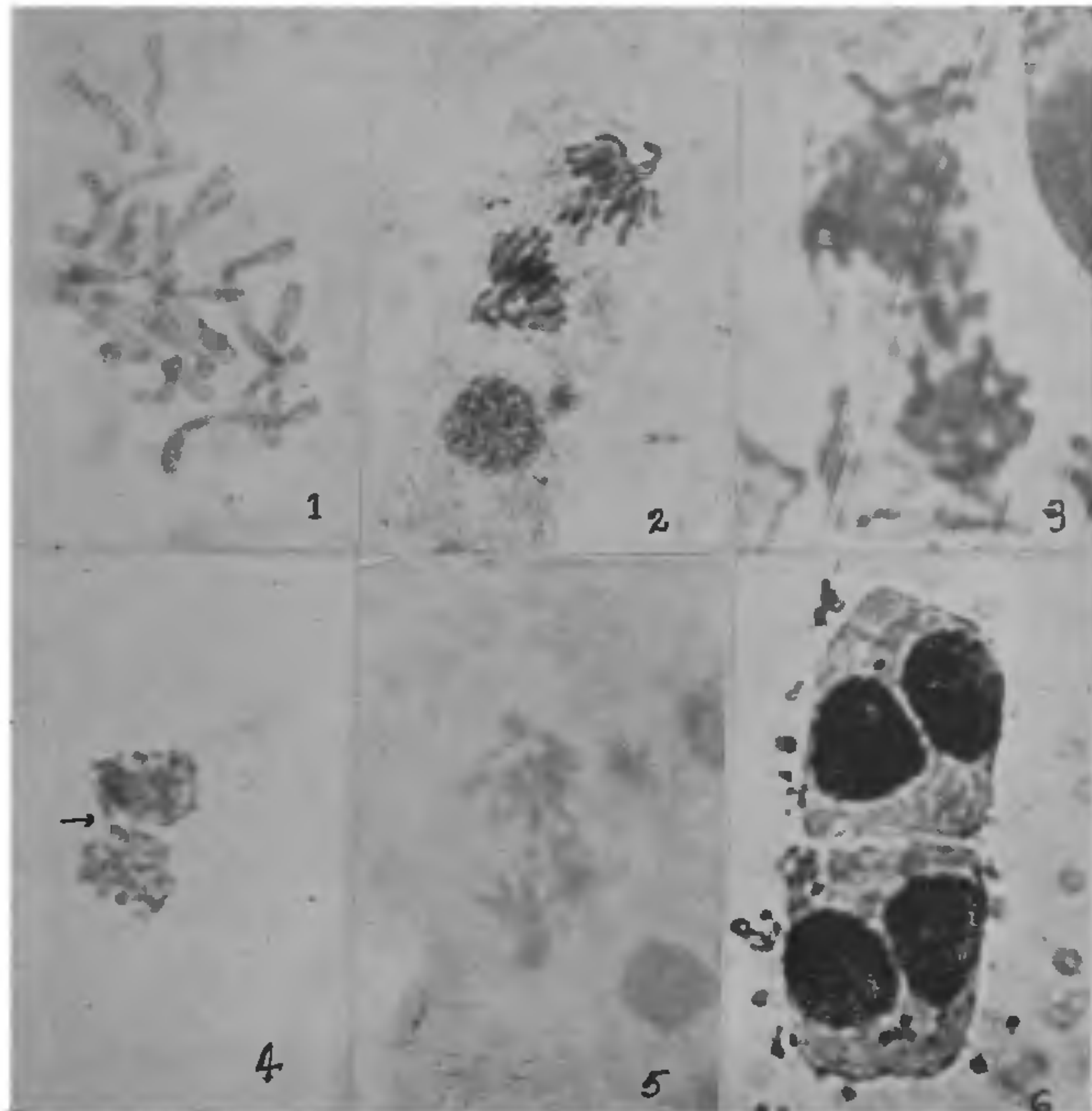


the action of phenols is reported earlier by several workers^{5,6,8,9}, yet no significant fragmentation could be observed in the present experiment for 1-3 hrs of treatment with 0.1 M solution of the acid.

3. Mehra, P. N. and Mann, S. K., *The Nucleus*, 1974, 17 (3), 167.
4. Chatterjee, P. and Sharma, A. K., *Ibid.*, 1972, 15 (3), 214.
5. Levan, A. and Tjio, J. H., *Hereditas*, 1948 a, 34, 250.



FIGS. 1-6. Fig. 1. Non-condensed chromosomes at metaphase. Fig. 2. Diagonally arranged spindle with lagging chromosomes. Fig. 3. Telophase with diagonally arranged unequal sister nuclei and lagging chromosomes at the equator. Fig. 4. Arrow shows a chromosome with two chromatids in each arm and connecting sister nuclei. Fig. 5. Split spindle with groups of chromosomes of unequal sizes. Fig. 6. Double nucleated condition with diagonally arranged sister nuclei.

On the whole lecanoric acid seems to imbibe in it, the effects of methylated and alkylated oxypurines in inducing the appearance of diagonal spindle and unequal sister nuclei in a single cell.

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6. Levan, A. and Tjio, J. H. *Ibid.*, 1948 b, 34, 453.
7. Sharma, A. K. and Bhattacharya, N. K., *Genetica.*, 1956, 28, 121.
8. — and Choudhury, R. K., *Biologia*, 1963, 18, 126.
9. — and Sharma, A., *Int. Rev. of Cytol.*, 1960, 10, 101.

FLORAL ANATOMY OF BORAGINACEAE

I. *Sericostoma pauciflorum* Stocks

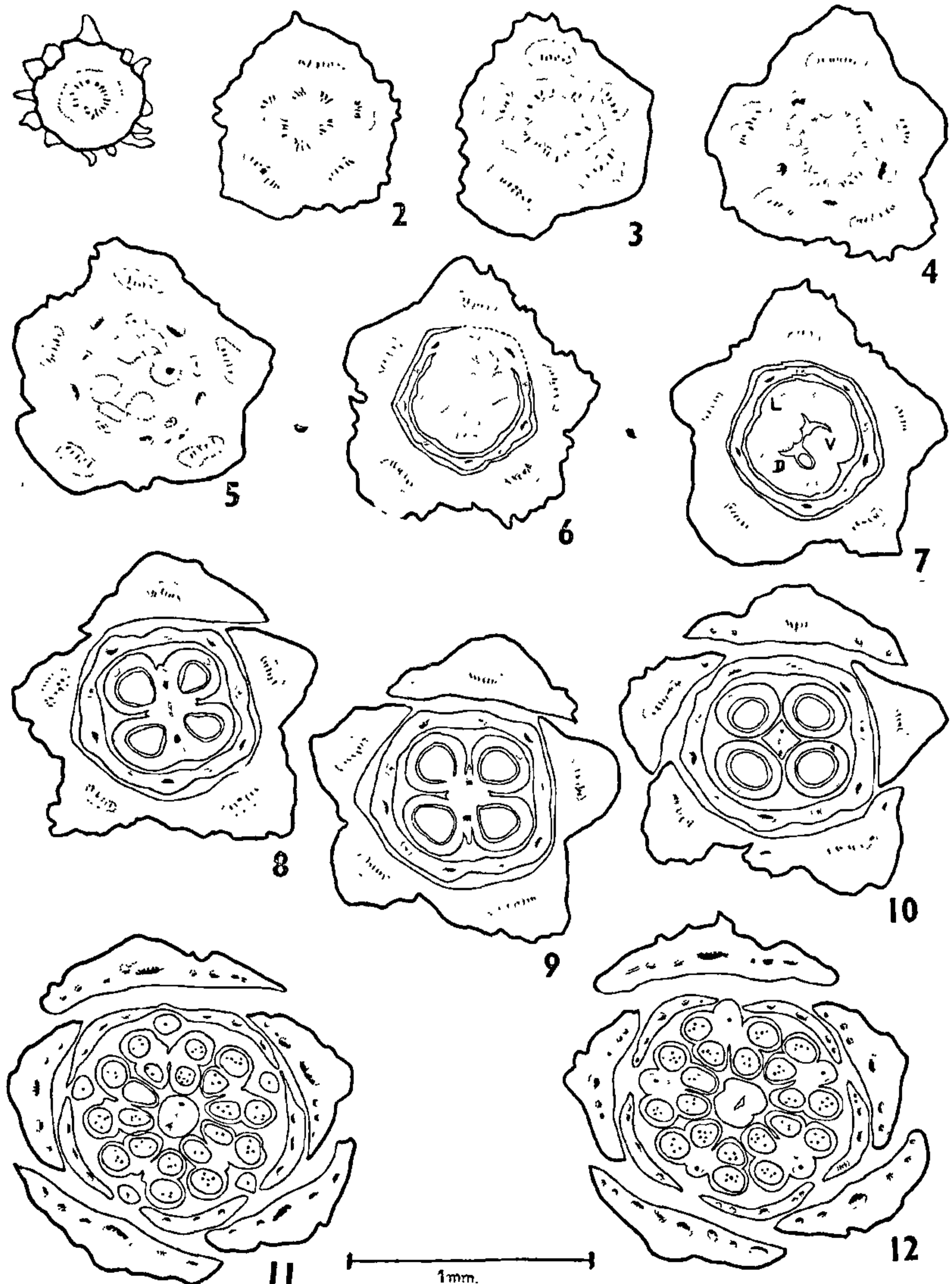
THE family Boraginaceae has earlier attracted the attention of those interested in floral anatomy. Joshi¹, Lawrence² and Sharma³ have described the anatomy of the flower in several genera but *Sericostoma* remained untouched. As it shows certain points of interest the floral anatomy of *S. pauciflorum* Stocks has been described in the present paper. The material was collected from

1. Kihlman, B., *Hereditas*, 1949, 35, 393.
2. —, *Action of Chemicals on Dividing Cells*, Prentice Hall, Inc., Englewood, Cliff, New Castle, 1966.

Okha and Dwaraka and usual techniques for fixation, cutting and staining have been employed.

The pedicel has a ring of vascular tissue which gives out five calyx traces at the base of the

receptacle (Figs. 1-3). All the calyx traces get arranged at the periphery of the receptacle which is later separated as calyx tube (Figs. 4-7). Calyx splits up at the top into five quincuncially arranged



FIGS. 1-12. Serial transverse sections of the flower from base upwards showing the course of vascular supply. (D, Carpellary dorsal; L, Carpellary lateral; V, Carpellary ventral).

lobes (Figs. 8-11). Within each lobe the sepal bundle gives out lateral branches on each side which show further branching (Figs. 10-12).

Close above the departure of the sepal traces five petal traces and five stamen traces depart from the central stele successively (Figs. 4, 5). The petal traces lie on alternate radii and the stamen traces on the same radii as those of the sepals. All these ten traces move out and form a ring within the cortex of the receptacle (Fig. 5). Simultaneously with the separation of the calyx tube, the corolla tube containing petal and stamen bundles is also separated from the receptacle (Figs. 6, 7). The petal bundles move up and each branches into a petal median and two petal laterals below the level of separation of the filaments (Fig. 11). The stamen traces pass out into the filaments and extend upto the connective (Figs. 11, 12). Just at this level the corolla tube breaks up into five lobes, each having a petal median and a petal lateral on either side (Fig. 11). The petal bundles divide further while extending up (Fig. 12).

Shortly after the departure of the stamen traces the receptacular stele breaks up into two halves, each half being trilobed. The median lobes move out and form carpellary dorsals. Each of the inwardly oriented lobes divides into a carpellary ventral that remains in the centre and a carpellary lateral which moves to a position on the side of a carpellary dorsal (Figs. 5-7).

The ovary is unilocular with two parietal placentae, two projecting ridges and four ovules (Fig. 7). The carpellary ventrals furnish ovular supply and are consumed. At this level the ovary appears to be deeply bilobed. Gradually toward higher levels, the two placentae as well as the two ridges meet in the centre thus making the ovary tetralocular (Fig. 8). At this level the ovary

shows two dorsal wings at the back of the carpels (Fig. 9). The carpellary dorsals are situated within the wings. At a higher level the carpellary dorsals move into the central part of the ovary which later separates as gynobasic style (Fig. 10). The four ovary lobes also separate from one another. The carpellary lateral within each ovary lobe branches repeatedly and the branches anastomose variously. Only the carpellary dorsals continue upto the stigma (Figs. 11, 12). The stigma is broad at the base and tapering upward.

The floral anatomy of *Sericostoma pauciflorum* resembles in general with the vasculature described earlier by Joshi¹, Lawrence² and Sharma³ for members of Boraginaceae. However, the vasculature of the sepals in this species is completely different from any other member of Boraginaceae described so far. The sepals are single traced and unlike in other members sepal bundles branch only within the free lobes of the calyx.

The vascular supply to the gynobasic style contains only carpellary dorsals as in other members. Two dorsal wings containing the carpellary dorsals are observed in this species. Lawrence² reported the presence of two dorsal wings in two species of *Alkanna*, four species of *Cynoglossum* and *Rindera ochroleuca* but in these species the dorsal bundles were reported to give out weak branches within the wings. No such branching has been observed in *Sericostoma pauciflorum*.

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Meerut University,
Meerut, December 10, 1975.

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SUDHA AGARWAL.

1. Joshi, B. M., *Geobios*, 1975, 2, 10.
2. Lawrence, J. R., *Amer. J. Bot.*, 1937, 22, 433.
3. Sharma, R., *Agra Univ. J. Res. (Sci.)*, 1954, 33, 349.

PROTECTION OF MATERIALS IN THE SEA

Symposium on deterioration of material in seawater and its prevention-marine corrosion and fouling will be held during February 25-26, 1977 at Bombay.

Details regarding the Symposium can be had from the Convener, Symposium Programme 1977, Naval Chemical and Metallurgical Laboratory, Tiger Gate, Bombay 400 023.
