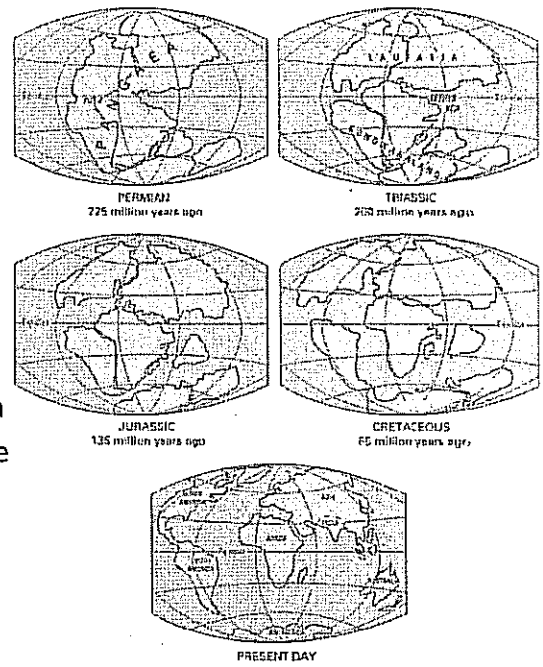
Evidence from Biogeography

- The study of past and present Geographical distribution of organisms



1. Geographically close environments are more likely to be populated by related species than are locations that are geographically separate but environmentally similar.
   Example:

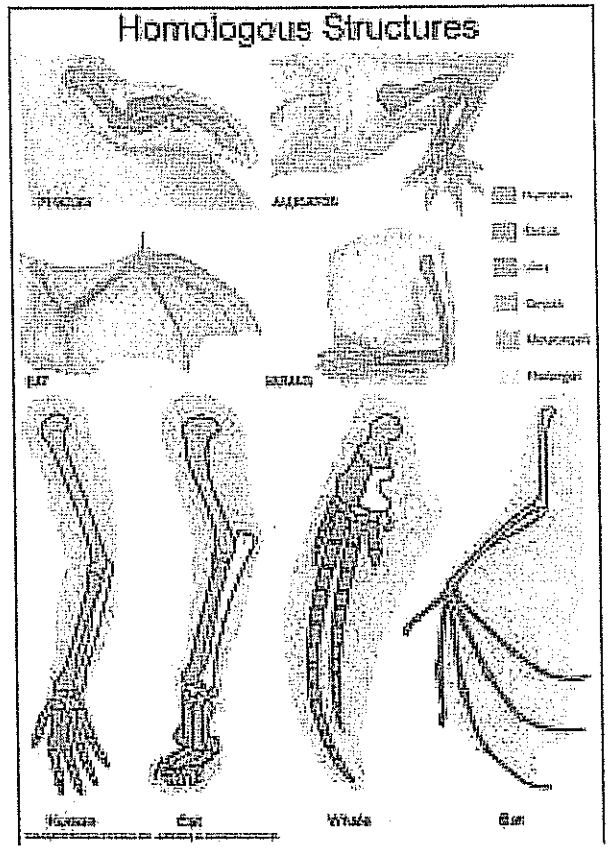
2. Animals found on islands often closely resemble animals found on the closest continent. This suggests that animals on islands have evolved from mainland migrants, with populations becoming adapted over time as they adjust to the environmental conditions of their new home.
   Example:

3. Fossils of the same species can be found on the coastline of neighboring continents. For example, fossils of the reptile Cynognathus have been found in Africa and South America.
   How can this be explained?

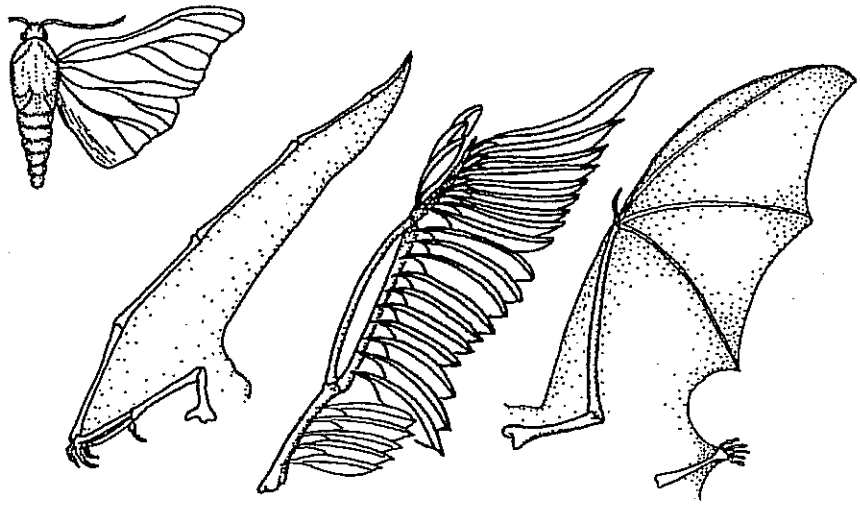
4. Closely related species are almost never found in exactly the same location or habitat.

Evidence from Anatomy

Homologous Structures:



Analogous Structures



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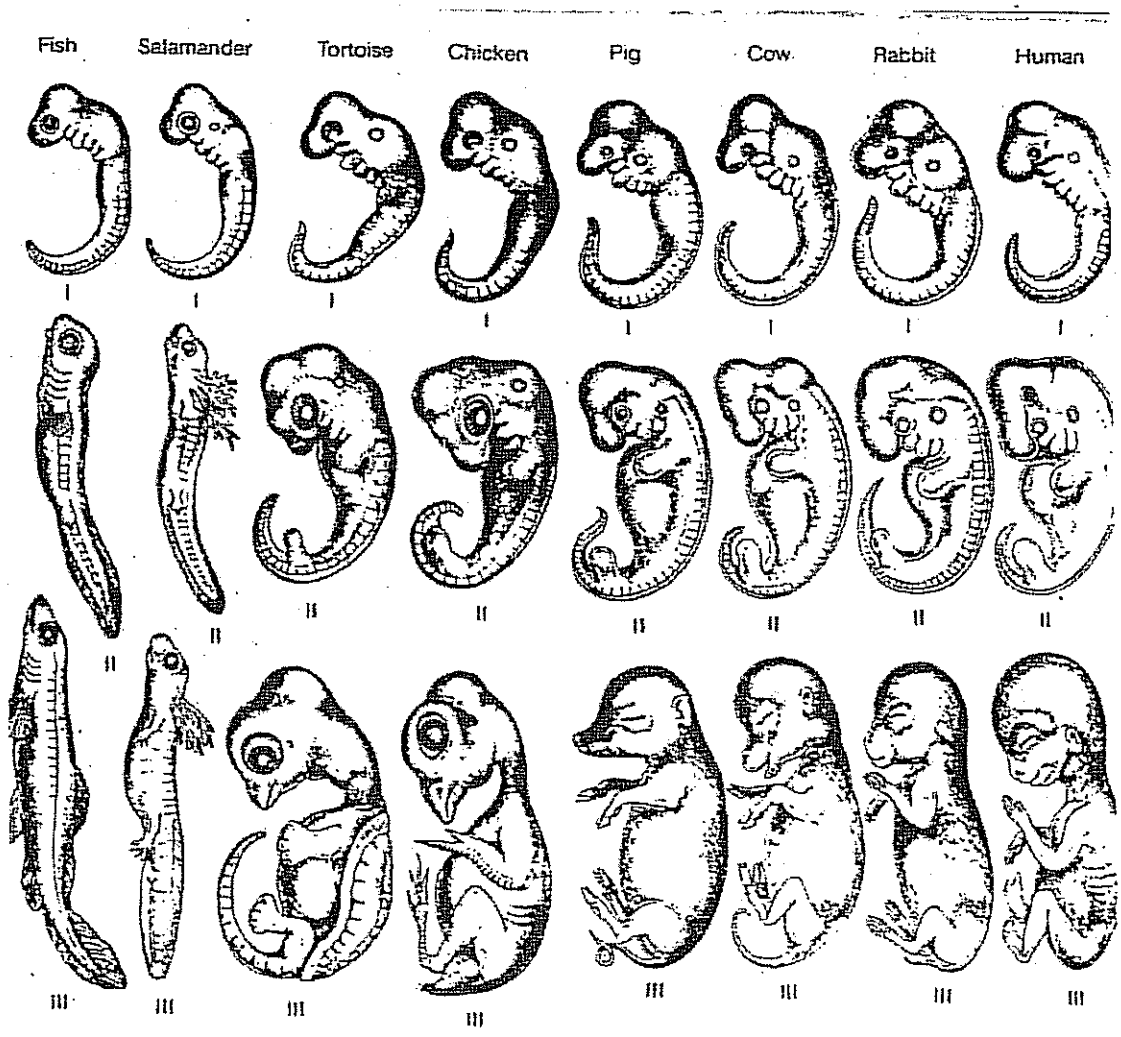
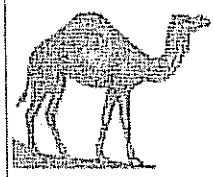
Evidence from Embryology (*write this note down in your book*)



Evidence from Fossil Record

- Fossils found in _____ layers or rock are more similar to species alive today than fossils found in deeper layers.

Table 15.1
Fossils are used by scientists to understand how camels evolved.

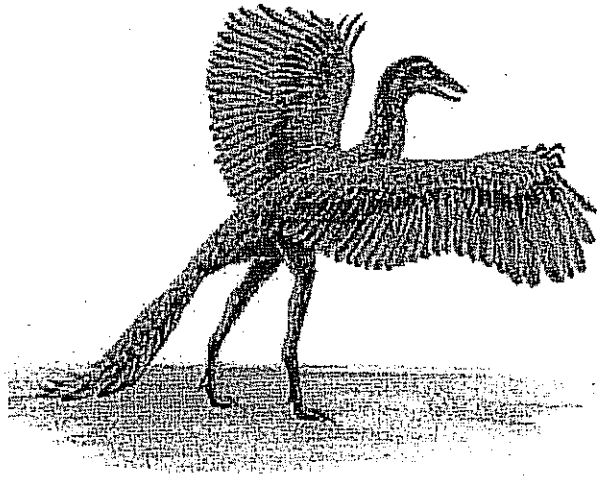
Age	Paleocene 65 million years ago	Eocene 54 million years ago	Oligocene 33 million years ago	Miocene 23 million years ago	Present
Organism					
Skull and teeth					
Limb bones					

- Fossils appear in chronological order in rock layers. So, probable _____ for a species are found in older rocks, which usually lie beneath the rock in which later species are found.
- Not all organisms appear in the fossil record at the same time. For example, the fossil history of vertebrates shows that fish are the oldest vertebrates. In subsequent layers, the fossils of other vertebrates- amphibians, reptiles, mammals and birds – appear. This reinforces scientific evidence that amphibians evolved from ancestral fish, then reptiles evolved from ancestral amphibians and both mammals and birds evolved from different groups of reptiles. THESE CHANGES WERE SLOW AND TOOK PLACE OVER MILLIONS OF YEARS.

- **Transitional Fossils show the _____ between groups of organisms.**

Archaeopteryx shows the transitional stage in the fossil record because this species had characteristics of both reptile (dinosaurs) and birds.

Archaeopteryx had feathers (but not like modern birds) **BUT** it also had Teeth, claws on its wings and a tail.



Ambulocetus is a transitional form discovered recently with heavier leg bones that may have lived on both land and water. It may bridge the gap between Pakicetus which lived on land but whose skull had evolved features of a whale and Rodhocetus which preceded the modern toothed whale.