The interesting feature of the studies centers upon the association between the relatively higher water content with faster growth rate and low water percentage to prolonged developmental processes. Water content is known to indicate cellular growth rate[1] and is found to alter during metamorphosis.[2] Diminution in water content is known to retard the developmental processes[3]. Whereas increase in water content is reported to be associated with sexual maturation in female locust[4]. Probably the higher water content at a specific stage in insect describes a period of intense cellular division and building activity. The species specific water content then determines the developmental rate and decides the duration of growth and differentiation.

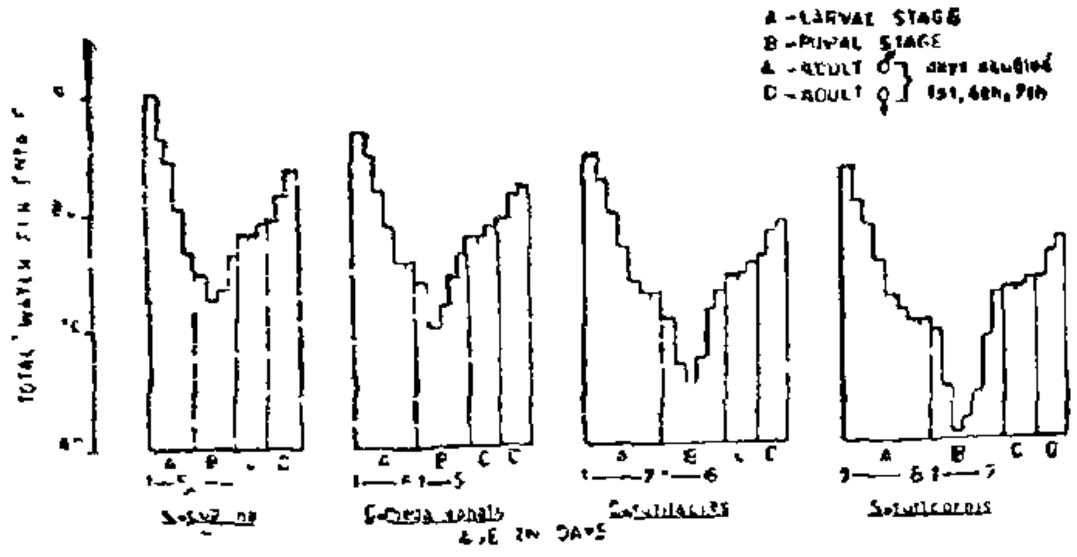

FIG. 1. Projects water percentage and growth rate (indicated by days taken for completion of different life stages) in various species.

Larval and adult stages are termed as open systems and the pupal stage is treated as a closed system[5]. Water content then distinctly differs from a very high percentage in an open system to a considerably low level in a closed system. State of hydration is known to decide the metabolic rate[3] and even neurosecretory processes[6,7]. In insects it is common to lose water before hibernation[3]. Summer aestivation studies in *Hypera postica* have clearly demonstrated the typical diapause alterations, *viz.*, low water and low respiration.

The high water content associated with open systems explains the active phase of the life cycle and as the metamorphic stage orients towards inactivity, *i.e.*, closed system water percentage considerably falls down.

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FIRST RECORD OF A PTEROBRANCH HEMICHORDATE FROM THE SEAS AROUND INDIA

IN the stomach contents of the marine cat-fish, *Tachysurus tenuispinis* from the South Kanara Coast, the authors came across twisted tube-like material often found attached to sand cocoons of tubicolous polychaetes as dominant food item of the fish. The tube-like material was found to be colonies of a pterobranch hemichordate of the genus *Rhabdopleura* and this is the first record of a pterobranch hemichordate from the seas around India.

The observations on trawl catches indicated that colonies of this pterobranch occurred in trawl catches at depths 10 to 30 m in sandy and muddy areas off Mangalore and Malpe (South Kanara coast) from April to June the peak occurrence being in May.

The colonies are composed of basal horizontal tubes and upper vertical tubes. The horizontal tubes are twisted and entwined amongst themselves forming a matrix with sand grains and mud. The erect tubes arise from the horizontal tubes in a linear creeping fashion. The erect tubes appear greyish on cleaning. These tubes are distinctly annulated (Fig. 1).

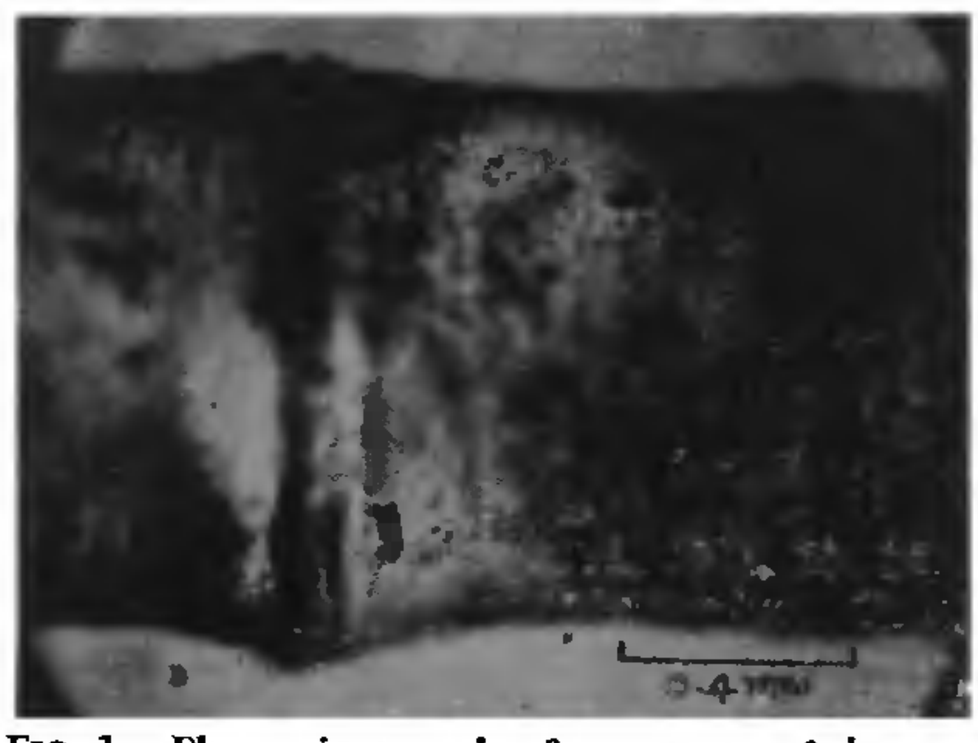

FIG. 1. Photomicrograph of a segment of the vertical tube of pterobranch colony.

though not at regular intervals. The distance between annulations varies from 0·51 to 1·08 mm, average being 0·81 mm. Between the annulations, thin transverse lines parallel to annulations are present. The annulations are not flared up. The mean diameter of the tubes is 1·02 mm and the maximum length of the erect tubes 6·5 cm The colonies are 10–12 cm long.

The creeping form of colonies, as found in the present material, is characteristic of *R. normani, R. annulata* and *R. striata*. The annulations are not flared up in *R. striata* and in *R, annulata* as also in the present material. The size of the colonies and dimensions of tubes in the present material are comparable to the 7 to 8 cm. long colonies of the giant of the genus *R. striata*. Therefore, the present material is assignable to *R. striata*.

Members of the Class Pterobranchia have been encountered by relatively few zoologists in contrast to the familiar acorn worms such as *Balanoglossus* and *Saccoglossus*. 21 known living pterobranchs are placed within three genera, *Cephalodiscus, Atubaria* and *Rhabdopleura. Cephalodiscus* contains the majority of species, most of which are found in cold waters of the Southern Hemisphere[3]. A few species have been reported from the tropical Indo-Pacific, one species from the Straits of Florida[2] and one from Japanese waters. All have been found at depths of 50 m or more. *Atubaria* contains a single non-tubicolous species dredged off Japan.

Of the four species of *Rhabdopleura, R. normani* is the most frequently collected pterobranch at several hundred metres depth off Greenland, in the Arctic, off Norway, Britain, the Azores, in the Mediterranean and in the Subantarctic and Antarctic. *R. compacta* has been recently described from specimens attached to shells dredged from British waters at 23 to 100 m[6], *R. annulata* is found off Australia and New Zealand at depths between 100 and 200 m[4]. *R. striata* was described only once from a coral reef off Ceylon in shallow water[5]. Rhabdopleuran pterobranchs are probably not as rare as the small number of records would suggest. Their minute size and the similarity of tubes to old hydroid skeletons make them easily overlooked[1]. The present report of occurrence of a pterobranch from the seas around India is the first for this region and the third for the occurrence of pterobranchs in coastal waters. Though generally known from great depths, the earlier two records of pterobranchs in shallow waters off Ceylon and Bermuda and the present one from India indicate that they abound in coastal waters as well.

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HISTOPATHOLOGY OF *HETEROPNEUSTES FOSSILIS* (BL.) INFECTED BY *PROCAMALLANUS (MONOSPICULUS) DEVENDRI*

INFECTION of the cat fish *Heteropneustes fossilis* (Bl.) by *Procamallanus* (Monospiculus) *devendri* (Nematoda) has been studied. The worm enters the stomach wall of the host by destroying the mucosa and submucosa. At some places the worm is attached to the host stomach wall by its buccal capsule (Fig. 1). In heavy infection the surface epithelial

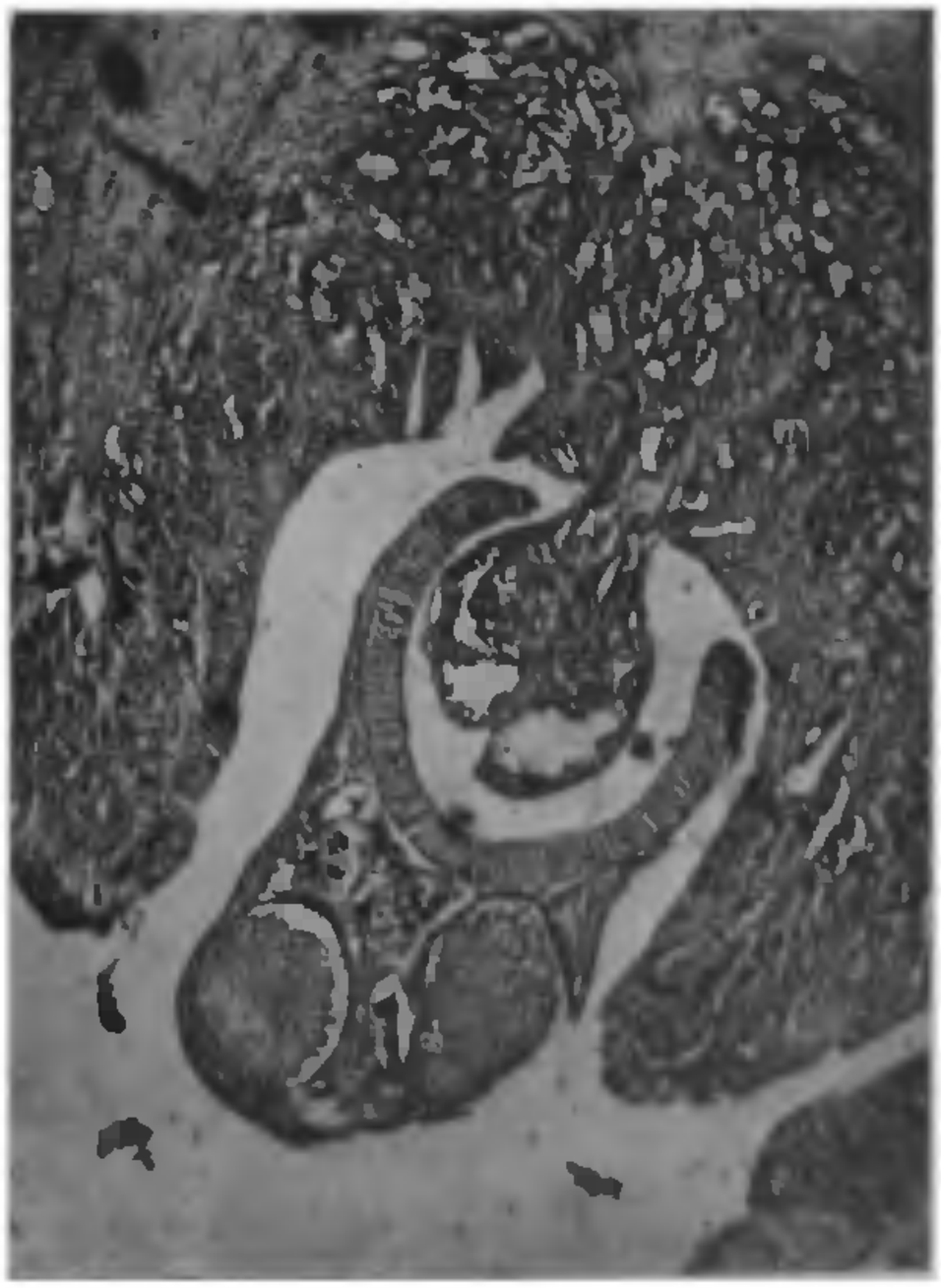

FIG. 1. Showing attachment of the worm to the stomach wall of host. × 150.