

SOME NEW AND INTERESTING BICELLARIELLIDS (POLYZOA :  
CHEILOSTOMATA) FROM VISAKHAPATNAM COAST,  
BAY OF BENGAL

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Five interesting species belonging to the anascan family Bicellariellidae have been collected from Waltair-Visakhapatnam area. Of these, 3 species belonging to the genera *Bugula*, *Kinetoskias* and *Bicellariella* are new to science and another, *Beania klugei*, a new record to the Indian region. The three new species have been described and figured. Brief mention of the distribution of the species has also been made. The other species, *Caulibugula zanzibariensis* is a new record from the Bay of Bengal.

INTRODUCTION

The family Bicellariellidae Levinsen, 1909 includes some of the very well-known species in the phylum ectoprocta. The members of this family are common objects on any sea-shore, particularly in the tropics, occurring quite frequently amongst various intertidal communities and fouling assemblages. The bathymetric distribution of the members of this group ranges from the intertidal region to abyssal depths.

There had been two views regarding the compass of the family—Harmer (1926) and Hastings (1943) maintaining a single family Bicellariellidae to include *Bugula*, *Bicellariella*, *Beania* and related genera; and others (Bassler 1953), splitting it into three separate families—Bugulidae, Bicellariellidae and Beaniidae. Osburn adopted the latter procedure in his earlier work (1940) but finally (1950) arrived at the conclusion that the separation of the families is 'unwarranted'. Most of the modern workers have also resorted to the comprehensive family Bicellariellidae treating Bugulidae, Bicellariellidae and Beaniidae as subfamilies.

Barring the early works of Harmer (1926), Thorneley (1907) and Robertson (1921), little or no information is available about this interesting group of polyzoans from the Indian region. Recent studies made at the Waltair-Visakhapatnam coast and Visakhapatnam harbour, revealed a rich and varied ectoproct fauna in this region of the east coast of India and the present communication deals with the Bicellariellids collected in this area, which are quite interesting both from the systematic and distributional view points. The classification followed here is after Harmer, 1926.

SYSTEMATIC ACCOUNT  
Bicellariellidae Levinsen  
*Bugula* Oken  
*Bugula bengalensis* n. sp.  
(Fig. 1)

*Material*—Number of colonies from the boulders at the intertidal region of

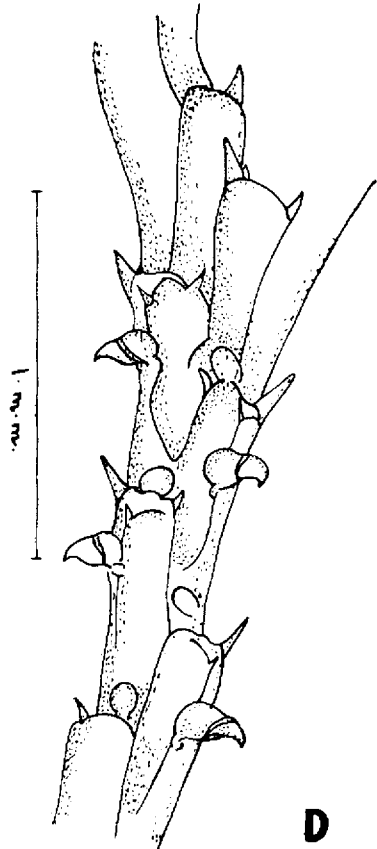
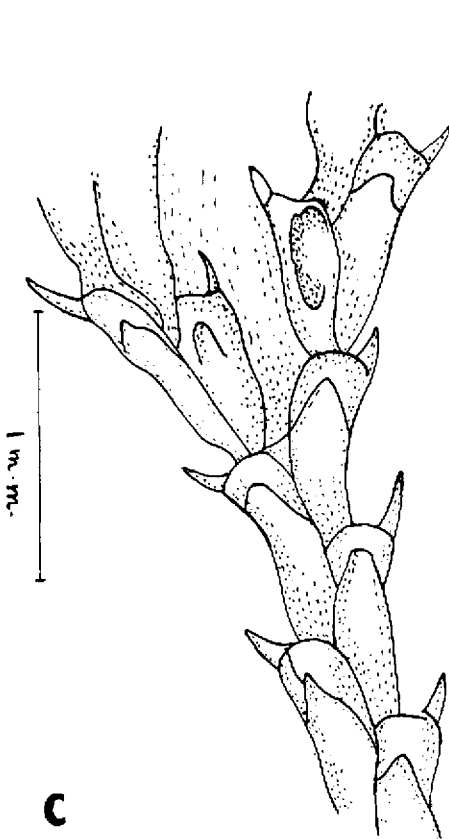


FIG. 1. *Bugula bengalensis*. A, photomicrograph of a portion of a branch.  $\times 18$ ; B, highly magnified zoecia showing the avicularia and ovicells.  $\times 120$ ; C, basal view of branch showing the type of bifurcation; D, frontal view of a branch of the same showing details of the zooids.

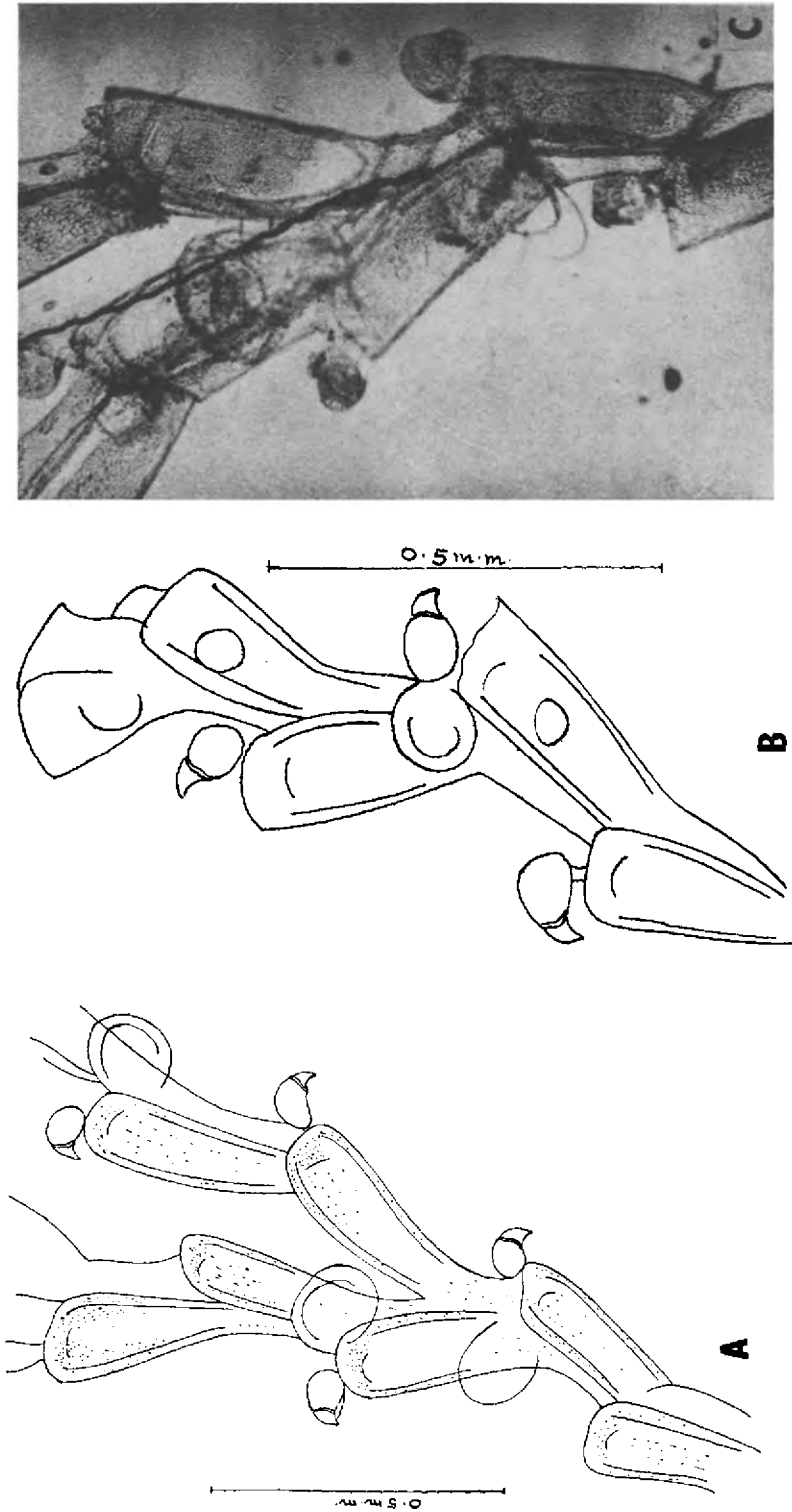


FIG. 2 *Kinetoskias klugei* A, camera lucida diagram of the frontal view of the branch showing the avicularia and ovicells; B, a portion of the tip of a branch; C, photomicrograph.  $\times 100$ .

the palm-beach, Waltair-Visakhapatnam coast, Bay of Bengal. Holotype and Paratypes at the Department of Zoology, Andhra University, Waltair.

*Description*—Zoarium cellularii-form, consisting of erect branches of up to about 4.5 cm, attachment by means of small rootlets either directly to the boulders or to other substrata. Mode of bifurcation type 3; colour whitish gray. Zooids biserial, alternate and broader at the distal end and tapering towards the base. Opesia occupies  $\frac{2}{3}$  of the length of the zooid. The distal spine formula is 2 : 1, the outer distal spine prominent, broad-based and elongate. The second spine is smaller. Avicularia present, situated above the mid point of the zooid on the lateral margin. Length of the avicularia little short of the width of the zooid. Beak is moderately decurved. Ovicells tilted towards the median axis of the branch, shallow, cap-like, poorly calcified and in the form of hood, in earlier stages.

*Measurements*—Length of the zooid: 0.5–0.65 mm, width of the zooid: 0.15–0.20 mm; length of the avicularia: 0.13–0.17 mm, width of the avicularia: 0.08–0.11 mm.

*Habitat*—Most of the specimens have been collected from the intertidal rocks at the palm-beach in the midlittoral zone amongst thick growth of algae and hydroids.

*Breeding period*—Mature ovicells, as well as young colonies are present in the collections made during March to May period.

*Remarks*—Two species already reported from the Indian Ocean region viz., *Bugula dispar* Harmer and *Bugula cucullata* Busk bear certain similarities to the present species at Waltair. But *B. bengalensis* can easily be distinguished from *B. dispar*, by the absence of the dimorphic avicularia, so characteristic of that species. The larger opesia and the consistent distal spine formula are the other features which distinguish this species from *B. dispar*. From *B. cucullata* it can be distinguished by the size, shape and position of the avicularia. The avicularia are never so large and concave in their upper profile as in *B. cucullata* and they are also situated above the mid point of the zoecium.

The name *bengalensis* is proposed to this species, because of its occurrence in this region of the Indian Ocean.

*Kinetoskias* Daniellsen  
*Kinetoskias klugei* n. sp.  
(Fig. 2)

*Material*—Few colonies from the Intertidal rocks at the palm-beach, Visakhapatnam coast, on erect bryozoans like *Bugula bengalensis*. Holotype and paratypes at the Department of Zoology, Andhra University, Waltair.

*Description*—Zoarium cellularii-form consisting, of erect branches, height up to 2 cm, attachment by rootlets springing from a short peduncle. Zooids biserial, alternate. Outer frontal margin rounded, free lateral margin straight, devoid of spines, inner margin convex; avicularia as wide as long with a strongly acute rostrum pointing proximally. Attachment by means of a short stalk at the tip of the zooid. 'Step-like' process has not been observed. Ovicells large, oblique, almost rounded, the ecto-and ento-ooecium being separated by a large space.

*Measurements*—Length of the zooid : 0.48–0.62 mm, width of the zooid : 0.130–0.156 mm; length of the avicularia : 0.104–0.130 mm, width of the avicularia : 0.078–0.091 mm.

*Habitat*—On the protected surfaces of boulders in the mid-littoral region and on the stems of *Bugula bengalensis*.

*Breeding period*—Mature ovicells are present in the collections made during May.

*Remarks*—The position of attachment of the avicularia, and the presence of a 'stalk' for the avicularia distinguish this species from all the other known species of *Kinetoskias*. The presence of a stalked avicularium, however, has been mentioned recently by Cook (1968) for an undescribed species of *Kinetoskias* from the tropical coast of West Africa.

*Distribution*—This is the first record of the occurrence of *Kinetoskias* in a truly intertidal locality (all the previous records are from depths ranging from 30 to 4670 m). From Indian region, no *Kinetoskias* has so far been described. The occurrence of one of its members in a tropical intertidal region particularly during the summer months when the temperatures may even reach up to 30°C is quite an interesting feature (Ganapati *et al.* 1969).

We take pleasure in naming this species in honour of H. Kluge who has done considerable work on the taxonomy of this genus.

*Caulibugula* Verrill (1900)  
*Caulibugula zanzibariensis* (Waters)

(Fig. 3)

Small whitish colonies of *C. zanzibariensis* have been collected on several occasions from the under surfaces of intertidal rocks at the palm-beach, Rishikonda, and Pigeon Island areas in Visakhapatnam. They have been always found amidst the colonies of other polyzoans like *Nellia* sp., *Porcellaria* sp. and *Crisis* sp.

This is the first record of this species from the Bay of Bengal.

*Beania* Johnston  
*Beania klugei*, Cook (1968)

(Fig. 4)

Small whitish, delicate colonies of this species have been collected on a number of occasions from the under surfaces of rocks, and from hydroids at various localities of the Waltair-Visakhapatnam coast. Our specimens agree well with those described by Cook (1968). This is the first record of *B. klugei* from the Indian region. However, it is interesting to record in this connection the observations of Miss Cook that many of the Indian Ocean specimens earlier referred to as *B. intermedia* are probably referable to *B. klugei*.

*Bicellariella*  
*Bicellariella, cookae*, n. sp.

(Fig. 5)

*Material*—Several colonies from the intertidal rocks at the palm-beach and Rishikonda areas of Waltair-Visakhapatnam coast. Holotype and paratypes

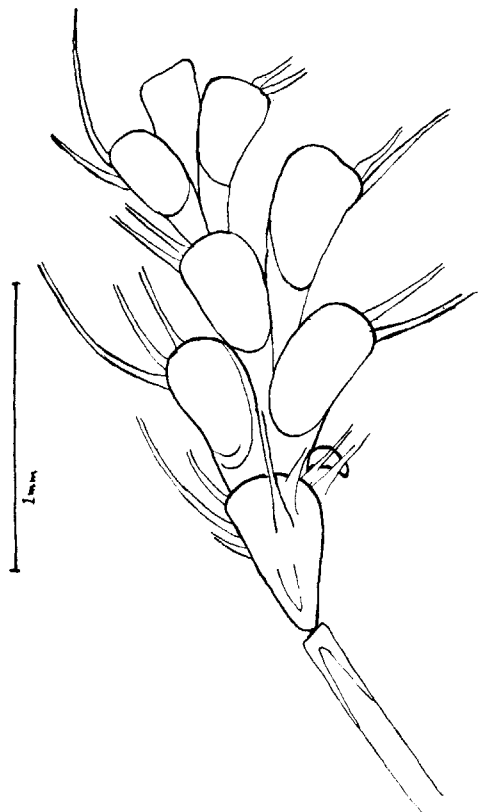


FIG. 3. Camera lucida diagram of *Caulibugula zanzibariensis*.

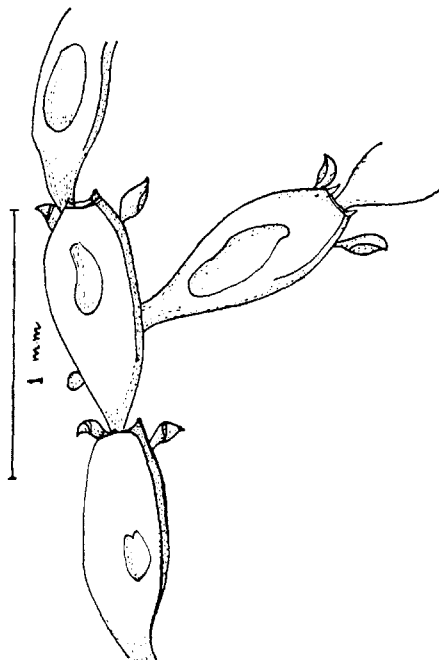


FIG. 4. Camera lucida diagram of *Beania klugei*.

deposited at the department of Zoology, Andhra University, Waltair.

*Description*—Zoarium cellularii-form consisting of delicate branches of up to 3–4 cm, attachment by means of rootlets from the basal wall of the zooid. Zooids biserial, divided into 3 well-marked regions, the distal section turbinated and thrown outwards. Number of spines on the turbinated zoecia variable, usually 4 lateral and 3 oral elongated spines on the outer angle and a single short spine on the inner angle. Avicularia movable, large and are present on almost all the zooids. The attachment is to the middle section of the zooid. The ovicells are broader than long and are present at the boundary between two adjacent zoecia.

*Measurements*—Length of the zooid : 0.45–0.53 mm, width of the turbinated section of the zooid : 0.117–0.160 mm, length of avicularium : 0.111–0.195 mm, length of the ovicell : 0.104 mm.

*Habitat*—On the protected surfaces of boulders and in the crevices.

*Breeding*—Mature ovicells are noticed during February to June.

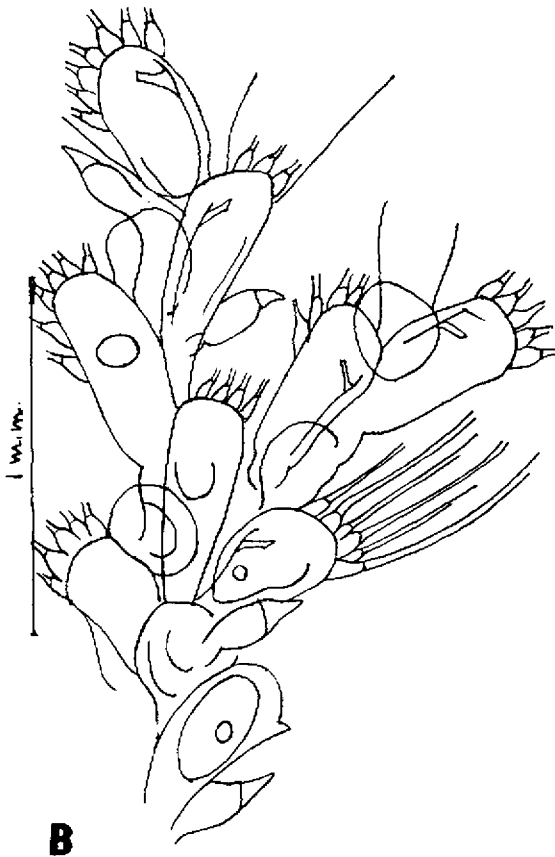


FIG. 5. *A*, photomicrograph of *Bicellariella cookae*.  $\times 16$ ; *B*, camera lucida diagram of the same species—a portion of the colony.

*Remarks*—This species is very distinctive in the number and arrangement of spines and the size and frequently of occurrence of avicularia.

*Distribution*—On the rocks at the palm-beach and Rishikonda areas. This is the first record of *Bicellariella* from the Bay of Bengal. We propose to name this species after Miss P. L. Cook, for her valuable contributions to the field of Bryozoa.

#### ACKNOWLEDGEMENTS

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