

In Table II corresponding results obtained with soils saturated with the divalent alkaline earth cations are reported.

TABLE II

Ion	Radius of the ion Å	Rate of percolation of water in inch per hour	
		Observed	Calculated
Mg	0.65	0.150	0.153
Ca	0.99	0.275	0.272
Sr	1.13	0.350	0.345
Ba	1.35	0.500	0.504

It is significant that the percolation rate follows the order



The observed rates conform to the relation

$$P = 0.127 e^{1.705r}$$

It is clear that the rate of percolation is an exponential function of the radius of the ion which saturates the soil complex.

Chemistry Department,
Lucknow University,
June 2, 1943.

M. R. NAYAR.
K. P. SHUKLA.

* This work has been carried out under the auspices of the Irrigation Dept. (Research Section), U.P. Government.

1. Ram Das and Mallik, *Proc. Ind. Acad. Sci.*, 1942, 16, 1. 2. Jenny and Reitmer, *J. Phy. Chem.*, 1935, 39, 593.

ZODIACAL LIGHT AT POONA

ZODIACAL light has been discussed from many points of view by various people.^{1,2,3} In this note the intensity of the Zodiacal light as seen

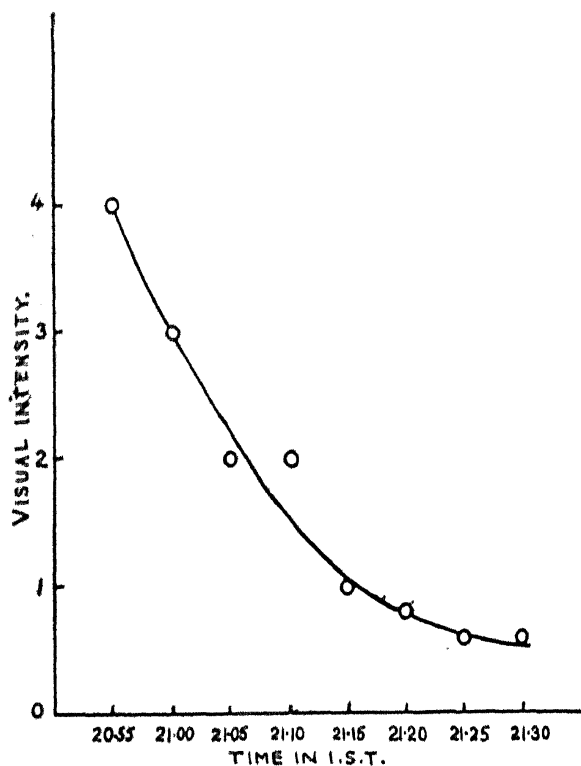


FIG. 1

at Poona in the evening after sunset on a moonless night at the western horizon like a dome vertically up has been studied visually. The maximum intensity of the Zodiacal light at different hours is compared with that of the star canopus, the observations being made from the second floor of a certain building (Wakekar's quarter) some forty feet high from the ground, on the Fergusson Road.

Table I gives the intensity of the Zodiacal light on 4-4-1943 from 20.55 hours to 21.30

TABLE I

Time in I.S.T.	20.55	21.00	21.05	21.10	21.15	21.20	21.25	21.30
Intensity of Zodiacal Light	4	3	2	2	1	.8	.6	.6

hours I.S.T., that of canopus being taken as 10. Graph 1 shows the relation between the time and the intensity as given in Table I.

Weather Office,
Poona,
May 10, 1943.

JAGDEO SINGH.

1. *Science and Culture*, 1939-40, 312. 2. *Meteorology* by A. E. M. Geddes, p. 342 (Plate XX facing p. 342). 3. Spectrum of night sky and Zodiacal light—c Hoffmeister, *Zeits. f. Astrophysik*, 1939, 19(2), 116-131.

ALGAL STRUCTURES FROM THE CUDDUPAH LIMESTONES (PRE-CAMBRIAN), SOUTH INDIA

IN the course of a detailed examination of some of the limestones from the lower Cuddupahs collected from near Royalcheruvu,



FIG. 1

Anantapur District, certain remarkable algal structures have been noticed. In hand specimens, the limestone is a dark coloured fine-grained marble, showing in places an oolitic

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.

Department of Geology,
Central College,
Bangalore,
July 12, 1943.

M. R. SRINIVASA RAO.

**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 *Dactylopinæ*. 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*.

Imperial Sugarcane Station,
Coimbatore,
June 18, 1943.

S. RAM MOHAN RAO.

1. Leonardi, G., *Monografia delle cocciniglie italiane*, Portici, 1920. 2. Herbert, F. B., "The European Elm Scale in the West", *United States Dept. Agri., Dept. Bull.* 1924, No. 1223.

**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

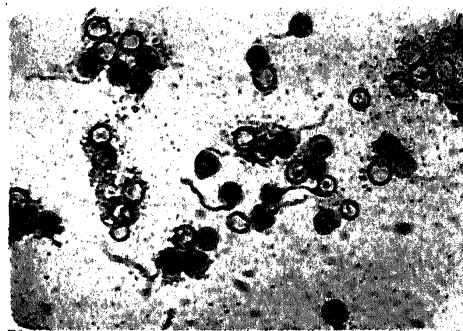


FIG. 1

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