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A Review :

Is it monosporic or bisporic development in *Cyamopsis psoralioides* DC.?: further evidence of a criticism of Maheshwari (1955) and Rembert (1967a - Ph.D. Thesis, 67b, 69, 71)

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Cyamopsis psoralioides DC. is a member of the Papilionaceae. In one micropreparation a linear arrangement of three spores was noted, perhaps the micropylar one is a dyad member, while the chalazal two are megaspores. In another micropreparation again three cells were observed, where the micropylar one is in the stage of degeneration. The chalazal cell is having two nuclei, while the next to it is having a nucleus which in the stage of division.

Key words : Embryology of the Angiosperms.

The issue of this critical review will focus on the culmination of megasporogenesis – megaspore organization. Megasporogenesis is initiated in most Papilionaceous species by the development of an archesporium hypodermally oriented in the nucellus. In Papilionaceae an archesporium, whether multi-cellular or uni-cellular, is characteristically hypodermal. The megasporocyte undergoes meiotic divisions to produce a tetrad of megaspores.

Battaglia (1955) considers the concept of the spore and emphasizes that the term should be limited to a cell produced by regular or irregular meiosis, originating in the sporophyte and giving rise to a gametophyte. Battaglia (1951) discusses the importance of the position of the megaspore nuclei in determining the final form of the megagametophte. He states that “natural modification” in megasporogenesis determine the morphology of the gametophyte. This is an important point, and its implications should be realized. Megasporogenesis culminates with the production of megaspores.

A generalized or hypothetical (ancestral) pattern may be postulated as consisting of four megaspores in linear arrangement. Any one of these megaspores has equal potential for maturing into a megagametophyte. From this ancestral pattern following conditions are considered to be derived: (a) loss of spore function, (b) change in division plan, (c) loss of cell wall, and (d) loss of nuclear division. Coulter (1908) was the first to make a clear distinction between divisions which formed megaspores, and divisions that produced nuclei of megagametophytes. This, as it turned out, was a very important distinction, and separates the meiotic divisions leading to megasporogenesis from the mitotic divisions leading to megagametogenesis.

Several additional variations in megaspore formation are reported in Papilionaceae. One pattern of development results from the failure of the upper or micropylar member of the first meiotic dyad to undergo the second meiotic division. The lower or chalazal member undergoes the meiotic division, resulting in a linear arrangement of three cells. The chalazal megaspore functions. The pattern has been reported in the Papilionaceae by Guignard (1881) in *Phaseolus multiflorus* and *Medicago arborea* by Brown (1917) and Weinstein (1926) in *Phaseolus vaulgaris*, by Cooper (1935) in *Medicago sativa*, by Rembert in *Wisteria sinensis*, (1967b), and *Robinia pseudo-acacia* and *Vicia villosa* (1969), and by Salgare in *Cyamopsis psoralioides* (1973, 75c), *Canavalia ensiformis* (1975b), *Dumasia villosa* (1975f) and *Dolichos lablab* (1975al). Satin and Blakeslee (1935) demonstrated a condition in *Datura* which may have some significance here. In their work it is reported that the micropylar dyad member fail to undergo the second meiotic division, while the chalazal member proceeded with meiosis II. Satina and Blackeslee showed that the failure of the second meiotic division in some plants of *Datura* is caused by a recessive gene found in some F_2 progeny of a plant that had pollen treated with radium.

Some embryologists speak a row of three megaspores - triad. This is incorrect, because only two cells of the row can be megaspores and third must be