

structure. When examined under the microscope, sections of the rock are seen to be crowded with fragments of varying shapes and diameters, and quite distinct from the oolitic structures. On closer examination, they show characters distinctly suggestive of the thallus of primitive algæ. One of them shown in Fig. 1 clearly shows a central cavity with a number of dark circular bodies arranged regularly along the periphery, the entire structure strikingly resembling a cross-section of the thallus of a Dasycladacea.

The author is grateful to Professors B. Sahni and S. R. N. Rao who very kindly examined the slides and agreed that the structures referred to above are of plant origin. The discovery of recognisable organic structures in these Pre-Cambrian rocks of India is evidently of considerable interest and importance, and a fuller paper dealing with this material will soon be published elsewhere.

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**A NOTE ON THE DISCOVERY OF
APTEROUS MALES IN THE PINK
MEALY-BUG OF SUGARCANE,
TRIONYMUS SACCHARI CKLL.
(COCCODÆ HOMOPTERA)**

THE adult males in Coccidæ are generally winged, while the females are wingless. In some genera, like *Fonscolomba*, however, the males are always apterous, while in others (*Tachardinae*) the males are sometimes so. Apterous and winged males are also said to occur in the genus *Gossyparia* which belongs to the Sub-Family *Dactylopinae*. In the case of *Aclerda berlesei*, Leonardi (1920) mentions



FIG. 1

the existence of males with atrophied wings besides the winged ones. Herbert (1924) reports forms representing varying gradations between the winged form and the apterous condition.

There appears to be no previous record of the occurrence of apterous males in *Trionymus sacchari* Ckll., either from this country or elsewhere. While studying the biology of the pink mealy-bug some forms came under observation which when examined microscopically, resembled in all essential respects, the alate male except in the possession of wings and compound eyes (Fig. 1). The cuticle of this apterous form is not sclerotised in the principal regions of the body, the three penultimate abdominal segments bear a pair of long setæ like those of the adult female, a pair of ocellanæ present but compound eyes absent, antennæ have eight joints instead of ten in the winged male. Spiracles, legs and stylus of the wingless male do not differ in any essential respects from those of the winged one. The apterous male of *T. sacchari* resembles that of *Stomococcus plattani*.

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**ARTIFICIAL GERMINATION OF
RICE POLLEN**

IN view of the importance of pollen viability tests to rice breeding, a detailed study of the optimum conditions for artificial germination of the pollen was undertaken. The combination of various culture media, temperature and humidity were re-tried but without satisfactory results. The following technique was, however, found to give consistently better results and uniform germination.

The experiments by the author have shown that given proper humidity and temperature, the rice pollen germinates without any culture solution. The humidity required is 100 per cent., but it is important that it is not supplied by a sheet of water directly below, as when humidity was supplied this way, the percentage of bursting was very high. After

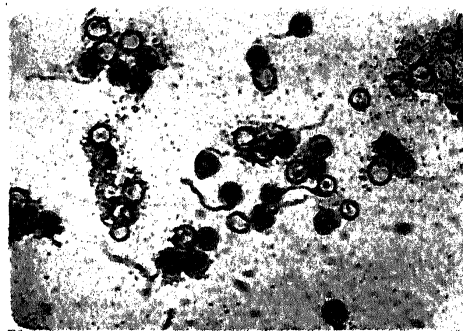


FIG. 1

Germinating pollen grains × 135

a number of trials it was found best to germinate the rice pollen inside a desiccator. The bottom of the desiccator is filled with water and a layer of filter-papers or a pad of cotton wool soaked in water is placed inside the

desiccator. The pollen is dusted over a glass slide and the slide placed (pollen side upwards) on the filter-paper. The desiccator is then placed inside a chamber in which a temperature of 28° C. or 29° C. is maintained.

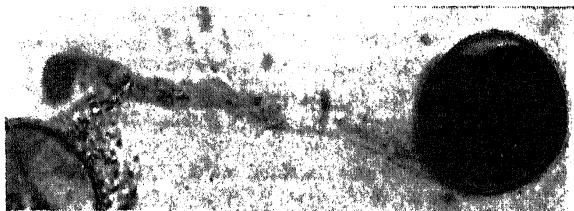


FIG. 2

A highly magnified pollen tube of average length $\times 950$

Grown in the above manner, the rice pollen has been giving consistently from 50 per cent. to 60 per cent. germinations and the length of the tubes has been about 130 μ to 140 μ with a maximum of 238 μ . Unlike other methods, this technique has yielded consistent and reproducible results.

My thanks are due to Mr. C. R. Srinivasa Ayyangar and to Mr. N. L. Dutt for help and advice.

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ON THE ACTIVE PRINCIPLES OF THE BARK OF *AEGLE MARMELOS* CORRÊA

Aegle marmelos (family: *Rutaceæ*), commonly known as Bael, is indigenous to India and is reputed to be a valuable Ayurvedic remedy for various intestinal complaints. The bark as well as the fruits, both ripe and green, have been used for this purpose.¹ A chemical examination of the fruits by various workers has revealed the occurrence of a coumarin² (marmelosin) identical with a furocoumarin (imperatorin)³ isolated from *Imperatoria ostruthium*⁴ and *Angelica archangelica*.⁵ As, however, no chemical examination of the bark has so far been reported, the present investigation was undertaken.

The barks of young and old plants procured from different places in Bengal and Bihar were sun-dried and the following five active principles isolated in a pure state, employing the usual methods of separation.

The young barks of both Bengal and Bihar gave (i) a coumarin (A) (yield—0.03 per cent.), which crystallises, has shining silky needles, m.p. 123° C. from ethyl acetate, acetone and petroleum ether; (ii) an alkaloid (B) (yield—0.003 per cent.) as rhombic plates, m.p. 175° C.; and (iii) umbelliferone (7-hydroxy coumarin). The old barks of both regions gave the same umbelliferone (iii), but (iv) a different coumarin (C) (yield—0.6 per cent.) which crystallises as colourless shining rods, m.p. 187–188° C., from alcohol, acetone and benzene. The same alkaloid (B) was yielded by the old barks of Bengal, but those of Bihar gave (v) a new alkaloid (D) (yield—0.3 per

cent.), which crystallises as thick colourless plates, m.p. 142° C., from alcohol and ethyl acetate. It would appear from the above facts that not only the age of the plant, but also ecology plays an important role in the biogenetic synthesis of active principles in plants.

Further work is in progress.

The author is indebted to Prof. P. C. Mitter for laboratory facilities and to Dr. P. K. Bose for advice and encouragement.

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April 26, 1943. (MISS) ASIMA MOOKERJEE.

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PRODUCTION OF PENICILLIN

THE yield of the unstable Penicillin is found to be generally small and the process is lengthy, requiring an incubation period of 12 days at 24° C. on modified Czapek-Dox media.¹ Hobby *et al.*² reduced this period to 8 days by using brown sugar instead of glucose. Challinor³ has reported that this time could be still further reduced to 5 days by adding small amounts of metabolic solution from previous batch to the culture vessel before seeding with *Penicillium notatum*.

All the previous workers have grown the fungus in liquid sugar media involving the handling of large volumes of solution. We are probably the first to grow this fungus on semi-solid media like those tried by Oshima and Church⁴ with a view to study the development of anti-bacterial activity. We found that the maximum anti-staphylococcus aureus activity was reached within 3 days. The activity of the nutrient medium after 3 days' growth diluted ten times with distilled water and sterilized by filtering through L3 candle was found to be 3 to 4 'Oxford Units'. This activity of the metabolic solution is the same as that reported by Florey and Jennings⁵ and we have verified this by growing the fungus in Czapek-Dox media for 12 days at 24° C.

Another point observed by us is that though the antibacterial activity reaches its maximum in 3 days, the production of the dye chryso-genin⁶ is at this stage very little. One more point of importance is that the anti-bacterial potency of the nutrient semi-solid media did not come down very much even after storing it at room temperature for a period of 3 weeks.

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