

TABLE 1
MIGRATION OF *Euploea core* AT BOMBAY

Date	Place	No. of butterflies counted	Time	Direction
11 July '92	Nr. Prince of Wales Museum	85	1030 to 1100 hrs	North-west
12 July '92	Goregaon (Along the railway track)	36	0850 to 0914 hrs	North-west
13 July '92	Goregaon	48	0850 to 0910 hrs	North-west
14 July '92	Flora Fountain	12	1000 to 1010 hrs	North-west
	Also <i>D. genutia</i> ,	2		
	<i>Tirumala limniace</i>	2	0845 to 0905 hrs	North-west
15 July '92	Matunga	17		
31 July '92	Goregaon, S.V. Road	22	1230 to 1330 hrs	North-west
1 Aug. '92	Goregaon East	60	1035 to 1100 hrs	North-west

(*Strebilus asper*, *Ficus bengalensis*, *Ficus racemosa*, *F. religiosa*, *Holarrhena*, *Nerium odorum*, *N. oleander*, *Hemidesmus indicus* and *Cryptolepis elegans*) are plentiful in and around Bombay city.

I am thankful to my friend Mr B.R. Pai, who

helped me to measure and record observations.

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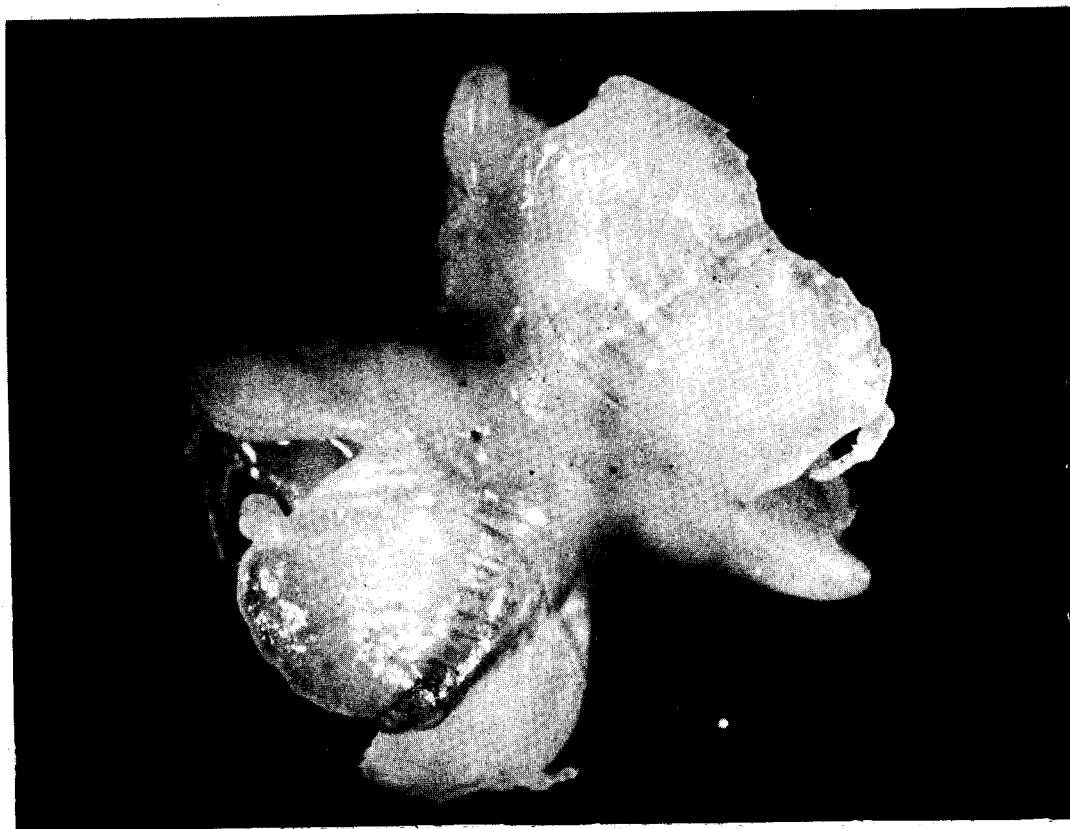
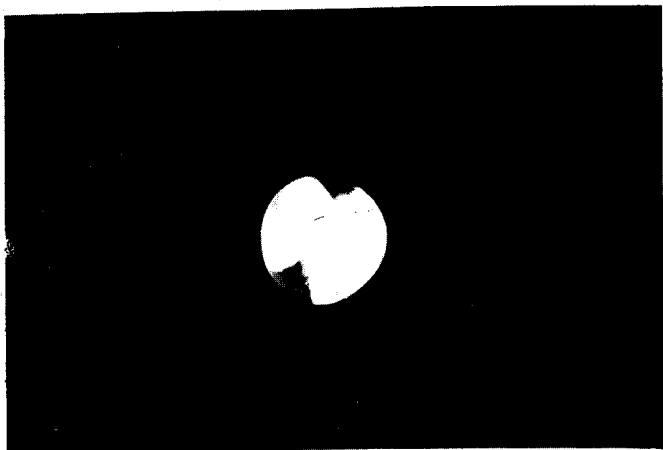
26. A FREAK TWIN TRILOBITE LARVA OF THE INDIAN HORSESHOE CRAB *TACHYPLEUS GIGAS* (MULLER)

(With a plate)

The horseshoe crab *Tachyploeus gigas* (Muller) is found abundantly along the north-east coast of India (21°17' N, 87°00' E). In India, so far, no attempt has been made to study the developmental stages of this species. Earlier, 21 embryonic stages in the Japanese species *Tachyploeus triodontatus* (Seikiguchi 1973), nine stages in *Limulus* (Scholl 1977) and 20 stages in *Limulus polyphemus* (Brown and Clapper 1981) have been reported.

Gametes from a mature pair of *T. gigas* were collected by applying electric current of 6 V (400 mA DC) on gonopore of the male and female, and fertilisation was performed *in vitro*. Fertilised eggs were kept at a constant temperature of 27°C ± 1°C in recir-

culating seawater incubators. Early embryonic stages were studied by using micrographs of live embryo. A total of 130 eggs were fertilised in the present study. A freak egg showing two trilobite larvae bridged with each other was noticed on the 38th day after fertilisation (Plate 1). The posterior margins of the opisthosoma of the trilobite larva were found attached to each other and margins of the prosoma showed hair-like sensory filaments. The body of the larvae was flattened with large cephalothorax and abdomen. Size (4.5 mm in length; 3.6 mm in width) and shape of the trilobite larvae showed all the characters of an adult horseshoe crab. Movement of the larvae inside the extra embryonic shell was rather slow. 39 days after



Above: Twin trilobite larvae inside the extra embryonic shell, ready to hatch.
Below: Free swimming twin trilobite larvae (size 4.5 mm length, 3.6 mm width).

fertilisation, the larvae hatched out and started swimming freely (Plate 1). However, on the 56th day after fertilisation the twin trilobite larva was found dead.

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27. RECORD OF *ATELOPSALIS PACIFICA* BARTSCH 1985
(HALACARIDAE : ACARI) FROM EASTERN INDIAN OCEAN

(With five text-figures)

In the course of taxonomic studies on halacarids of the Indian coast, 10 specimens of *Atelopsalis pacifica* Bartsch 1985 (Halacarinae : Halacaridae) were obtained from the thalli of coralline alga *Jania rubens* collected from Chatham island, Port Blair (Bay of Bengal). *A. pacifica* is known so far only from its type locality, Mactam islands, Philippines in the Pacific Ocean (Bartsch 1985). The genus *Atelopsalis*, comprising of five named and one undetermined species, is known from the north-east Atlantic ocean (Trouessart 1896, Bartsch 1973), Galapagos (Bartsch 1977), Mozambique channel (Bartsch 1982), and Mactam island, Philippines (Bartsch 1985) so far. Habitat depth and geographic distribution of all the species of the genus are shown in Table 1. Both the genus and species are recorded for the first time from Indian seas and eastern Indian Ocean.

The specimens agree with the original description (Bartsch 1985) of *A. pacifica*. However, a brief description is given below for ready reference. The idiosomal measurements of males ranged from 171 μ m to 187 μ m and females from 187 μ m to 204 μ m. Anterodorsal plate (AD) bears three areolae (one anterior and two posterior). Posterior two areolae long, one/two pore wide, parallel posteriorly and tending to converge anteriorly; dorsal seta 1 (ds_1) on AD located anterior to the posterior areolae and dorsal seta 2 (ds_2) on the anterior region of ocular plate (OC) (Fig. 1). OC with two corneae and panelled

posteriorly but devoid of areolae. OC caudiform posteriorly, extending beyond the insertion of leg 3. Dorsal setae 3 (ds_3) on the cuticular membranous area between AD and PD (posterodorsal plate). PD with two costae and one pore wide. All ventral plates separate (Fig. 2). Anterior epimeral plate (AE) bears three pairs of areolae, one pair posterolaterally, one pair on 1st coxal prominences and a pair of small areolae comprising a few pores below the 2nd coxal prominences. In males the genitoanal plate (GA) bears five pairs of perigenital setae (PGS) — one pair distinctly anterior to genital opening (GO), one pair just posterior to GO and three pairs distributed on either side of the GO — and in addition, four pairs of subgenital setae (SGS) on sclerites (Fig. 2). Gnathosoma and palp are very small. Palp 3-segmented. Palpal segment 1 (P_1) is very short, 2nd segment (P_2) the longest and the 3rd segment (P_3) intermediate. P_2 is without any setae and P_3 with one basal and one distal seta (Fig. 4). Telo femur 1 with denticulous projection anteromedially. Tibia 1 with eight setae (of which two are thick, stout and small) and patella 1 with four setae (Fig. 5).

In females, GA bears three pairs of perigenital setae and a pair of subgenital setae. Ovipositor is small (Fig. 3). All other characters are similar in males and females.

Table 1 shows that the genus *Atelopsalis* is probably conservative in speciation and the species