

P. hirsutum Harris (1949)² in having stomatal and non-stomatal bands. *P. cutchense* differs from the present species in the nature and distribution of papillae. The absence of papillae over the subsidiary cells in *P. horridum* distinguishes it from *P. hirsutum* and *P. indicum*.

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2. Harris, T. M., *Ann. & Mag. Nat. Hist.*, 1949, 12 (2).

PARASITIC COPEPODS, *CALIGUS POLYCANTHI* GNANAMUTHU INFESTING A BALISTID FISH, FROM SOUTH-EASTERN INDIAN OCEAN

DURING the 35th Cruise of the U.S.S.R. Research Vessel "Vityaz" in the South-Eastern sector of the Indian Ocean, a young form of a balistid fish was captured at station 5207 (Lat. 9° 57' S., Long. 91° 32' E.) on 29th August 1962, which was found to be infested profusely with adults and Chalimus stages of a Caligid Copepod. The balistid fish measuring 87.0 mm. in total length has been identified as *Canthidermis maculatus* (Bloch) which is widely distributed in all warm waters. The Copepods have been identified as adults and Chalimus stages of *Caligus polycanthi* Gnanamuthu. About 110 specimens of adult males and male and female Chalimus stages ranging from 0.5–2.0 mm. in size were found on the skin of the host. The adult females with egg sacs were present in the branchial chamber only, and 4 were recorded on the right side.

In this young balistid fish, the scales of the head have several small spinules, those on the sides of the body and caudal region bear large spines with ridges radiating from the base and these ridges also bear small spinules. The bases of these spines and spinules may probably afford easier holds for the attachment of the parasites to the host, resulting in heavy infestation.

The Chalimus stages were attached to the skin of the host by their frontal stalks while the adults were attached by the first antennae. The second joints of the two-jointed second antennae bear stout recurved, sharp pointed claws which also may be used for clinging.

Gnanamuthu¹ (1949) reported the infestation of 12 specimens of the same parasitic Copepod on the skin of *Canthidermis maculatus* (Bloch) from Madras. The present record is of interest in that (i) the distribution of the parasitic Copepod *Caligus polycanthi* Gnanamuthu is extended to the South-Eastern Indian Ocean and (ii) the host-parasite-species-relationship is confirmed. Moreover, such a heavy infestation of an external parasitic Caligid Copepod on a single fish host is uncommon. Therefore, it is considered worthwhile to photograph and record this infestation.



FIGS. 1-2. Fig. 1. *Caligus polycanthi* Gnanamuthu infesting on *Canthidermis maculatus* (Bloch). (Many parasites were detached due to feeble attachment). Fig. 2. Same as in Fig. 1 showing anterior region enlarged.

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Zoological Survey of India, A. DANIEL.
Calcutta, July 31, 1967. K. V. RAMA RAO.

1. Gnanamuthu, C. P., *Rec. Indian Mus.*, Delhi, 1949, 47, 159.

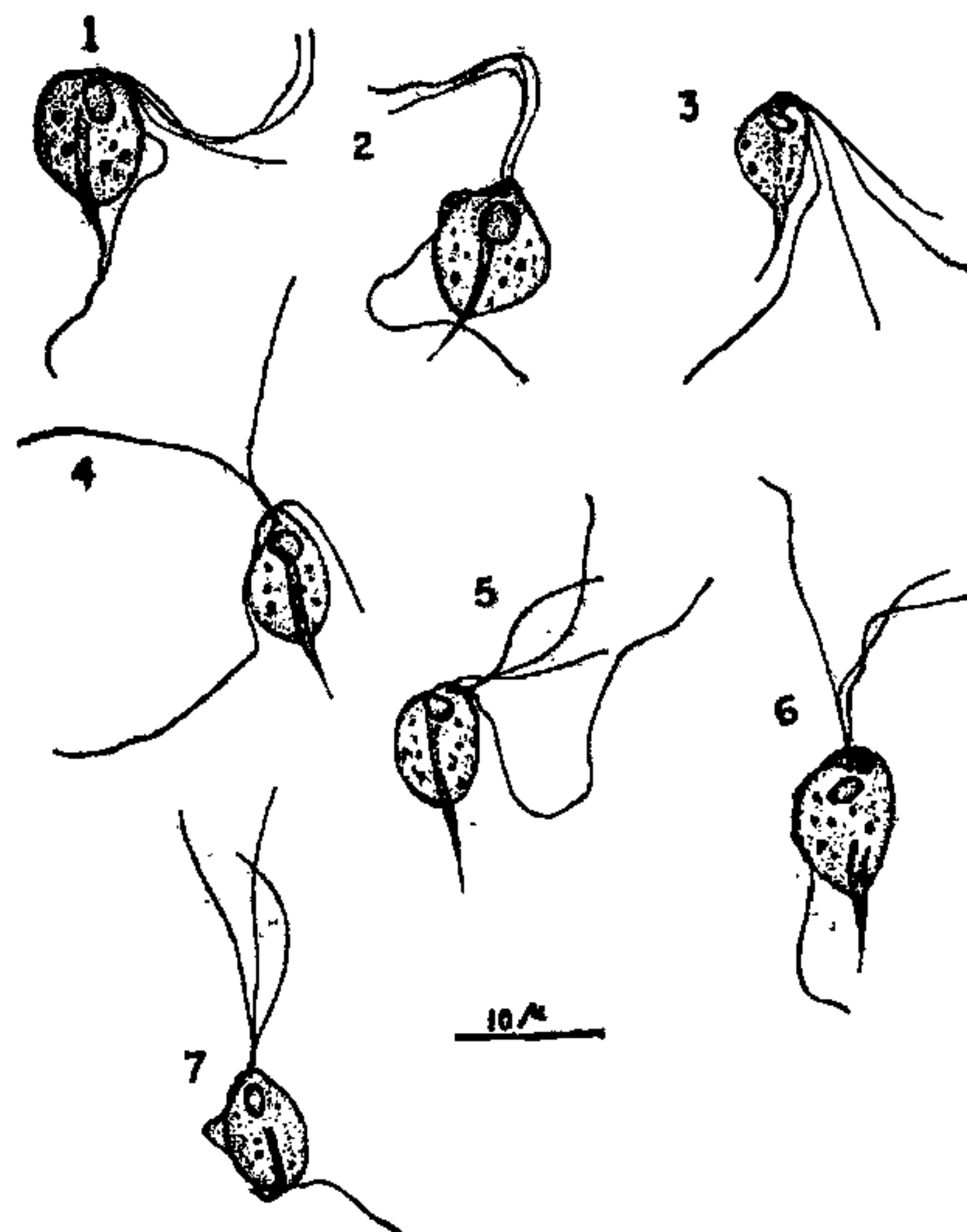
***HYPOTRICHOMONAS OSMANIAE* N. SP., FROM A VARANID LIZARD**

DURING the course of a survey of the intestinal flagellates of reptiles of Hyderabad, an interesting parasite belonging to the genus *Hypotrichomonas* Lee (1960)¹ (order Trichomonadida: family Monocercomonadidae: subfamily Hypotrichomonadinae) was found in the rectal contents of *Varanus* sp. The infection was found in six out of the forty-two lizards examined and in all the cases, the parasites were associated with those of the genus *Monocercomonas*. The present species is the first of this genus to be recorded from Indian reptiles. The parasite is typically pear-shaped in the living condition, but tends to become spherical or fusiform on fixation (Figs. 1, 4, 6). The organelle of the body comprises of a blepharoplast, three anterior flagella, a trailing flagellum with a poorly developed undulating membrane, an axostyle, a pelta and a nucleus.

The blepharoplast, situated at the anterior end, gives origin to the four flagella. The anterior flagella are unequal and measure $9.25-16.97\mu$, $12.85-22.11\mu$ and $14.40-24.16\mu$ with averages of 13.41μ , 17.76μ and 19.95μ respectively. The posterior flagellum runs backwards along the body surface, attached to it for some distance (Figs. 1, 2, 6, 7). The attached portion is thrown into one or two undulatory folds and is supported by a thin membrane (Figs. 2, 7). The size of these folds seems to be variable in the different forms. The attachment of the flagellum to the body surface is about half or two-thirds the body length, being more in forms where the undulatory folds are shallow and less where the folds are more pronounced. Beyond the attached portion, the flagellum is free for a considerable length and trails behind the body. The free part is $12.85-30.85\mu$, with an average of 20.63μ .

The axostyle is tubular and straight. It is almost of uniform thickness throughout its length, except the posterior part which is spine-like and protrudes outside the body (Figs. 4, 5, 7) for a distance of $1.00-7.20\mu$. Endo-axostylar granules and peri-axostylar chromatic rings are absent.

The pelta is curved and shaped like an inverted 'comma'. It arises from the blepharoplast and is directed sideways (Fig. 3). The costa is absent.



FIGS. 1-7. *Hypotrichomonas osmaniae* n. sp. Fig. 1. Showing general structure. Figs. 2, 7. Showing a short undulating membrane with deep fold. Fig. 3. Showing pelta. Figs. 4, 5. Showing origin of flagella. Fig. 6. Showing pelta and a long undulating membrane with shallow folds. (Figs. 1, 2, 4, 6, 7 from material fixed in methanol and stained with giemsa. Figs. 3, 5 from material fixed in Schaudinn's and stained with Heidenhain's hæmatoxylin). (All figs. $\times 1,000$).

There is a large and ellipsoidal nucleus, situated just behind the blepharoplast. It measures about $2.03 \times 1.94\mu$, on the average.

The cytoplasm contains many deeply staining granules and bacteria, showing the capacity of the organism to ingest foreign particles, even though a definite cytostome was not seen. The body of the parasite measures $7.20-13.88\mu \times 4.11-12.85\mu$ (Av. $9.94 \times 6.65\mu$).

The only complete description available of a species of this genus is that of *H. acosta* described by Moskowitz (1951)² and later redescribed by Lee (1960).¹ *H. acosta* is ovoidal or spherical and measures $4.00-17.00\mu \times 2.50-15.00\mu$, while the present one is pear-shaped or fusiform and shows a much limited range in its size. The anterior flagella of the new form are relatively longer. The trailing flagellum of the old form is acronematic while it is not so in the new form. The axostyle of the parasite under discussion is slender and straight while that of *H. acosta* is more robust and is