Dehra Dun, and Shri B. G. L. Swamy for their valuable guidance and helpful suggestions.

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October 11, 1958.

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SEED-LEAF INJURY DURING GERMINATION IN COTTON

CLOSE observations on three week old seedlings in a bulk crop of MCU—2 cotton on the Cotton Research Farm. Srivilliputhur, Madras State, during 1957, showed that in 18 out of a random sample of 100 seedlings the seed-leaf was not perfect in outline. One of the leaves showed signs of a mechanical injury at the margin corresponding to the place of final release from the grip of the ruptured testa shrinking in the process of germination. In most cases part of the white papery membranous relic of the endosperm was also found attached on the adaxial surface of the cotyledon. In stray cases a halo of anthocyanin developed along the fringe of the damaged tissue. This localisation of the injury would appear to be a case of tramautic response as a consequence of tardy disentanglement of the seed-leaf and a rapidly dehydrating testa. The injury was not due to entomological or pathological cause as one was apt to judge on cursory observations. It did not inhibit further development of the seed-leaf. This observation is let in to show that this is a new congenital defect which may show varietal incidence and as far as the authors are aware, it has not been recorded before in this country, or in any other country.

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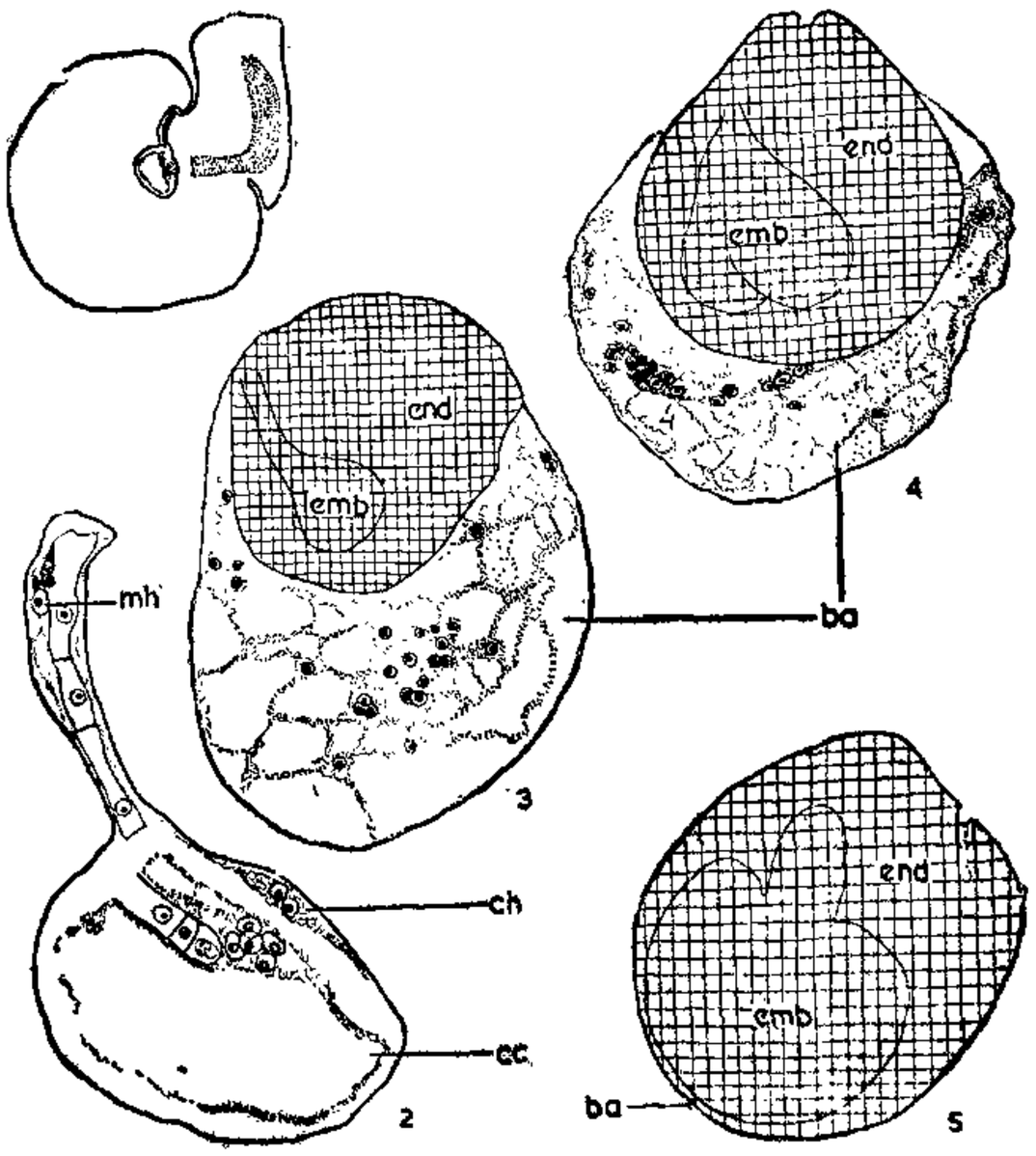
ENDOSPERM IN *ERANTHEMUM NERVOSUM*

THE mode of endosperm formation in the family Acanthaceæ is unique. With the exception of *Thubergia* (Mauritzon[1]) all the acanthaceous plants so far investigated show an initial vertical row of three endosperm cells, also met with in some families of the Tubifloræ, like Hydrophyllaceæ, Boraginaceæ, Scrophulariaceæ and Lobiatæ. What characterises the development subsequent to the three-celled endosperm of the Acanthaceæ in the stage? The central cell alone produces the endosperm proper, while the other two cells are transformed into the micropylar and the chalazal haustoria respectively. Usually the haustoria are unicellular and contain two or four nuclei. The endosperm proper may be nuclear to begin with but ultimately becomes cellular, or it may be cellular from its very inception. In several genera cell formation in the nuclear endosperm may be restricted to the part surrounding the embryo, leaving below it a free nuclear zone—the basal apparatus (Mauritzon[1], Mohan Ram[2], Mohan Ram and Sehgal[3]). The latter shows a great degree of variation in its extent and activity.

To start with, the central endosperm chamber in *Eranthemum nervosum* shows a free nuclear condition (Figs. 1, 2). According to Mauritzon,[1]



Figs. 1 and 2 from microtome sections; Figs. 3–5 from dissected whole mounts.

FIG. 1. L s. young seed, × 40. FIG. 2. Embryo-sac enlarged from Fig. 1 showing a long pro-embryo, a two-nucleate chalazal and micropylar haustoria and a five-nucleate central chamber, × 550. FIGS. 3–5. Later stages of endosperm. In Figs 3 and 4 a broad basal apparatus is observed. Fig. 3, × 180, Fig. 4, ×80 and Fig. 5, × 50.

ba, basal apparatus; *cc*, central chamber; *ch*, chalazal haustorium;
emb, embryo; *end*, endosperm proper; *mh*, micropylar haustorium.

in *E. leuconeuron* it becomes completely cellular after the 16-nucleate stage without forming a

basal apparatus. However, in *E. nervosum* it is found that wall formation is postponed until 32-64 free nuclei are formed, and a distinct basal apparatus always surrounds the cellular part of the endosperm (Figs. 3, 4). This is especially clear in dissections made under a stereoscopic microscope.

It may be pointed out that microtomed sections of young seeds always show a large empty space around the cellular endosperm. This represents the basal apparatus which is eventually used up by the enlarging cellular endosperm (Fig. 5).

It seems probable that in *E. leuconeuron* also, a basal apparatus similar to that of *E. nervosum* is present. Mauritzon's failure to observe it appears to be due to studying microtome sections alone which tend to give an incomplete picture unless supplemented by dissections and whole mounts.

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University of Delhi,
December 3, 1958.

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THE OCCURRENCE OF A SYMPHYLID (CLASS: MYRIAPODA) AS A PEST OF SUGARCANE AT COIMBATORE

VARIOUS soil animals are known to damage roots of crop plants. Ingram[3,4] reported the occurrence of *Hanseniella unguiculata* Bagnall, a symphylid, along with certain other kind of soil animals in Louisiana sugarcane fields, causing root injury to sugarcane plants.

Spencer and Stracener[1,2] observed extensive root injury to sugarcane by various soil organisms and demonstrated experimentally that root injury known as "Pitting" could be produced by the Symphylid, *Symphylella* sp.

In the course of a search for soil pests responsible for the heavy mortality of sugarcane seedlings (30 to 40%) in flats at the Sugarcane Breeding Institute, Coimbatore, the author ran into large numbers of a white symphylid in the soil surrounding the root zone of seedlings in the specially constructed brick flats on which the seedlings are raised. The examination of the root system revealed root damage in the form of 'pits' on the roots. The symphylids were actually seen to "gnaw" at the roots and tender root hairs (Figs. 1 & 2).

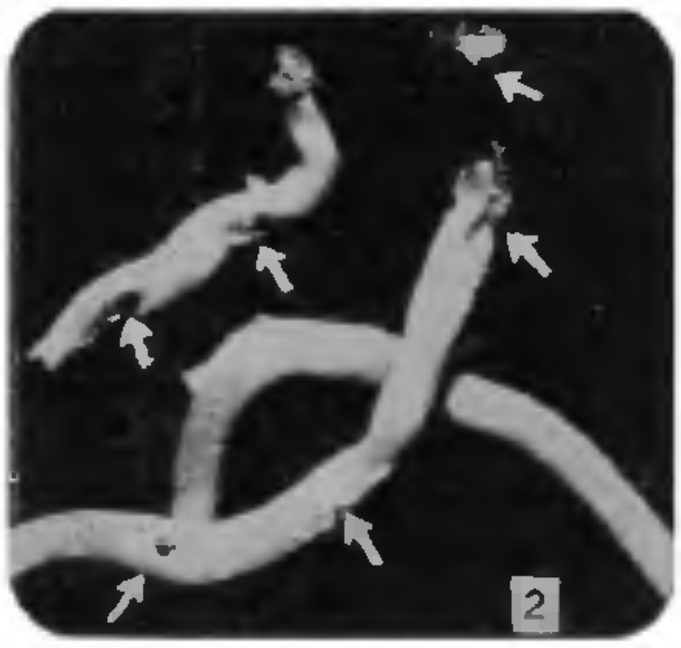

FIG. 1. Symphylids *in situ* : Feeding on roots of sugarcane (arrows denote damaged portions of root).

FIG. 2. Roots of sugarcane showing fresh damage in the form of "pits".

As far as the author is aware, this appears to be the first record of a symphylid affecting sugarcane in India. This is of particular importance to this Institute, which raises millions of hybrid sugarcane seedlings every year and which experiences a heavy loss of valuable seedlings in the nursery stage itself due to various factors including soil pests.

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