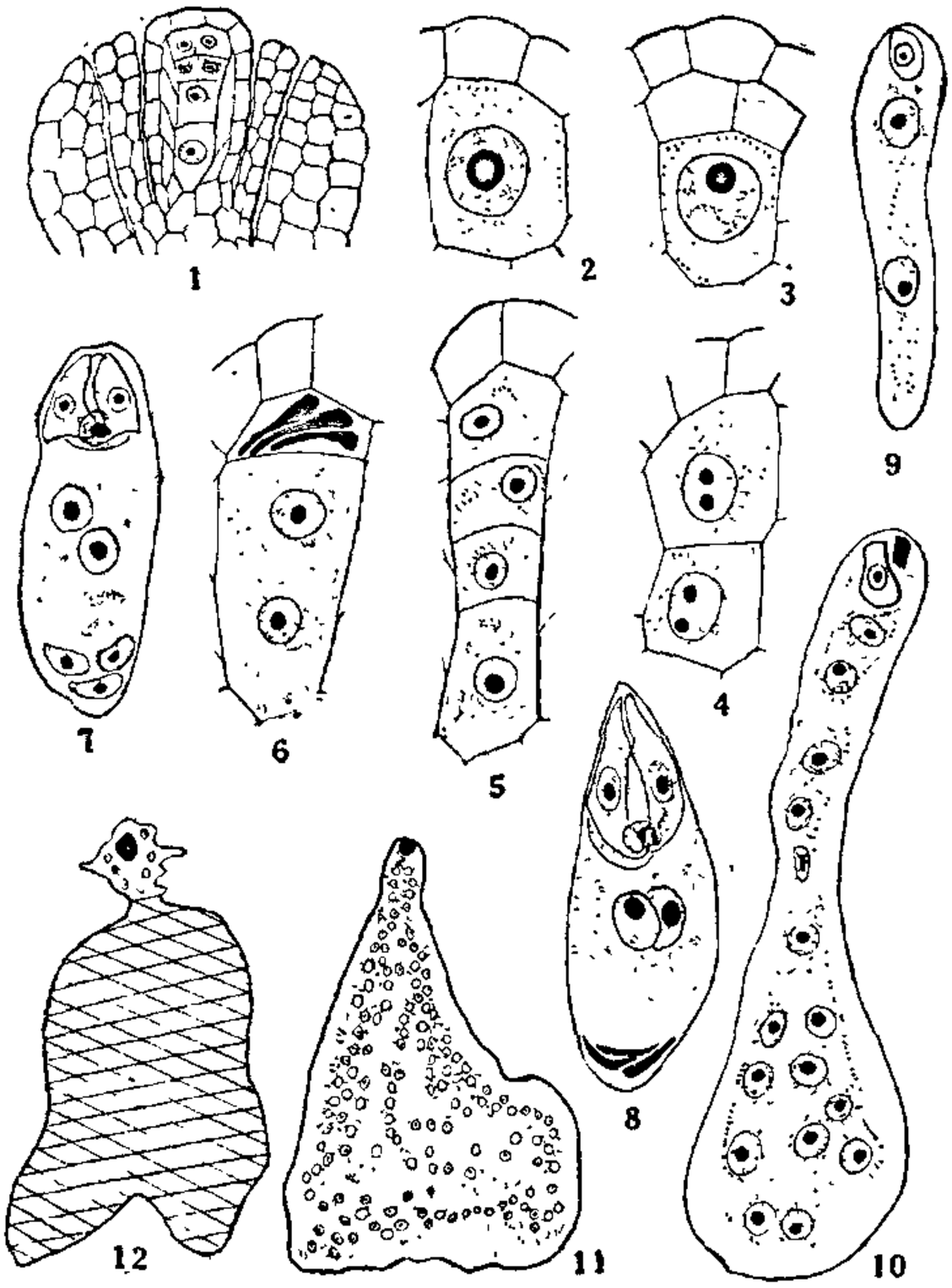
A NOTE ON THE MEGASPOROGENESIS AND ENDOSPERM OF SOME COMMELINACEAE

DAVIS[3] has reviewed the earlier literature on Commelinaceae. Chikkannaiah[1,2] has made an extensive study on embryological work of the taxon. The present work describes the megasporogenesis and endosperm development in *Cyanotis tuberosa* Schultes, f. *Amischophacellus cucullata* Roth and *Murdannia versicolor* Dalz.



FIGS. 1–12. Ovule, Embryo sac and Endosperm. Figs. 1, 3, 10. *Murdannia versicolor*. Figs. 2, 4–6, 11, 12. *Cyanotis tuberosa*. Figs. 7–9. *Amischophacellus cucullata*. Fig. 1. Ovule. Figs. 2, 4. One and two archesporial cells respectively. Fig. 3. Megaspore mother cell with parietal cells. Fig. 5. Tetrad. Figs. 6. 2-nucleate embryo sac. Figs. 7, 8. Organized embryo sacs. Figs. 9–12. Different stages in the development of endosperm (note the micropylar haustorium in Fig. 12).

FIGS. 1, 9, 10, × 450. FIGS. 2–8, × 1,000. FIGS. 11, 12, × 50.

Ovary is tricarpellate, trilocular, with two ovules in each locule in *Cyanotis tuberosa* and *Amischophacellus cucullata* and many in *Murdannia versicolor*. The ovule is bitegmic. It is orthotropous and crassinucellate in *Murdannia versicolor* (Fig. 1, 3) and hemianatropous and tenuinucellate in others (Fig. 2). In all these species, the integumentary initials differentiate very early at the archesporial initial stage. The inner integument is two-layered and outer is three-layered right from their initiation up to the maturity. Both the integuments are free from each other and inner free from nucellus also (Fig. 1). The micropyle is formed by both the integuments in *Cyanotis tuberosa* and *Amischophacellus cucullata*, while in *Murdannia versicolor* it is wanting. Further, the integuments grow faster and cover the nucellar apex after ferilization.

Generally, a single hypodermal archesporial cell is present (Fig. 2). Rarely two such cells are seen in *Cyanotis tuberosa* (Fig. 4) but only one develops further. The archesporial cell directly functions as megaspore mother cell in *Cyanotis tuberosa* (Fig. 2) and *Amischophacellus cucullata*, while in *Murdannia versicolor* a parietal cell is cut off and divides once anticlinally (Fig. 3); later it becomes crushed by the developing megaspore.

Meiotic division of the megaspore mother cell results in a linear tetrads of megaspores in *Cyanotis tuberosa* (Fig. 5) and *Amischophacellus cucullata* and T-shaped tetrads in *Murdannia versicolor*. Chalazal megaspore of the tetrads is functional and by three successive divisions it forms the Polygonum type of embryo sac (Figs. 6, 7). Embryo sac of *Amischophacellus cucullata* has abundant simple starch grains. Antipodals are ephemeral and show degeneration before the maturity of the embryo sac (Fig. 8). Egg apparatus consists of an egg and two synergids which are beaked. Polar nuclei just fuse before fertilization.

Endosperm is of nuclear type (Fig. 9). During resting period of the zygote only the primary endosperm nucleus divides forming free endosperm nuclei (Fig. 10). The endosperm extends beyond the collar and occupies the lower part of the developing seed (Fig. 11). The wall formation is centripetal. No wall formation takes place at the micropylar region in *Cyanotis tuberosa*. This is the micropylar haustorium (Fig. 12).

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1. Chikkannaiah, P. S., *Plant Embryology, a Symposium, CSIR India*, 1962, 23.
2. —, *Proc. Indian Acad. Sec.*, 1973, 77 B, 166.
3. Davis, G. L., *Systematic Embryology of the Angiosperms*, Sydney, 1966.