

(2)
by diacanal sinus as such when water passes through them, gaseous exchange takes place.

Blood vascular System:

Blood is colourless with no corpuscles. Dorsal vessel is the chief collecting vessel extending from anus to the collar lying above the gut. The flow of blood is from behind to forward.

Heart lies in the proboscis. It receives blood from venous sinus and pumps it to the glomerular cavity lying in front of the heart. Blood flows from behind to forward.

Excretory System: - There is no definite organ for excretion. Glomerulus performs this function. It

lies at the top of the basal organ and is a mass of tubular evagination of the basement membrane. Excreta comes out through proboscis pore.

Nervous System: Nervous system is primitive type.

It is intraepidermal and mainly consists of nerve fibres all over the body immediately above basement membrane.

Reproductive System: Sexes are separate. Sex

like gonads are lodged in the genital wings. Gonads are open to the outside by gonopores.

The eggs are small and poor in yolk. Sperm consists of head, middle piece and neck.

Fertilization and Development: -

Fertilization takes place in sea water. 200 to 3000 eggs are laid which collect into a mass. After 30 mts of spawning the sperm are emitted out from males burrow.

The development is indirect with a trochophore larva. Finally the trochophore larva metamorphoses into adult Balanoglossus.

AFFINITIES:

Metschnikoff (1869) and Spengel (1893) showed its affinity with echinodermata and annelida respectively. Bateson (1886) argued

Chordate affinities vigorously. Recent work like vander Hest (1939) and Dawydoff (1948) thought it to be more related to invertebrate and on that account Hymen (1959) very rightly gave in the rank of independent phylum of invertebrate.

Affinities with Chordate :-

The chordate characters such as presence of notochord, gill slits and dorsal tubular nerve cord are also met in hemichordata. (Balanoglossus)

(1) Notochord: From the roof of buccal cavity, there extends a diverticulum anteriorly into the proboscis to support the latter. Bateson (1886) compared it with the chordate notochord as the latter also arise from the archenteron.

(2) pharyngeal gill slits of Balanoglossus resemble very much with that of amphioxus.

(3) Nerve cord:- The collar cord of Balanoglossus is dorsal in position, contains cavity and possesses ^{occasionally} neurophore. It is comparable to the dorsal nerve cord of chordate.

Objections :-

(i) Buccal diverticulum arises as hollow forward evagination of buccal cavity where as the notochord arise as solid rod-like elevation from the roof of the archenteron along its length.

(ii) Buccal diverticulum does ventral to the ~~notochord~~ blood vessels but the notochord always lies dorsal to the ~~main dorsal~~ dorsal blood vessels.

(iii) Gill slits open dorsal in Balanoglossus but typical Chordate open laterally.

Affinities with Annelids:

Similarities:

- i) Body is segmented
- ii) ~~Sexilar mode of feeding and casting exist~~
- iii) Intra-epidermal nervous system is present
- iv) Blood flow from behind to in front in the dorsal vessel