

to the poem, 'Oh, I wish I'd looked after me Teeth'.

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B.Sc-II (Zool Hon) Paper-IV (Depth of Zoology)
AORTIC ARCHES IN AMPHIBIA:

The aortic arches don't break up into afferent and efferent arteries because the true internal gills are lacking. External gills formed in some cases and in embryonic cases are not homologous to the internal gills of the fish.

External gills disappeared first and then with them their blood vessels. As the larva metamorphoses the internal gills disappear and the afferent and efferent arteries become continuous.

- (i) The mandibular and hyoid arches disappear. The part of the mandibular forms lingual artery.
- (ii) The third forms the carotid trunk. Along with the anterior part of lateral dorsal aortae it forms the internal carotid while with the anterior continuation of the ventral aorta it forms external carotid.
- (iii) The fourth arches form the two systemic arches which meet to form the dorsal aorta behind the heart.

Urodeles amphibians which retain gills permanently make some partial shifts in the aortic arches.

(5)

- (i) The parts of the radices between third and fourth become very much reduced. Due to this external and internal Carotids arise as Common Carotid on each side.
- (ii) The sixth arch. divided into dorsal and ventral parts. The ventral part is called pulmonocutaneous from which the pulmonary artery is sent to the lungs and the dorsal part is called ductus Botalli (ductus arteriosus) which retains connection with the dorsal aorta.
- (iii) The fifth arches are also reduced.
- (iv) The changes continued in anurans which began in the arches of the aquatic urodeles. In frogs and toads following changes are seen.
- (a) The part of the radix aorta lying b/w third and fourth loops is completely lost.
- (b) Fifth arches are also completely lost during metamorphosis.
- (c) The sixth arches also loses its connection with radix aorta as the ductus Botalli are lost completely.

(6)

NOTICE ARCHES IN REPTILES:

The complete disappearance of the gills, the reptilian arches formed a typical plan from which the arches of birds and mammals evolved.

The elongated neck region, posterior shifting of the heart from the pharyngeal region and partial separation of ventricle into two chambers (completely in crocodiles) have a decided effect on the proportions of the arches. As a result, the following conditions have become established in the higher reptiles.

- (i) The more complete separation of the ventral aorta into two groups of vessels as they leave the heart.
- (ii) The loss of fifth pair of arches. (ARCHES).
- (iii) The loss or reduction of the ductus arteriosus, connecting part of the sixth arch with the aorta.
- (iv) The removal of the third arch is represented by the base of the carotid which may (in Sphenodon) or may not have connection with the dorsal aorta.

(7)

(v) The fourth pair of arch becomes the main systemic arches and contributes most of the blood to the aorta.

(vi) The sixth arch becomes pulmonary aorta. it originates from the right side of the ventricle.

(vii) The carotid is connected to the right systemic through the common carotid.

(viii) The right systemic is, therefore, also called carotico-systemic trunk. This arises from the left ventricle and has aeriated blood.

(ix) The two systemics communicate with each other by an opening at the place where they cross each other. This opening is called foramen of panizza.

Aortic arches in Amphibian & Reptiles:

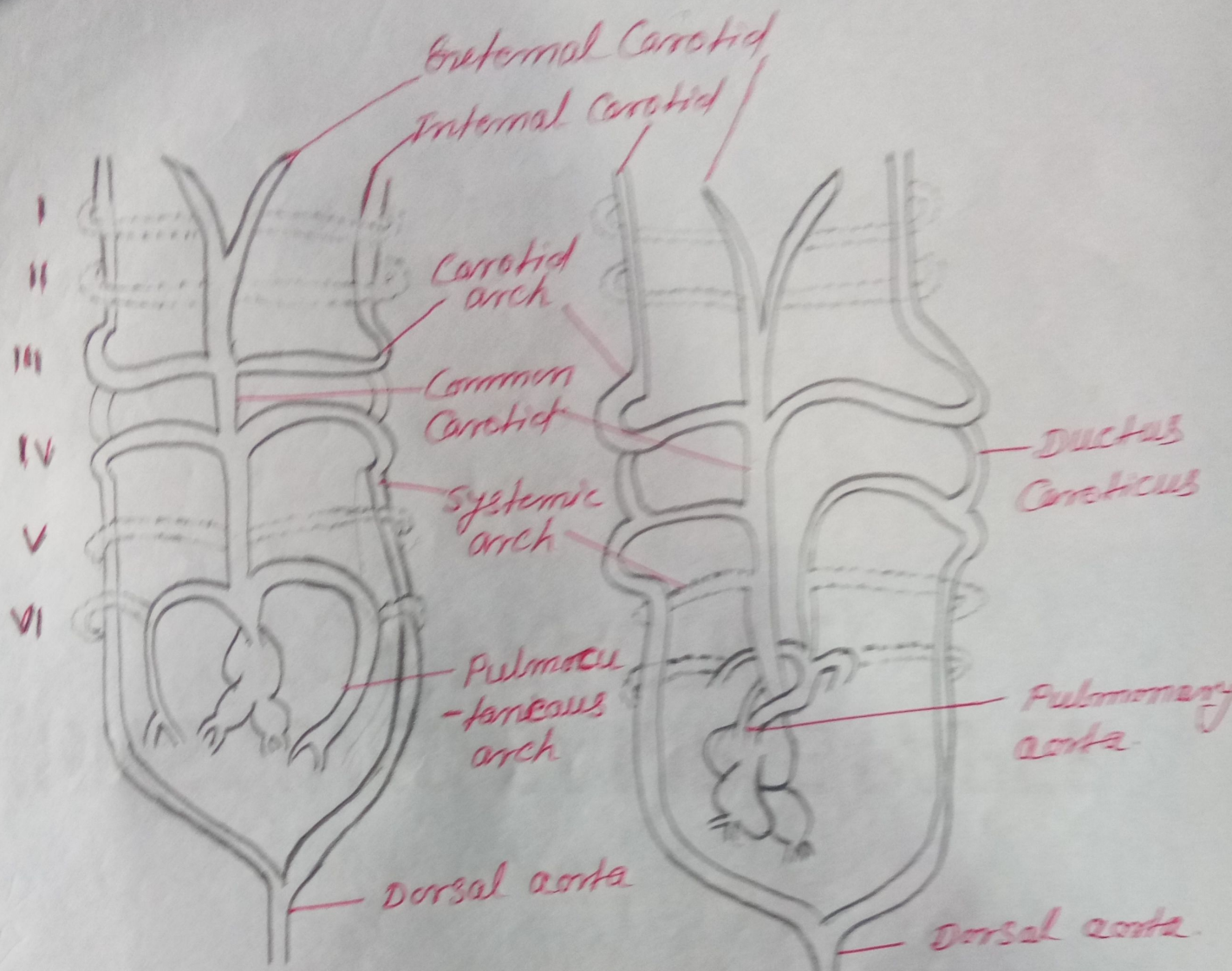


Fig. — Aortic arches in Amphibian and Reptiles.

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