OCCURRENCE OF A NEW FRESHWATER MEDUSA IN IDUKKI RESERVOIR OF KERALA, INDIA

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THE freshwater medusae had been reported from peninsular India both on the eastern as well as western drainages. The specimens were collected from various habits like river drainage[1], reservoir[2], lake[3,4] and fish water tank[5]. The various forms previously described are *Limnocnida indica* Annandale[6], *Craspedacusta sowerbyi* Lankester[4], *Moerisia gangetica* Kramp[7], *Mansariella lacustris* Malhotra[3] etc. During limnological study of the hydroelectric project namely Idukki reservoir of Kerala state, the author came across the freshwater medusa while doing limnological sampling and collected some specimens, which are described in detail here.

The medusae occurred throughout monsoon, post-monsoon and in early months of pre-monsoon. Once they were observed in masses during March 1983. In the following months the medusae disappeared totally from the reservoir and a special attempt made for their collection was in vain.

The medusae are umbrella-shaped. The diameter of umbrella ranged from 4–5 mm. The manubrium size varied from 2.7–3 mm. In height the umbrella measured upto 4 mm in some specimens. The margin of umbrella is beset with 128 tentacles (32 between two radial canals, figure 1). All tentacles are uniform in length measuring upto 2 mm and are arranged in a single row. Tentacles are solid, originating from circular canal forming a beaded structure at the base due to the presence of a balancing organ, the statocyst. They do not have any terminal sucker or an adhesive pad. Mouth is circular 1 mm in diameter when open, lips are radially arranged forming six-lobed structure (figure 2). Manubrium is large and bell-shaped opening into a circular gastric cavity. The radial canals originate from mouth and join the marginal circular canal. Gonads are slightly visible as a small thickening on radial canals in young forms. A few forms have eggs masses loaded in the manubrium.

The form under report is different from the genera reported earlier by various workers in Indian freshwaters. The earlier forms made their appearance suddenly for a short period while the present form was observed throughout the year leaving one or two monthly samplings.

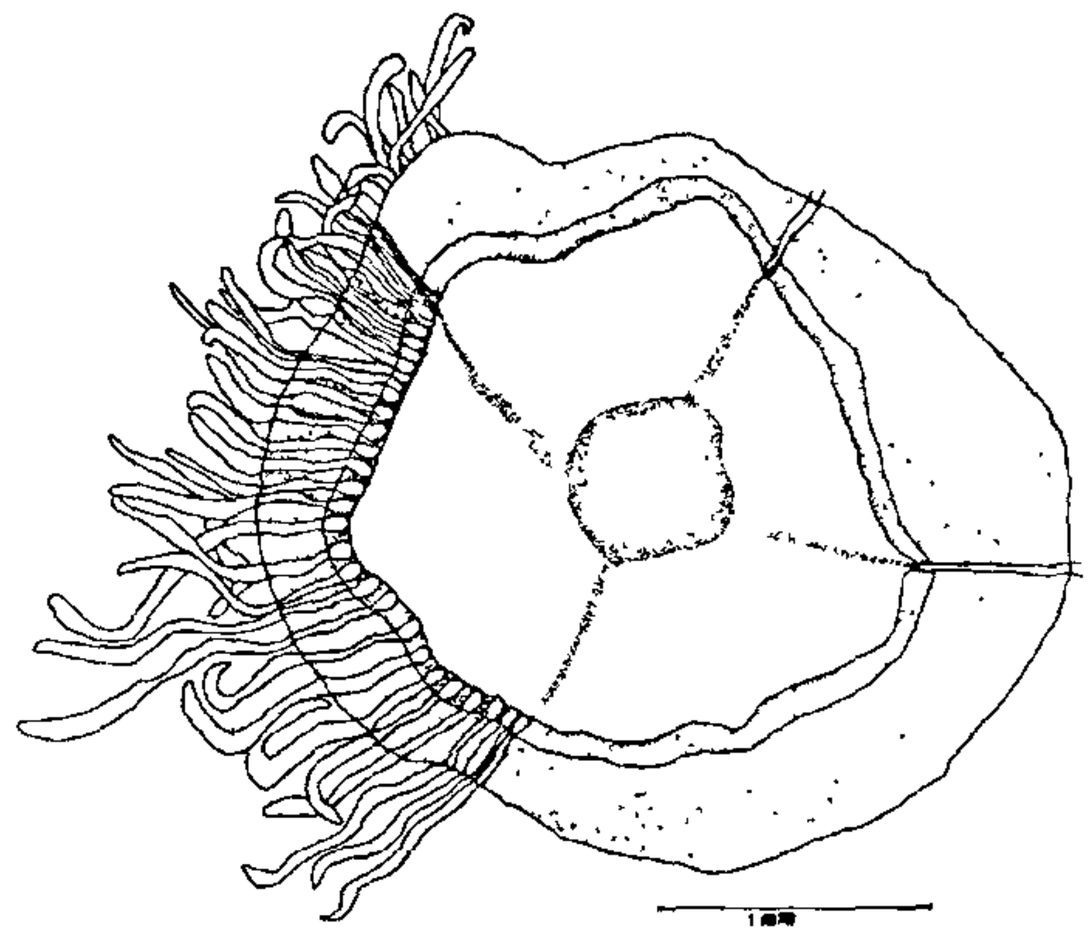

Figure 1. Camera lucida diagram of the medusa viewed from aboral side: only one forth of tentacles are shown.

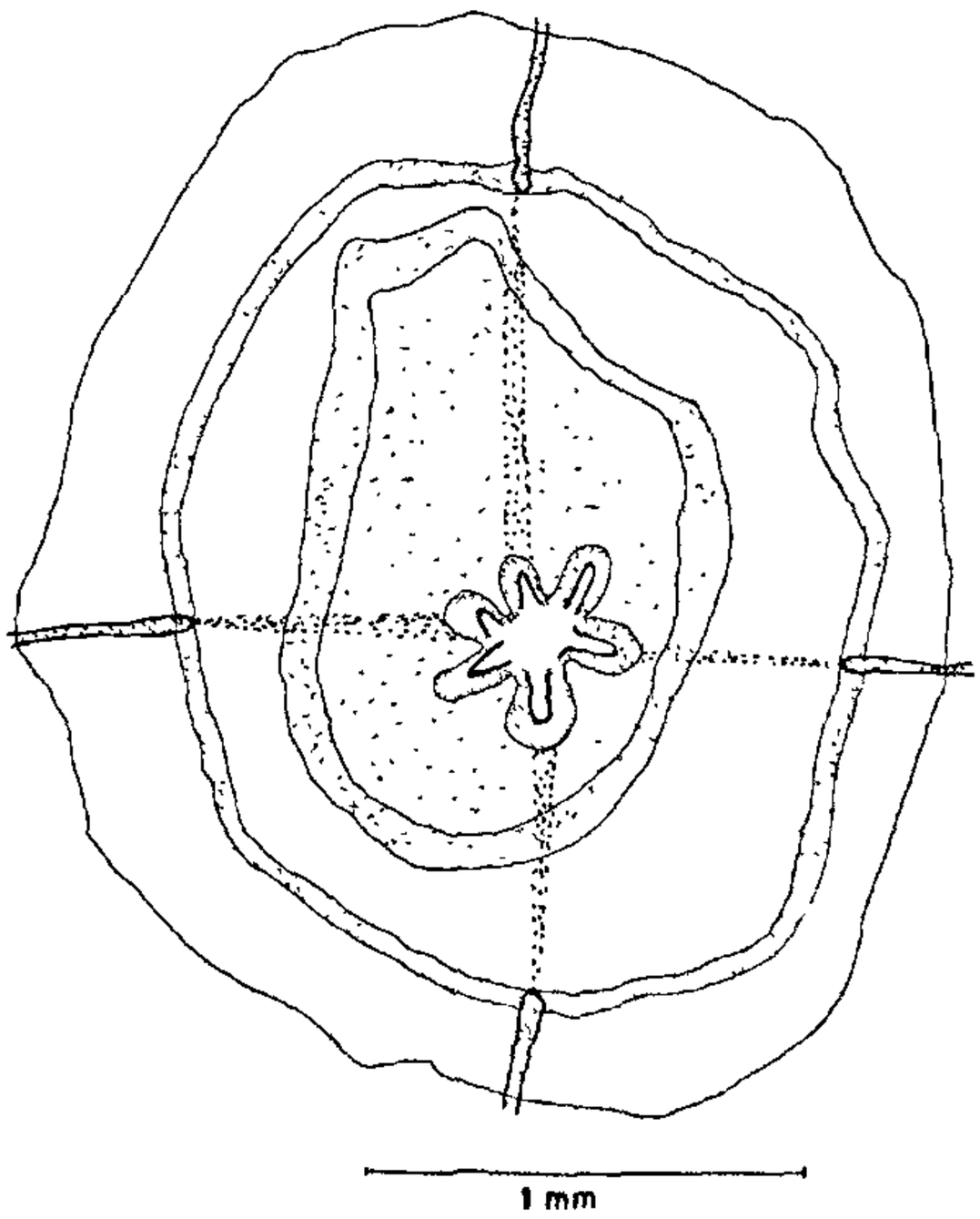

Figure 2. Camera lucida diagram of the medusa viewed from oral side: tentacles are not shown.

The present form differs markedly from the peninsular forms *e.g. Limnocnida, Limnocodium* and *Microhydra* in the number and arrangement of ten-

tacles and mouth-umbrellar ratios. The present form is dissimilar from the gangetic form, *Mansariella gangetica* in number of tentacles, shape of umbrella and other physical features. The reported medusa disagree in structure with *Limnocnida indica*, *Moerisia gangetica* and *Mansariella lacustris*.

Although the medusa retains the original basic frame of typical medusa, it differs from the above mentioned ones in 1. umbrellar depth, 2. oral aperture, 3. number of tentacles, 4. length of tentacles and 5. in the ratio of umbrella with manubrium. On the basis of the above characters, a new name *Keralica idukkensis* (the generic name is after the state and species name is after the reservoir) is suggested for the freshwater medusa.

It prefers acidic waters while the basic nature of habitat was found to restrict its distribution. However, asexual stages of the above are not observed during the study period, indicating that it may have a resting asexual stage.

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RESILIN IN THE LENS-CUTICLE OF THE HOUSE FLY, *MUSCA DOMESTICA*.

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RESILIN was detected first in certain elastic hinges and tendons in the cuticle of locusts and dragonflies by Weis-Fogh[1]. Later, the protein was detected in many more situations in arthropods[2–4]. The present communication gives the first report on the occurrence of resilin in the lens-cuticle of the house fly *Musca domestica*.

The tests employed for detection of resilin in the present study were those followed by Weis-Fogh[1]. When the histological preparation of the lens-cuticle of *M. domestica* was stained with toluidine-blue/Light Green combination at pH 4–7 the entire pro-cuticle became sapphire in colour. In solvents like formic acid, acetic acid, phenol, formamide and acetamide, the lens-cuticle showed considerable swelling within few minutes.

Chromatographic analysis for amino acids of the lens-cuticle was carried out following the method of Bailey and Weis-Fogh[5]. The lens-cuticle was separated from adhering tissue and was kept in fresh aqueous ethanol. The cuticle was then dried in vacuum desiccator *i.e.* over calcium chloride, and the cuticular material was collected by centrifugation. The residue was hydrolysed in 6NHCl at 105°C for 12–18 hr. The hydrolysate was evaporated to dryness and the dry residue was dissolved in distilled water. The test material was then spotted on Whatman No. 1 filter paper. One-dimensional discending chromatography with subsequent use of two solvents in the same direction was carried out. The first solvent was isopropanol–conc. ammonia–water (8 : 1 : 1, V/V) and the second, *n*-butanol–acetic acid–water (4 : 1 : 1, V/V). Examination of the chromatogram with UV light showed the presence of two fluorescent amino acids (di-tyrosine and tri-tyrosine). The fluorescence of these two amino acids increased when the chromatogram was exposed to ammonia vapour, whereas vapour from hydrochloric acid quenched it almost completely.

The foregoing observations, such as the positive colour reaction to the histochemical tests, swelling of the lens-cuticle in organic solvents as well as the presence of di- and tri-tyrosine provide characteristic evidence for the occurrence of resilin in the lens-cuticle of the house fly, *M. domestica*.

The question arises as to what could be the significance of the occurrence of the protein in the lens-cuticle. Locke[6] has demonstrated that the actual process of hardening in the non-elastic region of cuticle of *Calpodes ethlius* involves cross-linking by di- and tri-tyrosine. Since lens-cuticle which is transparent is also mechanically resistant and since resilin has also been reported to occur in some non-elastic regions[4], it is reasonable to presume that the hardening of the cuticle in the photoreceptor forming lens, may involve cross-linking by di- and tri-tyrosine, the characteristic