Sreerama Reddy, G. and N.B. Krishnamurthy.
University of Mysore, Manasagangotri, India.

Ovoviviparity in Drosophila anomelani.

In insects fertilization and oviposition follow rapidly after ovulation. But in many instances the terminal oocytes of each ovariole may be ovulated and spend some time in the pedicel of the ovary or the oviducts before they are fertilized and oviposited. In certain others, the phenomenon of egg retention accompanied by ovariolar fertilization has resulted in the development of ovoviviparity, a method of reproduction common among muscoid flies (King 1963).

Such a departure from oviparity has been observed in Drosophila anomelani, a new species described by the authors (in press). When some females from the laboratory stock were dissected to study the structure of female reproductive organs, one female was shown to contain an active first instar larva in one of the ovarioles and the egg capsule in the oviduct (Fig. 1). Actually the authors observed under the binocular stereozoom the larva coming out of the egg retained in the oviduct. By the time the photograph (Fig. 1) was taken the larva had moved into one of the ovarioles and was trying to come out of the ovariole. Later this larva died when transferred to a food vial. This clearly shows that the fertilized egg has been retained in the oviduct and hatched liberating the larva.

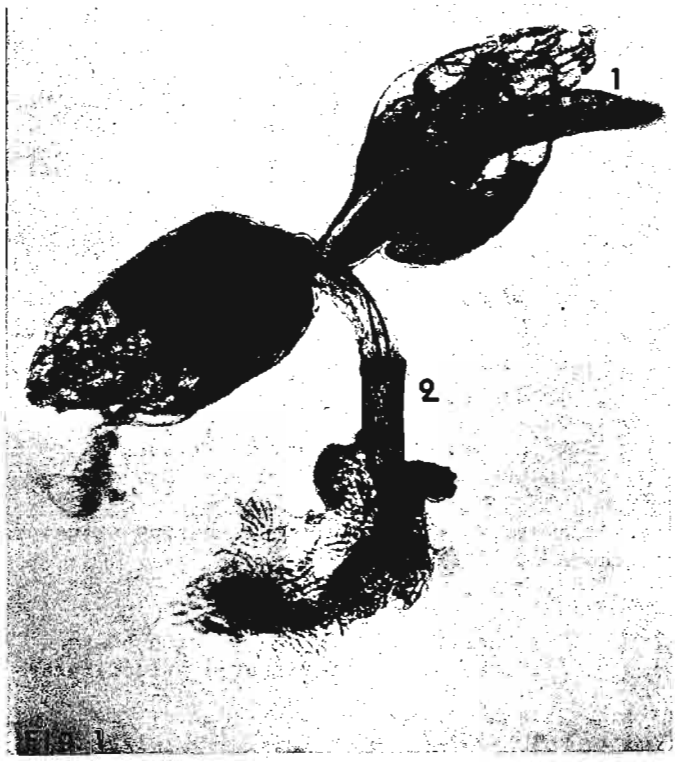

Fig. 1. Female reproductive organs with the first instar larva and the egg capsule.
1. first instar larva within the ovariole
2. egg capsule

The two conditions (a) egg retention and (b) ovariolar fertilization suggested by King (1965) are necessary for the development of ovoviviparity and has been observed in certain strains of D. melanogaster. Further he suggested that the inter-strain variation in egg retention in D. melanogaster virgin females gives some evidence of the existence of genotypes for the establishment of high egg retention and the development of ovoviviparity. It may be pointed out that departures from oviparity has also been observed in certain species like D. hydei, where a type of egg retention is established. This phenomenon of egg retention observed in D. hydei explains the capacity of these females to lay large numbers of eggs in short bursts from the reserve pools at the peak egg laying time (Gregg and Day 1965).

The present finding of an active first instar larva in one of the ovarioles in D. anomelani is an additional evidence in support of the existence of genotypes tending towards the development of ovoviviparity by egg storage and oviolar fertilization.

Acknowledgements: We are highly grateful to Dr. M.R. Rajasekarasetty, Professor and Head of the Department of Zoology, University of Mysore, for his constant help and constructive criticisms. One of us (G. Sreerama Reddy) is thankful to University Grants Commission for financial aid.

References: Gregg, T.G. and J. Day 1965, DIS 40:85; King, R.C. 1963, DIS 38:96.