

descended species. Hence the science of paleontology, which deals with fossil remains, has unique importance for evolution." (Edward O. Dodson)

"Evolutionary implications of Fossils. -- It is clear from the very much abbreviated account in this chapter that the animals and plants living on the earth at one time differed markedly from those of other ages. If it be assumed that there is a genetic continuity among these forms, or among any considerable portion of them, there can be no denial that evolution has occurred . . . .Biologists have assumed this genetic continuity because the alternative explanations have seemed incredible or impossible." (A. Franklin Shull)

"In the study of embryology and comparative anatomy we have only circumstantial evidence of evolution, but in the fossil remains of evolving species we have the actual documentary evidence that the changes have occurred." (C. O. Dunbar)

## 2. The interpretation of Fossils

"The remains of, or the record made by, an ancient living thing constitutes a fossil. The catch in this definition is the word 'ancient,' which is a very flexible one. In this context it is generally conceded to mean 'originating before the time of written history.' The footprint of some prankster in a cement sidewalk is not a fossil, but the footprint of a dinosaur is.

"Ordinarily, when an animal dies its flesh is eaten by scavengers, and its hide and bones crumble under the combined attack of sun, rain, bacteria, and chemicals. Dead plant material also decomposes and vanishes quickly. Under these conditions no fossil could form. But if the dead organism were to be protected from such thorough destruction, there would be the possibility that some record of it might remain through the ages. Quick burial in a favorable medium affords such protection. The sedentary clam living in an estuary and overwhelmed with mud during a spring flood; the hapless beast mired in an asphalt pool; the unwary insect trapped in a secretion of resin; all of these are potential fossils. Dry sand and cave deposits also may provide protective environments. Some fossils have been preserved in more rare media, such as ice and its opposite extreme, lava. This latter occurrence seems almost incredible, but it happened at least once; a rhinoceros engulfed in molten rock in the state of Washington left behind some charred bones and the imprint of its skin in the cavity which marked where it once lay.

"Those animals which possess hard parts stand the best chance of leaving behind some documentation of their existence. Fossils of entirely soft-bodied creatures have been discovered, but it is more surprising that any such animals have escaped total destruction than that so few of them have been preserved.

"All fossils belong to one of two categories: they are either the direct remains, altered or unaltered, of once living things; or they are less direct evidence of their existence."

-- Cordella Erdman Barber, "Fossils and Their Occurrence," in *Evolution and Christian Thought Today* edit. Russell L. Mixer (Grand Rapids, Michigan: Eerdmans Publishing Company, 1959). pp. 136-7.