

cranio-caudal axis and 23 cm in the lateral axis. The two foetuses were disposed parallel to the cranio-caudal axis of the uterus and their ventral sides were opposed to each other, but the head of one foetus was towards the rump of the other. Each was enclosed by its own amnion, which, in each case, was closely adherent to the body of the foetus except in the neck and the inguinal regions where the amnion was separated from the body surface of the foetus and a small amount of slimy transparent amniotic fluid was present in this persistent part of the amniotic cavity. Both foetuses were females and had a crown-rump length of 27.7 cm. The umbilical cord of both the foetuses was twisted a few times but remained distinct although they had loosely coiled round each other at three places. The umbilical cord of each foetus was 23.8 cm in length. The umbilical cords of both the foetuses were inserted near the centre of the primary placental disc located on the dorsal side (the "posterior" side according to Gray's⁷ terminology in human beings) of the simplex uterus and measured 10.4 cm in diameter. The secondary placental disc on the ventral side (or the "anterior" wall) of the uterus was 10.1 cm in diameter. The primary and the secondary placental discs of the other five full term animals were measured. The maximum diameter of the primary placental disc was 10.7 cm with an average of 10.5 cm. The maximum diameter of the secondary placental disc was 10.3 cm and the minimum was 9.9 cm. Evidently, the diameter of the primary and the secondary placental discs of the twin case under description was nearly the same as that of the normal uterus carrying a single foetus. Further, the structure and the foetal vascularization of the primary and the secondary placental discs in this unique case were similar to those in the normal uterus carrying a single foetus.⁸

Examination of the ovaries revealed that a large corpus luteum was present only in the right ovary, and the left ovary contained follicles at various stages of development and several follicles at different stages of atresia (figures 2 and 3). The corpus luteum in the right ovary had occupied nearly three fourths of the volume of the ovary, the rest of the ovary being occupied by a few follicles at various stages of development of atresia. That the corpus luteum was single was evident from the fact that there was a distinct thecal demarcation of the corpus luteum from the rest of the ovarian tissue. The corpus luteum had numerous lobules separated by strands of connective tissue-like partitions. The presence of a single large corpus luteum only in one ovary is a direct evidence to

indicate that the twin embryos are monozygotic and hence were of the same sex—female.

As mentioned earlier, occurrence of twins among monkeys is not an unusual phenomenon, although it is rare. But the earlier work has not demonstrated the occurrence of unquestionable monozygotic sychorial twins among monkeys. In most earlier reports of twin births or twin embryos, either the two ovaries had released an ovum each or there were two distinct corpora lutea in one of the ovaries, thereby indicating that two ova had been released and had undergone independent fertilization and development. Hence the cases earlier described were fraternal twins.

The author expresses her thanks to Dr A. Gopalakrishna, Professor Emeritus for able guidance.

17 May 1983; Revised 30 August 1983

1. Hill, J. P., *Proc. Anat. Soc., J. Anat.*, 1926, **60**, 486.
2. Hill, J. P. and Hill, C. J., *C. R. Assoc. Anat.*, 1972, **22**, reunion (London), 264.
3. Wislocki, G. B., *Am. J. Anat.*, 1939, **64**, 445.
4. Schultz, A. H., *Zoologica*, 1921, **3**, 243.
5. Fitzsimons, F. W., *Am. J. Anat.*, 1939, **64**, 445.
6. Tomilin, M. I. and Yerkes, R. M., *J. Gen. Psychol.*, 1935, **46**, 239.
7. Warwick, R. and Williams, P. L., *Gray's Anatomy*, Longman Group, 1973, p. 1356.
8. Karim, K. B. and Uma, G. Vasishta., *Proc. Natl. Acad. Sci. India.*, 1981, **B51**, 205.

A NOTE ON THE MITE, *PYEMOTES HERFSI* (OUDEMANS), ECTOPARASITIC ON DIAPAUSING PINK BOLLWORM LARVAE.

RAM SINGH and ZILE SINGH

Department of Entomology, Haryana Agricultural University, Hissar 125004, India.

PYEMOTES spp. have been mainly reported as external parasites of immature stages of Coleoptera, Hymenoptera, Lepidoptera, Diptera and Homoptera. Nangpal¹ observed *Pyemotes herfsi* (Oudemans) = *Pediculoides ventricosus* (Newport) as a parasite of pink bollworm under sub-tropical conditions. This was the only recorded species of parasitic Pyemotidae in India. However, 28 other mite species associated with various stored foods were reported². Dinabandhoo and Dogra³ observed the incidence of *Pyemotes herfsi* on Indian honey bee *Apis cerana*

indica (Fabricius) as an ectoparasite under temperate conditions. In Egypt, the mite was reported to cause considerable mortality among diapausing pink bollworm larvae in double seeds and dry bolls under storage conditions⁴⁻⁷. The behaviour and potential of this mite in killing diapausing bollworm larvae have not been studied so far.

Pink bollworm, *P. gossypiella* (Saunders) is the most destructive lepidopterous pest of cotton in Northern India and from November onwards it undergoes a state of diapause in its larval form. During February and March 1983, while observing larval population trend in double seeds in the samples collected from various places in Haryana, an ectoparasitic mite, *P.*



Figure 1. Paralysed and shrink larvae due to attack of *P. herfsi*.



Figure 2. Gravid females of mites covering the body of exposed larvae.

herfsi (Oudemans) was found to be widely associated with pink bollworm larvae and produced 20 to 80% mortality. Each larva harboured 20 to 100 mites. As a result of the loss of haemolymph, the larvae show signs of paralysis and shrink in size (figure 1). Even up to 300 gravid females were found to survive on a single larva when exposed to mite infestation (figure 2). Five females killed a single larva in 5 days but 20 females produced the same effect within 12 hr of their release at 25°C and 75% humidity. As a result of the mite injury, the larva initially becomes yellowish and finally dies. Once the mite female settles over the body of the larva, it remains in constant association with the site, develops quickly and its opisthosoma increases up to 2.1 mm diameter. This mite may prove helpful in suppressing the population of pink bollworm in India if its practical utilization is further explored.

The authors are thankful to Miss Swaraj Ghai of IARI, New Delhi for identification of the specimen.

7 June 1983; Revised 13 September 1983

1. Nangpal, H. D., *Indian Cent. Cot. Comm.*, 1948, p. 1
2. Ghai, S., *Bull. Grain. Technol.*, 1976, 14, 134.
3. Denabandhoo, C. L. and Dogra, G. S., *Am. Bee. J.*, 1980, 120, 44, 46
4. Tawfik, M. F. S. and Awadallah, K. T., *Bull. Soc. Ento. Egypt.*, 1970, 54, 49
5. Tawfik, M. F. S. and El-Sherif, S. I., *Bull. Soc. Ento. Egypt.*, 1974, 58, 191
6. Abul-Nasr, S. E., Tawfik, M. F. S., Ammar, E. D., Farrag, S. M., *Zeit. Angew. Ent.*, 1978, 84, 403
7. Moawad, G. M. and Hussein, A. H. M., *Agric. Res. Rev.*, 1982, 58, 265

PRESENCE OF CEPHALIC MUCOUS GLANDS IN *ALPHEUS EDWARDSI* (AUDOUIN)

T. RAJENDRANATH, K. HANUMANTHA RAO* and K. SHYAMASUNDARI*

Department of Zoology, Kakatiya University, Warangal 506 009, India.

**Department of Zoology, Andhra University, Waltair 530 003, India.*

THE decapods among Crustacea offer interesting examples of highly specialised nature of feeding and digestion. The mechanism involved in these processes has been well studied in many aspects. There are,