

(From the department of Zoology, Calcutta University.)

**Note on a ciliate, *Nyctotherus kempi* GHOSH  
from the intestine of a Gastropod (Mollusca),  
*Pila globosa* SWAINSON.**

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(With 4 figures in the text.)

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This ciliate *Nyctotherus kempi* GHOSH, has been under my observation for the last two years, and as no other species was encountered in this gastropod during this long period of study it may safely be stated that the very same organism was also seen in this same host by GHOSH who first described it in the year 1921. After having made careful observations on both fresh and stained material, I felt that GHOSH's description of the species required to be emended in certain places in order to give a clear understanding of its morphology, and this paper, therefore, is an attempt to fulfil this object.

The material for study was obtained from the lower portion of the alimentary canal of *Pila globosa* collected from several ponds in Calcutta and its suburbs. Permanent smear preparations were made for a close study, while observations on the fresh material was made by examining the fluid contents of the gut of the host which needed occasional dilution with saline (.65 %). Silver nitrate preparations made after the method of KLEIN, demonstrated very clearly the arrangement of the ciliary rows on the body of the organism.

### Observations.

*Nyctotherus kempi* is a bean-shaped organism with its anterior pole being slightly narrower than the posterior. It measures 150—200  $\mu$  in length and 100—110  $\mu$  along its broadest part. In order to emphasise the chief characters of this ciliate, the points of comparison between the original and emended descriptions are given here in the accompanying table.

Ghosh's original description.	Emended description.
1. Anterior end tapering to a point.	Anterior end rounded but slightly narrower than the posterior end.
2. Peristome extends upto the junction of the middle and the posterior third of the body length.	Peristome extends beyond the posterior third of the body length.
3. Cytopharynx about half the diameter of the body and directed forwards.	Cytopharynx extends beyond half the diameter of the body of that region and directed backwards.
4. Macronucleus elongately oval, placed in the posterior portion of the anterior body half.	Macronucleus broadly elliptical and placed obliquely along the right side, near about the middle of the body.
5. A single micronucleus at the side of the macronucleus.	A single micronucleus placed always at the posterior end of the macronucleus.

A glance at the table will at once show that the original description is demonstrably erroneous. The disputable points could only be settled if I could compare my specimens with the type species but unfortunately this was not possible due to the untimely death of Dr. GHOSH, the original author. That I was dealing with the same organism was, however, confirmed by him during his life time when my preparations were shown to him.

The body of this ciliate is slightly laterally compressed and when examined fresh is seen to swim very briskly and often to rotate round its own longitudinal axis. When the movement is slowed down it is usually found to creep along its right side with the peristome lying on the left or ventral side of the body (see Fig. 1). The right edge or dorsal side forms an arch while the left or ventral side forms almost a straight line. The oral fossa is slightly inclined towards the right side of the body (see Fig. 1). The body is pliable and easily yields to obstructions. At the left anterior extremity where the dorsal edge meets the ventral one, the body is slightly raised into a small beak which is often seen to move to and fro, particularly when the organism gets entangled in the debris. Pliability of the body coupled with the above mentioned beak and

straight left margin, enables this ciliate to extricate itself from the semisolid contents of the lower part of the large intestine of the host.

The macronucleus is usually broadly elliptical in shape

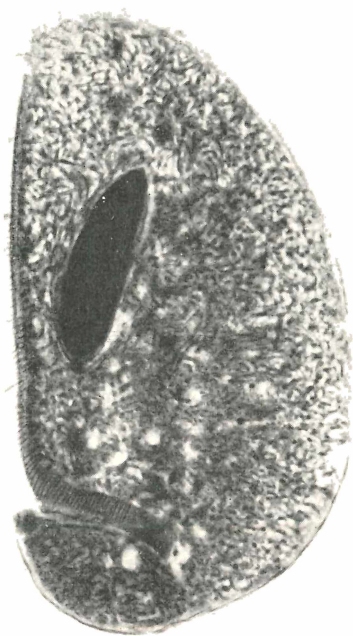


Fig. 1

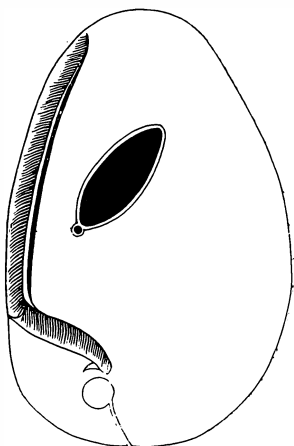


Fig. 2

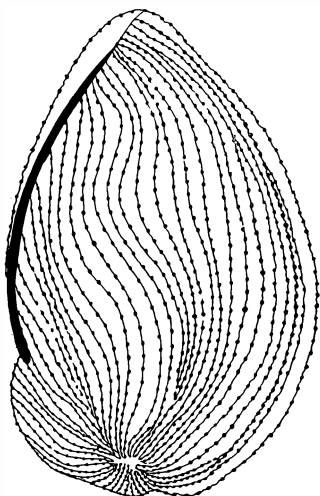


Fig. 3.

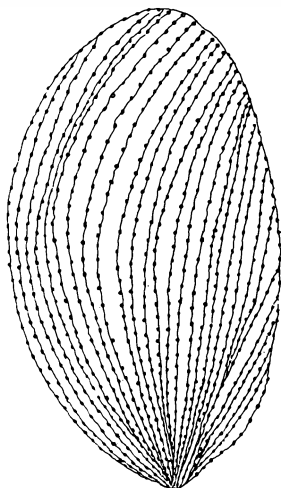


Fig. 4.

and measures 35—50  $\mu$  in length and 15—20  $\mu$  along its greatest diameter. In comparison to the size of the macronucleus, the micronucleus is a very small spherical body and measures only 2.06—4  $\mu$  in diameter.

The contractile vacuole is situated towards the posterior end in the neighbourhood of the inner extremity of the cytopharynx. In a fully extended condition it measures about 15—20  $\mu$  in diameter and opens to the exterior posteriorly through a short duct (see Fig. 2).

The longitudinal ciliary rows in this organism, as demonstrated in KLEIN'S silver-nitrate preparations, arise from a point in the middle of the posterior border of its left side whence they diverge as continuous rows throughout the body except in the region of the peristome where this continuity is broken by the plates of the peristomal cilia. The proper arrangement of the cilia are better understood by referring to the figures 3 and 4. In such preparations the peristomal area ahead of the oral fossa shows a very heavy deposit of silver which in the Fig. 3 has been indicated by the thick black line. Cilia all over the body are of uniform size and measure 3  $\mu$  in height. Arrangement of cilia within the cytopharynx was however not shown by this method. Evidently in air dried specimens (a preliminary process prior to the addition of silver salt) a protoplasmic sheet deposited on this organ by process of dessication, prevents the penetration of silver. In preparation stained with iron-alum haematoxylin, however, these cilia are seen to be arranged in rows and forming plates of membranelle like those of peristome.

Unfortunately neither dividing forms nor conjugants were seen by me and hence I could not put in any word about its method of reproduction.

In conclusion I express my deep indebtedness to Dr. H. N. RAY for his helpful suggestions and kind criticism.

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### Reference.

- GHOSH, E. N. (1921): Infusoria from the environment of Calcutta. Bulletin of the Carmichael Medical College, Belgachia. No. II.
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