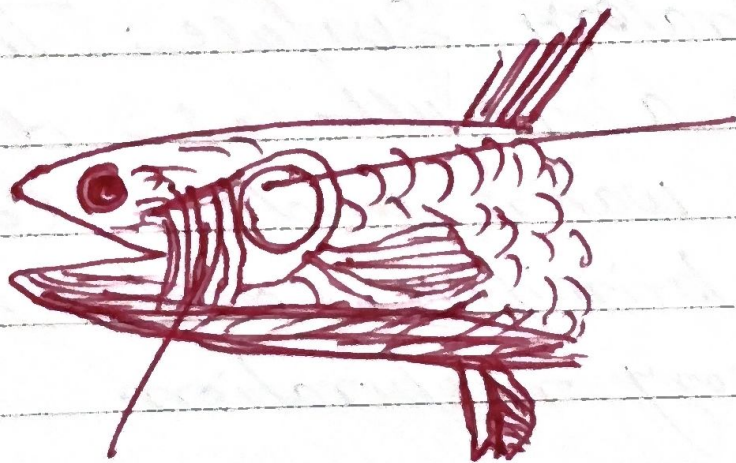


<5> Pharyngeal diverticula: (2nd part)

paired air chambers developed from the roof of pharynx (not from bronchial chambers), lined by highly vascular epithelium capable of gaseous exchange and serving as air reservoirs like lungs are called pharyngeal diverticulum. These are also called supra bronchial cavities as they lie above gills.

✓ In *Channa striatus*, the vascular epithelial lining is folded to form some alveoli. The gill filaments are greatly reduced.



Supra-branchial Cavity.

Fig-A

Gills



Fig-B

Gills.

In *Periophthalmus*, paired pharyngeal diverticula lie on the roof of the pharynx and are very small.

In *Amphiprion* *Cuchia*, sac like

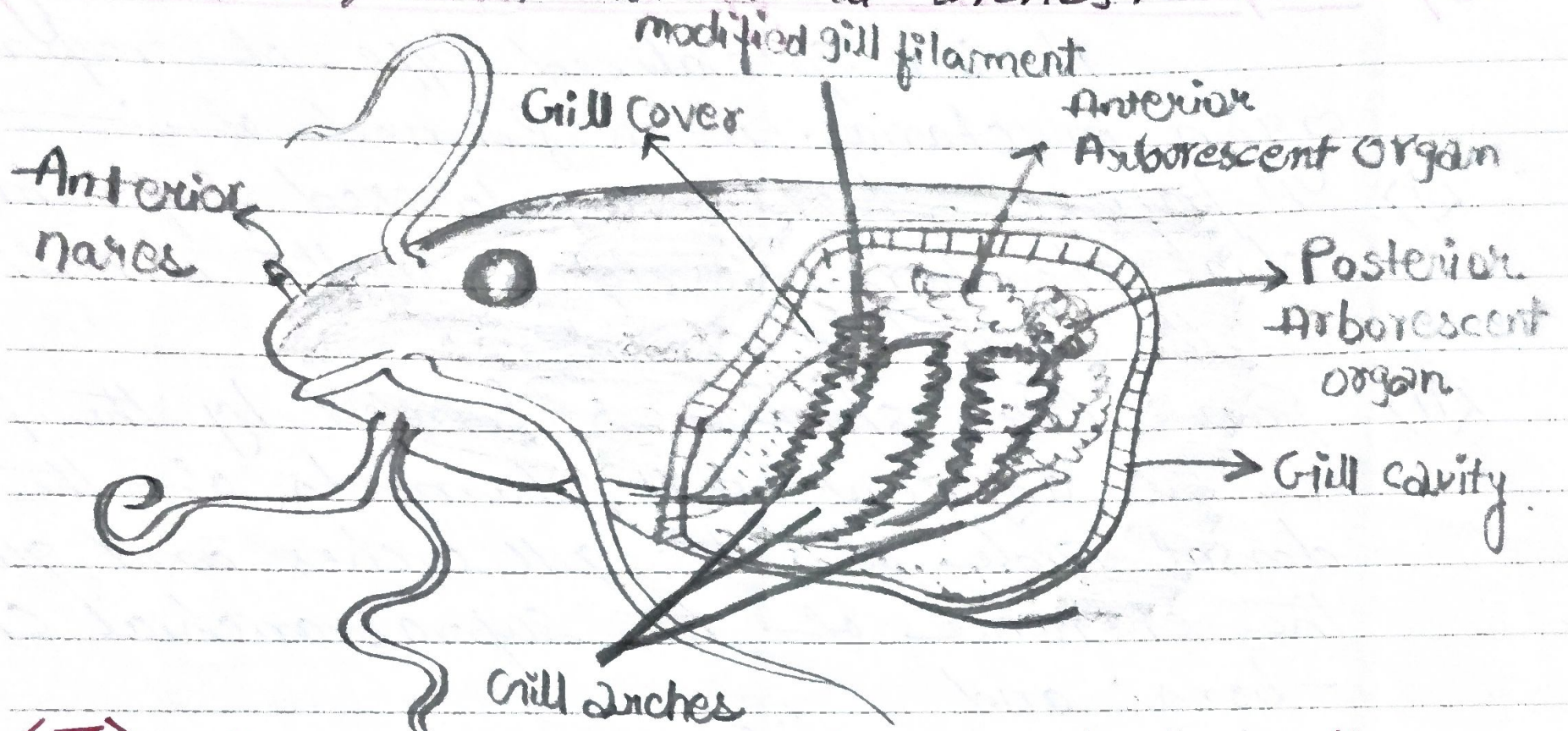
- diverticula lie above gills, open anteriorly into first gill slit, and function as lungs. Gills are reduced. Gill filaments are present only on the second arch. Third arch bears a fleshy vascular membrane

<6> Suprabranchial organ or Arborescent organ.

it is a specialized type of respiratory organ in chonias. it is formed of :—

- <i>(i)</i> A pair of highly vascularised suprabranchial chambers developed as the diverticula of the branchial chambers:
 - <i>(ii)</i> 'fan'-like structures formed by the fusion of the adjacent gill filaments of the dorsal side of the gill arches and guard the entrance of the suprabranchial chambers; and
 - <i>(iii)</i> Elaborate tree-like or rosette shaped structure, two in each supra branchial chamber, arising as derivatives from the upper end of second and fourth gill arches of either side. Each rosette is formed of eight knob like folds, supported internally by a core of cartilage and covered by a highly vascular epithelium.
- The arborescent organ functions as lung. The air gulped into the pharynx during the periodic wriths of fish, to the surface of water, enters the suprabranchial

Through inhalent aperture lying between second and third branchial arches, gaseous exchange occurs in the sand chamber and is expelled into the opercular cavity by exhalent aperture lying between third and fourth branchial arches.



<F> Branchial outgrowths or Labyrinthine organ

The climbing perches are in habit of moving from pond to pond and breathe air directly from the atmosphere during movement on land. For this purpose, *Anabas testudineus* has a pair of extra-bronchial air chambers, one on each side of skull located between the first gill arch and the hyomandibular. These develop as outgrowths from the dorsal side of the branchial chamber. This extra bronchial chamber communicates with

Ex-A 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 rattle like labyrinthine organ. it develops from the epibranchial bone of the first gill 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.

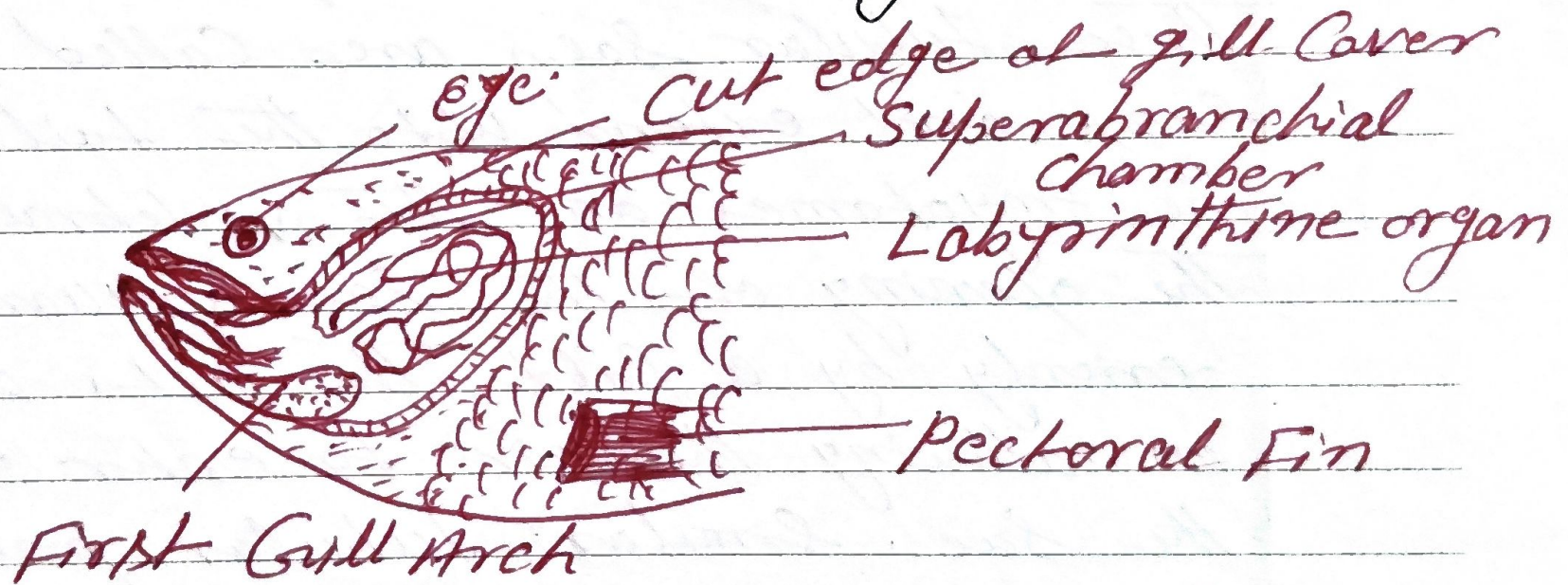


Fig:- Labyrinthine organ of *Anabas testudineus*.

In another Indian perch *Trichogaster fasciatus*, the accessory respiratory organs are similar to that of *Anabas* and consist of suprabranchial chamber.