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THE HORSE FAMILY TREE—A CASE STUDY IN EVOLUTION

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INTRODUCTION

Many classic "evidences" for evolution have been perpetuated through textbooks long after they have been exposed as fallacy or fraud. Whether intentional or not, this guarantees that the average student, who later will graduate to become the average man-on-the-street, is left with no doubt as to the supposed firm evidential support for life's common descent by naturalistic processes. Good examples would be Haeckel's embryonic recapitulation theory, certain fossil "men" (see Wayne Jackson, "Frauds in Science," *Essays in Apologetics*, Apologetics Press, Montgomery, Alabama, 1984, 1:6-10) and *Archaeopteryx* (see F.W. Cousins, "The Alleged Evolution of the Birds," *A Symposium on Creation*, Baker, Grand Rapids, Michigan, 1971, 3:89-99). Presumably, presentation of the "evidence" persists until either a "better" example arises, or the scientific community in general becomes embarrassed by its continued use.

The subject of horse evolution probably would be classed in the former, that is, a classic example having innumerable problems but doing great service in illustrating evolutionary principles. In fact, the horse evolutionary tree (or phylogeny) usually is represented as a supreme example of undeniable developmental change occurring over millions of years. Professor Storer and colleagues, in their textbook, *Elements of Zoology*, wrote: "The Family *Equidae* provides about the most complete record of evolution in an animal series..., leading to the existing horses, asses, angoras and zebras of the Old World" (McGraw-Hill, New York, 1977, p. 211, fourth edition). Similarly, Helena Curtis described the evolution of the horse as "one of the best-known examples" of phyletic evolution (i.e., change over time in a series of related organisms) "whose history is abundantly represented in the fossil record" (*Invitation to Biology*, Worth Publishers, New York, 1977, p. 460, second edition).

The purpose of this article is to show that the horse evolutionary tree essentially does not exist, and that so-called horse-like ancestors are unique, well-defined animals possessing variations within prescribed limits expected from created kinds.

BACKGROUND

History of Fossil Discovery

While there is indeed a great wealth of equid (horse-related) fossil material today, the confidence expressed by evolutionists in the horse series has existed for over a century. In 1870, eleven years after Charles Darwin published his *Origin of Species*, evolutionists believed they had found a wonderful example of transformation in the fossil record. One of their chief spokesmen, Thomas Huxley, made the following gleeful announcement to the Geological Society of London:

> It is easy to accumulate probabilities—hard to make out some particular case—in such a way that it will stand rigorous criticism. After much search, however, I think that such a case is to be made in favor of the pedigree of horses (as quoted by S.J. Gould, "Life's Little Joke," *Natural History*, April 1987, p. 16).

The story began in the late 1830s with the discovery in England of a skull fragment, and later a well-preserved skull (*Contrast*, 2[4]:2). Eminent paleontologist Sir Richard Owen believed the bones belonged to a new ungulate (hoofed) genus he called *Hyracotherium* because he thought it resembled the modern rodent-like *Hyrax* or daman living in North Africa and Western Asia. Owen also saw affinities between *Hyracotherium* and other animal orders, but he never mentioned any relationship to horses (see F.W. Cousins, "The Alleged Evolution of the Horse," *A Symposium on Creationism*, Baker, Grand Rapids, Michigan, 1971, 3:75). As more skeletal material accumulated in Europe and Asia, V.D. Kovalevsky helped initiate the idea that *Hyracotherium* gave rise to the modern horse (*Equus*) via the fossil "intermediates" called *Anchitherium* and *Hipparion*.

But it was Huxley who really popularized the horse lineage, first by making such public statements as noted above, and then by applying his own intellectual skills to the problem. However, while those of the Old World were making their conclusions, Yale paleontologist Othniel C. Marsh was involved in his own discoveries, and had amassed an impressive array of similar fossils from Western North America. Marsh had found not only *Hyracotherium* (which he called *Eohippus*, "dawn horse"), but also a whole range of supposed transitional forms in the following sequence: *Orohippus*, *Mesohippus*, *Miohippus* (American equivalent of *Anchitherium*), *Protohippus* (equivalent to *Hipparion*), *Pliohippus*, and finally old dobbin himself, *Equus*. Note how Marsh, from the very beginning, included the Greek word for horse (*hippos*) in the names of these fossil animals. Kovalevsky identified three fossil genera in the horse family, but by the late 1940s this figure had risen to 26.

The next part of the legend continues in 1874 with the publication of Marsh's initial findings (*American Journal of Science*, 7:255) in which he concluded that the European sequence represented extinct and dead-end forms that had migrated from the Americas. The actual evolutionary process and line of descent, according to Marsh, had occurred in the latter continent.

Two years later, Huxley was visiting the United States to give a lecture on horse evolution at the founding of Johns Hopkins University in New York, but having read Marsh's paper, he first diverted through Yale to see the collection of fossils. After Marsh presented such a good case, Huxley capitulated to the American's interpretation. In the following weeks, Huxley and Marsh cooperated in producing a chart that was presented to the New York audience by Huxley, and that later was published by Marsh ("Polydactyle Horses," *American Journal of Science*, 1879, 17:499-505).

From that time forward, similar diagrams were reproduced in many publications and textbooks as a case study in evolution. Science teachers love to tell this famous story because it supposedly has a moral, which is that truly great scientists are willing to give up their own opinions when faced with the "truth." However, the following discussion casts a different light on this story.

Similarities and Differences

What had Marsh demonstrated so graphically? His diagram represented two important inferred evolutionary changes through time: (1) a decrease in the number of toes from three to one; and (2) an increase in complexity and size of grinding teeth. The third change, an increase in height and bulk, was not represented but was recognized by Marsh in his 1874 article.

The next question to be asked is: Why did these men identify *Hyracotherium* as a relative of the horse? As noted previously, Owen thought the fossil animal had affinities with a variety of quite different creatures, including the *Hyrax*, rodents, etc. However, it was the bones at the base of the skull, the ankle bones, and position of the cusps of the teeth, which caused both *Hyracotherium* and *Equus* to be placed in the horse family [most of the comparative anatomical information for this article was obtained from Deb Bennett, "What Kind of an Animal is a Horse?," *Equus*, 1987, 116:85ff.].

The differences between these two animals basically represent the changes that would have to occur in the evolutionary scenario. They are as follows:

	Hyracotherium	Equus
1.	paw with blunt claws, three-toed hindfeet, four-toed forefeet	single hoof front and hind
2.	teeth low-crowned	teeth high-crowned
3.	canines large	canines smaller
4.	no cement coverings on crown	cement coverings on crowns
5.	incisors relatively small	large blunt "grassnipper" incisors
6.	eye socket over teeth	eye socket behind teeth
7.	broad, shallow nasal notch	narrow, deep nasal notch
8.	lumbar span very flexible	lumbar span relatively rigid
9.	back arched upward	back not so arched
10.	escape by quick, erratic direction changes	escape by fast, straight-line running
11.	forest dweller	plains or savanna dweller
12.	diet of lush leaves	diet of coarse grasses
13.	about the size of a small dog (11" tall)	size varies from Shetland Pony to Clydesdale type horses

It is easy to see from the table above why Cousins was moved to say "the first supposed ancestors are...very little horselike both morphologically and in habitat" (p. 80).

According to evolutionary theory, changes from *Hyracotherium* to *Equus* occurred over a 50-million-year period. Four front toes became three, and later three became one; the eye socket moved back as the teeth became larger; the limbs lengthened proportionally; and so on. Such transitions supposedly correspond to the change in environment from widespread forest in the Eocene (55 million years ago) to progressively increasing areas of grass-covered plains on the major continents. [NOTE: My use of terms and dates from the evolutionary geological time scale should in no way be taken as support for that system.] Those members of the original population who were able to live on the plains, so the story goes, became new species as they grew more dependent on coarse Vegetation, and had to survive predation in exposed areas.

THE EVIDENCE EXAMINED

Fossils, diagrams, and the accompanying explanations make horse evolution seem fairly straightforward. They have convinced many people that gradual change has occurred from one form into another. Here, it is suggested, is a classic case where the order of fossils found in the rocks appears to match the order predicted by evolutionary theory. Let us therefore see what others have said with regard to the horse series, and examine if there is any substance to this popular evidence for evolution.

European expert Othnio Abel [not I. Abel as in Cousins, p. 77] supported the idea of the horse series, but expressed a certain amount of surprise at the rapidity of change at major branches in the "tree" (*Paleobiologie und Stammesgeschicte*, G. Fischer, Jena, Germany, 1929, 423 pp.). For instance, the change from the four- toed, forefooted *Epihippus* to the much larger all three-toed *Mesohippus* occurred quite suddenly at the Eocene/Oligocene boundary. *Epihippus* was in fact smaller than its predecessors, and so the leap in size is even more pronounced. The same sort of rapid change is inferred in the development of the browsing *Parahippus* into the grazing *Merychippus* during the early Miocene, with the obvious necessity for a lengthening of the crown and addition of cement to the chewing teeth. Even more extreme is the development of the three-toed *Merychippus* into the one-toed *Pliohippus* in the early Pliocene. In each case, Abel refers to "explosive" or "stormy" transformation. Almost half a century later, J.B. Birdsell used the same sort of terminology in stating: "The evolution of the foot mechanisms proceeded by rapid and abrupt changes rather than gradual ones" (*Human Evolution*, Rand-McNally, Chicago, Illinois, 1975, p. 170).

In Europe, *Hyracotherium* was meant to have branched-off into a variety of similar creatures, all of which died out in early Oligocene times, with the former becoming extinct in the earliest Eocene age. However, Forster Cooper reviewed the fossil evidence for these abortive descendants and concluded they were essentially indistinguishable from *Hyracotherium* ("The Genus *Hyracotherium,*" *Philosophical Transactions of the Royal Society of London*, Series B, 1932, p. 221). In other words, there was no upward development in evolutionary terms; *Hyracotherium* "stood still."

The transition from *Mesohippus* to *Miohippus* (which actually involved no dramatic shift in habitat, etc.) was supposed to have happened during the Oligocene. In his *Horses* book, evolutionist George Gaylord Simpson expressed great confidence in this part of the sequence, writing:

> In fact *Mesohippus* and *Miohippus* integrate so perfectly and the differences between them are so slight and variable that even experts find it difficult, at times nearly impossible, to distinguish them clearly.

In other words, there is meant to be an imperceptible change from the *Mesohippus* into the *Miohippus*. However, later research has shown that the early taxonomists were guilty of over-splitting in order to show a nice transition, whereas in fact no real change occurred in this three-toed grazer for the entire epoch supposedly representing 8 million years of Earth's history.

With regard to these two genera, vertebrate paleontologists Don Prothero and Neil Shubin concluded:

> There is no evidence of long-term changes within these well-defined species through time. Instead, they are strikingly static through millions of years. Such stasis is apparent in most Neogene horses as well, and in *Hyracotherium*. This is contrary to the widely-held myth about horse species as gradualistically-varying parts of a continuum, with no real distinctions between species. Throughout the history of horses, the species are well-marked and static over millions of years. At high resolution, the gradualistic picture of horse evolution becomes a complex bush of overlapping, closely related species (quoted by Gould, p. 24).

What these writers are saying is that there is no clear evolutionary path from *Hyracotherium* to *Equus*. Further, these creatures identified as belonging to the horse family show no ancestor-descendant relationship with one another. They appear suddenly, live for quite a while (in the process branching off into new species), and then become extinct. One cannot speak of an evolutionary family **tree** for the horse; a clump of neighboring **bushes** would be a more appropriate analogy.

With regard to this "lateral stepping" interspersed with long periods of stasis, Stephen J. Gould is convinced that the horse lineage is an example of his punctuated equilibrium theory. But as I have pointed out in previous articles, such an argument serves only to illustrate the glaring "gaps" in the fossil record (see *Reason & Revelation*, 6:33). In other words, whenever an evolutionist talks about sudden or abrupt transformation, he really means there are no intermediate or transitional fossils. Forms with progressively smaller side toes are not found; similarly, forms with teeth changing gradually to suit the change in diet do not exist. Instead, each fossil genus is found whole and completely suited to the habitat in which it is found, even with single-toed and three-toed forms occurring in the same rock strata. Further, there is a fundamental morphological discontinuity between the grazers and the browsers, and between the one-toed and many-toed kinds.

CONCLUSION

The horse series always has been presented by the neo-Darwinian evolutionist as a clear example of straight descent from an ancestral animal called *Hyracotherium* to the modern horse *Equus* over a period of 60 million years. However, it is apparent that *Hyracotherium* really has no more resemblance to the horse than it does to any four-legged animal that feeds on vegetation. The geological record does not show a progressive change in tooth complexity, foot form, or any other skeletal feature. Expected transitional forms do not exist, and the proposed transitional forms appear abruptly and are contemporaries of both more "advanced" and "primitive" species. In addition, there is no mechanism to account for any sudden transformation. The supposed intermediates are merely extinct three-toed, hoofed animals living either on plains or in forest-type environments. The "recent" one-toed species simply represent variation within limits on the horse kind.

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