

THE EARLIEST MAMMALS

AROSE FROM THERAPSID IN LATE TRIASSIC TIME.

THE LIVING MONOTREMES

ALMOST UNKNOWN AS FOSSILS, SO OF UNCERTAIN ANCESTRY, THE EGG-LAYING MAMMALS ARE CONFINED TO AUSTRALIA. THOUGH PRIMITIVE AND REPTILE-LIKE, IN SOME RESPECTS THEY ARE HIGHLY SPECIALIZED TO A MODE OF LIFE.

THEIR REMAINS ARE SMALL AND VERY RARE, MOSTLY TEETH AND FRAGMENTS OF SKULLS AND LIMBS. THEY DIVERSIFIED SOMEWHAT THROUGH THE REST OF THE MESOZOIC, AND SEVERAL GROUPS ARE RECOGNIZED.



THE MONOTREME SKELETON, ESPECIALLY IN SKULL AND SHOULDER GIRDLE, RETAINS TYPICALLY REPTILIAN FEATURES. ITS MOST SIGNIFICANT MAMMALIAN FEATURE IS THE ONE PIECE LOWER JAW. THE LIMBS ARE HIGHLY SPECIALIZED.

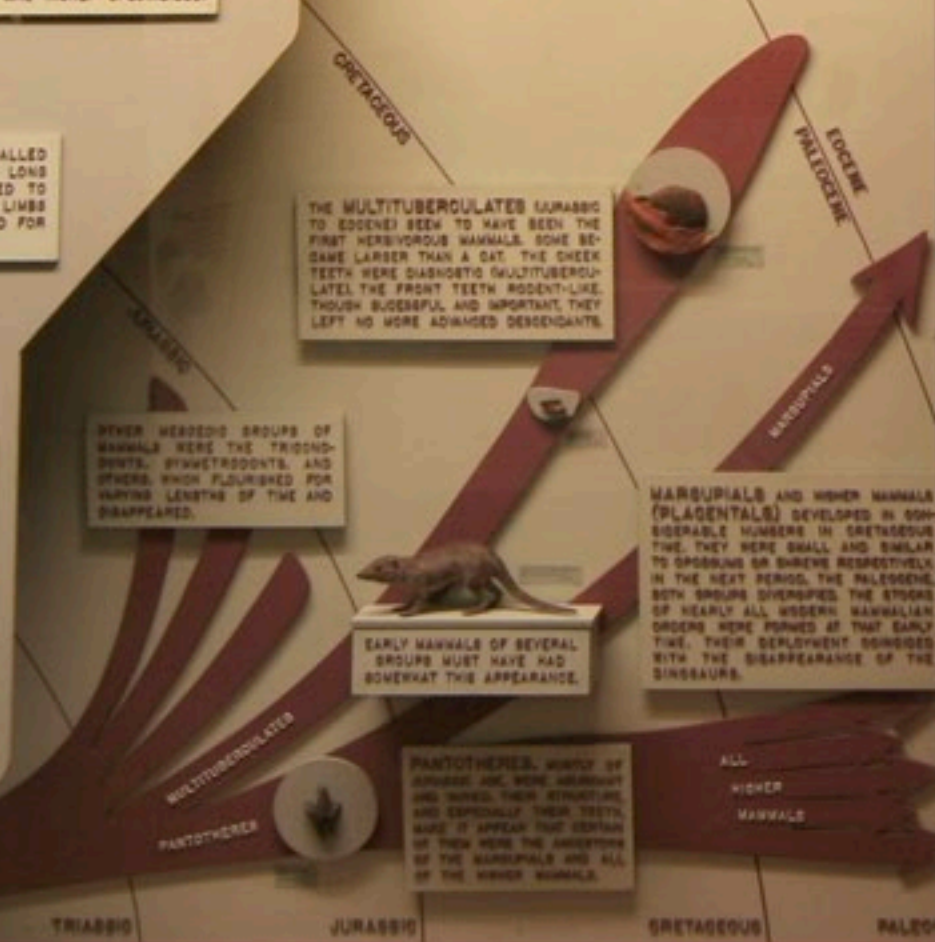


THE ECHIDNA, ALSO CALLED SPINY ANTEATER, HAS A LONG BILM BILL WELL ADAPTED TO ITS DIET. ITS POWERFUL LIMBS AND CLAWS ARE MODIFIED FOR EFFICIENT DIGGING.



THE PLATYPUS, ALSO CALLED THE DUCKBILL, USES ITS BROAD HORN BILL FOR EATING WORMS. MOSTLY AN AQUATIC ANIMAL, ITS BROAD STRONG LIMBS SERVE AS EFFETIVE PADDLES.

ONE GROUP OF MESOZOIC MAMMALS IS OF PRIMARY IMPORTANCE AS BEING PROBABLY ANCESTRAL TO ALL LIVING MAMMALS (EXCEPT PERHAPS THE MONOTREMES).



THE MULTITUBERCULATED MAMMALS TO EODONTIA SEEM TO HAVE BEEN THE FIRST HERBIVOROUS MAMMALS. SOME BECAME LARGER THAN A CAT. THE CHEEK TEETH WERE DIABOLIC MULTITUBERCULATED. THE FRONT TEETH RODENT-LIKE, THOUGH SUGARFUL, AND IMPORTANT, THEY LEFT NO MORE ADVANCED DESCENDANTS.

MARSUPIALS AND HIGHER MAMMALS (PLACENTALS) DEVELOPED IN CONSIDERABLE NUMBERS IN CRETACEOUS TIME. THEY WERE SMALL AND SIMILAR TO SPOONBILLS OR SHREWS RESPECTIVELY. IN THE NEXT PERIOD, THE PALEOGENE, BOTH GROUPS DIVERSIFIED THE STAGES OF NEARLY ALL MODERN MAMMALIAN ORDERS WERE FORMED AT THAT EARLY TIME. THEIR DEVELOPMENT COINCIDED WITH THE DISAPPEARANCE OF THE DINOSAURS.

EARLY MAMMALS OF SEVERAL GROUPS MUST HAVE HAD SOMEWHAT THIS APPEARANCE.

PANTOTHERES, MOSTLY OF JURASSIC AGE, WERE NEARLY ALL HORNED, WITH STRONG, AND ESPECIALLY THEIR TEETH, MADE IT APPEAR THAT CERTAIN OF THEM WERE THE ANCESTORS OF THE MARSUPIALS AND ALL OF THE HIGHER MAMMALS.

MARSUPIALS, THE POUCHED MAMMALS, ORIGINATED IN THE CRETACEOUS FROM PANTOTHERES, ALONG WITH THE PLACENTAL MAMMALS.

THE EARLY MARSUPIALS WERE ABUNDANT AND OF NEARLY WORLDWIDE DISTRIBUTION. EXCEPT IN THE AMERICAS AND AUSTRALIA, THEY SUCCUMBED WITH THE SPREAD OF MORE ADVANCED MAMMALS. WITHOUT SUCH COMPETITION, THEY BECAME VERY DIVERSIFIED, ADAPTING TO MANY ENVIRONMENTS IN SOUTH AMERICA AND AUSTRALIA.

RUSH-TAILED POSSUM (TYPE SPECIES OF A LARGE GROUP OF SMALL BUT RATHER GENERALIZED MAMMALS, BUT RATHER GENERALIZED ONLY ADAPTABLE, AUSTRALIAN MAMMALS).



THE KOALA IS ONE OF THE MOST DISTINCTIVE AND MOST FAMILIAR OF LIVING AUSTRALIAN MARSUPIALS.



PRESENT-DAY NORTH AMERICAN POSSUM SKULL



THYLACOID, ABOUT THE SIZE OF A LION, HAD LARGE SHEARING CHEEK TEETH.



AUSTRALIAN MARSUPIALS (THEY WERE MORE THAN 6 UPPER INCISORS)

AMERICAN MARSUPIALS (SAY HAD AS FE UPPER INCISORS)

THE LARGE CARNIVOROUS THYLACOID DEVELOPED ENORMOUS STABLING CANINE TEETH, SIMILAR TO THOSE OF THE UNRELATED SABER-TOOTH CATS (AN INSTANCE OF PARALLEL DEVELOPMENT).



THE AMERICAN POSSUM HAS NOT CHANGED GREATLY FROM ITS CRETACEOUS ANCESTORS. ITS BUILDING CLOSELY RESEMBLES THAT OF AN ANCESTRAL MARSUPIAL.

