

Larval Forms in Echinodermata

No other group of animals has such complicated metamorphosis in the course of development. Development may be direct or indirect. In direct one, the larval stages are missing while in indirect one, various types of free-swimming larvae are formed. In each class, a few members, are viviparous, that is, they brood their young in a sort of brood pouch on the surface of their body. The development of larva takes place in a typical deuterostomous fashion. In most cases the characteristic free swimming larvae develop externally which are of great phylogenetic significance.

Echinoderm larva is strikingly bilaterally symmetrical in marked contrast to radially symmetrical adult. It swims about by means of a ciliated band, which may be complicated by a number of short or long slender projection or arms from the body wall. Based upon the nature and position of the arms or their absence, larvae of different classes of Echinodermata may be distinguished. After a free-swimming planktonic existence, the bilateral larva undergoes a metamorphosis, in which the radial symmetry of the adult is developed. In different classes of echinoderms, different types of larvae complete the development.

[I] Class 1. Asteroidea

Bipinnaria larva. Two types of development occurs in asteroids. The *direct* type has large, yolky eggs and no free swimming larval stage. The *indirect* type has homolecithal eggs with little yolk and a free swimming larval stage. After hatching the larva develops cilia and begins a free-swimming life. The larva feeds on diatoms as an alimentary canal is formed. The presence of powerful ciliary band on the stomodaeal walls helps in feeding. Two lateral longitudinal locomotory ciliated bands develop which connect in front of mouth, forming a *preoral loop* and in front of the anus, to form a *preanal loop*. Preoral loop later, separates or in some cases develops independently into an anterior ciliated ring around the body. Three lateral lobes or projections are also developed on each side of the body bordered by ciliary bands. At this stage the larva is known as *bipinnaria* and develops in 2 to 7 days.

Echinodermata : General Account

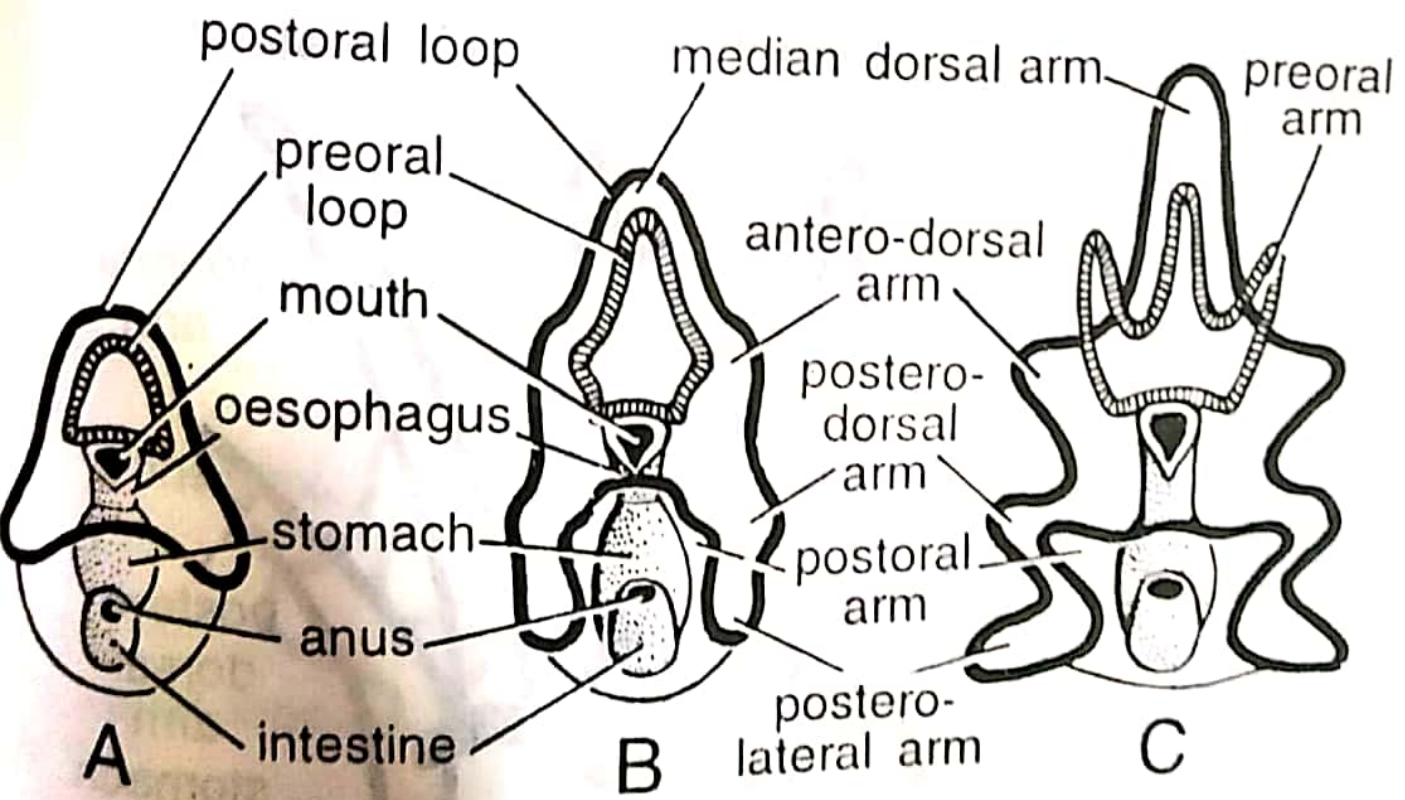


Fig. 1. Stages in development of a bipinnaria larva.

Left hydrocoel