

the lamps started glowing there was no effect of light on the current flowing or on the voltage across the lamp.

In view of the above, the use of neon lamps should be avoided in such circuits, or if used, the lamps must be painted red so that they become immune to light effect.

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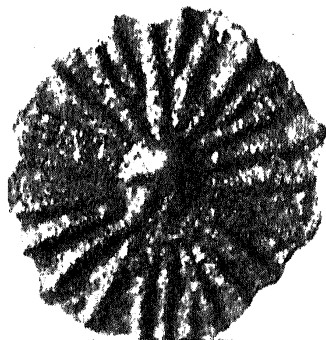
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ON A STELLATE DISCOCYCLINE
FROM THE UPPER EOCENE OF
SURAT-BROACH AREA (BOMBAY
PRESIDENCY)

STELLATE discocyclines are important in the zonal classification of the Eocene beds; and from India and neighbouring regions the following are known:

1. *Orbitoides asterifera*—Described by Carter¹ from the Laki horizon of the Kelat-valley in Baluchistan. Only the external characters are known and from Carter's description it appears to be an *Asterocyclina*.

2. *Actinocyclina alticostata*—Described by Nuttall² from the Middle Kirthar horizon of Kutch.



Actinocyclina cf. *crassicostata* Douville⁷ × 5½.
Upper Eocene of Bhodan, near Surat.

3. *Pseudophragmina* (*Asterophragmina*) *pagoda*—Described by S. R. N. Rao³ from the Yaw stage (Priabonian) of Burma.

The stellate discocycline now being recorded was collected by the author from the *Pellatispira*-bed of the Surat-Broach area to which an Upper Eocene age has been assigned.^{4, 5} The fossil has a discoidal test with a mamelon in the centre. In complete specimens radial ridges do not extend beyond the periphery of the test. The specimen figured is 6.3 mm. in diameter. An axial section shows that the radial ridges are built by lateral chambers as in the genus *Actinocyclina* as now defined by Brönnimann.⁶ The fossil is unlike any discocycline so far described from India, and appears to be very close to, if not, identical with *Actinocyclina crassicostata* which Douville⁷ has described from the Priabonian (Upper Eocene) of France.

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GERMINATION OF DOUBLE GRAINED
PADDY IN RELATION TO THE
ANATOMY OF LEMMA AND PALEA

In the germination of double grained paddy a peculiarity was observed. Embryos in the primary and secondary kernels are located facing the lemma and palea respectively. When the double grained paddy seeds are kept for germination, only the embryo facing lemma germinates, while one facing the palea does not. It was suspected that the embryo facing the palea may not be viable. Naked primary and the secondary kernels were taken out of the pericarp and put to germination test. It was found that the embryos in both the kernels germinated, but the embryo in the secondary kernel grew less vigorously. The mechanical obstruction of the palea apparently prevented the germination. In the embryo in the secondary kernel of order to confirm the same, anatomy of both

lemma and palea was studied in serial sections.

Structure of the lemma at the basal end, where the embryo is located, is quite different from the other portions of the same. Throughout its length (5 to 8 mm.) the hypodermal cells under the midrib are not lignified. These cells are small in size and thin-walled. Absence of lignified hypodermal tissue gives the appearance of a slit at this portion. Epidermal cells also are small in size compared to the neighbouring epidermal cells. Further the epidermal cells at other portions are corrugated with incrustation of silica on both sides while at this place they are smooth-walled and devoid of any incrustation of silica or trichomes (Fig. 1).

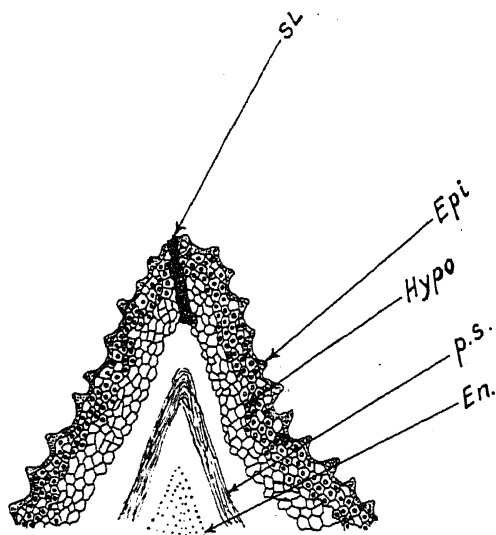


FIG. 1. T. S. of lemma at the basal portion.

Epi—Epiclumis. *Hypo*—Hypodermis. *SL*—Slit—like portion of the lemma where the cells of the hypodermis are not lignified through which embryo emerges. *p.s.*—perisperm. *En*—Endosperm.

In the structure of the palea the outer epidermal cells exhibit similar lignifications and silicifications as those found in the lemma. The epidermal cells are slightly smaller in size in general and particularly they are very much reduced where the palea is clasped by the margins of lemma. The hypodermal cells are thickened and lignified. The structural peculiarity found in the case of lemma near the embryo is not found here. There are no rows of thin-walled cells below the midrib as found in the case of lemma.

During germination the pericarp is pushed through by the coleorrhiza leaving a cavity.

in front of the rootcap. Primary root soon elongates and fills the cavity. On further growth the root extends upwards in the direction of epicotyl for a short distance before it responds positively to the stimulus of gravity. About this time the coleoptile also emerges splitting open the lemma at the particular portion described above. In the case of palea the lignified hypodermal tissue offers mechanical resistance for the growth of the embryo in the secondary kernel which is also less vigorous than the primary embryo. Consequently there is no germination.

To establish mechanical obstruction of the palea over the embryo in the secondary kernel, half the palea was finely scalpeled when the embryo in the secondary kernel germinated behind the embryo in the primary kernel.

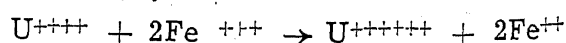
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VANADOMETRY—PART V Volumetric Estimation of Uranium with Sodium Vanadate

THE present communication deals with the determination of U^{++++} with sodium vanadate as a reagent. A known volume of a 0.05 N solution of uranyl sulphate was reduced in a Jones Reducter according to the directions given by Lundell and Knowles and later treated with a stream of purified air for five minutes. The titration of the resulting U^{++++} solution with a standard solution of sodium vanadate was not found feasible, when diphenyl benzidine was used as indicator, because of the extremely slow development of the colour of the indicator. The difficulty is overcome by adding ferric alum solution in excess of that required for the reaction.



We have tried another and a novel way of overcoming the difficulty of the slowness of the end point in the titration of U^{++++} with sodium vanadate. Our experiments have shown that an overall concentration of 0.01 N oxalic acid is enough to catalyse the