B.Sc-III (Zoology Hons) Gr-A
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Respiration in Fishes (3rd PDF).

- buccopharyngeal cavity and opercular cavity. These cavities are lined by highly vascular epithelium which is produced into many folds to increase respiratory surface. Each chamber contains a characteristic rosette like labyrinthine organ. it develops from the epibranchial bone of the first gills arch and consists of three concentrically arranged plates. The margins of the plates are wavy and the plates are covered with vascular gill-like epithelium.

Air enters into the chamber by way of the buccopharyngeal opening and goes out through the external gill slits. The entrance is controlled by valves.

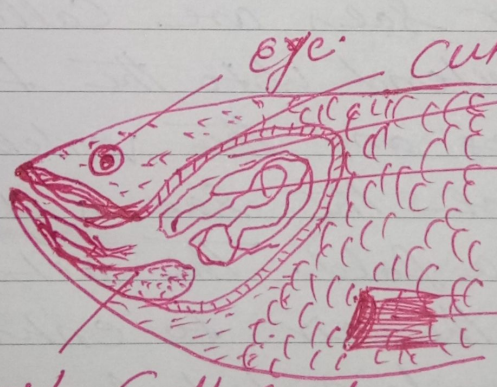


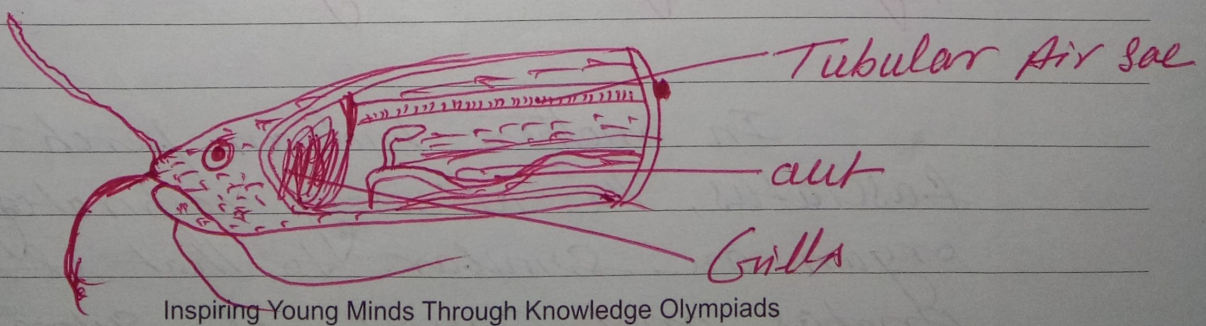
Fig:- Labyrinthine organ of Anabas testudineus.

In another Indian perch Trichogaster fasciatus, the accessory respiratory organ are similar to that of Anabas and consists of suprabranchial chamber,

labyrinthine organ and respiratory membrane. it differs only in structure of the labyrinthine organ which is simpler than that in Anabas. it assumes a spiral configuration with two leaf like expansions. These leafy expansions are composed of loose connective tissue which is covered by highly vascular epithelium for exchange of gases.

(8.) Pneumatic sacs or Saccular organ!

A pair of long tubular sacs arise as the outgrowths from the branchial chamber, one on each side of the body in Indian Cat fish Heteropneustis fossilis. These tubular sacs are called pneumatic sacs and extend upto the tail between the myotomes and the vertebral column. The opening of the sac is guarded anteriorly by a fold. This acts as a valve in allowing the air to enter or leave the sac. Similar tubular pneumatic sacs are also present in Saccobranchus.



Fig— pneumatic sacs

(9) Gut epithelium :—

In fishes like Cobitis and Mis-gurnus fossilis, The wall of stomach and intestine is thin due to reduction of the muscular layers, and the lining epithelium becomes highly vascular to serve as respir-atory surface. Fishes swallow air that passes down into the intestine. After the gaseous exchange the gas is voided through the anus. In certain other fishes, Callichthyes, Hypostomus and Doras, The highly vascular rectum serves as the respiratory organ by sucking in and giving out water through the anus alternately.

(10) Air bladder :—

Air bladder in many fishes like Amia, polypterus, Lepidosteus and Certain Dipnoi is provided with vascular folds and alve-olar sacculations. These provide respiratory surface for the exchange of gases and act as accessory respiratory organs.