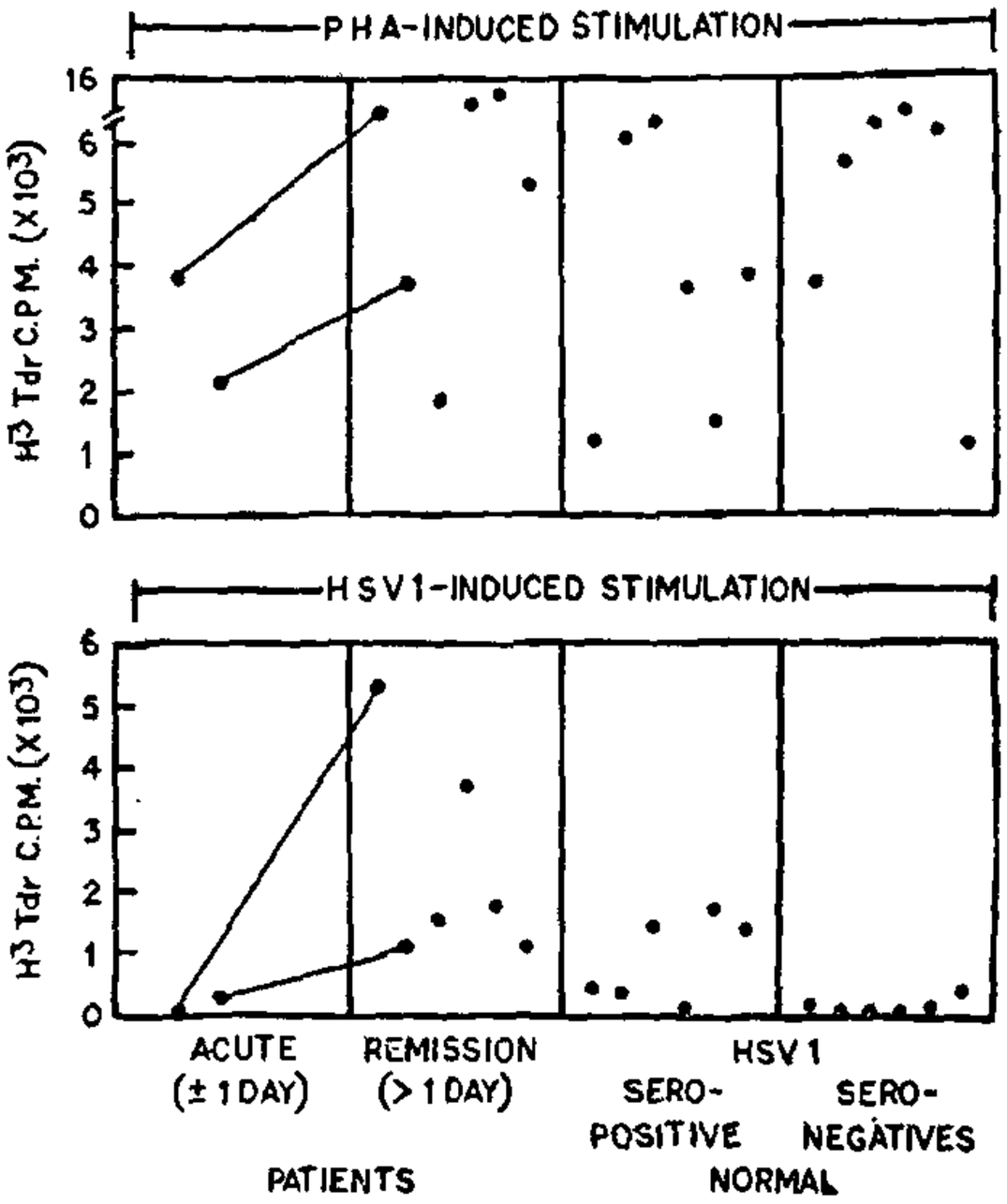

FIG. 1. Shows the result of *in vitro* lymphocyte stimulation to HSV1 antigens and phytohaemagglutinin (PHA) in humans.

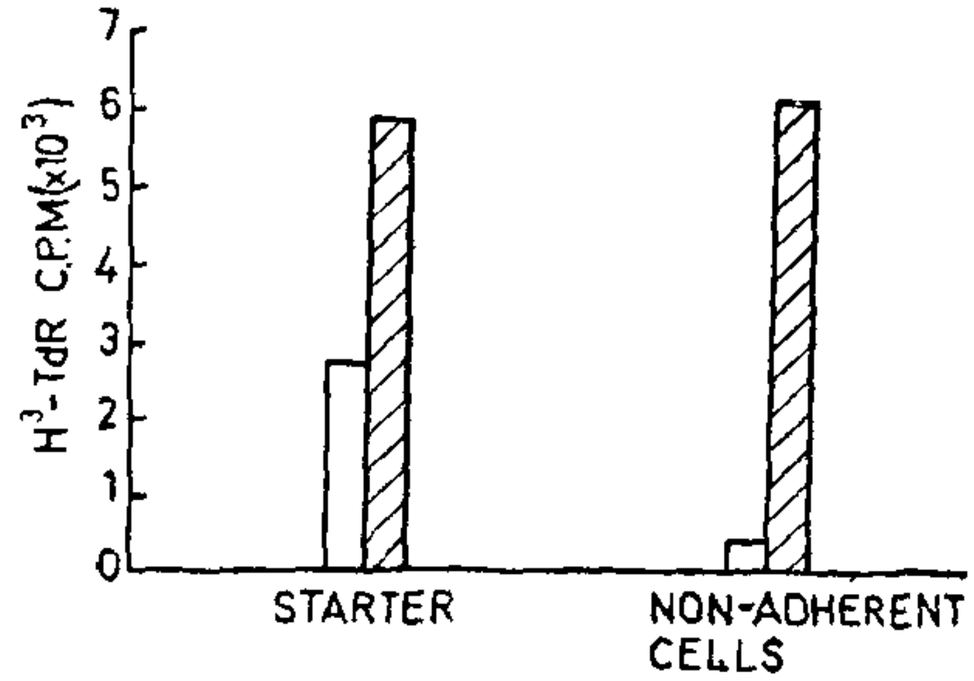

FIG. 2. Shows the result of lymphocyte stimulation of non-adherent cells. □ antigen (HSV1)—specific stimulation ; response with PHA.

These results can also be explained simply on the basis of peculiarities of lymphoid cell traffic. An antigen-specific response with peripheral blood cells during the acute stage might not have been obtained because the antigen-reactive cells are 'homing' to distant sites (lymph nodes, spleen, etc.) leading to a failure of immuno-surveillance mechanism.

It was concluded that recurrences of Herpes labialis occurred at the time of minimum lymphocyte reactivity to HSV1 antigens in blood, possibly subsequent to a failure of immuno-surveillance mechanism.

We thank Dr. G. R. B. Skinner for neutralization tests against HSV type 1 in serum samples. One of us (AKK) also thank Commonwealth Association for a scholarship.

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1. Wilton, J. M. A., Ivanyi, L. and Lehner, T., *Brit. Med. J.*, 1972, **1**, 723.
2. Rusell, A. S., *J. Inf. Dis.*, 1974, **129**, 142.
3. Steele, R. W., Vincent, M. M., Hensen, S. A., Fuccillo, D. A., Chapa, I. A. and Canales, L., *Ibid., Dis.*, 1975, **131**, 528.
4. Ling, N. R. and Kay, J. E, In *Lymphocyte Stimulation,* North Holland Publishing Company, Amsterdam, 1975.
5. Kapoor, A. K., Ling, N. R. and Bazeley, M., *Cytobios*, 1978, **20**, 151.

MORPHOGENETIC ABNORMALITIES CAUSED BY TREATMENT OF EGGS OF *DYSDERCUS CINGULATUS* WITH JH ANALOGUES

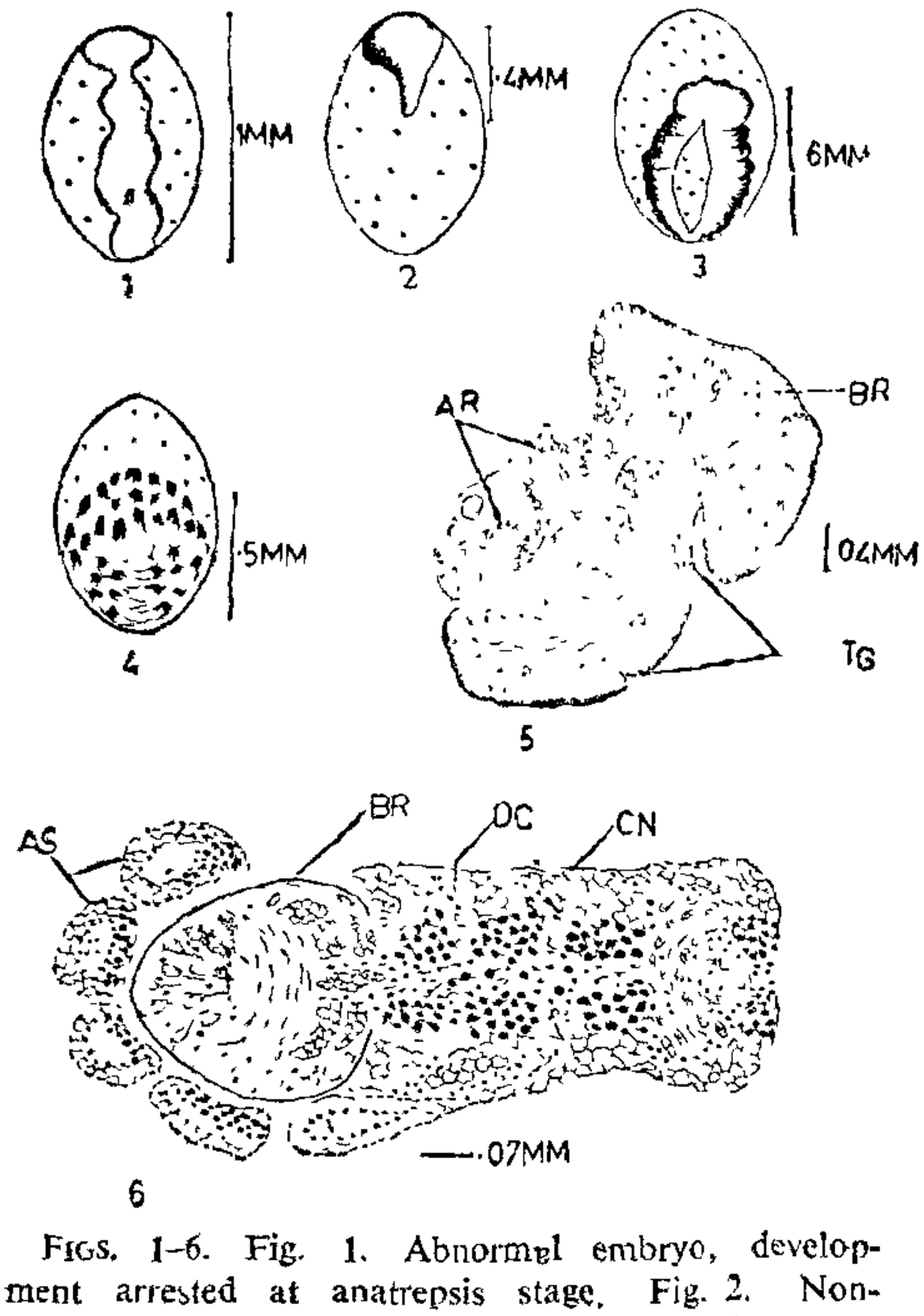
THERE are a number of reports that exogenous juvenile hormone (JH) and JH analogues block embryonic development in insects when applied to eggs prior to a critical stage[1, 2]. However, very few attempts have been made so far to study the internal details of these abnormal embryos. The present study summarises the changes in the external and internal organization of the embryos after treatment of the eggs of a pyrrhocorid bug, *Dysdercus cingulatus* with JH analogues.

Eggs after oviposition, after germ band formation and after blastokinesis were used for the study. Farnesyl methyl ether (FME) and ZR 777 (Kinoprene) were dissolved in acetone. One μl of the solution containing different doses of ZR 777 (0·25, 0·125, 0·06, 0·03, 0·015, 0·0075, 0·004, 0·0009 and 0·0001 μg per egg) and FME (2·0, 1·5, 1·0, 0·5 and 0·25 μg per egg) were topically applied using a Hamilton microliter syringe. Controls were treated with 1 μl of acetone. Twenty-five eggs per group were treated at a time. The experiments were repeated six times. The results were pooled and summarised. For whole mounts, embryos were fixed in Carnoy's fluid and

stained with Schiff's reagent. for sections embryos were fixed in Smith's fluid; paraffin sections of 5 μ thickness were stained in Heidenhain's haematoxylin eosin

It was found that acetone did not affect development. ZR 777 was about 125 times as active as FME, as the dose required to effect 50% hatchability was 0 0075 μg with ZR 777 and 1 μg for FME, when the analogues were applied to eggs at oviposition or to eggs immediately after germ band formation.

When eggs were treated with JH analogues, the arrest of development at cleavage, blastoderm, germ band, anatrepsis (Fig. 1) or at katatrepsis were noticed.



FIGS. 1–6. Fig. 1. Abnormal embryo, development arrested at anatrepsis stage. Fig. 2. Non-segmented embryo. Fig. 3. Medium sized embryo without dorsal closure; Fig. 4. Embryo with sunken head. Fig. 5. Sagittal section through non-segmented embryo resulting from low dose. Fig. 6. High dose treated embryo; section through dorsal side showing abnormalities. (AR—appendage rudiment; AS—appendages; BR—Brain; CN—crowded nuclei; DC—degenerating cells; TG—thoracic ganglia).

Different types of abnormal embryos which failed to hatch out were of common occurrence. There were non-segmented embryos with or without rudiments of appendages (Fig. 2), dwarf embryos, dwarf, medium and full size embryos without dorsal closure (Fig. 3), embryos with sunken head (Fig. 4), full size embryos with short and stumpy appendages, less pigmented forms, embryos continuing development inside the chorion even after its hatching time and also fully developed embryos without any visible abnormalities failing to hatch out. Among these forms the number of non-segmented, dwarf and fully developed embryos failing to hatch out were always high in the experiments. As the dose applied was decreased, gradual decrease in the early abnormality was noticed, while the abnormalities were postponed to the later stages of embryogenesis. The eggs treated after blastokinesis with high and low doses were found to be less sensitive. These observations resemble the findings in other insects[1–9].

The non-segmented embryos obtained using high doses were masses of cells with crowding of nuclei in which no organs could be identified. The cell membrane could not often be distinguished. In the non-segmented embryos resulting from treatment with low doses, cells were not damaged. Brain, thoracic ganglia, one or two appendage rudiments and a few scattered cells could be traced in them (Fig. 5). The dwarf and fully developed embryos also showed similar structure. After treatment with high doses, the overall shape of the embryo remained unaltered, while no internal organs could be distinguished. The unusual crowding of nuclei was noticeable here (Fig. 6). In the embryos resulting from treatment with low doses the cells were well arranged and no crowding of nuclei could be traced. It appeared that JH analogues topically applied to eggs or developing embryos affected cell movements.

The arrest of development at cleavage obtained by JH treatment in the present study resembles the effect of tepa on German Cockroach[3]. Early abnormalities at blastoderm, germ band and during blastokinesis have also been reported on insect embryos[4, 5]. The early and late abnormalities especially the different types of embryos as well as fully developed embryos failing to hatch out were usual occurrences in some experimental eggs[6–9].

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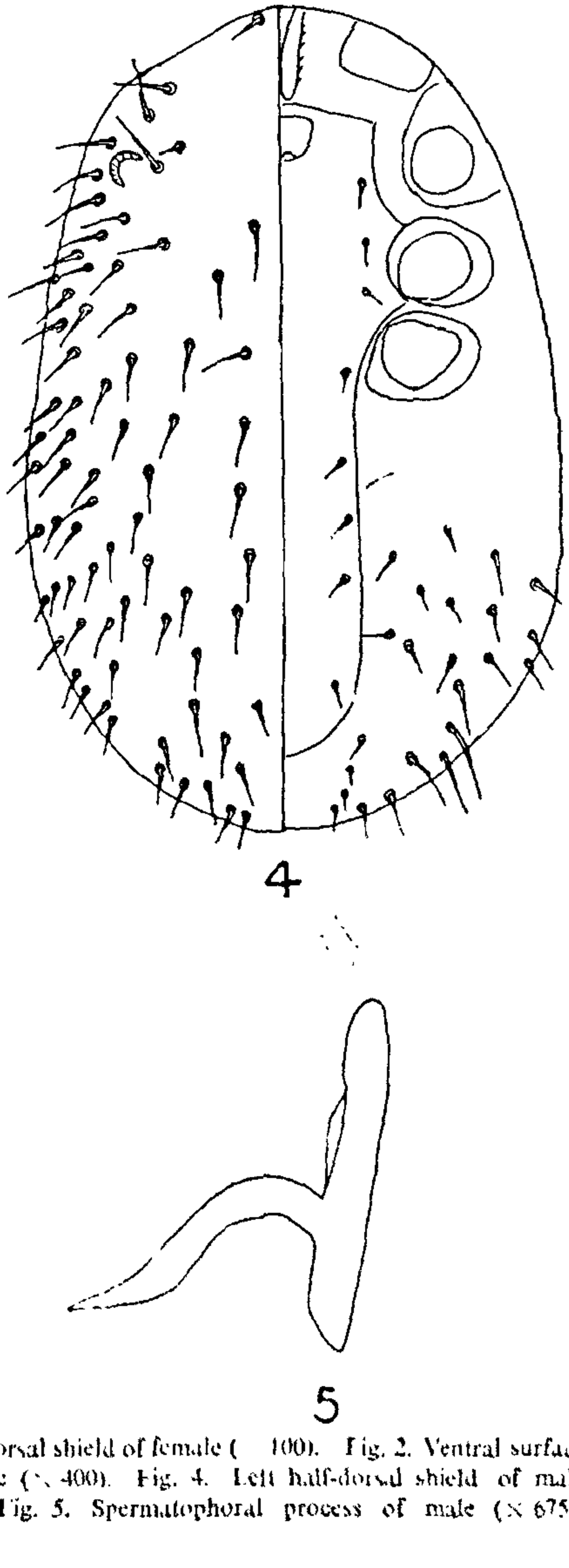
1. Staal, G. B., *Insect Juvenile Hormones, Chemistry and Action*, Ed. by J. Menn and M. Beroza, Academic Press, New York, 1972, p. 69.
2. Slama, K., Romanuk, M. and Sorm, F., *Insect Hormones and Bioanalogues*, Springer Verlag, Wein, New York, 1974, p. 243.
3. Smittle, B. J., Schmitt, J. B. and Burden, G. S., *J. Econ. Ent.*, 1966, **59**, 1419.
4. Slama, K. and Williams, C. M., *Nature, London*, 1966, **210**, 329.
5. Riddiford, L. M. and Williams, C. M., *Proc. Nat. Acad. Sci. U.S.A.*, 1967, **57**, 595.
6. Novak, V. J. A., *J. Embryol. Exp. Morph.*, **21**, 1.
7. Matolin, S., *Acta Ent. Bohemoslov.*, 1970, **67**, 9.
8. Rohdendorf, E. B. and Sehnal, F., *J. Insect Physiol.*, 1973, **19**, 37.
9. Smith, R. F. and Arking, R., *Ibid.*, 1975, **21**, 723.

A NEW SPECIES OF BLOOD SUCKING MITE (ACARINA) FROM INDIA

No species of the genus *Liponyssoides* is known from India though this group of mites is of significant importance as it parasitizes animals and human beings. In this note a new species of this genus is being, described basing on the collection from West Bengal.

Liponyssoides bengalensis sp. nov. (Figs. 1–5)

Female : Chelicera elongate, both digits long and pointed, pilus dentilis absent. Palp trochanter with 2-tined apotele. Dorsal shield 742 μ long, 382 μ wide with 19 pairs of setae, penultimate setae at the posteriormost end being minute. Unsclerotized integu-



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FIGS. 1–5. *Liponyssoides bengalensis* sp. nov. Fig. 1. Dorsal shield of female (100). Fig. 2. Ventral surface of female (in part, × 100). Fig. 3. Chelicera of female (× 400). Fig. 4. Left half-dorsal shield of male (× 100); right half-ventral surface of male (× 100). Fig. 5. Spermatophoral process of male (× 675).