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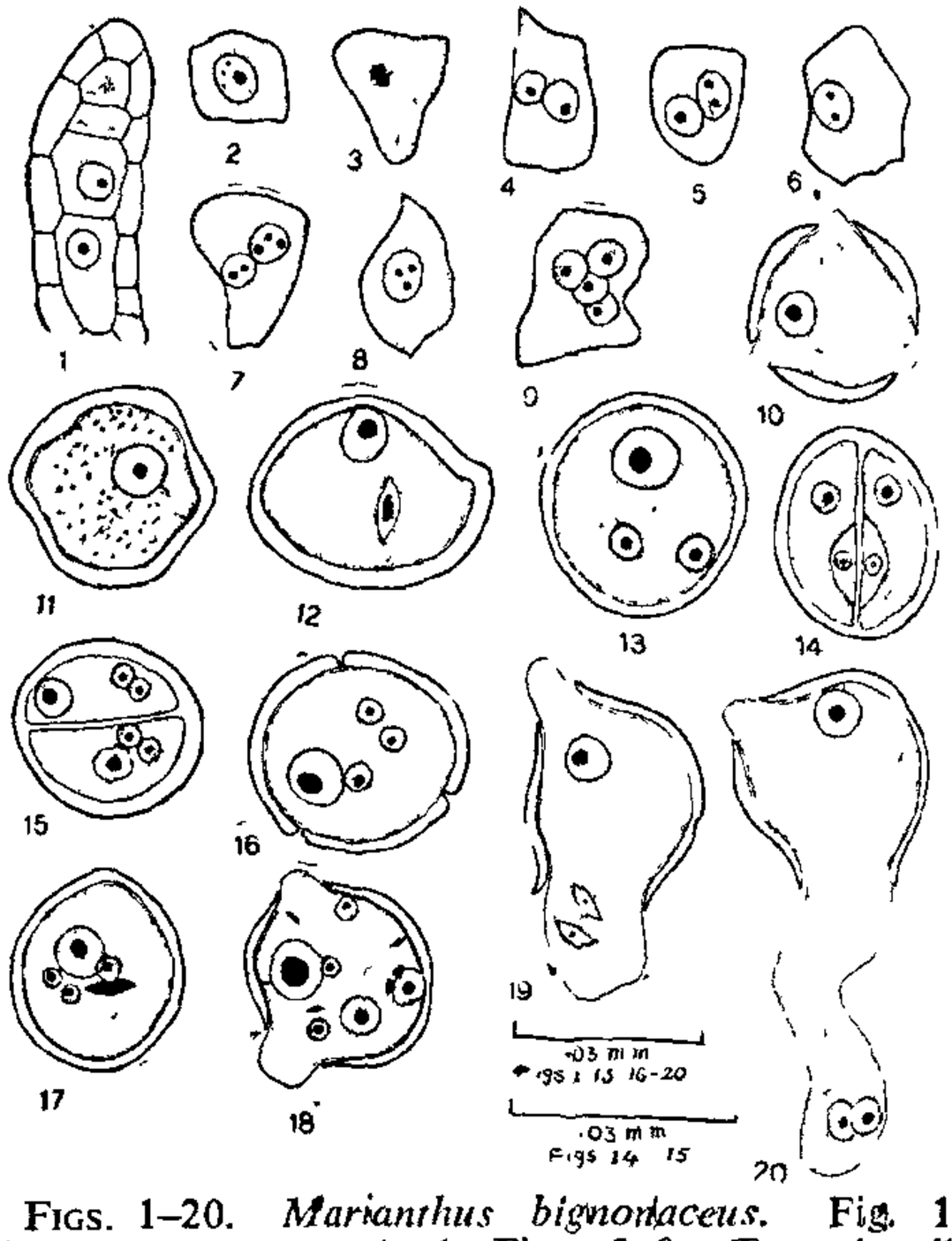
A NOTE ON THE EMBRYOLOGY OF *MARIANTHUS BIGNONACEUS* F. MUELL.

THE members of Pittosporaceae have not received much attention from the point of embryology. Davis[1] (1966) reviewed the earlier work in the family. Subsequently, Sheela and Narayana[9] (1966) and Narayana and Sundari[7] (1976) studied a few taxa. The present paper deals with the embryology of *Marianthus bignonaceus*, F. Muell., highlighting certain abnormalities hitherto unrecorded in the family.

The male archesporium is plate-like and 3–4 cells wide. The anther shows an epidermis, hypodermis which develops characteristic thickenings, two middle layers, which become crushed during development and a tapetum which is of the secretory type. The cells are uninucleate to start with (Fig. 2). By the time the pollen mother cells begin to undergo meiosis, the tapetal cells enlarge and their nuclei begin to divide resulting in a multinucleate condition. The cytoplasm becomes vacuolated. The nuclear divisions are followed by their fusion resulting in syntapetal nuclei. These syntapetal polyploid nuclei show varying number of nucleoli (Figs. 3–9).

As a result of meiosis four microspores are formed in the pollen mother cell. Cytokinesis takes place by furrowing and pollen tetrads show tetrahedral arrangement. The pollen grains are 3-colporate and are 3-celled at the shedding stage (Figs. 10–13).



FIGS. 1–20. *Marianthus bignoniaceus*. Fig. 1. Linear megaspore tetrad. Figs. 2–9. Tapetal cells showing nuclear divisions and fusions. Figs. 10, 11. Uninucleate pollen grains; note black granular bodies in Fig. 11. Fig. 12. Two-celled pollen grain. Fig. 13. Three-celled pollen grain. Figs. 14, 15. Double pollen grains. Figs. 16–18. Pollen grains showing 4 and 6 nucleate condition. Figs. 19, 20. Germinating pollen grains.

In several anthers abnormal pollen grains were noticed. The microspore nucleus divides resulting in the formation of two equal cells which remain within the common spore wall. Each cell of such double pollen grain behaves like a normal pollen grain and divides forming a lenticular generative cell on the common wall separating the two cells (Fig. 14). The generative cell in due course becomes liberated into the vegetative cytoplasm (Fig. 15). Such double pollen grains were reported earlier in *Cuscuta* (Fedortschuk[2], 1931), *Strychnos* (Mohrbutter[5], 1936), Podostemaceae (Magnus[3], 1913; Mukkada[6], 1962) and Cyperaceae (Shah[8], 1962).

Besides the double pollen prains, microspores with 2–6 nuclei have also been observed. Where the number of the nuclei in each pollen grain is two; they are of the same size, and cannot be distinguished into the vegetative and generative nuclei. Probably they may have been formed as a result of the division of the microspore nucleus. Where the number of nuclei is 3, 4, and 6, they show a

difference in size (Figs. 16–18). In such instances it was difficult to decide whether the nuclei were formed by the division of the vegetative or the generative nucles. Such multinucleate pollen grains have been reported in *Jasminum, calophyllum* and *Jasminum angustifolium* (Maheswari Devi[4], 1975).

Besides the nuclei, some of the multinucleate pollen grains show deep staining chromatin-like bodies within the cytoplasm (Figs. 17 and 18). In some pollen grains a deposition of black granular bodies of unknown nature has been noticed (Fig. 11).

In some of the anthers *in situ,* germination of pollen grains was observed (Figs. 19, 20). All the germinating pollen grains were 3-celled ; of these, one was the vegetative nucleus and the other two, the sperms. The sperm cells occupied distal position while the vegetative nucleus remained within the microspore.

The ovule is tenuinucellate, unitegmic and anatropous. The female archesporium is one celled. Megaspore tetrads are linear (Fig. 1). Embryosac develops according to the Polygonum type and shows the usual organisation.

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INTERNATIONAL CONFERENCE ON METAL SCIENCES—THE EMERGING FRONTIERS, VARANASI

The Metal Sciences Division of the Indian Institute of Metals and the Department of Metallurgical Engineering of the Banaras Hindu University are jointly organising an International Conference in Varanasi from 23rd to 26th November 1977 (Wednesday to Saturday) to highlight recent researches in active frontier areas of Metal Sciences. The following topics are expected to be covered at this Conference : Solidification, Phase Transformations, Interfaces, High Resolution Microscopy, Amorphous and Magnetic Alloys, Powder Metallurgy, Composites, Thermomechanical Processing, High Temperature Deformation, Fatigue, Fracture, Corrosion, Metallurgical Thermodynamics, Diffusion, Process Simulation, Process Engineering, Metal Sciences for Society.

Details can be had from Prof. T. R. Anantharaman, Head of the Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi 221 005.