

## Pearl formation in Bivalves

pearl is a white, highly shining globular concretion found within the shell of an oyster. Pearl has been reputed as one of the rarest gems, the rare occurrence of pearl in the nature is due to its peculiar mode of formation which may not happen frequently in the natural condition.

Although a number of bivalves have ability to produce pearl under suitable climatic conditions but high quality pearls are obtained from pearl oysters of genus Pinctada rodingeri, Pinctada margaritifera etc. But Pinctada valgans is a common oyster distributed in the gulf of Kutch, gulf of Mannar and the Pak bay. In India the pearl oyster beds of the east coast are more extensive and productive than those of the west coast.

### Pearl Formation :-

pearl formation is an interesting phenomenon for protection against foreign invaders, parasites, sand grains, small broken twigs of sea-seeds or a small insect, accidentally entering the body of the oyster which happens to adhere to a part of its mantle

Pearl Culture

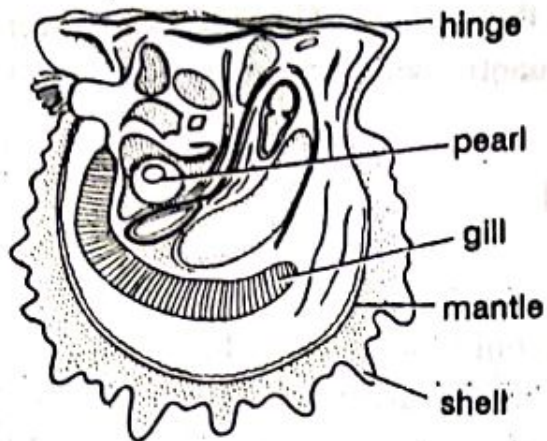


Fig. 1. Diagrammatic sketch showing site of pearl formation in Mytilus.

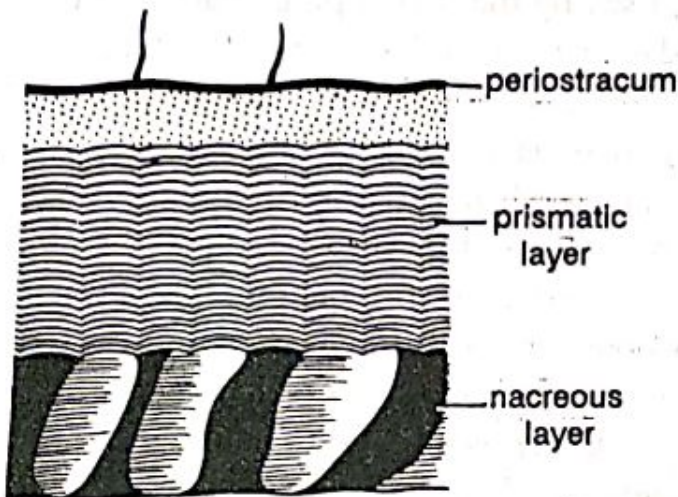


Fig. 3. Vertical section through the shell.

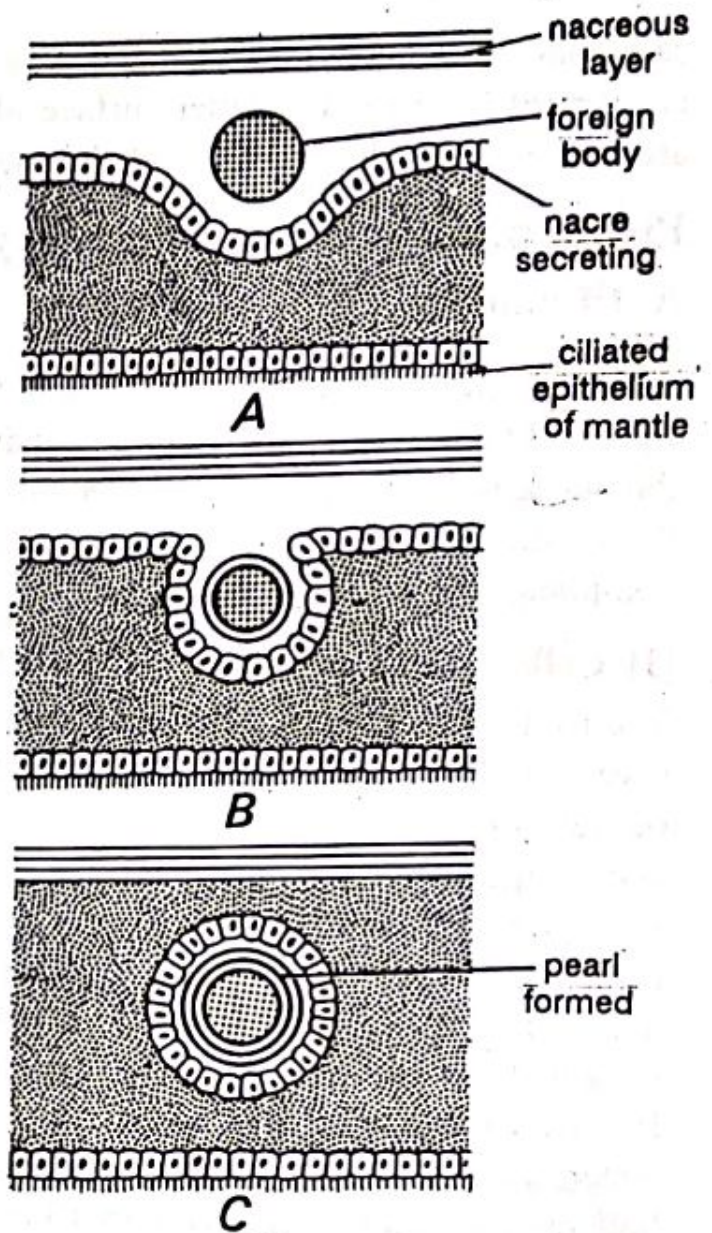


Fig. 2. Stages in pearl formation : A. Primary stage ; B. progressive ; C. Final stage.

The mantle epithelium at once enclose it like a sac and starts to secrete concentric layers of nacre around it from defence point of view and completely encloses it gradually. Nacre is secreted continuously by the epithelial layer of the mantle and deposited around the foreign particle in the form of several layers and ultimately the pearl is formed.

The vertical section of the shell if cut, shows that it consists of three layers.

① Periostacium — It is an outer layer formed of a horny conchoidin which is a substance related to chitin. On its inner side the next layer is found which is known as prismatic layer.

② Prismatic layer — It consists of a small prism-like deposit of calcite separated by thin layer of conchoidin. This layer is followed by the third layer known as nacreous layer.

③ Nacreous layer — It is the inner most layer formed of calcium carbonate and called as "mother of the pearl". It consists of alternating layers of calcium carbonate and ~~chitin~~ conchoidin arranged parallel to the surface. This nacreous layer is secreted by the entire outer surface of the mantle while other two layers are secreted only by the edge of the mantle.

## composition of Pearl

pearl consist of water, organic matter, calcium carbonate and the residue.

water  $\rightarrow$  2-4%

organic matter  $\rightarrow$  3.5-5.9%

calcium carbonate  $\rightarrow$  90%

Residue  $\rightarrow$  0.1 - 0.8%

## Quality of pearl :-

the pearls obtained are of variable shapes and sizes. They may be white or cream, red or pink in colour, the spherical pearls of rainbow colour are rarely found. the best quality pearl is known as Lingha pearl and obtained from marine oyster. Pearls obtained from freshwater bivalves are not as valuable as those obtained from the marine oysters.