

LARVAL FORM IN ECHINODERMATA

Echinoderms

- Unisexual animal
- Sexual dimorphism - absent
- Development - direct or indirect.
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Larval form
- Metamorphosis

Radial symmetrical adults develop

The larvae of the ^{various} diff. classes differ normally in shape, size, number and arrangement of arms or number of the ciliated bands.
Form of E. LARVA Six types

1. Bipinnaria
2. Brachiolaria
3. Auricularia
4. Ophiopluteus
5. Echinopluteus
6. Dolicholaria

Bipinnaria

① Bipinnaria larva

- Life history of Starfish
- Eggs fertilized - Hermaphroditic.
- Holoblastic cleavage → Blastula
→ Gastrula →
- Free swimming process

Class Asteroidea two types of larval form
 ① Bipinnaria ② Brachiolaria.

Bipinnaria Larva

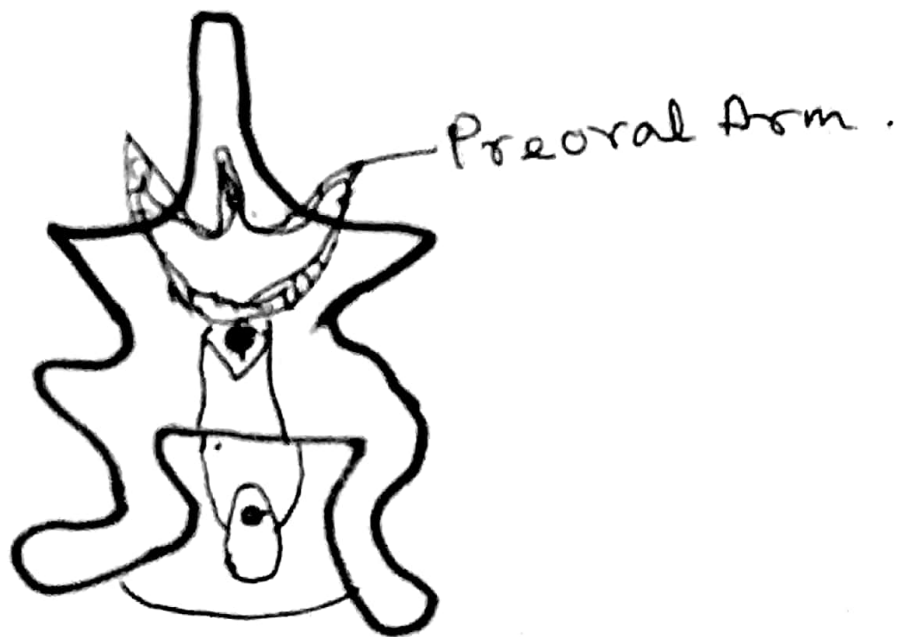
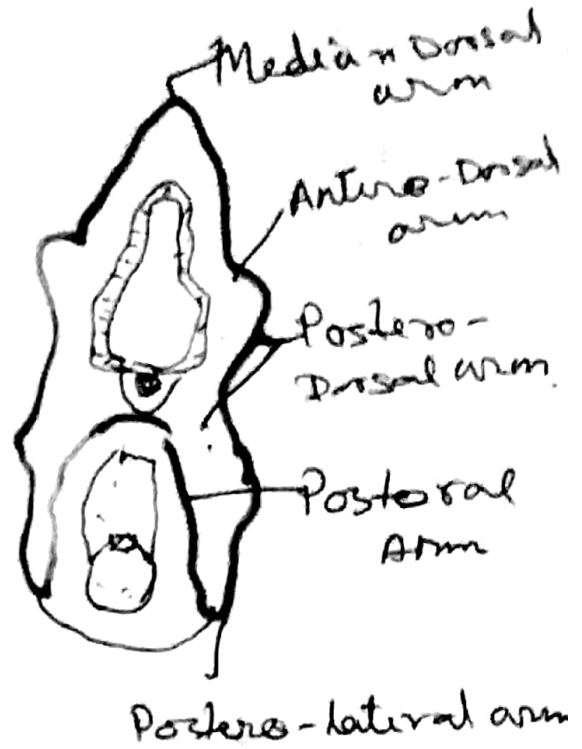
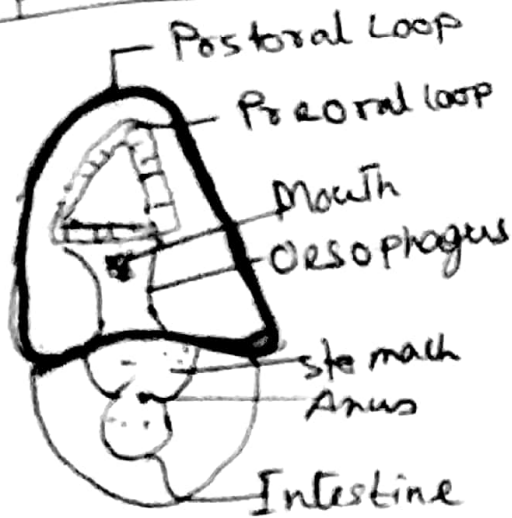


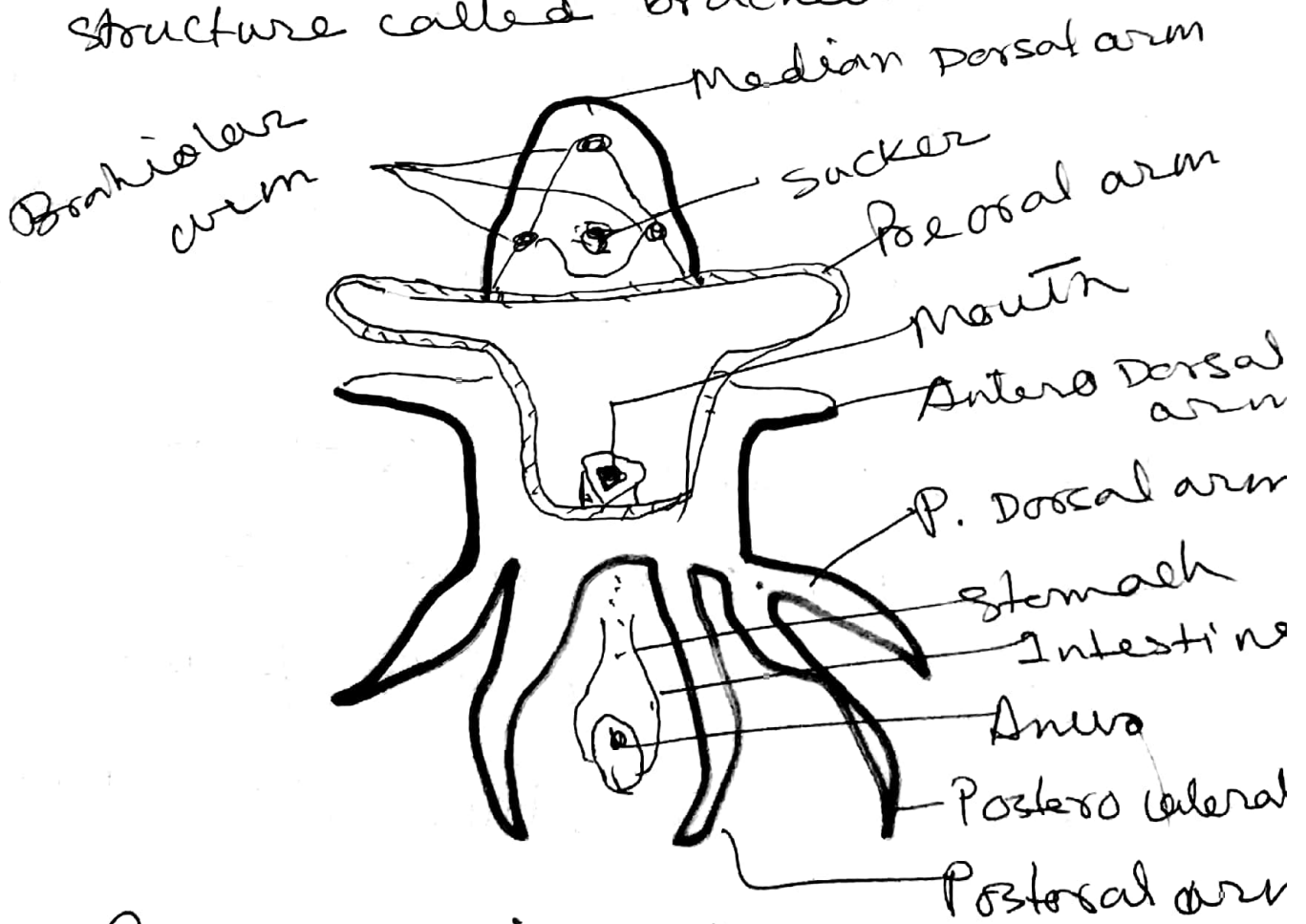
Fig - Diff^t stages of Bipinnaria

Bipinnaria larva is a free swimming life. It possesses two

ciliated bands known as Preoral and postoral bands. The larva has a large preoral lobe from which three arms are projected. All these arms are directed forward. The side of the larva possesses four pairs of arms namely antero-dorsal, postero-dorsal, postoral and postero-lateral. The preoral band is split into preoral loop bordering the preoral ~~loop~~ lobe and its arm and postoral loop borders all other arms. The postoral ciliated band forms a complete ring between the mouth and arms. The bilaterally symmetrical bipinnaria

larva swims and feeds actively.
 After some weeks it is transformed
 into the next larval form known as
Brachiolaria larva.

It is modified form of Bipinnaria larva. Lobes of the bipinnaria larva become modified into long slender, non ciliated contractile structure called brachiolar arms.



Rg Brachiolaria larva

The Brachio lar arms are present on the ventral side in front of the Pre oral loop. The arms are beset with suckers to help in temporary adhesion. It is also Bilaterally symmetrical and swims and feeds actively like bipinnaria. In some asterooids Brachiolaria larva are absent and then bipinnaria larva directly metamorphosis into the adult.

After two three months the brachiolaria larva settle to the sea bottom and adheres to some solid subject with the help of adhesive discs. Preoral lobe forms a short of stalk for attachment.

Metamorphosis occurs in the fixed condition. The rounded posterior part of the larva having gut and coelomic chambers converts into a young star. Later on the adhesive stalk becomes degenerated and is completely absorbed.

Class : HOLOTHUROIDEA

The larval form of Holothuroidea is Auricularia larva.

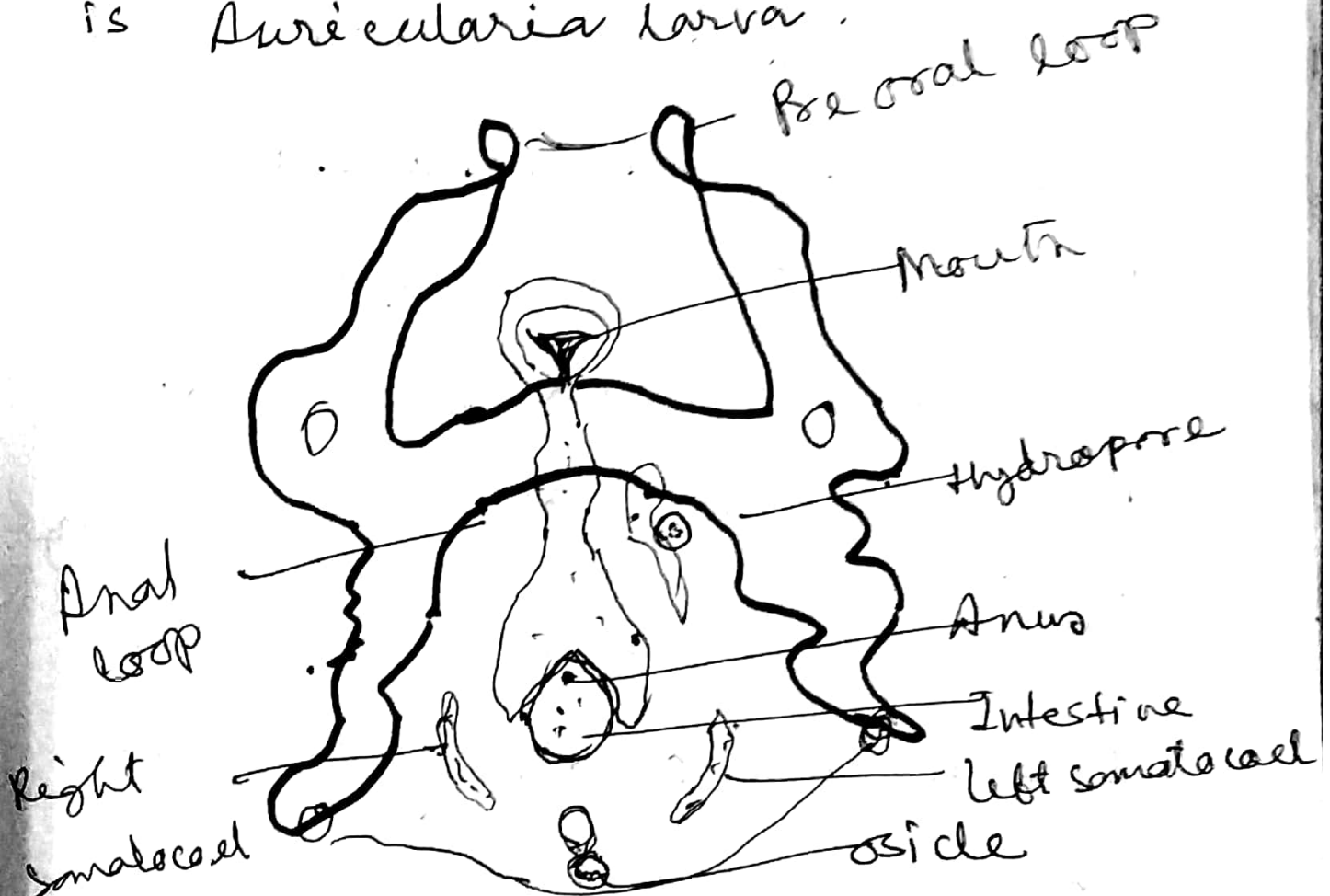


Fig - Auricularia larva

After the formation of the coelomic sac and gut the embryo of holothuroidea develops into Auricularia larva. It has a single ciliated band, but it possesses long areas with ciliated bands at the margin. This larva ~~extra~~ externally bilaterally symmetrical and pelagic in habit. The Preoral lobe is very well formed like the bipinnaria larva. It swims actively by a single ciliated band which runs along the side of the larva.

Around the mouth forming a preoral loop which extend forward on the ventral side of the posterior region to form the anal or postoral loop. The larva possesses a curved gut with succiform stomach, hydrocoel and left and right sematocoel. It has also ~~plus~~ present a sensory, flagellated apical plate.

Echinopluteus larva

Class. Echinoderm's larval form is Echinopluteus. It is conical shape and possesses reduced preoral ~~loop~~ lobe.

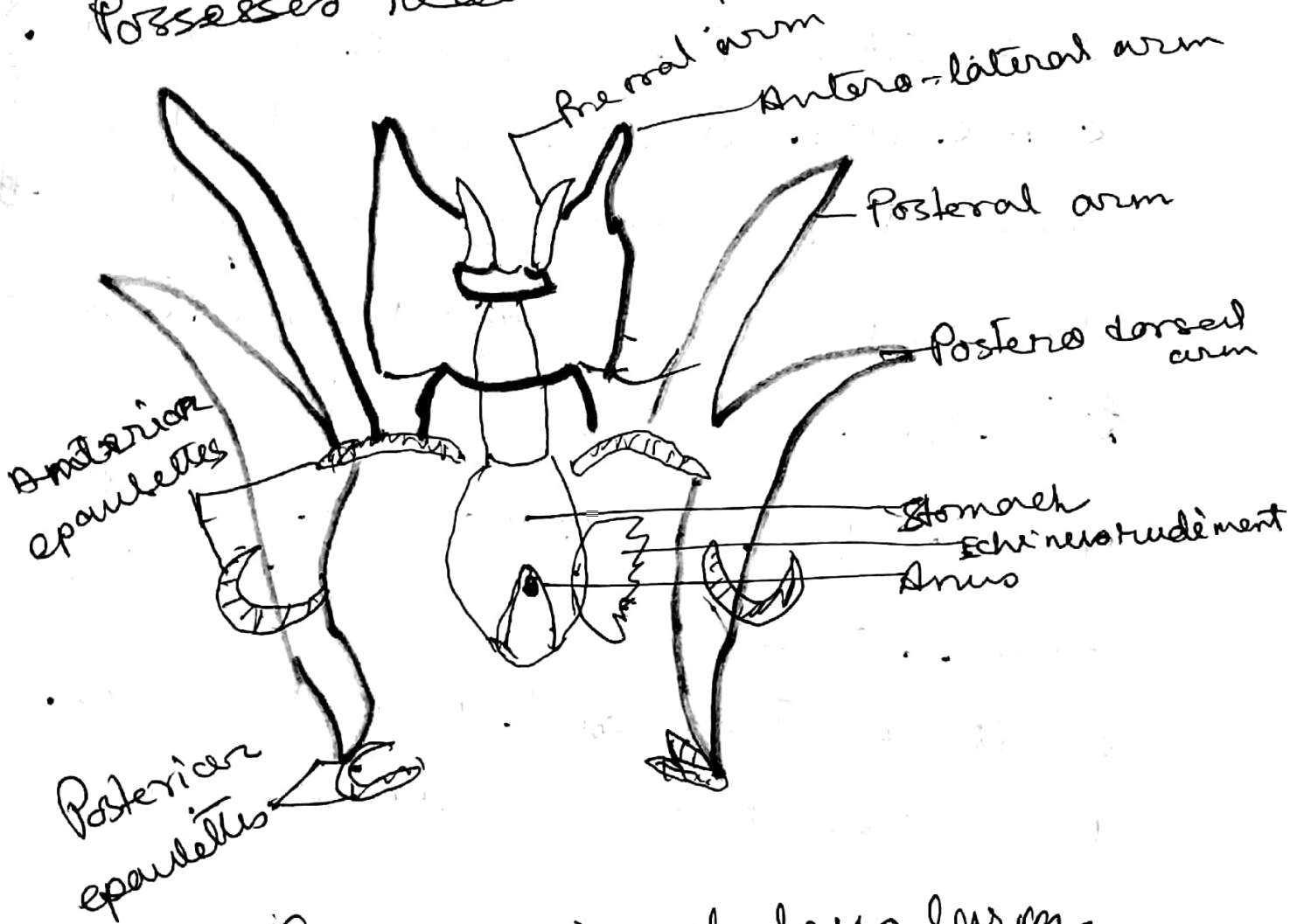


Fig - Echinopluteus larva

This type of larva slender and supported by calcareous rods. There are six pairs of arms. They are preoral, anterolateral, ~~postero~~ lateral, postoral, Postero dorsal

and postero lateral. In most of the larva Postero-lateral are absent. They have 5 arms. Some are antero dorsal also absent and they have only four arms. The arms are having pigmented tips. The ciliated bands are undivided and borders all the arms. The larva gradually sink to the bottom and metamorphose into adult very rapidly.

Ophiopluteus larva

The larva of class Ophirozoa is also pluteus but it is known as ophiopluteus. It has very close similarity with the larva Echinopluteus.

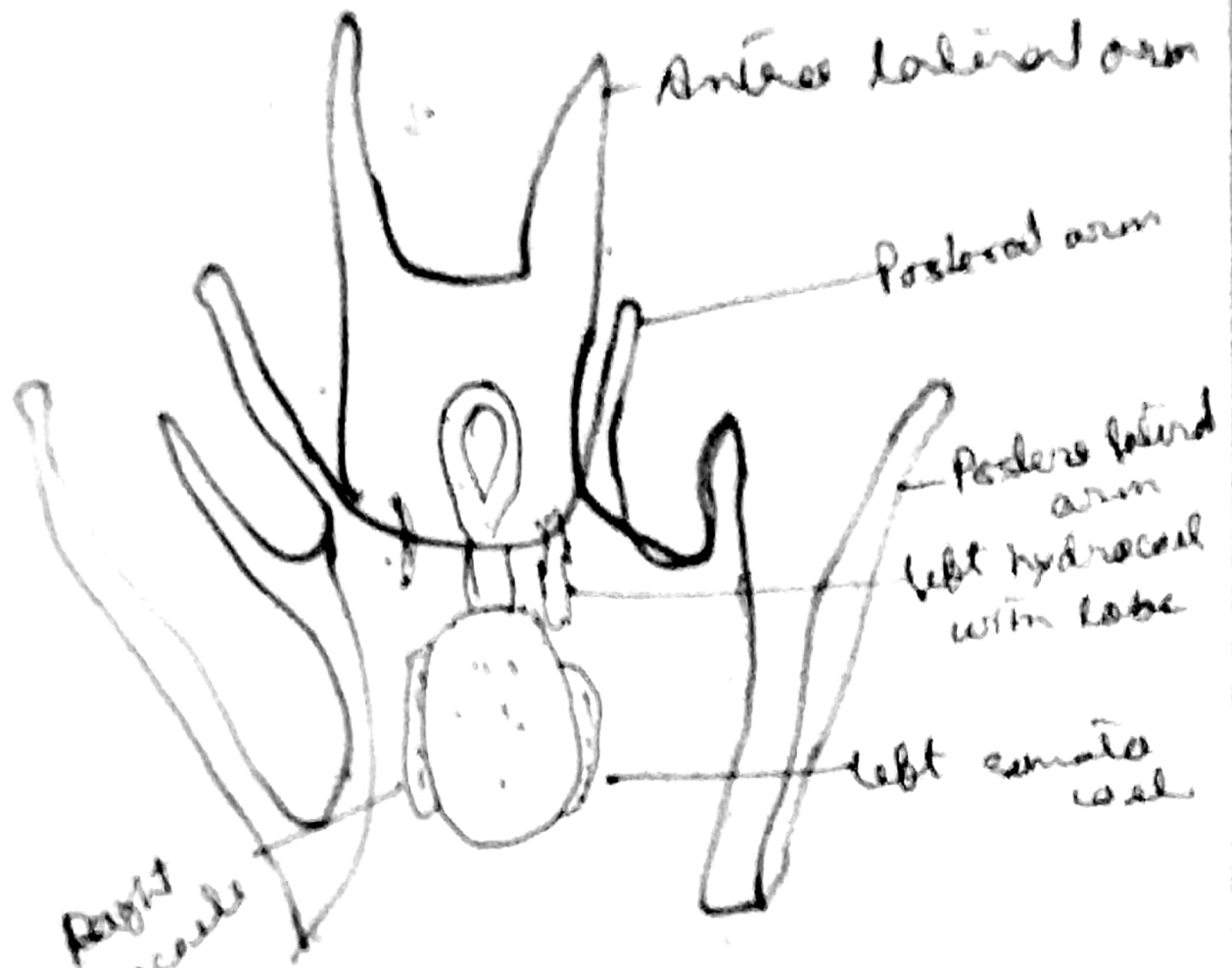


Fig - Ophiopluteus larva

The larva is conical in shape having small pre-oral lobe. Five numbers of arms. The Postero-lateral are the longest and directed forward, but they are absent in some forms. The other arms are small and provided with calcareous rods. The ciliated band is single. The larva contain coelomic chamber and archenteron. The larva are

Not fixed any substratum and metamorphosis occur during swimming. After metamorphosis, the young sink to the bottom and adult live in the sea bottom.

Doliolarian Larva: (Class - Crinoidea)

After the formation of coelom and gut, the embryo develop into Doliolarian larva. This larval stages has many structural peculiarities. It has barrel shaped body with slightly flattened ventral side. The larva bears an apical sensory plate at its anterior end with a tuft of cilia. The ciliated bands are in the form of five transverse ciliated rings encircling the body.

A midventral adhesive pit near the apical plate over the first ciliary band help the larva to adhere to the substrate. The internal structure rotate at an angle of 90° from the ventral to the posterior side.

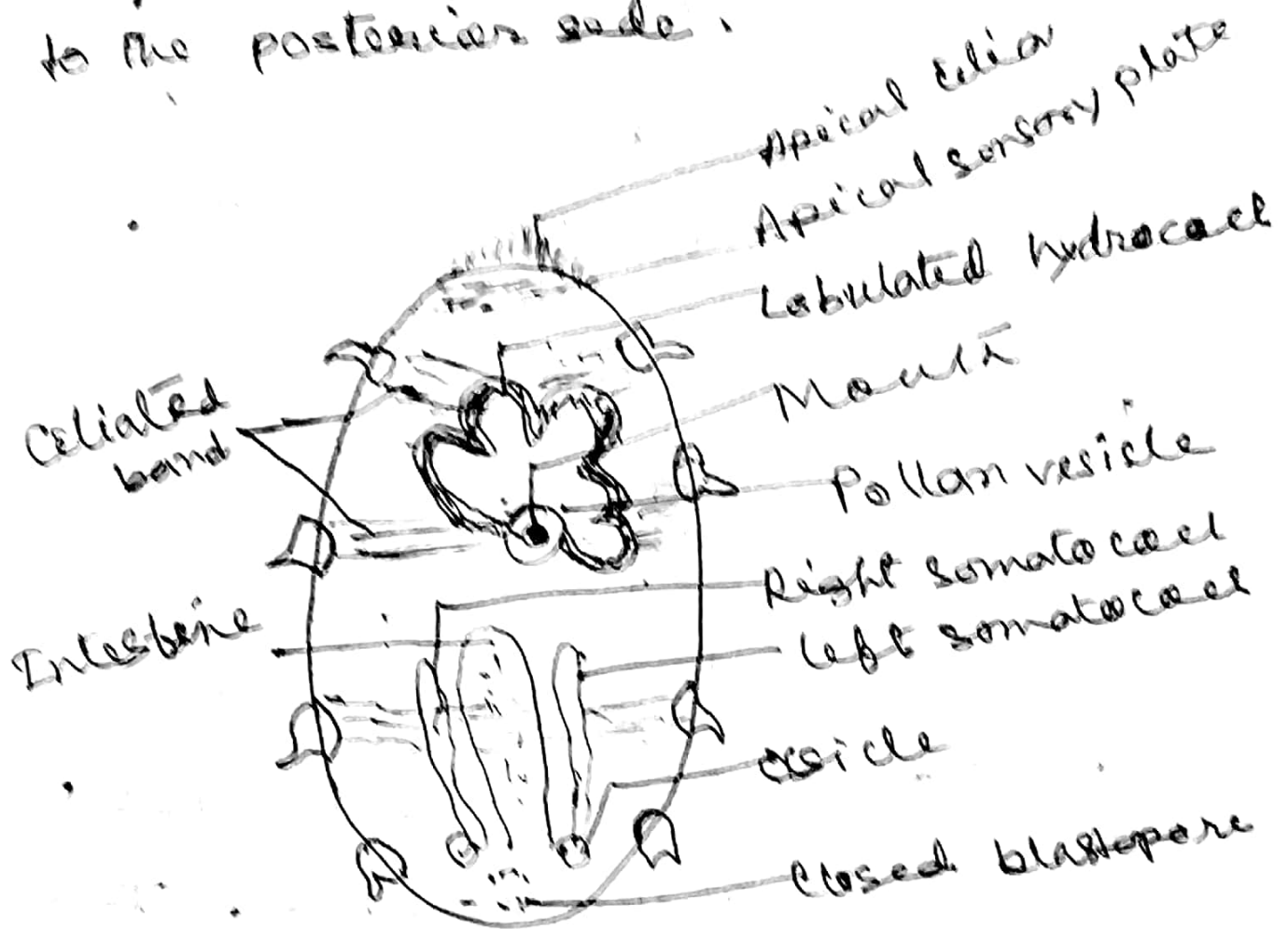


Fig. Dolioletia larva

After a brief swimming life, the anterior end of the Dolioletia

larva settle to the bottom and ~~adhere~~ adheres to some object with the adhesive pit. It start metamorphosis and develop some elongated narrow stalk. After some time they larva metamorphoses to the adult.

Significance of Echinodermata larva —

The larval form all classes in Echinodermata will show ~~the~~ general resemblance. The ctenoida larva differ from this pattern. In general

all the larva show that they might have come from same ancestor. Hence the common ancestor is coelomate, ~~bilaterally~~ bilaterally symmetrical and free swimming.

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