

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.

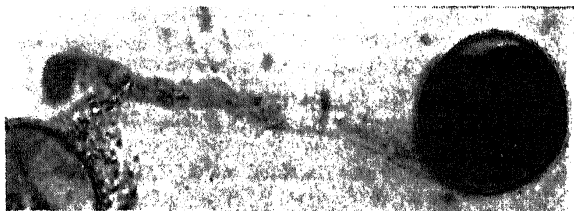


FIG. 2

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.

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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.

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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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