

DEPARTMENT OF ZOOLOGY

B.N. COLLEGE BHAGALPUR

T.M. BHAGALPUR UNIVERSITY,
BHAGALPUR- 812007



Dr. Rajesh Kumar
Assistant Professor

Phone- 7677189610 (w.app)

7004072016 (R)

Email id- raju.km1987@gmail.com

B.Sc. Zoology Part I

CHARACTERS AND CLASSIFICATION OF HEMICHORDATA

DEFINITION

“Usually vermiform, solitary or colonial enterocoelous coelomate animals with intra-epidermal nervous system and a pre-oral gut with or without gill slits and without typical nephridia.”

GENERAL CHARACTERS

- Solitary and colonial, mostly tubicolous, exclusively marine.
- Body soft, fragile, vermiform and divisible into **proboscis**, **collar** and **trunk**.
- Body wall with a single-layered epidermis.
- Coelom enterocoelous, divisible into **protocoel**, **mesocoel** and **metacoel**.
- Buccal diverticulum, earlier considered as notochord, present in the proboscis.
- Digestive tract complete; in the form of straight or U-shaped tube.
- Gill-slits, when present, are paired and one to numerous.
- Circulatory system simple and well developed; closed type; usually with a contractile heart vesicle and two longitudinal vessel, one dorsal and one ventral interconnected by lateral vessels and sinuses.
- Excretion by a single glomerulus situated in the proboscis.
- Nervous system primitive comprising mainly of an intra-epidermal nerve plexus.
- Reproduction mostly sexual. Sexes separate or united, gonad, one to several pairs.
- Fertilization external. Development mostly indirect through a free swimming **tornaria larva**. Direct development is also found in some forms.

CLASSIFICATION

Phylum Hemichordata has been divided into following four classes.

CLASS 1: ENTEROPNEUSTA

- Commonly known as “acorn” or “tongue worms.”
- Solitary and burrowing worm like marine animals.
- Body consists of proboscis, collar and trunk; collar without tentaculated arms.
- Alimentary anal straight; mouth and anus at opposite ends.
- Numerous pairs of U-shaped gill-slits.
- Two pairs of hepatic caeca present in the middle of the trunk.
- Sexes separate; gonads numerous, sac like.
- Development with or without tornaria larva.

Example:- *Balanoglossus*, *Saccoglossus* (*Dolichoglossus*), *Ptychodera*.

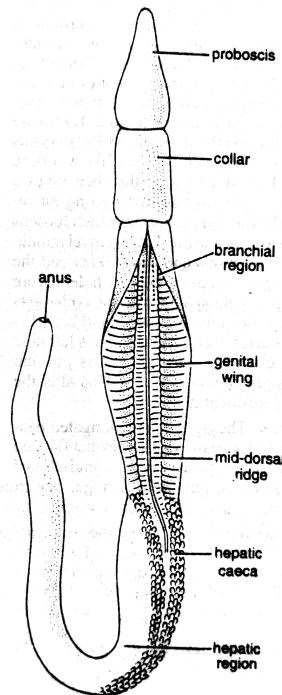


Fig. 86.2. *Balanoglossus*. External features in dorsal view.

CLASS 2: PTEROBRANCHIA

- Sedentary, solitary or colonial, tubicolous marine animals.
- Proboscis with ciliated tentacles to produce ciliary feeding currents of water.
- Collar with two or more tentaculated arms bearing tentacles.
- One pair of gill-slits or none, never U-shaped.

- Alimentary canal U-shaped with dorsal anus situated near the mouth at the same end.
- Sexes separate or united; single or one pair of gonads.
- Development direct, May or may not include a free swimming larval stage.
- Asexual reproduction by budding in some.

Order 1: Cephalodiscida

- Solitary or several individuals living unconnected in a common gelatinous house.
- Collar with several tentaculated arms.
- Gill-slits single pair.
- Gonads single pair.

Example:- *Cephalodiscus*, *Atubaria*.

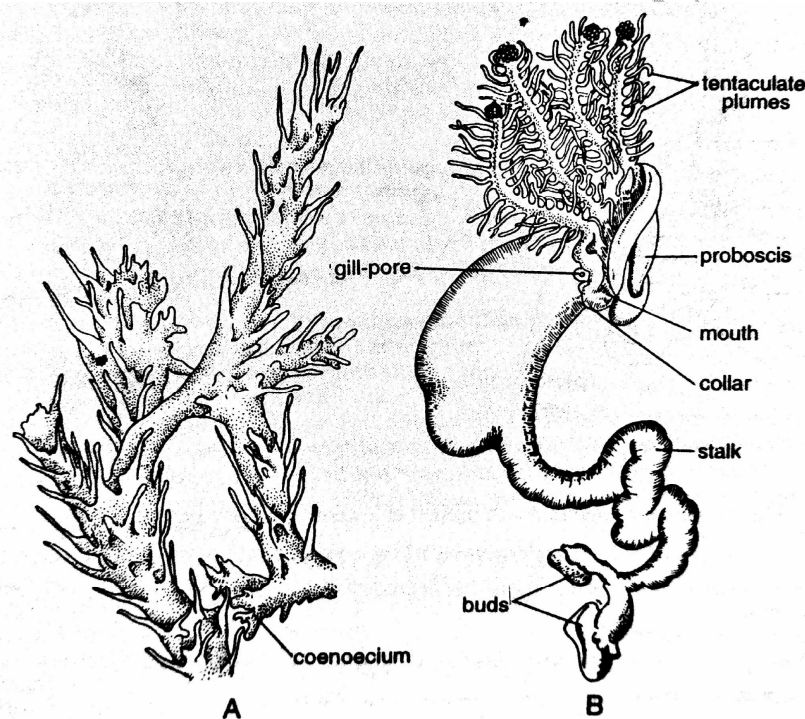


Fig. 89.3. *Cephalodiscus*. A—A part of colony; B—An individual zooid.

Order 2: Rhabdopleurida

- Colonial, zooids connected by a stolon.
- Collar with two tentaculated arms.
- Gill-slits absent.
- Gonad single.

Example:- *Rhabdopleura* (Single genus)

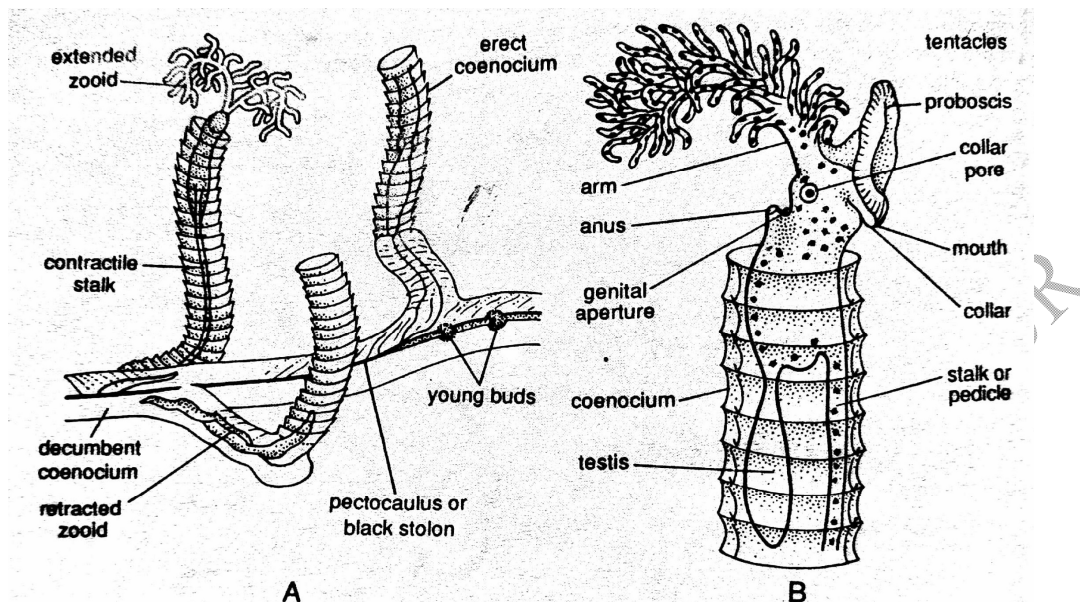


Fig. 89.4. *Rhabdopleura*. A—A portion of a colony ; B—An individual zooid.

CLASS 3: PLANCTOSPHAEROIDEA

- This class is represented by a few small rounds, transparent and pelagic larvae, supposed to be specialized tornaria of some unknown hemichordate *Planctosphaera pelagica*.
- The larva has branching arborescent ciliated bands on the surface.
- The alimentary canal of larva is U-shaped.
- The adult form is yet unknown.

CLASS 4: GRAPTOLITA

- These are extinct colonial hemichordates, mainly known from the fossils structures of their tubes.
- Each animal is housed in a zooid.
- These were abundant in the Ordovician and Silurian periods.

Examples:- *Dendrograptus*.
