Degree Part II By Sushma Kumari

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PAGE #

CLASSIFICATION OF AMPHIBIA

Amphibia may be defined as "cold blooded Vertebrate having a smooth or rough naked skin, rich in glands. Scales are present or hidden in the skin.

The classification of class Amphibia has been a matter of controversy and various authors have classified it differently. Boulenger, Sedwick, Watson and many others have worked extensively on the Taxonomy of Amphibia. The present classification is adopted by Nobel (1931, 54).

characteristic features :-

1) Ectothermic Vertebrate having naked, moist and highly glandular skin.
2) Dermal scales are present in some apodons.
2) Two pairs of pentadactyle limbs present.
4) Paired fins are present.
5) Paired nostrils are present.
6) The eyelids are movable.
7) Skeleton is bony and skull is with two occipital condyles.
8) Ribs when present, are never attached to the sternum.
9) Teeth are present in the jaws.
10) Three chambered heart with two auricles and one ventricles.
11) RBC are oval and nucleated.
12) Respiration is by different means like gills, ~~in lower~~ lungs, integument or the buccal

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cavity, separately or in combination.

14) Renal portal and hepatic portal system are well developed.

15) Mesonephric kidney, urinary ducts open into the cloaca which also receive genital duct.

16) Ten pairs of cranial nerves arise from the brain.

17) Cerebral hemisphere are large but the cerebellum is ill developed.

18.) Fertilization may be external or internal.

19.) Holoblastic cleavage but unequal.

20.) Mostly oviparous.

21.) Development is indirect with metamorphosis.

22.)

According to Nobles classification there are three extinct orders and three living orders respectively. These are as such —

(A) Extinct orders

(1.) Labrynthodontia (Folded teeth)

a) First vertebrate to walk on land, present in late palaeozoic and Triassic fossils.

b) Extinct salamander like forms.

c) Skull heavily armoured.

d) Pel strong Pectoral girdle V shaped and pelvic girdle V shaped.

e.g. Trematosaurus, Eryops. etc.

(2) Phyllospondyli —

a) Small net - like amphibians

b) Vertebrae tubular.
c) Notochord and neural cord lie in the same common cavity.
d) Transverse process well developed.
e) True ribs absent.
f. Occurs from the Carboniferous to the Permian period.
e.g Ichthyostega and Branchiosaurus.

(3) Lepospondyli (Scale vertebrae)
a) Reported from the Carboniferous to the Permian period.
b) Vertebrae composed of a single piece.
c) Neural arch fused with the centrum.
d) Ribs articulated with the vertebral column intervertebrally.
e.g Lysorophus and Diplocaulus.

LIVING ORDERS :-
These are found throughout the tropical and temperate parts of the world.

(1) Urodela or caudata (Gk. Caudos tail oura, tail).
1.) Lizard like body with a well developed tail which help in the progression of the animal.
2.) Body divisible into distinct head, trunk and tail.
3.) Generally small eyes without eyelids but in cave dwellers eyes are completely lost.
4) Teeth may or may not present.
5.) Limbs are of equal size and weakly developed. Sometimes hind limbs are absent.

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6) The larvae and aquatic adults have lateral line system.

7. Vertebral ~~cotoma~~ ~~Coloum~~ Column long and the vertebrae ophesthocoelous and amphicoelous.

8) Some species are with external gills.

9) Exhibit neoteny.

10) Fertilization is internal.

Urodela has five suborders —

1) Cryptobranchoidea - e.g Hynobius

2) Salamandroidea - e.g Salamandra.

3) Ambystomoidea - e.g Ambystoma.

4) Meantes — Siren

5) Proteida — Necturus & Proteus.

(2) Order 2 — Anura or Salientia

1) Anurans are short, four legged and stout bodied animals.

2) Tail absent.

3) Forelimbs short, hind limb long and help in long jump.

4) Well developed eyelids.

5) Vertebral column short.

6) Gills absent in adult.

7) Tongue may be present or absent.

8) Respiration pulmonary, cutaneous or buccal.

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9) Fertilization external, development through metamorphosis.

Order Anura is also subdived into five Suborders —

1) Amphicoela — e.g Liopelma.
2) Ophisthocoela — e.g Alytes, Pipa
3) Procoela — Bufo, Hyla
4) Anomocoela — Pelobates
5) Diplasto coela — Rana and Rhacophorus.

Order 3 — Apoda or Caecilia

1) Worm like, elongated, limbless burrowing creatures.
2) Body smooth, slimy and segmented by a series of annular grooves.
3) Tail short or absent.
4) The skin contains concealed calcified scales.
5) Vertebrae are amphicoelous. Girdle absent.
6) Ledless eyes are covered with opaque skin and are nonfunctional.
7) Males have protrusible copulatory organ.
8) Heads bears a peculiar sensory minute protrusible tentacles.
9. Fertilization may be external or internal.
10. Eggs are large and yolky.
11) Most of the apodons are oviparous but some are viviparous.
12.) Some of the apodons e.g Dethyophis shows highest degree of parental care having their eggs in the coils of body; while moving.

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