



FIG. 1

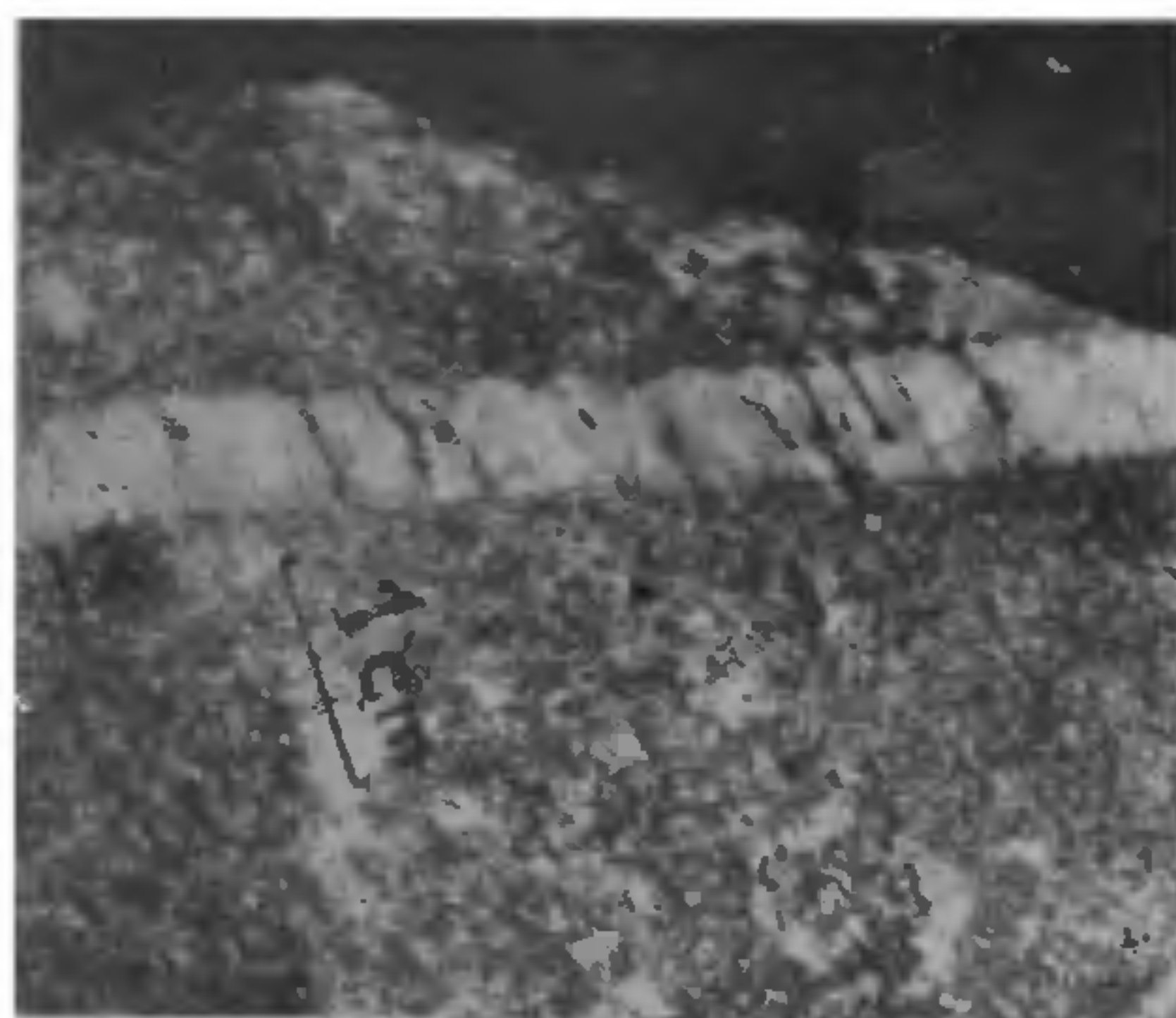


FIG. 2

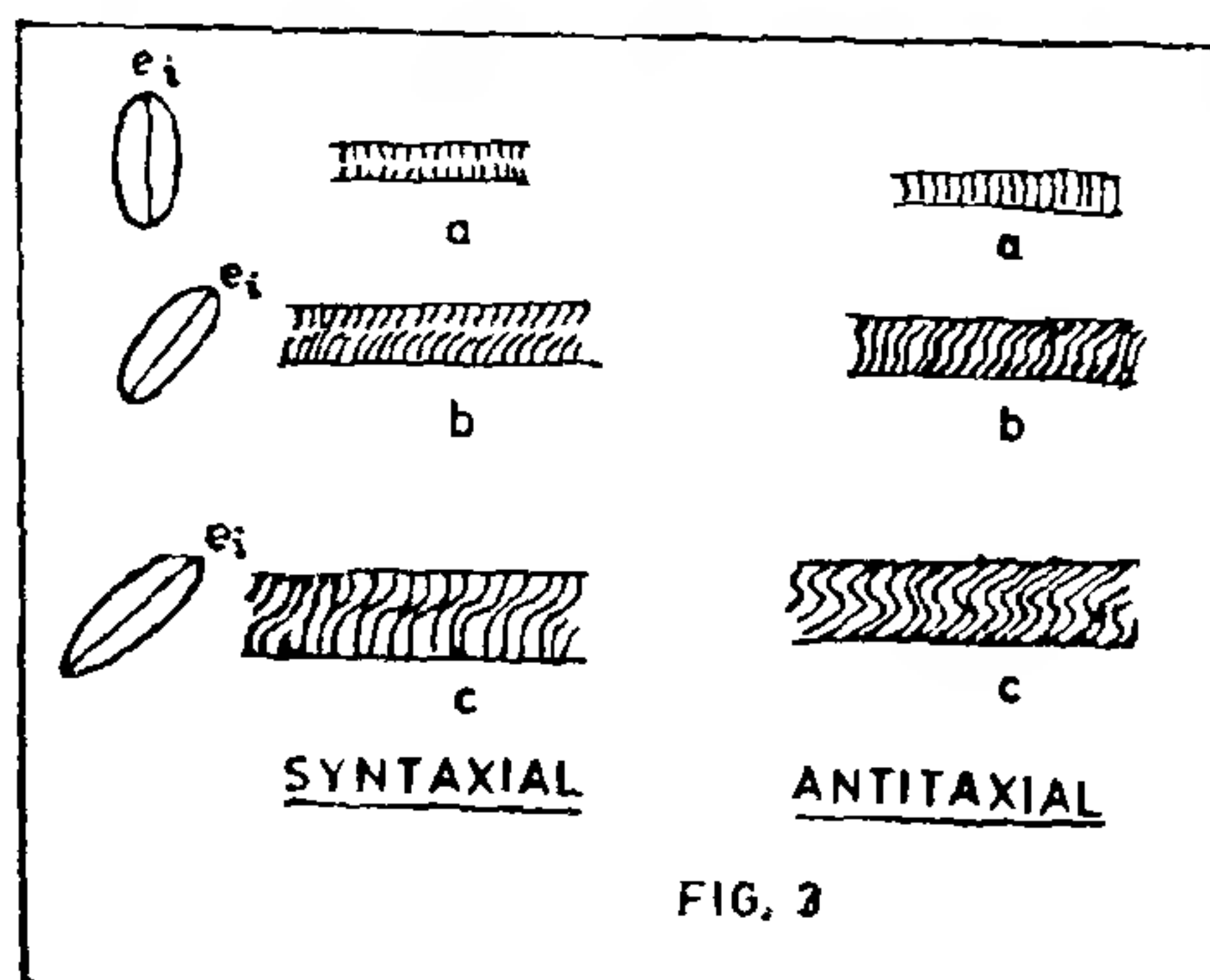


FIG. 3

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NODAL ORGANIZATION IN THE FAMILY SCROPHULARIACEAE

VARGHESE¹ reported unilacunar node in several species of the family Scrophulariaceae. In the present study, a large number of representatives of the family were selected to study the variations, if any.

For obtaining the complete perspective of the nodal organization, information has been obtained both by clearing the twigs as well as by obtaining sections through the nodal regions of the following species:

- Sub-family—Scrophularioideae; Tribe Gratioleae—*Dopatrium junceum*, *Glossostigma spathulatum*, *Lindenbergia muraria*, *Majus japonicus*, *Mimulus* sp., *Scoparia dulcis*, *Stemodia viscosa* and *Torenia cordifolia*.
Tribe Verbasceae—*Verbascum celsioides*.
Tribe Aptosmeae—*Anticharis senegalensis*.
Tribe Scrophularieae—*Russelia sarmentosa*, *Scrophularia himalensis*.
Tribe Calceolarieae—*Calceolaria mexicana*.
Tribe Antirrhineae—*Antirrhinum majus*, *Linaria maroccana*.
Sub-family—Rhinanthoideae; Tribe Buchnereae—*Rhaphicarpa longiflora*, *Striga angustifolia*.
Tribe Veroniceae—*Veronica arvensis*.

In *Dopatrium junceum*, *Glossostigma spathulatum* (Fig. 1 A) and *Lindenbergia muraria* (Fig. 2 A) the unilacunar node is accompanied by a single-stranded condition of the leaf. In *M. japonicus* (Fig. 2 B), however, it is unilacunar to begin with, but later by repeated splitting of the single trace, it becomes six-stranded at the base of the lamina. In *Mimulus* sp. also the leaf ultimately shows as many as seven strands at the laminar base (Fig. 1 B). In fact at the node it exhibit a unilacunar condition with a single trace which subsequently divides into three and finally at

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the junction of the lamina seven distinct strands are seen.

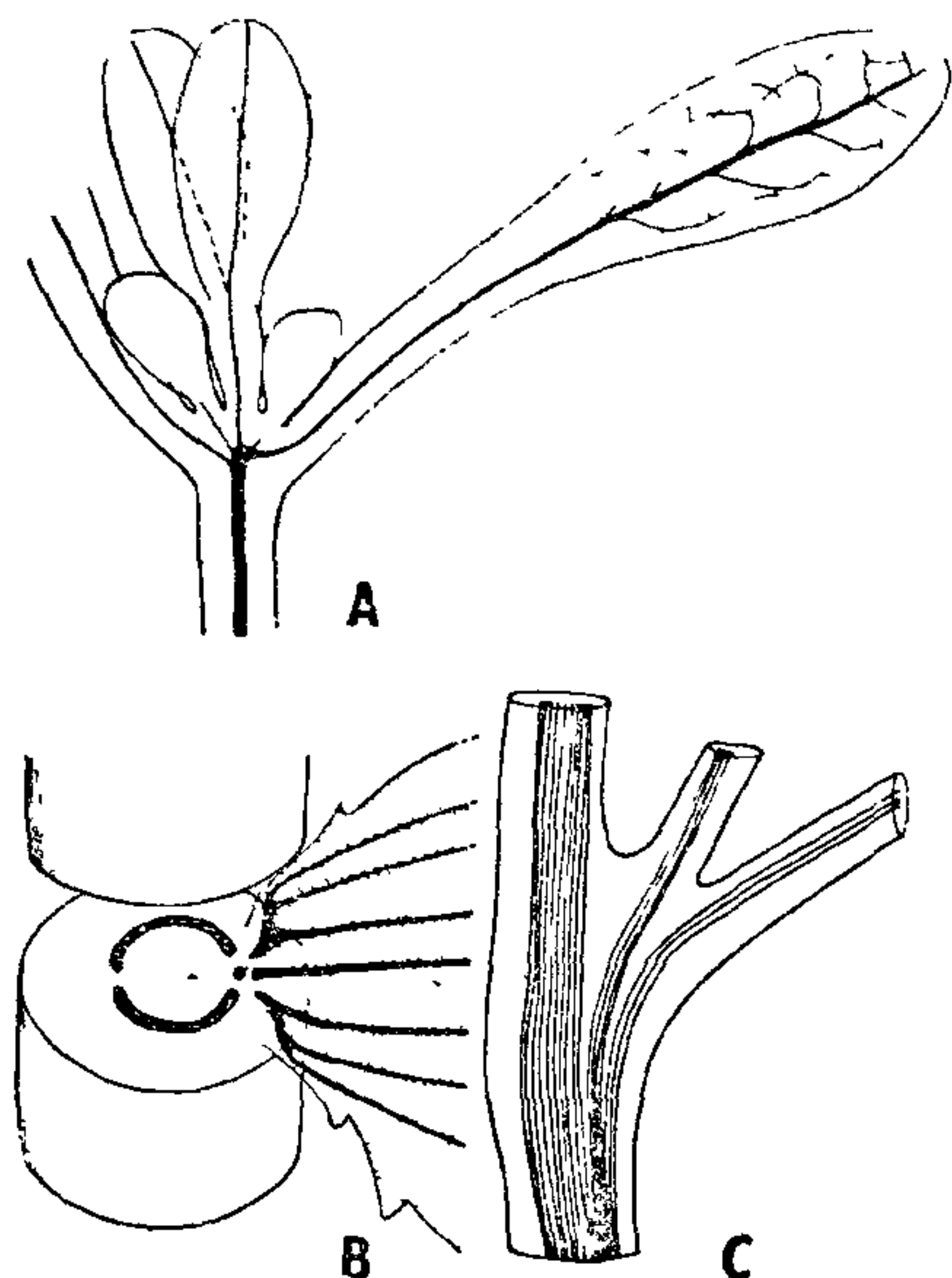


FIG. 1 A-C. Scrophulariaceae. Nodal organization. Illustrations of the cleared branch and transverse sections through the nodal region to indicate the unilacunar condition. A. *Glossostigma spathulatum* (Gratiolaeae). B. *Mimulus* sp. (Gratiolaeae). C. *Rhamphicarpa longiflora* (Buchneraeae) shown with a portion of the stem. All $\times 74$.

In *Scoparia dulcis* (Fig. 2 C), *Stemodia viscosa* (Fig. 2 D), and *Torenia cordifolia*, a single strand is given out from the stele which later divides into three before entering the petiole. The various investigated representatives of the tribe Gratiolaeae possess a unilacunar node which ultimately forms uni-, tri-, and hepta-stranded conditions of the vascular supply to the leaf. Both *Verbascum celsioides* (Fig. 2 E) and *Anticharis senegalensis* (Fig. 2 F) also exhibit unilacunar node. In the latter, the single trace ultimately divides into three strands. In some instances, splitting of the traces in the petiole is not distinct and finally the leaves become single-stranded as in *Russelia sarmentosa* (Fig. 2 G) and *Scrophularia himalensis*. *Calceolaria mexicana* shows a tri-stranded condition although from the node only a single trace departs which ultimately forms three strands, before entering the lamina. *Linaria maroccana* also shows a similar situation. *Antirrhinum majus* (Fig. 2 H), *Veronica arvensis* (Fig. 2 J)

Rhamphicarpa longiflora (Fig. 1 C), and *Striga angustifolia* (Fig. 2 I) also show unilacunar conditions of the node.

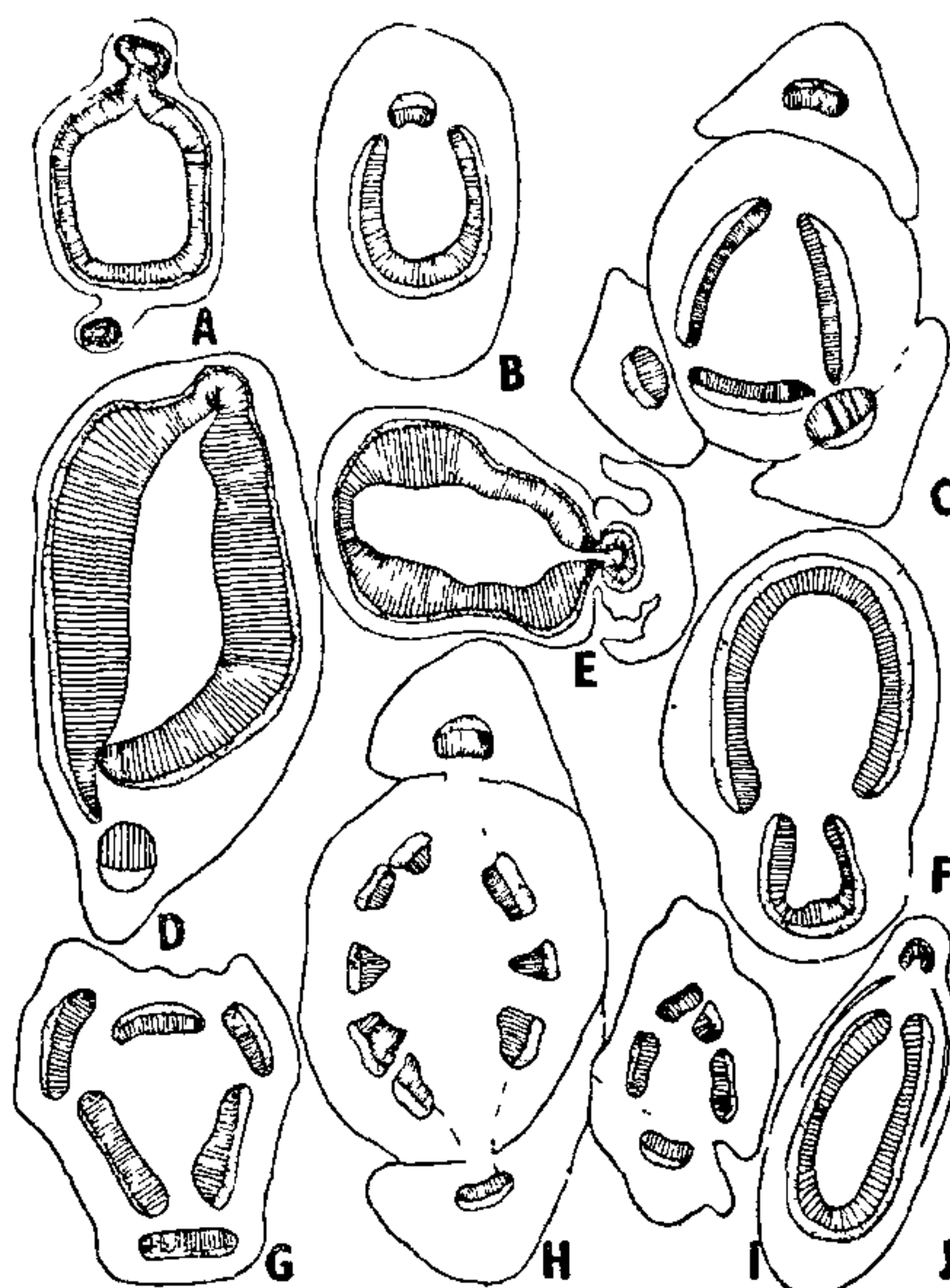


FIG. 2 A-J. Transections through the petiolar and nodal regions to indicate the organization of the unilacunar stele coupled with an uniformly unilacunar condition in representative taxa of the Scrophulariaceae. A. *Lindenbergia muraria*—showing a single strand on both the sides of the stem. B. *Majus japonicus* with unilacunar nodal condition. C. *Scoparia dulcis*, three petiolar bases attached to the stem having a single trace in each. D. *Stemodia viscosa* exhibiting a single trace given out from the stele. E. *Verbascum celsioides*, F. *Anticharis senegalensis*, G. *Russelia sarmentosa*, H. *Antirrhinum majus*, I. *Striga angustifolia*, J. *Veronica arvensis*, respectively A, B, E, G, I, J. $\times 36$; C, D, F, H. $\times 64$.

Varghese¹ reported unilacunar node in 18 species of the family. Our study of the representatives drawn from the various tribes of the Scrophulariaceae further substantiates the distribution of uniformly unilacunar nodal organization, even when this feature is considered from a systematic point of view and on a wider majority of the taxa. In a few species with a unilacunar nodal organization, the traces were seen to start dividing only at the petiolar attachment to form a tri-stranded condition which further divides into seven strands at the base of the leaf. This indicates

that the tri-stranded condition has originated in the petiolar base of the lamina from the anilacunar condition as in *Mimulus* sp.

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ASSOCIATION OF *DRECHSLERA SETARIAE* WITH DOWNY MILDEW AFFECTED PEARL MILLET

WHILE growing downy mildew susceptible pearl millet plants (NHB-3) in downy mildew sick plots during the *Kharif* seasons of 1977-1978 and 1978-1979 the author observed characteristic lesions on leaves affected with downy mildew.

The lesions start as small specks of about 1 mm in diameter (Fig. 1). They enlarge into long lesions. The length of the lesions varied from 3 mm to 10 mm and their breadth from 1 mm to 5 mm (Fig. 2). The lesions coalesce and run into several cm, blighting the leaves completely (Fig. 3). The lesions have dark margin and ash coloured centre.



FIG. 1

When the lesions appeared on young seedlings, affected with downy mildew, the plants were killed completely (Fig. 4) giving a false impression of the death of the seedlings due to downy mildew. Lesions were also seen on tillers affected with downy mildew, but not on healthy tillers. Healthy plants and tillers were completely free from the lesions.

Attempts to isolate the incitant on potato dextrose agar from the lesions and blighted portions yielded a fungus which sporulated profusely.



FIG. 2

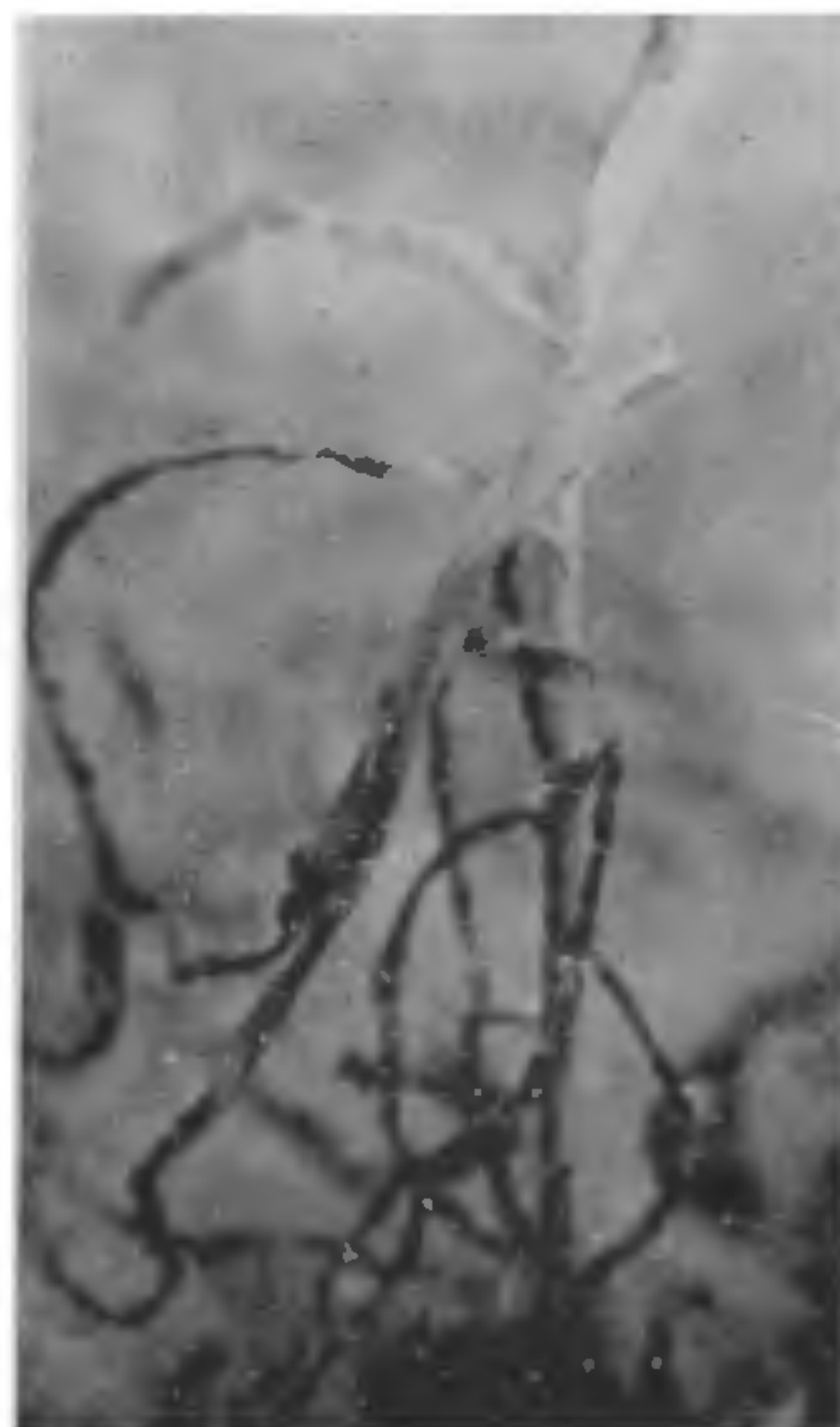


FIG. 3

The conidia of the fungus are slightly curved, fusiform and golden brown in colour. They are 5 to 8 pseudoseptate (Fig. 5). The dimensions of the conidia vary from (34.8 μ m to 81.6 μ m) \times (12.3 μ m to 14.4 μ m). The conidia germinate through 2 poles in distilled water (Fig. 6). From the character and dimensions of the conidia¹ and their nature of germination, the fungus is identified as *Bipolaris setariae* [*Drechslera setariae* (Sawada) Subram. and Jan].

Bhowmik² reported the occurrence of *Bipolaris setariae* on HB-1 pearl millet hybrids. In the present observation in Hyderabad the fungus was seen only on downy mildew affected leaves and tillers.