



TRANSITIONAL FORMS

by

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Creationists often state that Evolution can't be true because there are no transitional forms. That, it must be assumed, are species between Genera, Families, Orders, Classes or whatever passes for a taxonomic system in Creationist thought. The only classification Creationists have admitted to is the "Basic Kind." Variations are permitted, they say, within "Basic Kinds", but not outside of them. No Creationist has ever defined where "Basic Kind" fits into the Linnaean taxonomy that most of the Biologists of the world use today. Creationists have their own definition of what needs to be true if Evolution really is a fact. That is: there must be a continuous set of fossils between each "kind" of animal in the fossil record and the animals existing today, exhibiting an almost insensible gradation from one fossil to the next. The fact that fossilization is a very capricious event and happens very rarely doesn't stop them from making this demand, knowing that it can never be met. What Creationists don't seem to realize is that the fossil record is not required to justify Evolution, it is Evolution that explains the fossil record.

As for the transitional forms that the Creationists say don't exist, the fossil record is bulging with them. As far as there being any alive today, in all likelihood, today's animals (including us) are in actuality transitional forms to some future species. But let's look at the record. There are a great number of fossils that are intermediate between reptiles and mammals and most Biologists think the bridge there is fairly complete, but here we encounter another favorite trick of the Creationists. Every time they look at a particular intermediate fossil species, they refuse to admit it's an intermediate. In the case of the mammal/reptile transitionals, they will say it's either a "fully formed" mammal, or a "fully formed" reptile. (I'd like to see what a half-formed animal looked like.) By dissembling and obfuscation the Creationists can keep reality from impinging on their thought processes.

The case of the horse is one that the average person can probably verify for himself. The prototype of the horse (Hyracotherium) lived 55 million years ago. It was about the size of a terrier and had four hoofed toes on its front legs and three on its back legs. This and similarities in its skeleton identified it as a precursor to the horse. The fossil record of the horse is extremely, and uncharacteristically, rich in documenting the evolution of the Hyracotherium into the modern horse. Do the Creationists feel this is just variation within a "Basic Kind?" If that is so, then apes and humans are the same Basic Kind, for there is much less morphological difference between an ape and a human than there is between the Hyracotherium and the modern horse. Anyway, most natural history museums can give you a fairly good grounding on horse Evolution (as well as human evolution.)

The classic transitional though is the Archaeopteryx. This is one that gives Creationists fits and prompts their most imaginative prevaricating. The Archaeopteryx is a fossil that clearly exhibits characteristics of both dinosaurs and birds. Duane Gish of the Institute for Creation Research (isn't that an oxymoron) says unequivocally that its a bird (using the old Creationist trick of denying transitionals.) Gish says, it had feathers, it flew, ergo it's a bird, case closed (and it died out in the flood.)

But wait a minute, how did he know it flew? The Archaeopteryx had a breast bone, but paleontologists can't be sure if the muscles attachments were large enough to support powered flight, and Archaeopteryx bones aren't hollow like modern birds, so how does Gish know it flew. If it did fly it was more like the flight of a road runner than the flight of an eagle. Archaeopteryx does have feathers, their impressions are clearly visible on most of the fossil specimens of Archaeopteryx, so score one for the bird side. Archaeopteryx also has a wish bone, score two. The Archaeopteryx also may have an opposable big toe (it's hard to tell on the fossils) which would be another Avian feature. Finally the Archaeopteryx has an elongated and backward facing pubic bone, another characteristic of birds. Well that seems petty convincing, doesn't it, its a bird.

Not so fast, don't birds have bills? You bet. Does Archaeopteryx have a bill? No indeed, it has very dinosaurian jaws. Bird's trunk vertebrae are always fused but Archaeopteryx trunk vertebrae are not. Birds do not have bony tails, Archaeopteryx does, as do dinosaurs and reptiles. Apart from the pubic bone pointing backwards, the entire structure of the Archaeopteryx pelvis is mostly dinosaurian, including the pelvic peduncle which is a very prominent feature in such dinosaurs as the Tyrannosaurus. There are more reptilian/dinosaurian features on Archaeopteryx than there are Avian features, and to me the most interesting is the fact that the Archaeopteryx had teeth! When was the last time you saw a bird with teeth? But then, when was the last time you saw a reptile with feathers? It was obviously a transitional. It appears that Archaeopteryx may have been an evolutionary dead end, because paleontologists believe that birds descended from dinosaurs by another route. But that does not diminish Archaeopteryx's status as an intermediate species.

While Archaeopteryx is the most spectacular transitional form, it is far from the only one. An extremely interesting set of fossils links the modern whale with a terrestrial forebear. Finding the land going ancestors of the whale was anticipated by scientists using the precepts of evolution, which shows that the theory has predictive value. The same is true of the Hyracotherium. T.H. Huxley predicted in the 1800's that a small ancestor to the horse lineage would be discovered in the early Eocene Epoch. He called it Eohippus, or " Dawn Horse" The Dawn Horse had actually already been discovered prior to Huxley's visit to Yale University and O.C. Marsh, the Director of the Peabody Museum, in 1877. But it was in a basement at the Peabody, and hadn't been identified for what it was until after Huxley returned to England. Its discoverer had already named it Hyracotherium and the earlier name took precedence over the more poetic Eohippus. This is something that "Creation Science" could never do. Since it is not a valid scientific theory no predictions could be made from it. The next time a Creationist says to you there are no transitional forms, ask him or her how they explain the Archaeopteryx.