

**EMBRYOLOGICAL STUDIES IN PALMÆ  
(A PRELIMINARY NOTE ON THE  
MEGASPOROGENESIS IN ARECA  
CATECHU LINN.)**

THE review of literature on Palmæ given by Schnarf<sup>1</sup> and Schürhoff<sup>2</sup> reveals the paucity of work on the subject. There is considerable difference of opinion between different investigators about the mode of development. A re-investigation of several members of the family Palmæ is taken up by the author and a preliminary note on the megasporogenesis of *Areca catechu* Linn. is presented here.

There is a single basal, erect ovule in each ovary. The archesporial cell cuts off 4 to 6 parietal cells and the megaspore-mother cell becomes deeply placed. The development of the embryo-sac conforms to the Normal-type. The embryo-sac enlarges in size and the surrounding nucellar cells become disorganised constituting nutrition. Consequently the embryo-sac shows very irregular contour. The synergids are about the same size as the egg. The antipodals are persistent and become aggressive. The surrounding nucellar cells are depleted of their cell contents and the antipodals might be haustorial in function. The nuclei of the antipodal cells show marked hypertrophy.

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<sup>1</sup> Schnarf, K., *Vergleichende Embryologie der Angiospermen*, Berlin, 1931.

<sup>2</sup> Schürhoff, P. N., *Die Zytologie der Blütenpflanzen*, Stuttgart, 1926.

**A NEW PHANEROGAMIC PARASITE OF  
SUGARCANE IN BENGAL**

THAT the sugarcane suffers from attack of phanerogamic parasites<sup>1,2,3,4</sup> is well known. The parasitic weed *Striga*, causing sometimes a good deal of damage in sugarcane crop, is not uncommon in India and in other countries. *Æginetia indica*, of the family *Orobanchaceæ*, has been known as a parasite on sugarcane in India and other tropical cane-growing countries, while a second member of the same

genus, *A. paniculata*,<sup>1</sup> is reported from Burma as another parasite on cane. Though *Æginetia pedunculata* has been seen to occur as a parasite<sup>1</sup> on grasses, no such report of its parasitisation on sugarcane would appear to have been recorded so far.

During the months of June and July, 1940, many clumps of sugarcane were observed in some localities of the Munshiganj Sub-Division, Dacca, that were apparently suffering from some sort of disorder. The clumps were examined and clusters of flowers were found emerging out of the soil at the bases of the cane plants (Fig. 1). The flowers were later



FIG. 1

Clusters of floral stalks and flowers of *Æginetia pedunculata* showing attachment with roots of sugarcane. A—roots of the parasite; B—roots of sugarcane.

identified to be of the species *Æginetia pedunculata* Wall.

To find out what relationship this flowering plant had with the diseased appearance of the sugarcane clump, the latter with the flowers was taken out of the ground with the root system intact and the whole carefully washed to remove the adhering soil. *Æginetia pedunculata* was found to produce a short, soft, thin underground stem, 4-6 inches long, having small fleshy scales over its body and to send out pedicelled (2 to 4 inches) flowers above

the soil surface. The flowers,  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches in length, were conspicuous by their bright violet colour and the aggregation of corymbs. Short rather stout and soft scapes, long bracteate pedicels, bright violet limbs, 2-lamellate placentas and mucilage loaded spathaceous calyx were all there to distinguish this species from *A. indica* Rox., the only other species of the genus known in India.

The roots of the parasite were found to form a thick tangled mass with those of the sugarcane. They formed organic connections with the thinner roots of the cane and thus drew upon the sugarcane host. Sometimes a knob-like swelling was seen upon the parasite root at the point where it formed connection with that of the cane. The attacked canes or clumps were stunted in growth with withered and dried leaves. In the early stages of attack, the outer leaves seemed to be affected first with withered edges and the midribs alone remaining green. In case of severe attack the clumps might die altogether. The effect due to the related species of this parasite on sugarcane is known as "bunga"<sup>3</sup> and the same name might be applied in this case also.

In the control of this parasite, the infected clumps should be dug out and eradicated as soon as the flowers become visible and before they form seeds. If the parasite is left to seed and the seeds, minute and numerous, mature then the parasite comes out in large numbers the next season. Setts for planting should be selected from fields free from the attack of the parasite. Further control measures are being tried, the results of which will be published in due course.

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<sup>1</sup> Hooker, J. D., *The Flora of British India*, London, 1885, 4, 320.

<sup>2</sup> Luthra, J. C., *Agri. J. India*, 1921, 16, 519.

<sup>3</sup> Roxas, M. S., *Sugar News*, 1927, 8.

<sup>4</sup> Subramaniam, L. S., *Imperial Council of Agri. Research, India, Miscella. Bull.*, No. 10, 1936.

## THE MANUFACTURE OF GLANDULAR PRODUCTS IN INDIA

WHILE it is gratifying to note that several laboratories in this country have been making original contributions to the chemistry and therapy of Vitamins some of which are being quoted with appreciation in foreign scientific journals, it is to be regretted that few, if any, of our institutions have undertaken systematic research in the field of Hormones. This is probably due to some extent to the difficulties which are inherent in hormone-research but more to the fact that for such work to be really fruitful a better and more intimate co-operation between the chemist and the clinician is necessary than obtains at present in India. The incorporation recently of a department of Pharmacology in the Chemistry Department of the Institute of Science, Bangalore, is from this point of view to be regarded as a move in the right direction.

Glandular products like insulin, adrenalin, liver principles, pituitary concentrates and sex hormones have now become indispensable for the comforts of modern life, but we are at present entirely dependent on foreign imports for these essential drugs. The war of 1939 which has now blazed into a real World War has completely cut off our supplies of these medicinal products and we are consequently faced with the dire necessity of either developing our own resources or of going without these drugs. India is reputed to possess nearly a third of the world's population of cattle and it is the slaughter-houses of our principal cities which should mainly provide the raw materials for these drugs. Statistics obtained through the kind services of the Board of Scientific and Industrial Research in Calcutta show that nearly two and a half millions of sheep and goats and three and half lakhs of cattle (bullocks, buffaloes, cows and calves) are slaughtered annually in the cities of Bombay, Calcutta, Madras, Delhi, Karachi, Lahore, Lucknow and Dacca. These figures compare favourably with animals slaughtered in the slaughter-houses of London or even of a typical Packing House in Chicago,