Effect of Indole-acetic Acid on Rooting in *Gootes* (Marcotte) of Mango

THE present method of inarching of mango using seedling stock is tedious and does not give satisfactory result. In this connection our attention has been drawn to a note by P. K. Sen,[1] who reports the result of his not very successful attempt to induce formation of roots in mango cuttings by treatment with indole-acetic and indole-butyric acids. As the period of his observation extended up to sixty days, the author concludes that the interval is too short for rooting in mango.

In the course of our trials to find out a more suitable method of mango propagation we tried to grow roots by ring bark cutting with treatment of indole-acetic acid employing two-year old shoots. After the ring bark was taken out as in the usual process, the epidermis of the bark just above the ring was slightly disturbed; the wound was thoroughly washed with water and then a lanoline paste containing 1 per cent. indole-acetic acid was applied round the stem above the ring to the extent of half an inch. It was allowed to remain in that condition for twenty-four hours after which it was dressed with coir only and kept moist. Control experiments were also undertaken in order to be certain of the effect of indole-acetic acid on the root formation in mango.

Roots were found in the treated region within six weeks of the experiment (Fig. 1). There was no rooting in the control plants (Fig. 2).

FIG. 1

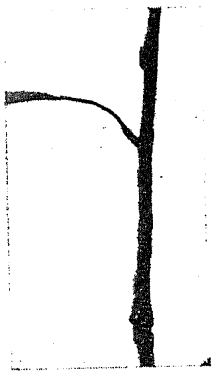

FIG. 2

The work is being continued and the detailed account of the investigation will be published in the *Transactions of the Bose Research Institute.*

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January 19, 1940.

[1] Sen, P. K., *Curr. Sci.*, 1939, 8, 553.

The Occurrence of Pollen Grains in the Ovary Wall of *Dianthus*

IN *Dianthus*, a number of abnormalities are known to occur, but the one observed by the writer has so far not been reported.

An abnormal pistil having a deep longitudinal groove (indicating a slight bulging out of the carpels) on the ovary was collected, and in order to see how far the lobes of the ovary resembled as regards ovule development, it was fixed and microtomed in the usual way. In Master's Teratology, it is mentioned that in abnormal ovaries of *Dianthus*, with a disunion of the carpels, the ovaries are mostly destitute of ovules.

In serial transverse sections of the abnormal ovary that was collected, it is seen that the smaller lobe is composed of one carpel, and the larger one of two carpels, both the lobes containing normal, fully developed ovules. The larger lobe is bilocular at the base, but towards the middle of the ovary free-central placentation is established due to the breaking down of the septa. The smaller lobe is unilocular throughout and has marginal placentation.

From about 2·5 mm. above the base of the loculi of the ovary, a small cavity makes its appearance in the ovary wall of the smaller lobe, almost directly opposite the place where the smaller lobe is continuous with the larger (Fig. 1). This cavity gradually enlarges in size, and contains fully developed pollen grains, some of them entirely normal in appearance, and others deformed (Figs. 2 and 3). This part of the ovary wall containing pollen grains higher up bulges into the loculus of the ovary. Towards the middle of the length of this pollen cavity, it opens by a narrow aperture into the ovary

(Fig. 4), but towards its apex it again closes up. The length of this pollen cavity is about

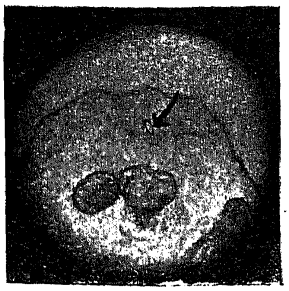

FIG. 1

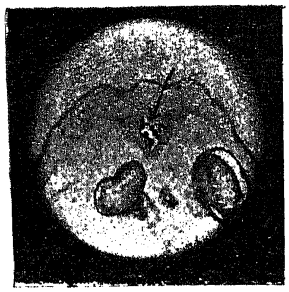

FIG. 2

FIG. 3

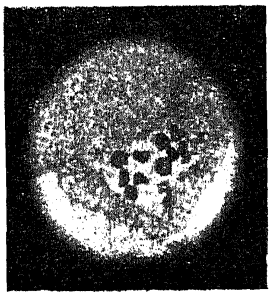

FIG. 4

4·5 mm. and it is divided into three linear parts by two constrictions and sterile tissue. The extreme tip of the "Pollen cavity" is separate from the ovary wall and lies in the loculus of the ovary. The vascular bundles of the ovary show no relation, either direct or indirect, to this pollen cavity, while the filaments of the normal stamens of this plant are supplied with well-developed vascular strands.

Similar development of microsporogenous tissue in the ovary has been previously recorded in Salix.[1, 2]

I am deeply obliged to Dr. A. C. Joshi, D.SC., of the Benares Hindu University, for kindly going through the manuscript and giving valuable suggestions which have been incorporated in this note. I am also grateful to Dr. N. N. Murti, PH.D., for kindly providing me with all facilities for research, and for the keen interest he had taken in the work.

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1 Chamberlain, C. J., *Bot. Gaz.*, 1897, 23.

2 Hagerup, O., *Danske Videsnk. Selsk. Biol. Med.*, 1938, 14.

The Duration of the Parasitic Stage in the Life-history of the South Indian Fresh-water Mussel

WE have no knowledge of the life-history of any of the Indian Unionidæ or fresh-water mussels. This is partly due to the difficulty of observation, the important phase in the development of the mussel being passed as a parasite on a suitable fish-host. During this stage the 'encysted' glochidium metamorphoses into the juvenile mussel, attaining complexity of organisation without increase in size. In nature, the infection of fish is purely accidental, and specimens of infected fish are hardly come across. Experimental determination of the appropriate fish-host by artificial infection may involve several trials with different species of fish.

Quite recently, employing the method of artificial infection, I was able to observe the metamorphosis of the 'encysted' glochidia of *Lamellidens consobrinus* (Lea). The remarkable feature in the life-history of this form is the very short duration of the parasitic stage. For the European and American species the duration of the parasitic stage is stated to be from a few weeks to two months or longer.[1] In the case of *Lamellidens* the parasitic stage lasts only for *six to eight days*. In one of my experiments the fish were infected on 11-12-'39, at about 7 p.m. and the first batch of free-living, young mussels were obtained on 17-12-'39, at about 3 p.m. By 19-12-'39, all the 'encysted' glochidia metamorphosed. Another batch of fish were infected on 12-1-'40, at about 4 p.m., and the first batch of metamorphosed stages were obtained on 18-1-'40 at about 5 p.m. This striking abbreviation of the period of parasitism is evidently related to tropical conditions of life. In a future account on the life-history of *Lamellidens* I hope to discuss, among other things, the significance of this feature, and its effect on the organogeny during the post-embryonic development.

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January 17, 1940.

1 Korschelt, *Vergleichende Entwicklungsgeschichte der Tiere*, 1936.