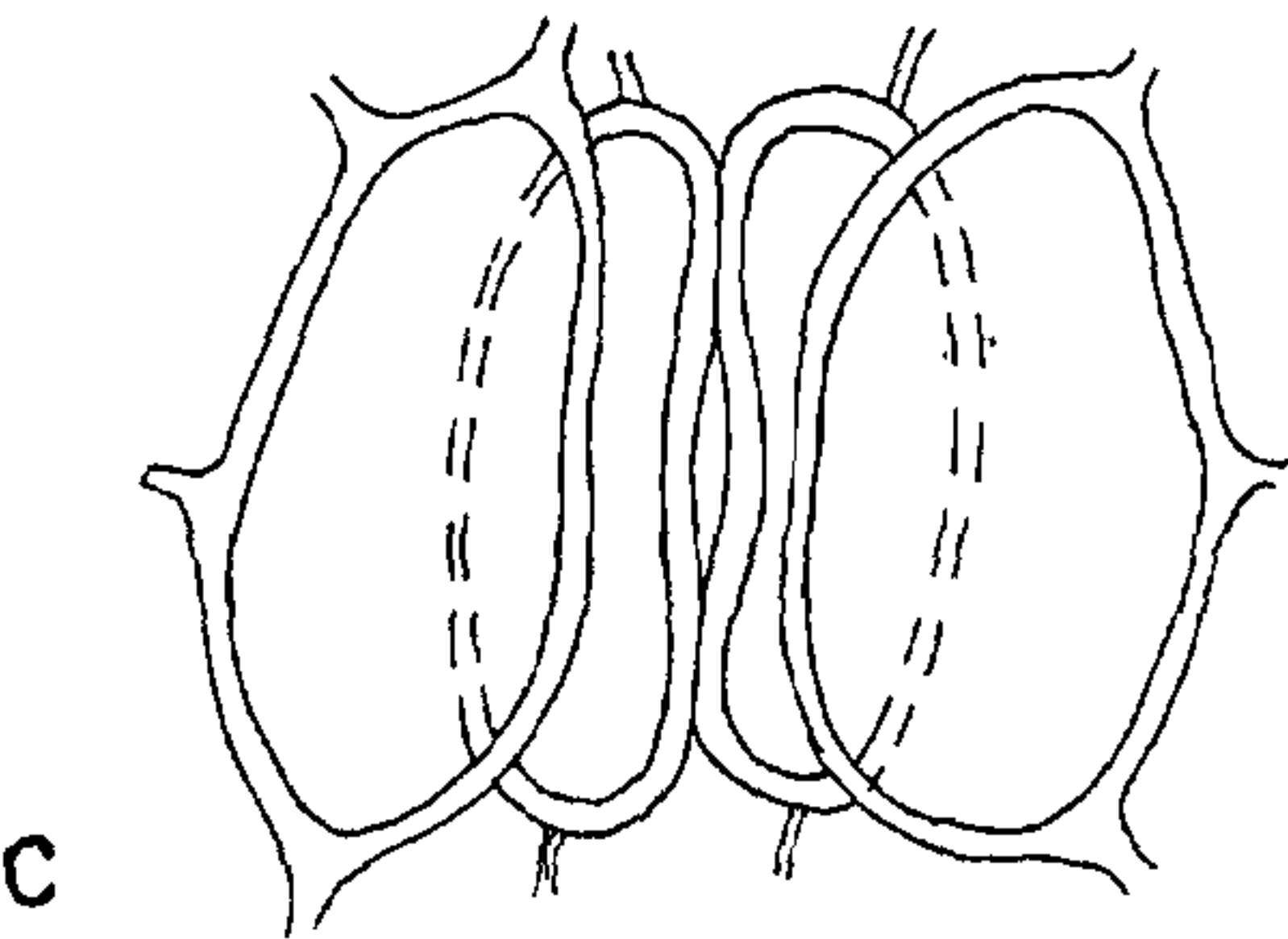
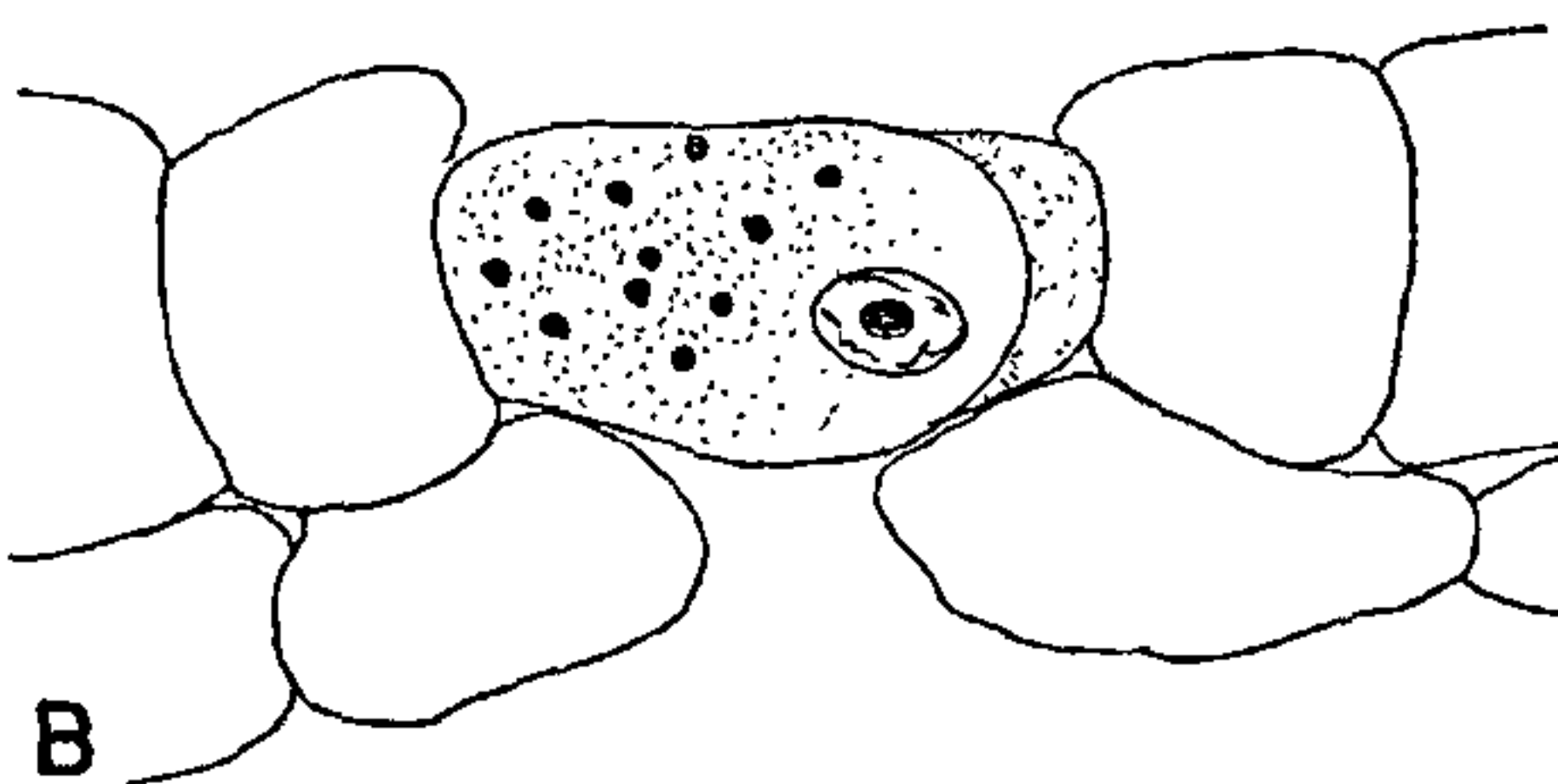
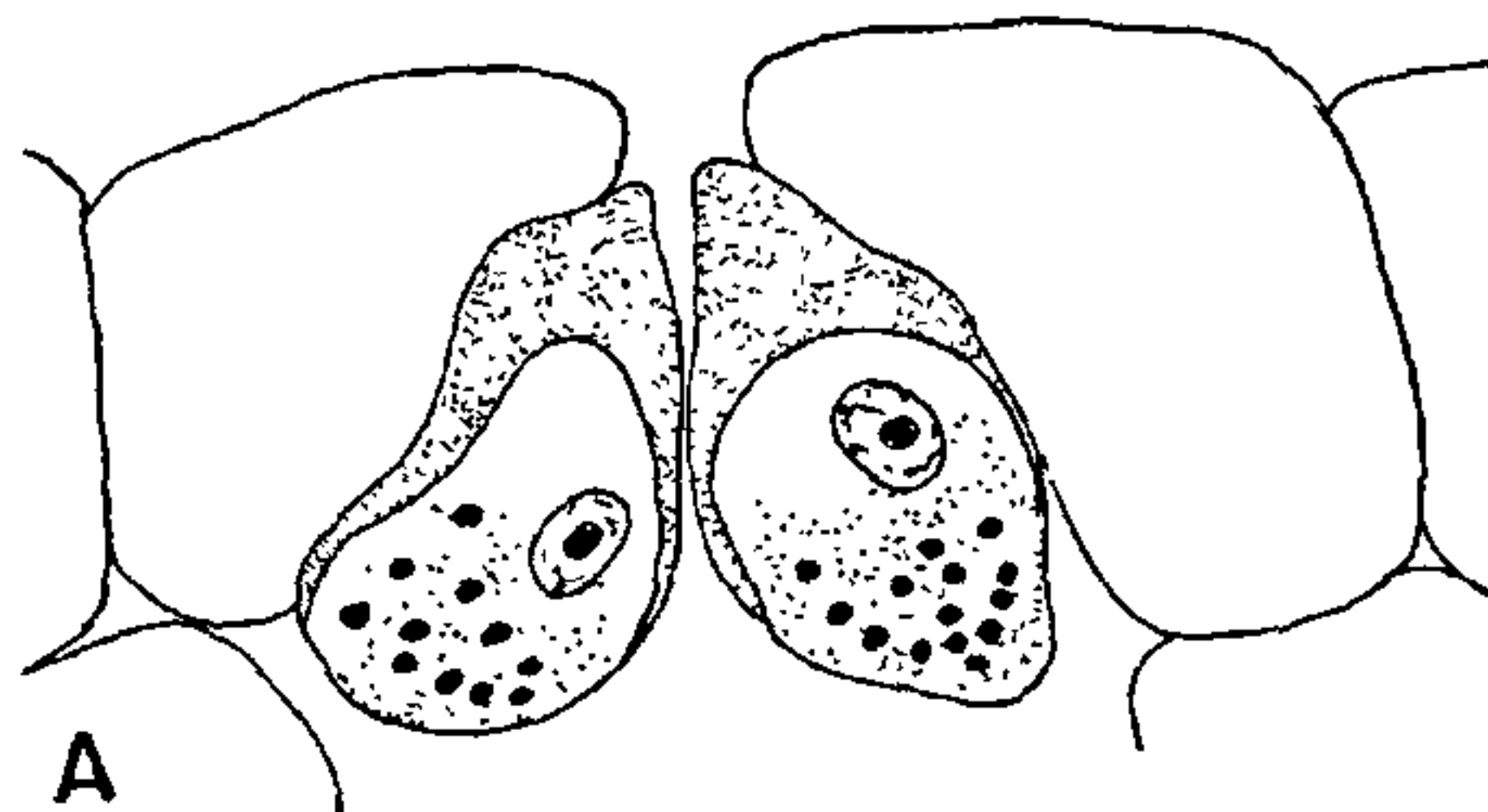


**FACULTATIVE STOMATA IN *GRIFFITHELLA*  
(*PODOSTEMACEAE*)**

*PODOSTEMACEAE* are found in fast flowing streams and the plants come to flower when the level and pace of water in the stream attains their minimum. As the plants inhabit flowing waters there is perhaps no necessity for the development of special structures for exchange of gases. Obviously, there has been a belief that no stomata are developed in any part of the plant body<sup>1</sup>. During the reproductive phase, however, the plant body is exposed above the water level, a feature which necessitates the development of stomata.



FIGS. A-C. *Griffithella hookeriana* (Tul.) Warming. Fig. A. Stomatal apparatus from cross-section of thallus passing through the minimal stomatal diameter,  $\times 400$ . Fig. B. Same, passing through the maximal stomatal diameter,  $\times 400$ . Fig. C. Surface view of the stoma showing guard cells and subsidiary cells,  $\times 400$ .

In *Griffithella hookeriana* (Tul.) Warming stomata are developed on the upper epidermis of the flowering thallus. They are somewhat sunken (Figs. A, B). Although the ontogeny of the stoma for want of proper stages has not been studied, there is no doubt that the mature structure conforms to the paracytic type with two subsidiary cells oriented parallel to guard cells (Fig. C). The sectional views also confirm the determination. The sunken guard cells possess mild thickenings towards the dorsal side. The guard cell cavity shows darkly stained spherical bodies the nature of which has not been determined.

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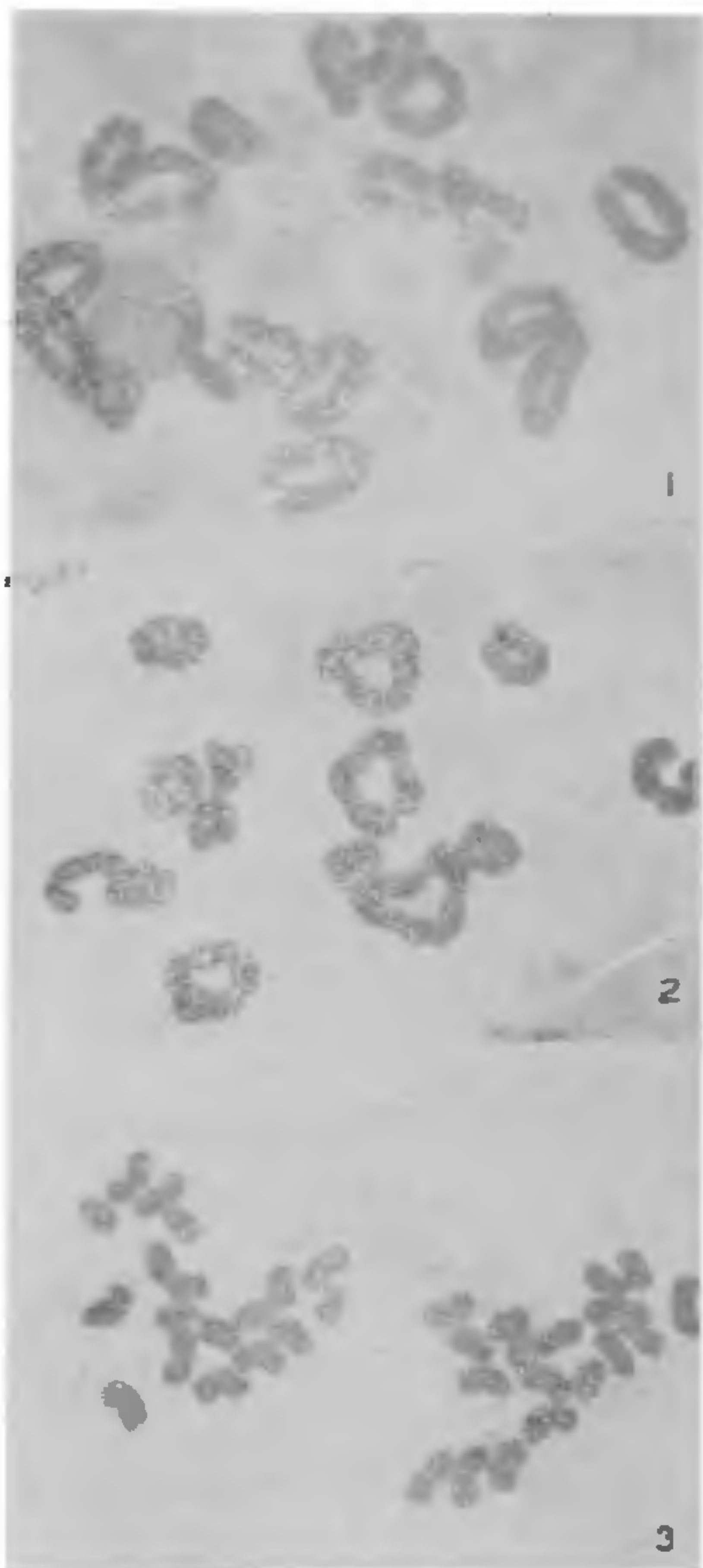
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**NATURAL TETRAPLOIDY IN  
*CHRYSANTHEMUM FRUTESCENS* L.**

*Chrysanthemum frutescens* L. (Family—Compositae), commonly known as 'Marguerite' is winter annual. While screening cytologically 10 species of *Chrysanthemum*, contrary to the earlier reports of diploidy and triploidy, the present strain of this species was found to be tetraploid. The meiotic behaviour of the tetraploid taxon is described in the present communication.

For meiotic studies young flower heads were fixed in 6:3:1 alcohol, chloroform, acetic acid mixture saturated with ferric acetate. After proper fixation, anthers were squashed in 1% acetocarmine following the usual technique. At diakinesis and metaphase I various chromosomal configurations such as quadrivalents, trivalents, bivalents and univalents were encountered (Figs. 1 and 2). The average number of associations together with the range are: 1.19 IV (0-4) + 0.14 III (0-1) + 15.19 II (10-18) + 0.34 I (0-2). In most of the PMCS there was predominant bivalent formation and the multivalent frequency was rather low. The bivalents were mostly of ring type with 2 chiasmata. Chiasmata are mostly terminal and the average chiasma frequency per cell was 30.7. Anaphase I segregation was quite normal (Fig. 3) and subsequent division also did not show any abnormalities. Pollen stainability was 58.4% and there was moderate seed setting.

A perusal of literature shows that *C. frutescens* usually occurs as diploid<sup>1-6</sup> or triploid<sup>7-8</sup>. Dowitz<sup>9</sup>



FIGS. 1-3. Fig. 1. Diakinesis showing 3 IV + 12 II. Fig. 2. MI with 4 IV + 10 II. Fig. 3. Anaphase I with 18:18 segregation (All  $\times 1,500$ ).

has studied in detail the meiosis of triploid form and concluded that they are of autopoloid origin. He also found quadrivalents which may have originated as a result of interchanges. The present study revealed the existence of tetraploid form with  $2n = 36$ , with predominant bivalent formation associated with a low number of multivalents and univalents indicating segmental allopolyploid nature. Lower number of multivalents may also be due to low chiasma frequency per cell, as a result of failure of chiasma formation. This is evident from the formation of rather low incidence of interstitial chiasmata.

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#### MORPHOLOGY OF LARVAL GLANDS OF *SPODOPTERA EXIGUA* (HUBNER) (LEPIDOPTERA : NOCTUIDAE)

*Spodoptera exigua* (Hubner), commonly known as linseed caterpillar, is a serious pest of linseed, pea and soybean. It is active throughout the year, in Madhya Pradesh. Hence studies on the morphology of the larval labial glands of this pest were carried out. For this purpose mass culture of the pest was maintained in the laboratory at  $27 \pm 2^\circ \text{C}$ , and  $70 \pm 5\%$  r.h. Fifth instar larvae were dissected in physiological saline under stereo dissecting binocular. Whole mounts of the labial glands were prepared after staining them in eosin.

#### Observations and Discussion

The labial glands of the larvae revealed paired structures situated on either side of the alimentary canal extending from head to the fourth abdominal segment. Each gland was divisible into two distinct regions. The anterior narrow portion termed the lateral duct (LD) and the posterior comparatively thick glandular portion termed the thread press (TP). The lateral ducts were joined anteriorly below the pharynx of the alimentary canal to form a common duct which extends upto the metathoracic segment. The common duct opens on the spinneret (Sr.) of the labium. The lateral ducts were colourless tube measuring 3.24 to 5.15 mm (average 4.30 mm). The thread press started from the anterior part of the first abdominal segment. It was thicker and milky white in colour measuring 6.19 to 8.00 mm (average 7.11 mm) in length. In the third abdominal segment it formed a S-shaped structure or loop (Fig. 1). The rest of the portion of the