

of the nectary followed by two to three layers of compactly arranged parenchymatous cells.

The single vascular trace entering the filament finally reaches the connective of the anther. Here it gives out a branch passing further up into the horn-shaped appendage and ending blindly at its apex

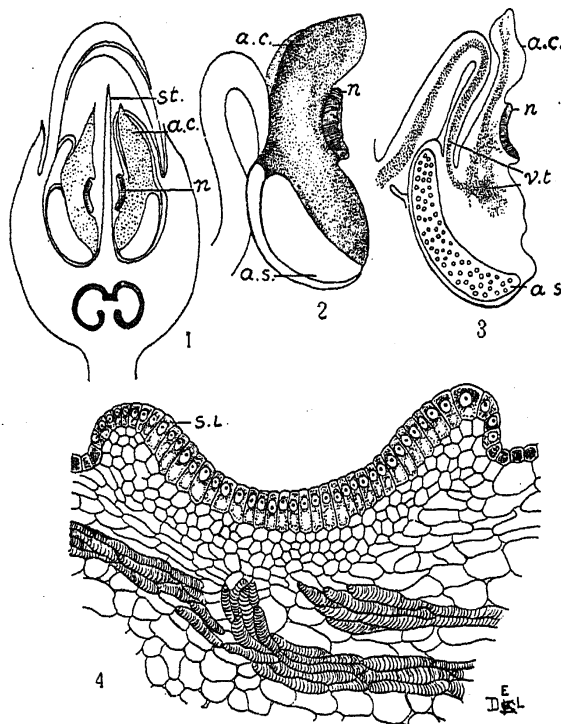


FIG. 1. L. S. of a young flower bud (semidiagrammatic). FIG. 2. A stamen enlarged showing the connective, appendage and nectary. $\times 23$. FIG. 3. L. S. of same showing vascular supply. $\times 23$. FIG. 4. L. S. nectary (a.c., appendage of the connective; a.s., anther sac; n., nectary; s.l., secretory layer; st., style; v.t., vascular trace.) $\times 175$.

(Fig. 3). In the appendage of the connective the vascular trace spreads itself broadly and sends some branches to the base of the nectary.

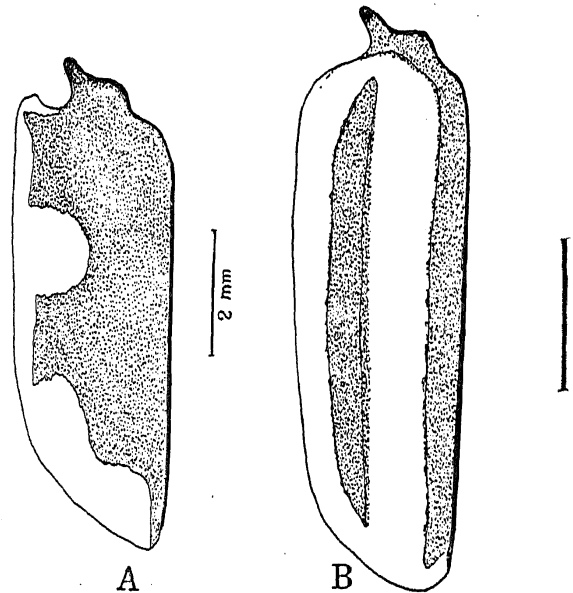
I thank Prof. P. Maheshwari for suggestions, the National Institute of Sciences of India, for the award of a junior fellowship, and the authorities of the University of Delhi for laboratory facilities.

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November 2, 1949.

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CICINDELIDS FROM KRUSADAI ISLAND AND KUTIKAL POINT IN THE GULF OF MANNAR

THE commonest diurnal insects on the sandy shores of the Krusadai island are the cicindelids (*Cicindela biramosa* F.). Another larger species, *C. quadrilineata* var. *reithornii* Horn, characterised by longitudinal stripes on the elytra (*vide* figures) is to be seen with while walking from Pamban



The right elytron of
(A) *C. biramosa* (B) *C. quadrilineata*

Kutikal Point along the southern coast of the Rameswaram island. A detailed account of these beetles will be published later.

Thanks are due to Dr. N. C. Chatterjee, Forest Entomologist, Dehra Dun, for identifying the species.

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A POSSIBLE EXPLANATION OF THE JOSHI EFFECT

PROF. JOSHI'S postulate of the surface layer origin of the Joshi Effect Δi appears probable.^{1, 2, 3, 23, 24, 25, 4} Its various determinants follow from the photo-volt behaviour of a singlet-formed^{16, 17} w complex $W^{+1/2} (XY)^{-1/2}$. It is assumed that (i) this complex is stabilised owing to the electron donating property of a semiconductor, e.g., glass (ii) under

operating fields (V_m , the threshold potential) the complex ionises into $(W.XY)^+ + e(-)$ and the latter contributes to the discharge current i ; and finally (iii) light dissociates the complex into either, or/and (a) $W + XY$, (b) $W^+ + XY^-$, (c) $WX + Y$, (d) $(WX)^+ + Y^-$. The light action introduces, therefore, negative ions *in lieu* of electrons as in (ii) or/and neutral particles, causing Δi . Enhanced temperature instabilises the complex and therefore reduces Δi , as reported.^{2, 5} The favourable effect on Δi of a rise in gas pressure¹² follows from the corresponding increase in the complex concentration; similarly, ageing^{1, 2, 13, 14, 24, 25} under the discharge favours it. An increase of light frequency^{1, 3, 6, 7} and intensity^{29, 3, 8, 13, 15} should aid (iii) and therefore, Δi . The boundary complex being the photosensitive material, primary to Δi , its non-dependance on selective absorption of the excited gas is to be anticipated^{1, 26}; as also the profound influence of the wall material^{1, 5, 27} and the comparatively greater Δi in transverse than in longitudinal irradiation.^{21, 22}

The complex formation should develop with gases possessing resonating semipolar single bond structure^{18, 19}; or with a tendency, under excitation, to pass into that structure whether single or multibonded, e.g. $W^{+1/2} \cdot O \cdots (O)^{-1/2}$ or $W^{+1/2} \cdot H \cdots (OH)^{-1/2}$ in order to accept the electron donated by the wall molecule W . The observed order in respect of Δi in various elementary gases follows, *viz.*, $Cl_2 > Br_2 > I_2 > O_2 > N_2 > H_2 > Ne$. Due to polarisation from complex formation, surface layer ionises²⁸ at a lower voltage V_m . At higher voltages unpolarised molecules even in the bulk start ionising when surface ionisation becomes unimportant. This explains the appearance of maximum Δi near V_m implied in (ii) and its decrease thereafter.^{2, 5, 7, 10, 11} Since large potentials are required for conduction at large gas pressures the inhibitive influence of the latter follows.¹²

A typical result in this field that Δi is linked preferentially with the H.F.s^{9, 10, 11} may now be considered. The ozoniser is essentially a compound condenser² discharging once every period through an internal resistance, characteristic of the excited gas, which is inverse of the associated con-

ductivity. The observed decrease of latter (as in Δi) should reduce the Δi since the resistive damping increases rapidly with the frequency.^{1, 10}

Joshi has generalised that a $+\Delta i$ occurs at low applied potentials² and ascribed *inter alia* to a simple photoelectric effect of the boundary layer uninterfered with secondary changes. On the basis of theory now advanced, at low applied V_m , process (ii) is negligible. Irradiation leading to (iii) should release negative ions and therefore, enhance the conductivity constituting the positive Joshi Effect.^{1, 2}

Our grateful thanks are due to Prof. S. Joshi, D.Sc. (London), F.R.I.C., F.N.I., for his valuable suggestions and kind help.

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