

between the R values of polycrystalline and single metal faces may be attributed to different B values for these faces since it is normal to expect different depths of penetration with different crystal faces, other conditions remaining the same. When the first few layers are concerned this may not be significant and this is exactly what is observed, the R values being the same at about 50 volts. The above considerations enable us also to give a natural explanation for the differences observed between gas covered and perfectly degassed metal faces.

Full details will be published elsewhere.

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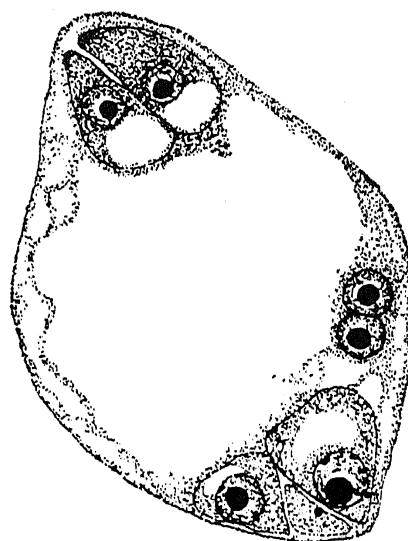
Annamalai University,  
Annamalainagar,  
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#### The Development of the Female Gametophyte and Chromosome Number of *Argemone* *mexicana* Linn.

INVESTIGATIONS on the morphology and cytology of *Argemone mexicana* have been in progress in this laboratory since the last two years and the work is now nearing completion. In a recent paper Joshi<sup>1</sup> has given an account of the formation of megaspores and embryo-sac in this plant. His account which is based on material obtained from only 'two ovaries' differs in certain fundamental points from our observations. In this note an outline of the development of the female gametophyte as observed by us is presented.

Joshi presumes that the archesporial cell is hypodermal in origin and this by transverse division gives rise to a 'wall cell' and the megaspore mother cell. Our observations support his statement. By the division of the megaspore mother cell a dyad is produced and the two cells of the dyad as a rule divide periclinally and produce a normal linear tetrad. The 'T-shaped' tetrad which according to Joshi is a characteristic feature of this plant, is of comparatively rare occurrence. Generally the upper three megaspores from the micropylar end degenerate and the chalazal one functions. It increases in size before division and by three successive divisions produces an eight nucleate embryo-sac. The structure of the fully differentiated embryo-sac is given below:

<sup>1</sup> Joshi, A. C., "Megaspore formation and Embryo-sac of *Argemone mexicana*, Linn," *The Jr. of the Indian Botanical Soc.*, 12, No. 2, April 1933.



× 550.

It will be noted that the synergids are nearly as big as the antipodals. The egg is situated centrally between the synergids and is masked by them. The two polar nuclei lie very close to each other before fusion. The approximate sizes of the synergids, the egg, the polar nuclei and the antipodals at this stage are given below:

Synergid	..	28.6 μ
Egg	..	22.0 μ
Polar nucleus	..	8.8 μ
Antipodal cell	..	26.4 μ

Endosperm formation commences very soon after fertilisation. The synergids are not observed at this stage, but the antipodal cells increase very considerably in size. The average dimension of an antipodal cell when the endosperm nuclei form a lining around the nucellar cavity is 154 μ. Signs of degeneration of the antipodals are just apparent at this stage. It thus appears that the antipodal cells of *Argemone* behave similarly to that observed by Huss<sup>2</sup> in *Fumaria*, *Corydalis* and *Papaver*.

The chromosome number of *Argemone mexicana* has been computed from the meiotic stages of the microspore mother cells and it has been found to be fourteen ( $n=14$ ).

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<sup>2</sup> Huss, G. A., "Beitrag zur Morphologie und Physiologie der Antipoden," *Beih. Bot. Centralb.*, 20, 77-174, 1906.