

B.Sc (Hons) Part II Paper III A

Subject: Zoology

Characters, classifi. Distribution
& Affinities of Metatheria.
(Part one)

By

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Introduction: - The subclasses metatheria and placental Eutheria are, the most highly organised and advanced mammals. They have presumed to be arisen from some untraced branches of Jurassic pantotheres and both diverged along their separate lines of evolution during Early Cretaceous period. In the Upper Cretaceous period, the marsupials were more numerous than Eutherians. It was probably during Cretaceous period that Marsupials entered New Guinea, Australia and adjacent islands, which were isolated from Asia in late Cretaceous. Metatheria were widely distributed over many parts of the world so recently as the Miocene period but, they were now confined to

Australian Region (except New Zealand) to
South America and a few species to
North America. Geological History of this
group is interesting. In Australia, which
is now its chief home, no fossil history
are found before Pleistocene Period. In
America, remains of both Polyprotodonts
and diprotodonts are found as far as
back to Eocene. By the time, Placental
appeared. Australia and South America
were no longer connected with the
other continents and the marsupials
became extinct in Europe and North
America which were still connected.
When opossums appeared, probably
from South America; Australian
marsupials (most Kangaroos) only became
threatened by the advent of Man
from Europe. But, large Macropus
have thrived with the spread of
agriculture. Marsupial diversified
in Australia due to Isolation,
differentiated structurally in to diff.
types, arboreal, fruit-eating, grazing,
gnawing, digging, burrowing, ant-eating,
Insectivorous or Carnivorous.

Distinctive characters

Habit & Habitat :- Marsupials or
Metatherians are

terrestrial and Carnivorous (e.g. Native Cat, Tasmanian Devil, Macquarie wolf) and herbivorous Kangaroos; arboreal and Insectivorous Didelphys, Marsupial, Chiroptera, etc., arboreal phalangers or opossums and semi-arboreal Phascogale and pouched rats and mice.

Thus, they may be herbivorous, Insectivorous, Carnivorous and Omnivorous, diurnal or nocturnal, warm-blooded, air-breathing viviparous pouched animals.

External Features :- (i) Body is covered over with hairs.

(ii) Pinnae (External Ear) is well developed.

(iii) Tail is generally long and prehensile and act as an important organ to balance in Kangaroo, Rats and jumping mice.

(iv) Mammary glands are modified sebaceous glands and have elevated nipples.

(v) Females usually have a marsupium pouch or Marsupium, but is absent in Didelphys & Dasyuridae.

(vi) Marsupium encloses the nipples. The no. of teats are related to no. of young ones produced at birth.

(vii) Typical Muscular diaphragm divides the body cavity into thoracic and abdominal cavity.

(ix) Teats only one set, functional throughout life.

Res. Cir., Ex. and other body Systems [Pg. 4]

- (i) Res. Cir. and Excretory Systems are typical mammalian type.
- (ii) Heart is without fossa ovalis. Atrio-ventricular valves are membranous and attached to the papillary muscle by chordae tendinae.
- (iii) Brain is smaller, olfactory bulbs large. Corpus callosum absent. Cerebral hemisphere surface is convoluted. Cerebellum small and simple. Cochlea of Internal Ear is spirally coiled.
- (iv) In male, there is no seminal vesicle. Testes descend in scrotal sac placed in front of penis. In females, Mullerian ducts are separate and opens into urogenital sinus. clitoris is also double.
- (v) Rectum and urogenital sinus open together in a common cloaca. cloaca is larger in female than the male.
- (vi) Regarding Development, females are viviparous, Eggs are yolky and cherry is unequal. Placenta is of yolk-leaf type. Embryos are born very young and are developed in the marsupial pouch attached to the teats. The young stays in the pouch for 8 to 9 months and the mother remains in lactationally induced anoestrus. In opossums, young are born just 8 days after Conception.