lase system in maintaining the auxin levels and also its role in wound healing.

2 August 1986; Revised 28 August 1986

1. Gopinathan, K. and Ananthakrishnan, T. N., *Proc. Indian Nat. Sci. Acad.*, 1985, **B51**, 413.
2. Yoshida, S., Farno, D. A. and Cock, J. H., *Laboratory manual for physiological studies of rice*, International Rice Research Institute, Philippines, 1971.
3. Lowry, O. H., Rosenbrough, N. G., Farr, A. L. and Randa, R. G., *J. Biol. Chem.*, 1951, **193**, 265.
4. Bray, H. C. and Thorpe, W. V., *Meth. Biochem. Analysis*, 1954, **1**, 27.
5. Nelson, N., *J. Biol. Chem.*, 1944, **154**, 375.
6. Raman, A. and Ananthakrishnan, T. N., *Proc. Indian Nat. Sci. Acad.*, 1983, **B49**, 525.
7. Gopinathan, K., *Proc. Indian Acad. Sci. (Plant Sci.)*, 1986 (submitted).
8. Neish, A. C., In: *Biochemistry of phenolic compounds*, (ed.) J. B. Harbone, Academic Press, New York and London, 1964, p. 295.
9. Tandon, P. and Arya, H. C., *Biochem. Physiol. Pflanzen.*, 1980, **175**, 537.

POLLEN TRANSFER AND STIGMATIC RECEPTIVITY WITH REFERENCE TO THRIPS (INSECTA: THYSANOPTERA) IN *SOLANUM MELONGENA* LINN

R. VELAYUDHAN and R. S. ANNADURAI
Entomology Research Institute, Loyola College, Madras 600 034. India.

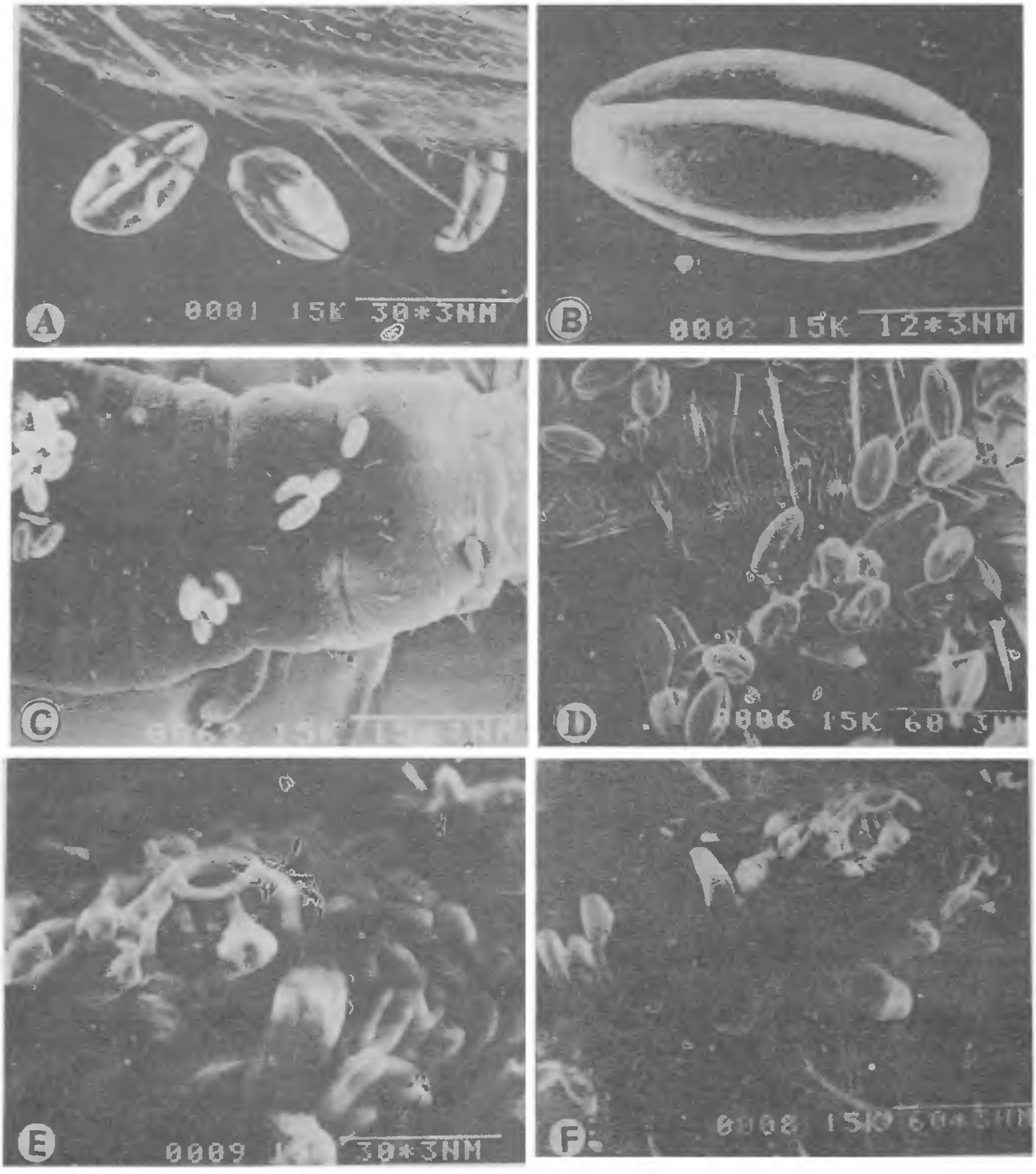
THE recent report on entomophily in a solanaceous plant is related to the work of Kakizaki (as reported by Free)[1], in *Solanum melongena*. Thrips pollination in Solanaceae has been correlated with the degree of stigmatic receptivity and further instances of entomophily (by thrips) was recorded in flowers in which the stigmatic surface was at a higher level than the anthers[2]. Except for the work of Odland and Porter[3] on the pollination by thrips of *Capsicum annum* no earlier information is on record on the role of thrips in pollinating solanaceous flowers. Results presented in this note highlight the role of thrips as pollen carriers based on field observations supplemented by scanning electron micrographs (SEM) with special reference to *Solanum melongena*.

Periodic collections of thrips were made throughout the cropping period and the pollen load on the various parts of the body were calculated. The mode of pollen attachment was closely observed by etherizing the specimens with pollen grains and dried in a critical point drier. These specimens were later fixed on an aluminium stub using a double adhesive tape and coated with gold for 3 min in an ion coater and later observed under SEM (Hitachi Model S415 A) under 15 kV emission current.

Photomicrographs were taken with a Mamiya camera attached to the SEM.

The flowers of *Solanum melongena* harboured both *Frankliniella schultzei* Trybom and *Ceratothripoides cameroni* Priesner overwhelmigly dominant with the former. Adults and larvae of both the species were found crawling around the throat of the corolla where interfloral movement of adults alone were observed. The larvae hatching from the eggs placed near the nectaries were confined to their respective flowers till they became adults which showed active movements, more often towards the stigma. The 'cloud' of pollen, resulting from poricidal dehiscence of the anthers gets scattered all over the flower and the presence of an increased population of thrips during this period of anther dehiscence enables pollen dispersal on to the various parts of the body of thrips. A comparative mean pollen carrying efficiency of *F. schultzei* indicates the larvae to be the more efficient pollen carriers than the adults. The decrease in the pollen load on the wings (figure 1A) appears to be due to the cleaning behaviour in the adults, where frequent wing and leg movements were observed in an attempt to shake off the pollen on the head, thorax and the abdomen. As a result of this cleaning behaviour the pollen load on the abdomen too was considerably reduced as against the much higher pollen load of larvae with shorter setae, (figure 1C) though both inhabit the same micro-habitat. Frequent movement of the thrips within flowers finally results in the shedding of pollen on the stigmatic surface and after three days pollen germination was observed (figures 1E and F). The adaptive significance of the thrips-flower association and the pollination potential of the former mainly depend on the dynamics of the pollen transfer mechanics in relation to the behavioural trends, availability of pollen or nector as food and also the avilability of suitable ovipositional sites within the bud, so as to allow for synchroniza-

tion of thrips development with the opening of the flower and the maturation of the gynoecium and anther dehiscence. In this respect the Solanum type of flower is very conducive for the development of thrips, since the adults can penetrate the flower during the bud stage itself so that the larvae could emerge even prior to the opening of the flower. Flowers of *S. melongena* are all oligandrous with most of their anthers enlarged and showy, providing its inhabitants as well as other visitors with excess of



Figures 1A–F. Scanning electron micrographs of: **A.** Pollen grains of *S. melongena* attached to the setae on the wings of *F. schultzei*. **B.** A single pollen grain enlarged. **C.** Pollen grains attached to the abdomen of the larva of *F. schultzei*. **D.** Pollen grains attached to the thorax of *F. schultzei*. **E and F.** Shedding of pollen and germination on the stigma.

pollen and a moderate quantity of nectar. The peak receptive period of the stigma coincides with the exudation of a sticky fluid which helps in the adherence of the pollen. Hence self-pollination occurs due to the random movement of the thrips species within the corolla and the continuous build-up of thrips population in a flower in turn leads to interspecific and intraspecific competitions amongst the thrips species, resulting in the dispersal of thrips and ultimately enhancing the chances of cross pollination as observed in the case of Compositae[4]. The synchronized events occurring in the life cycle of the pollinator and the development of the flower could be a vital factor in thrips pollination of *S. melongena*.

The authors are grateful to Prof. T. N. Ananthakrishnan under whose gudiance this work was carried out. This work was done during the tenure of the CSIR project for which thanks are due.

20 August 1986

1. Free J. B., *Insect pollination of crops*. Academic Press, London, 1970, 544.
2. Velavudhan, R. and Annadurai R. S., *Proc. Indian Acad. Sci. (Anim. Sci.)* 1986, **95**, 109.
3. Odland, M. L. and Porter, A. W., *Proc. Am. Soc. Hort. Sci.*, 1941, **38**, 585.
4. Ananthakrishnan, T. N., Varathrajan, R. and Gopinathan, K., *Proc. Indian. Natl. Sci. Acad.*, 1981, **B47**, 159.

ANNOUNCEMENT

CONFERENCE ON NUCLEAR PHYSICS AND PARTICLE PHYSICS

The Nuclear Physics sub-committee of the Institute of Physics is organising a conference on Nuclear Physics and Particle Physics at the University of Birmingham from 6–8 April 1987.

The scientific programme will include parallel nuclear physics and particle physics talks in the mornings, followed by joint afternoon sessions on topics of mutual interest. On the last afternoon speakers will look forward to the future for both particle and nuclear physics.

Contributions are sought for presentation in oral and poster sessions. Abstracts, on a single sheet of A4 paper suitable for photolitho reproduction (and reduction to A5) should be sent to one of the Conference Secretaries to arrive by Friday, February 6th, 1987. An exhibition of scientific equipment will be held during the first two days of the conference. Conference secretaries: Dr. B. Fulton (NP) and Dr. M. Corder (PP), Department of Physics, University of Birmingham, P.O. Box 363, Birmingham B15 2TT.

For further information and registration forms for the Conference please contact: The Meeting Officer, The Institute of Physics, 47 Belgrave Square, London SW1X 80X.