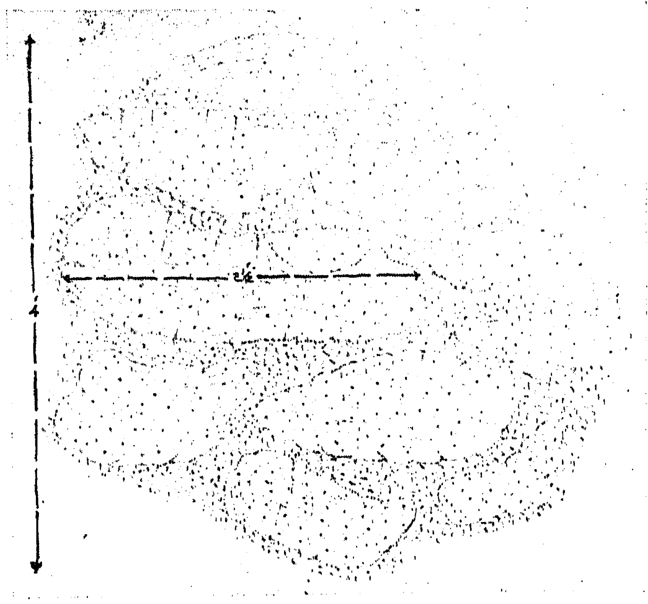

Fig. 3.

Sketch showing the "elliposoidal structure" in the lavas, S. E. of Mahadevankatte.

(Extracted with permission, from Mr. Rama Rao's field notes.)

their close association with the current-bedded and ripple marked quartzites, conglomerates, grits and argillites of sedimentary aspect clearly indicates their sub-aqueous origin.

In the mica traps of the Kereaganahalli exposure there are a few thin bands of a fine grained dark bluish compact "Hornstone" which are traceable for more than hundred yards in length. They seem to me to be the indurated and intercalated ash beds. Petrographic descriptions of these pillow structured mica traps and their associated ash beds, etc., will be given in due course in the publications of the Department.

I am not aware of any recorded instance of the occurrence of *true* pillow lavas in the Dharwar schists. It would be interesting to ascertain whether they could be detected in the Dharwar schists elsewhere, outside Mysore.

I am thankful to the Director, Mysore Geological Department, for having kindly permitted me to publish this interim account of my observations, in this journal.

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Mysore Geological Department,
Bangalore,
November 11, 1937.

Inheritance of the Flowering Character in Rice.

SEVERAL crosses were tried between some of the summer (early), autumn (medium) and winter (late) rices. In a cross between a summer and an autumn rice there was a difference of about 41 days in flowering between the two parents. The F_1 plants were more or less intermediate inclined much towards the early parent. The actual segregation of the F_2 progenies showed about a normal curve which probably represented a multiple factor inheritance. The transgressive segregation was rather one-sided, *i.e.*, the early plants were as early as the early parent, while some of the late plants were much later than the late parent. Two more crosses between the summer and autumn rices showed practically the same result.

In a cross between an autumn and a winter rice the F_1 was definitely intermediate and the F_2 had a wide range of variation with transgressive segregation on both sides. Graphically, the F_2 population segregated with a bi-model curve showing clearly a ratio of 3 late : 1 early.

In two other crosses between the summer and winter rices the F_1 was intermediate and in F_2 the transgression was again one-sided, *i.e.*, towards the lateness only.

From the above it transpires that we do not get plants earlier than the earliest (summer rice) pure line types we have in our collection.

P. M. GANGULI.

Karimganj (Assam),
October 31, 1937.

A Note on the Development of the Female Gametophytes of Some Malpighiaceae and Polyembryony in *Hiptage madablota*.

THE development of the female gametophytes of the three genera, *Hiptage*, *Stigmatophyllum* and *Banisteria* takes place on the same lines as those of *Malpighia* and *Bunchosia* (Schurhoff, 1924).

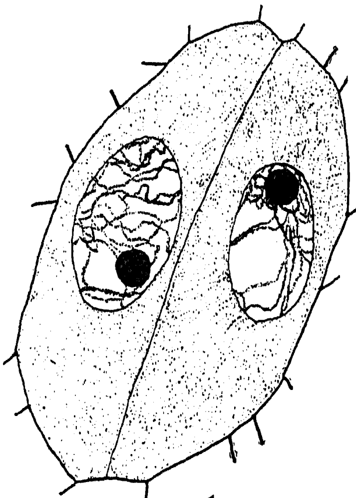
Female Gametophytes.—The megasporangium takes its origin on a lateral outgrowth of the carpellary wall. The archesporial cells are hypodermal in origin and cut off a large number of parietal cells to form a massive parietal tissue. Multiple archesporium is fairly common in all the three genera. No mention of the presence of multiple archesporium has been made in

Malpighia coccinea and *Bunchosia nitida* (Schurhoff, 1924). It is also present in another species of Malpighia, *M. punicifolia* (Narasimhachar, 1936, to be published). Of the several archesporial cells, usually one develops to function as megaspore mother-cell. Occasionally, the presence of two mother-cells is noticed (Fig. 1). The development of these two megaspore mother-cells may proceed up to the formation of two sixteen-nucleate embryo-sacs (Fig. 2). The mother-cells are easily distinguished from the surrounding cells by big-sized nuclei, and their cytoplasm is fibrillar round the nucleus and highly vacuolated at the periphery.

The development of the megaspores is of the "Lilium type".

The two daughter nuclei formed after the heterotypic division give rise to four nuclei. During the homoeotypic division the spindle fibres are commonly placed in an oblique position. Secondary spindle fibres arise and connect the four nuclei to one another (Fig. 3).

The young embryo-sac becomes highly vacuolate and the nuclei divide in their respective places and give rise to a sixteen-nucleate embryo-sac (Fig. 4). The embryo-sac enlarges very much at the cost of the surrounding tissue. The fully developed



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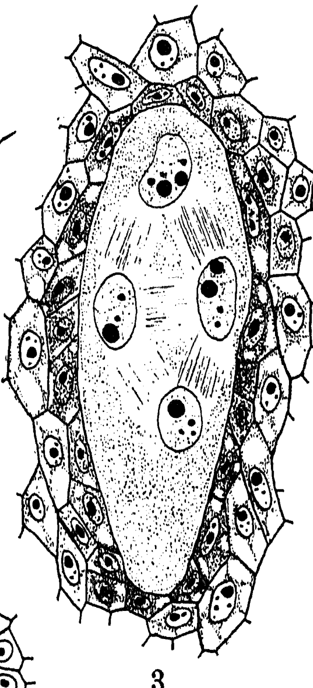

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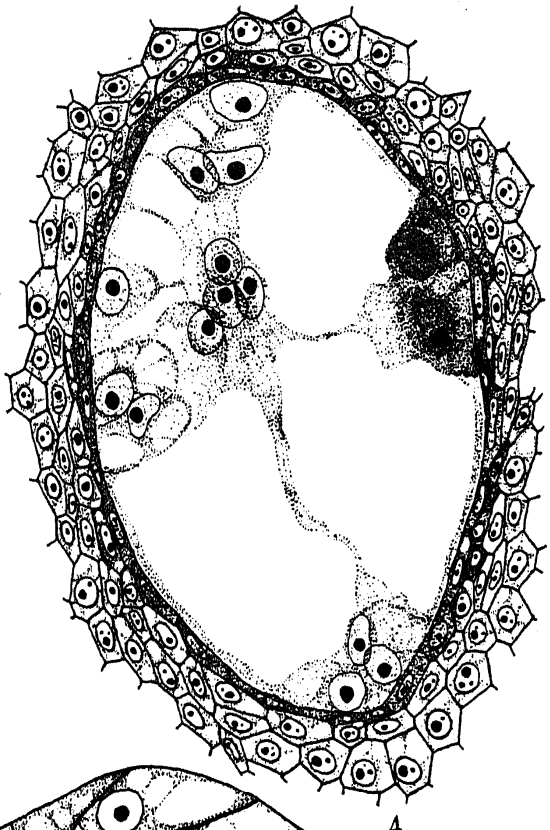

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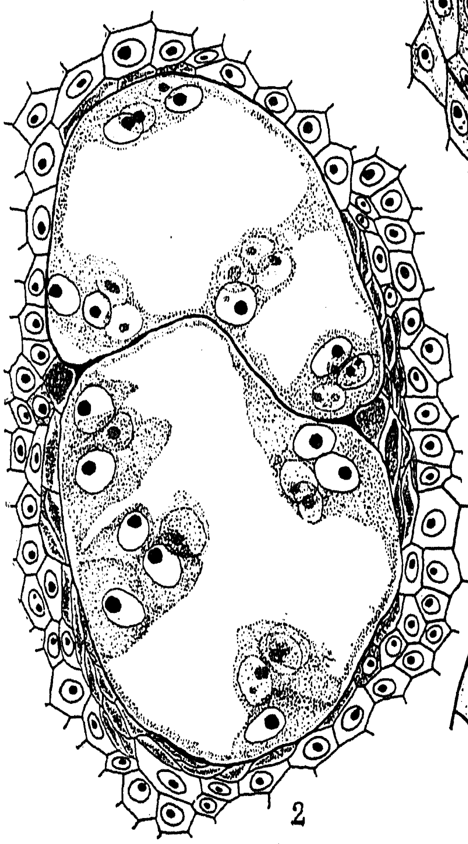

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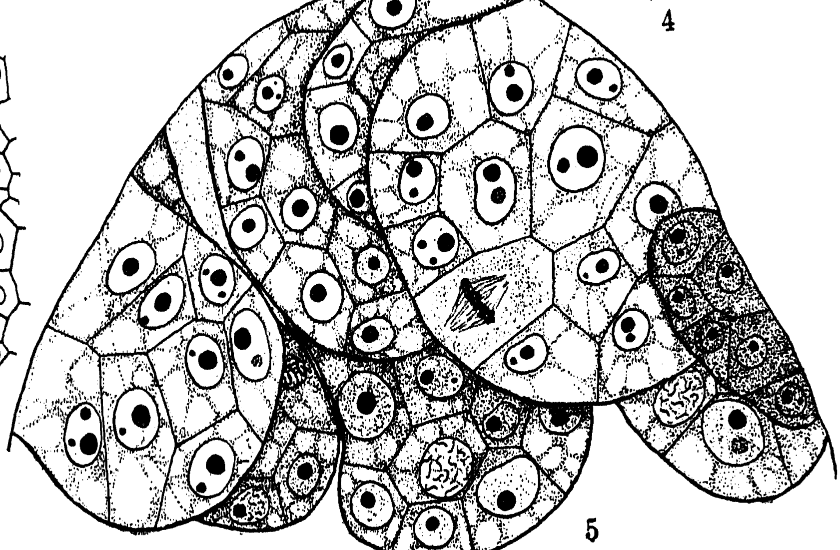

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embryo-sac has four egg-apparatus and four polar nuclei at the centre. The three nuclei of the egg-apparatus are not well organised into synergids and egg. Invariably all the four groups of the egg-apparatus degenerate. The course of development described is common to all the three species, *Hiptage madablota*, *Banisteria laurifolia*, *Stigmatophyllum aristatum*. The last two plants do not produce seeds in Bangalore.

Polyembryony.—The occurrence of polyembryony has been reported, as early as 1860 by Braun, for *Stigmatophyllum* and *Banisteria*. Polyembryony in *Hiptage madablota* is very common. Almost all the embryo-sacs show more than one embryo and the number of embryos in one embryo-sac may go up to eight (Fig. 5).

Most of the embryos are towards the micropylar end of the sac unlike in *Aspicarpa* (Ritzerow, 1907) where it is reported to have been away from the micropylar end. Instances of embryos arising from the lateral sides of the embryo-sac have also been observed and they also develop into large embryos. They are not the rule but are exceptions. The origin of the embryos from the chalazal end of the embryo-sac has not been seen.

All the embryos are nucellar in origin as in *Aspicarpa*. The nucellar activity commences very early in the development of the embryo-sac. Even before the fusion of the polars is complete two or more cells adjacent to the embryo-sac cavity become well marked from the sourrounding cells by having rich cytoplasmic contents. The nucellar cells which develop into embryos divide several times and give rise to a tissue, which later on forms the stem tip, and a short massive suspensor-like portion. Mature seeds sometimes show two or three embryos, though only one of them develops further at the time of germination.

The details will appear elsewhere as a separate paper.

Acknowledgements are made to Dr. M. A. Sampathkumaran and Mr. L. Narayana Rao for kind guidance.

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December 8, 1937.

A Note on Wagad 8 Cotton—Early and Late Sown.

Koshal and Ahmad[1] have concluded from their results that "Well-designed field experiments should be carried out at Dharwar and Nandyal Agricultural Stations with a view to find out the optimum conditions of sowing". In view of this, the following results (obtained before the above was published), of fibre tests on samples of Wagad 8 cotton (1933–34), sown on widely different dates, both on the Viramgam Farm and on the Cultivator's field, with the same pedigree seed, are of interest: since they indicate the nature of changes that may be expected in the quality of the cotton under different "conditions of sowing".

Group	No.	Grown on	Sowing Date	Period of Ripening (months)	Ginning Percentage	Fibre Length (ins.)	Fibre I.P.	Fibre Weight 10^{-7} ozs. per in.	Fibre Maturity	S.H. 10^{-7} ozs. per in.
1	2	3	4	5	6	7	8	9	10	11
I	1	Farm	29–6–33 (early)	8½	35·3	0·84	14·3	1·83	63–15	1·91
	2	,,	5–10–33 (late)	7½	34·8	0·78	12·2	1·24	33–25	1·46
II	3	Cultivator's field	25–7–33 (early)	5¾	40·7	0·83	12·1	1·88	70–16	1·91
	4	,,	28–9–33 (late)	5	38·5	0·80	14·4	1·51	48–27	1·70

(*Rainfall*: July—9·50″; August—26·27″; September—5·64″, October end, one shower.)