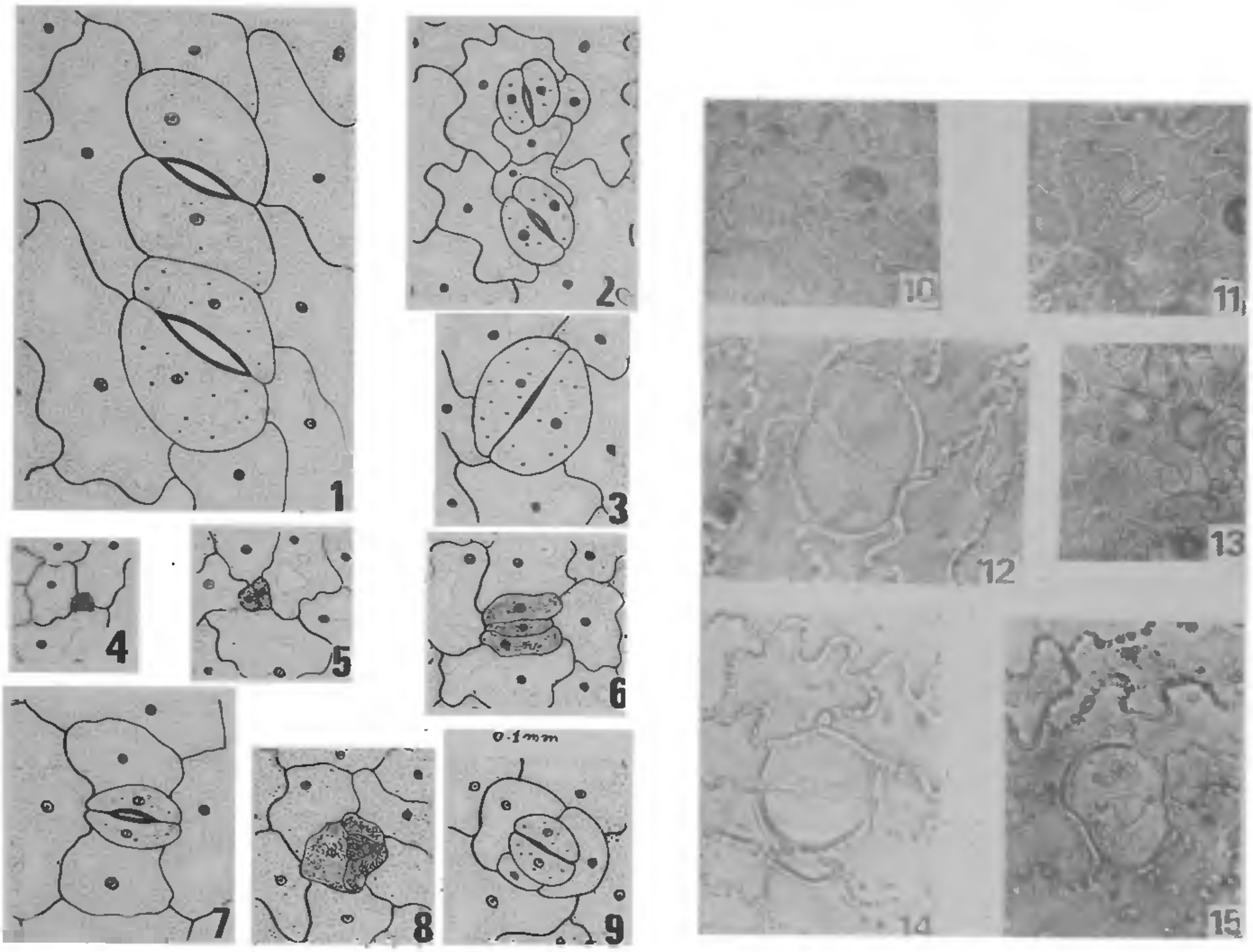
The calyx and corolla are amphistomatic and the stomates on these parts are aniso-mesogenous, aperigenous and para-mesogenous[1]. However, the pericarp exhibits stomata on the inner epidermis only and these are of aperigenous type. Contiguous stomata have also been occasionally recorded on the pericarp.

Epidermal cells on all the aforesaid floral parts are uninucleate, elongated in various directions and irregularly arranged with sinuous anticlinal walls. The epidermal cells of the pericarp are peculiar in being pitted (Figs. 12, 14, 15). In aniso-mesogenous type, the meristemoid is cut off in a corner of an epidermal cell, the former being distinguishable from the latter by its smaller size, densely stainable cytoplasmic content and conspicuous nucleus (Fig. 10). The meristemoid behaves like an apical meristem from which are derived a guard mother cell and three unequal subsidiary cells by successive divisions (Figs. 8, 13). The meristematic activity is confined to the central smaller cell only which undergoes final division by a straight wall giving rise to a pair of guard cell initials surrounded by three unequal subsidiaries (Fig. 9). Eventually these initials enlarge and assume the characteristic crescentic shape (Fig. 2).

In aperigenous type, the meristemoid surrounded by 4-6 epidermal cells (Fig. 4), directly undergoes a division giving rise to a pair of guard cell initials. An aperture appears between the two guard mother cells in the course of time thus resulting in the formation of aperigenous stomates (Figs. 3, 11, 12, 14, 15).

In the case of para-mesogenous stomates, the guard cells of mature stomata are flanked by two subsidiary cells parallel to the long axis of the aperture and the polar sides are covered by the epidermal cell (Fig. 7). Consequent to the meristemoid dividing by a slightly curved wall two unequal cells are formed (Figs. 4, 5). While the larger differentiates into the first subsidiary cell, the smaller one divides again by a curved wall producing the second subsidiary cell and a guard mother cell (Fig 6). The latter undergoes a vertical division in the usual manner to give rise to a pair of guard cells.

Contiguous stomata are found to be juxtaposed and parallel during the course of the present study (Fig. 1). Average stomatal size in calyx, corolla and pericarp



FIGS. 1–15

Calyx: Figs. 2, 8, 9. Developmental stages of aniso-mesogenous stoma. Figs. 4, 5, 6, 7. Various developing stages of para-mesogenous stoma. Fig. 13. Aniso-mesogenous stoma showing guard cell initials.

Corolla: Fig. 3. Developing anisocytic stoma. Fig. 11. A fully developed anisocytic stoma.

Pericarp: Fig. 1. Contiguous stoma. Figs. 12, 14, 15. Developing anisocytic stoma.

is 51 × 53 μm, 34 × 31 μm and 52 × 56 μm respectively.

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A NEW DISEASE OF POTATO INCITED BY *FUSARIUM ACUMINATUM* ELL. AND EV.

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DURING December-January 1977-78, potato plants of variety, Kufri Chandramukhi, and several other hybrids grown at the Central Potato Research Station, Modipuram, were found to suffer from severe stem infection.