RESEARCH NOTE

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An anomalous megagametophyte of *Phaseolus aureus* Roxb.: Further evidence of a Criticism of George, George and Herr (1979)*

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Megasporogenesis culminates with the production of megaspores. Maheshwari (1945a, b) and Cave (1953) both relate the importance of gametophyte studies in Angiosperms. Since megaspore produce megagametophytes directly, production and position of megaspore must be significant not accidental. Megasporogenesis is initiated in most Papilionaceous species by the development of an archesporium hypodermally oriented in the nucellus. In Papilionaceae archesporium, whether multi-cellular or uni-cellular, is characteristically hypodermal. The megasporocyte undergoes meiotic divisions to produce a tetrad 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 plane, (c) loss of cell wall, (d) loss of nuclear division.

Coulter (1908) was the first to make a clear distinction between divisions which formed megaspores, and divisions that produce 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.

Generally the functional megaspore undergoes three mitotic divisions resulting in eight nuclei which are arranged to two groups of four each. This is achieved by the simultaneous nuclear divisions. However, deviation from the normal simultaneous nuclear divisions is observed in the present investigation. At one instance an abnormal case was observed, where the megagametophyte was 9-nucleate. Five nuclei were seen at the micropylar end and four nuclei at the chalazal end. This condition might have arisen by the division of one of the nuclei of the micropylar quartet. This is further confirmed on the bases of the size of the micropylar nuclei. Out of five nuclei two were almost half the size of the remaining nuclei of the megagametophyte. The large number of workers throughout the world are working on the embryology of the Papilionaceae. However, there is only one case *i.e.* Roy (1933) who reported 9-nucleate megagametophyte in Dolichos lablab, hence the present investigation is important one. However, George, George and Herr (1979) have also failed to take notice of such abnormality in Phaseolus aureus. Present work as well as an extensive past work of Salgare (1970, 73, 75, 86, 2006) and Salgare and Dnyansagar (1971) also proved that the observations of George, George and Herr (1979) are superficial and misleading.

With such a superficial observations George, George and Herr (1979) are making a comparative study of ovule development in field-grown and greenhouse-grown plants of Phaseolus aureus. How far it is justified ?