



Creation Matters

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The Overselling of Whale Evolution

by Ashby L. Camp, J.D., M.Div.

Summary: *This article examines briefly the three major transition stages in the standard account of whale evolution: (1) from a mesonychid to an amphibious archaeocete, (2) from an amphibious archaeocete to a fully marine archaeocete, and (3) from a fully marine archaeocete to modern whales. Regarding the first stage, it is argued that no known mesonychid species qualifies as an actual ancestor of archaeocetes. Mesonychids simply are assumed to have been ancestral on the basis of some general similarities with archaeocetes and for lack of a better candidate. Regarding the second stage, it is argued that the standard representation of archaeocetes as a series of stratomorphic intermediates is dubious. Even if the representation was accurate, the archaeocetes involved would not constitute an actual lineage. Regarding the third stage, it is argued that the consensus opinion only decades ago was that archaeocetes were not ancestral to modern cetaceans. The alleged ancestral relationship remains highly speculative.*

Editor's note: This article is somewhat more "technical" than those that normally appear in CM. However, we believe the summary and Figure 1 will aid the nonspecialist in understanding the essential problem with stories of the supposed evolution of whales.

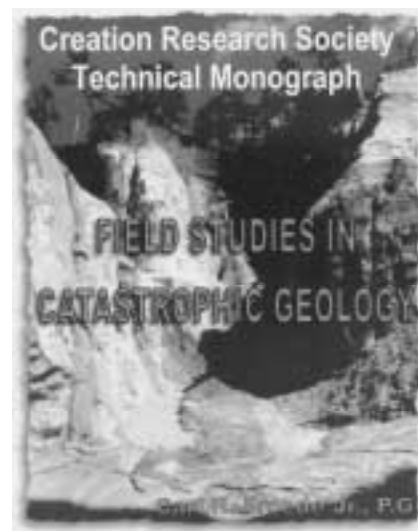
Conventional wisdom among evolutionists, at least at the popular level, is that whales descended from Mesonychidae, an early and diverse family

of land mammals that were well adapted for running. [1] It is hypothesized that some mesonychid species began feeding on creatures inhabiting shallow waters and that over many generations the selective pressures created by this change of diet transformed one or more of the species into an amphibious archaeocete. The selective pressures of amphibious living, in turn, generated a variety of archaeocetes. Eventually one or more of the species was transformed into a fully marine archaeocete. Marine existence then shaped further adaptations to produce the 75 to 77 living species of whales, porpoises, and dolphins. [2] Some evolutionists believe the fossil record has established this claim beyond a reasonable doubt. One writer went so far as to pronounce that "the evolutionary case is now closed." [3] The purpose of this article is to suggest that the fossil evidence for the mesonychid-to-whale transition is not persuasive, let alone conclusive.

Mesonychids to Archaeocetes

The first claim in the evolutionists' scenario is that archaeocetes descended from a mesonychid species. The ancestral status of Mesonychidae was first proposed by Leigh Van Valen in 1966 on the basis of certain dental similarities between the mesonychid *Dissacus navajovius* (which is *Dissacus carnifex* of Cope) and some archaeocete specimens. His rather cautious statement of the claim is worth recalling:

"To my knowledge the family of Mesonychidae is one of the relatively few groups of mammals (and even of reptiles) that has not been specifically suggested as ancestral to the whales, but in my opinion the



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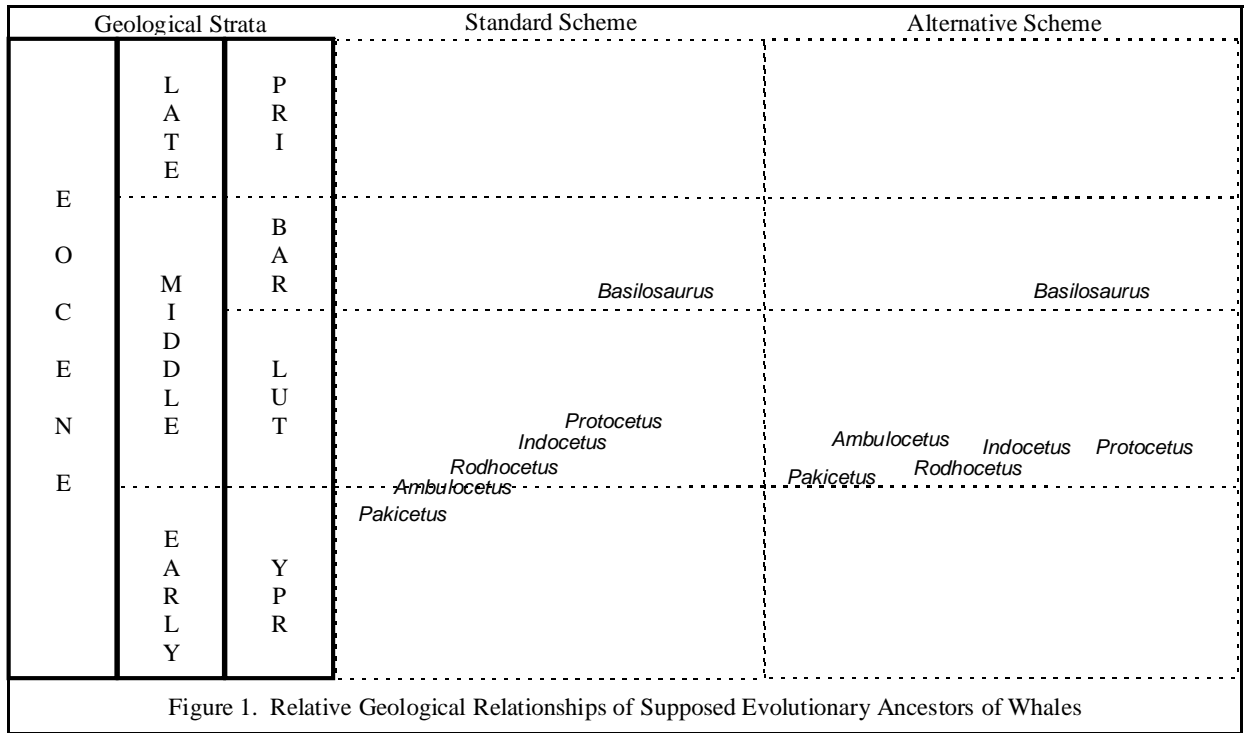
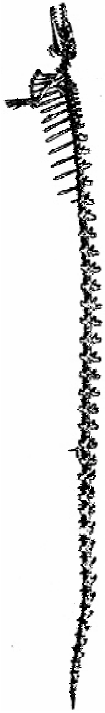
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Above left: *Basilosaurus cetoides*, the state fossil of Alabama
http://www.asc.edu/archives/emblems/st_fossil.html

preceding argument establishes them as at least the most likely candidate. . . . *Dissacus navajovius* is possibly directly ancestral, but little is known of the early history of the mesonychids, especially outside North America.” [4]

In a more extensive analysis published three years later, Frederick Szalay suggested that both hapalodectines (which was then considered a mesonychid subfamily) and archaeocetes probably “derived from either early or middle Paleocene mesonychids, **species more primitive than known mesonychines**” [emphasis mine]. [5] In other words, Szalay concluded that both *Dissacus* and *Ankalagon*, the only middle Paleocene mesonychids known at that time, were too derived (*i.e.*, evolutionarily advanced) to be in the archaeocete lineage. [6] He saw them as “sister groups” of the archaeocetes, not as actual ancestors.

Since publication of the Szalay article, three more genera of middle Paleocene mesonychids have been identified in Asia (*Dissacusium*, *Hukoutherium*, *Yangtanglestes*), but none is known from anything more than fragmentary crania. [7] Information on *Hukoutherium*, the best known of the three, is limited to a crushed and

broken skull with lower jaws. [8] No one has nominated any of these genera for ancestor of the archaeocetes, and thus mesonychids continue to be classified in the more technical literature as a “sister group” to the archaeocetes. [9]

To acknowledge, as Robert Carroll did recently, that “[i]t is not possible to identify a sequence of mesonychids leading directly to whales” is to understate the problem. [10] It is not even possible to identify a single ancestral species. All known mesonychids are excluded from the actual chain of descent by the evolutionists’ own criteria.

The reason evolutionists are confident that mesonychids gave rise to archaeocetes, despite the inability to identify any species in the actual lineage, is that known mesonychids and archaeocetes have some similarities. These similarities, however, are not sufficient to make the case for ancestry, especially in light of the vast differences. The subjective nature of such comparisons is evident from the fact that so many groups of mammals and even reptiles have been suggested as ancestral to whales.

In the case of mesonychids, the relationship to archaeocetes is based on the most general of similarities. As Van Valen acknowledged in the original article proposing mesonychid ancestry:

“[M]any features of the skull of

Protocetus [an early archaeocete - AC] are not similar to those of either the Hyaenodontidae or the Mesonychidae (or to any other terrestrial mammal known to me) and probably represent to a considerable extent a reorganization of the skull, the chain of effects resulting from adaptation to hearing, feeding, locomotion, and other functions in an aquatic existence.” [11]

This point was later echoed by Edwin Colbert: “In general this [archaeocete] skull appears as if it might have been derived from a mesonychid type, but there is little beyond certain general resemblances to support such a relationship.” [12] Others have likewise noted that the cited similarities in skull and dental characters “are not all clear-cut.” [13] One need only compare the reconstructed skull of the late Paleocene *Sinonyx jiashanensis* to that of an early archaeocete to appreciate these remarks. [14]

Amphibious Archaeocete to Fully Marine Archaeocete

The second claim in the evolutionists’ explanation of the origin of whales is that an amphibious archaeocete evolved into a fully marine archaeocete. It is believed that this transformation is documented by a sequence of intermediate forms, what one writer called the “sweetest series of tran-

sitional fossils an evolutionist could ever hope to find.” [15] This series, which spans 10-12 million years of the Eocene, includes *Pakicetus inachus*, *Ambulocetus natans*, *Rodhocetus kasrani*, *Indocetus ramani*, *Protocetus atavus*, and *Basilosaurus isis*. [16]

It is important to understand that, in calling these creatures a “series of transitional fossils,” the evolutionist does not mean that they form an actual lineage of ancestors and descendants. On the contrary, they readily acknowledge that these archaeocetes “cannot be strung in procession from ancestor to descendant in a *scala naturae*.” [17] What they mean is that these fossils show a progressive development within Archaeoceti of certain features found in the later, fully marine forms such as *Basilosaurus*. (The specific features relate mainly to the middle ear and the appendicular skeleton.) This progression of features is believed to correspond to changes that were occurring in the actual basilosaurid lineage.

Whether the early archaeocetes form a series or sequence of intermediate forms depends, of course, on their morphology and their stratigraphic position. The claim is that, for each of these fossils, the degree of evolutionary advancement corresponds to the stratigraphic position. In other words, the older the fossil the less advanced its features; the younger the fossil the more advanced its features. It is this correspondence of form and position (age) that provides the impression of directional transformation through time.

The generally accepted order of the archaeocete species, in terms of both morphological (primitive to advanced) and stratigraphical (lower/older to higher/younger) criteria, is *Pakicetus*, *Ambulocetus*, *Rodhocetus*, *Indocetus*, *Protocetus*, and *Basilosaurus* (see note 16 and standard scheme in Figure 1). One problem for this tidy picture is that the stratigraphical relationships of most of these fossils are uncertain.

In the standard scheme (Figure 1), *Pakicetus inachus* is dated to the late Ypresian, but several experts acknowledge that it may date to the early Lutetian. [18] If the younger date (early Lutetian) is accepted, then *Pakicetus* is nearly, if not ac-

tually, contemporaneous with *Rodhocetus*, an early Lutetian fossil from another formation in Pakistan. [19] Moreover, the date of *Ambulocetus*, which was found in the same formation as *Pakicetus* but 120 meters higher, would have to be adjusted upward the same amount as *Pakicetus*. [20] This would make *Ambulocetus* younger than *Rodhocetus* and possibly younger than *Indocetus* and even *Protocetus*. [21]

According to the standard scheme, *Protocetus* is dated to the middle Lutetian, but some experts have dated it in the early Lutetian. [22] If the older date (early Lutetian) is accepted, then *Protocetus* is contemporaneous with *Rodhocetus* and *Indocetus*. In that case, what is believed to have been a fully marine archaeocete was already on the scene at or near the time archaeocetes first appear in the fossil record. [23]

Given the significance evolutionists

Given the significance evolutionists have attributed to these fossils in their battle with creationists, one cannot help but wonder whether their stratigraphical arrangement in the standard scheme has been influenced by their morphology.

have attributed to these fossils in their battle with creationists, one cannot help but wonder whether their stratigraphical arrangement in the standard scheme has been influenced by their morphology. One committed to evolution would tend to be less critical of dates that placed these fossils in a morphological sequence and more critical of dates that disrupted that sequence. [24] As the diversity and shifts of expert opinion indicate, stratigraphical correlation is more an art than is commonly appreciated.

Based on the foregoing, it is reasonable to believe, even within an evolutionist framework, that all the early archaeocetes were essentially contemporaries (see alternative scheme, Figure 1). *Basilosaurus isis*, on the other hand, was a gigantic marine archaeocete dating to the early Bartonian. [25] Evolutionists suspect that basilosaurids descended from the earlier Protocetidae (which includes the archaeocetes

discussed above), but specialists admit there is a “lack of clear ancestor to descendant relationships.” [26] Indeed, the tremendous size difference between Basilosaurinae and protocetids casts doubt on that hypothesis. All protocetids were less than ten feet long, whereas *Basilosaurus cetoides* was over 80 feet in length, and *Basilosaurus isis* was over 50 feet. [27] It has been calculated that, even in a rapidly evolving line, changes in size are usually on the order of only 1-10% per million years. [28]

Lacking a cogent argument that *Basilosaurus isis* actually descended from protocetids, evolutionists claim it is transitional in the sense that it exhibits features between the earlier protocetids and the later cetaceans. If *Protocetus* was fully marine, as some experts now believe, it is questionable whether and to what extent the features of *Basilosaurus* can be characterized as more “advanced.” But more importantly, if *Basilosaurus* did not descend from protocetids and was not ancestral to cetaceans (see below), what does the presence of intermediate features in *Basilosaurus* establish? It seems the most one could say is that it indirectly supports the claim of descent with modification by showing a creature similar to the creature hypothesized to be in the actual lineage. Creationists find this too weak to carry the extraordinary claim of cetacean evolution.

Archaeocetes to Modern Cetaceans

The third claim in the evolutionists’ chain of events is that archaeocetes gave rise to modern cetaceans. This is sometimes asserted as a fact, but the relationship between these suborders has long been debated. There are major differences between the archaeocetes and cetaceans (e.g., body shape, thoracic fin structure, and skull arrangement) which have led many experts to deny that archaeocetes gave rise to odontocetes or mysticetes. [29] As George Gaylord Simpson concluded:

“Thus the Archaeoceti, middle Eocene to early Miocene, are definitely the most primitive of cetaceans, but they can hardly have given rise to the other suborders. The Odontoceti, late Eo-

cene to Recent, are on a higher grade than the Archaeoceti and, on the average, lower than the Mysticeti, middle Oligocene to Recent, but apparently were not derived from the former and did not give rise to the latter.” [30]

The point was reiterated two decades later by A. V. Yablokov, who wrote, “It is now obvious to most investigators that the Archaeoceti cannot be regarded as direct ancestral forms of the modern cetaceans.” [31] This was the consensus opinion until relatively recently. [32]

The current leaders in the field believe that archaeocetes were ancestral to modern whales, but there is no agreement on which family of archaeocetes was involved. In fact, all three families (Protocetidae, Remingtonocetidae, and Basilosauridae) have been proposed. [33] This is particularly revealing when one considers how radically different Remingtonocetidae is from the other archaeocetes. [34]

In addition, no chain of descent from archaeocetes to modern whales has been identified. The phylogenetic relationships among major lineages within the Cetacea continue to be “very poorly understood,” which is why recent phylogenies are dominated by dead ends, broken lines, and question marks. [35] As for *Basilosaurus isis*, it is generally recognized that Basilosaurinae was an isolated subfamily that had nothing to do with the origin of modern whales. [36]

Endnotes

- [1] E.g., Stephen Jay Gould, “Hooking Leviathan By Its Past,” *Natural History* (April 1994):12; Carl Zimmer, “Back to the Sea,” *Discover* (January 1995):83; Elizabeth Culotta, “It’s A Long Way From Ambulocetus,” *Pacific Discovery* (Winter 1996):16. Szalay and Gould divided Mesonychidae into three subfamilies: Mesonychinae, Hapalodectinae, and Andrewsarchinae. Frederick S. Szalay and Stephen Jay Gould, “Asiatic Mesonychidae (Mammalia, Condylarthra),” *Bulletin of the American Museum of Natural History* 132 (1966):156. However, “mesonychids are now often given ordinal rank as either Mesonychia or Acreodi.” Maureen A. O’Leary and Kenneth D. Rose, “Postcranial Skeleton of the Early Eocene Mesonychid *Pachyaena* (Mammalia: Mesonychia),” *Journal of Vertebrate Paleontology* 15, no. 2 (1995):402. Current thinking is that Hapalodectinae should be placed in its own family. Xiaoyuan Zhou, Renjie Zhai, Philip D. Gingerich, and Liezu Chen, “Skull of New Mesonychid (Mammalia, Mesonychia) From the Late Paleocene of China,” *Journal of Vertebrate Paleontology* 15, no. 2 (1995):387, 396-98.
- [2] The scenario is sketched in Keith Banister and Andrew Campbell, eds., *The Encyclopedia of Aquatic Life* (New York: Facts on File Publications, 1985), 294-296. See also Culotta, 16. The order Cetacea includes the whales, porpoises, and dolphins. The 75 to 77 living species are divided into 13 or 14 families and two suborders: Mysticeti (baleen whales) and Odontoceti (toothed whales, dolphins, and porpoises). The extinct suborder Archaeoceti is a wastebasket group that includes all ancient toothed Cetacea that lack the cranial features of Odontoceti and Mysticeti. It is comprised of three extinct families: Protocetidae, Remingtonocetidae, and Basilosauridae. The family Protocetidae includes the extinct subfamily Pakicetinae. The family Basilosauridae is comprised of two extinct subfamilies: Dorudontinae and Basilosaurinae. See, R. Ewan Fordyce and Lawrence G. Barnes, “The Evolutionary History of Whales and Dolphins,” *Annual Review of Earth and Planetary Science* 22 (1994):419, 427-31.
- [3] Zimmer, 84.
- [4] Leigh Van Valen, “Deltatheridia, A New Order of Mammals,” *Bulletin of the American Museum of Natural History* 132 (1966):92.
- [5] Frederick S. Szalay, “The Hapalodectinae and a Phylogeny of the Mesonychidae (Mammalia, Condylarthra),” *American Museum Novitates* 2361 (1969):25; for application of statement to archaeocetes, see figure 19, p. 24.
- [6] Szalay and Gould, 169-170 lists *Dissacus* as the only middle Paleocene mesonychid known at the time. *Dissacus sensu* Szalay and Gould was later divided into *Dissacus* and *Ankalagon* (type species being *Dissacus saurognathus*, which is *Dissacus carnifex* of Osborn and Earle). Leigh Van Valen, “*Ankalagon*, New Name (Mammalia: Condylarthra),” *Journal of Paleontology* 54, no. 1 (1980):266. *Microcladon*, which was not listed by Szalay and Gould, is now generally classified with triisodontines rather than mesonychids. Philip D. Gingerich, “Radiation of Early Cenozoic Didymoconidae (Condylarthra, Mesonychia) in Asia, With a New Genus From Early Eocene of Western North America,” *Journal of Mammalogy* 62, no. 3 (1981):535. It is noteworthy that the skull of neither *Dissacus* nor *Ankalagon* has been recovered. These genera are known from jaws, teeth, and rather limited postcrania.
- [7] Discoveries of *Dissacusium* and *Hukoutherium* were first published in 1973; discovery of *Yangtanglestes* was first published in 1976. Li Chuan Luei and Ting Su-Yin, “The Paleogene Mammals of China,” *Bulletin of Carnegie Museum of Natural History* 21 (1983):1-93. *Dissacus* and *Ankalagon* are the only Paleocene mesonychids for which postcrania have been described. O’Leary and Rose, 401.
- [8] Zhou, et al., 388. *Dissacusium* and *Yangtanglestes* are so poorly known that Zhou, et al. omitted them from their cladistic analysis. *Ibid.*, 395.
- [9] Malcolm C. McKenna, “Toward a Phylogenetic Classification of the Mammalia,” in W. Patrick Luckett and Frederick S. Szalay, eds., *Phylogeny of the Primates* (New York: Plenum Press, 1975), 39; Donald E. Savage and Donald E. Russell, *Mammalian Paleofaunas of the World* (London: Addison-Wesley Publishing, 1983), 123; Robert L. Carroll, *Vertebrate Paleontology and Evolution* (New York: W. H. Freeman & Co., 1988), 521 (implicit in his statement “early mesonychids were almost certainly close to the ancestry of whales” [emphasis mine]); J. G. M. Thewissen, “Phylogenetic Aspects of Cetacean Origins: A Morphological Perspective,” *Journal of Mammalian Evolution* 2, no. 3 (1995):174.
- [10] Robert L. Carroll, *Patterns and Processes of Vertebrate Evolution* (Cambridge: University Press, 1997), 329.
- [11] Van Valen, (1966):92.
- [12] Edwin H. Colbert, *Evolution of the Vertebrates* 3rd ed. (New York: John Wiley & Sons, 1980), 329.
- [13] Banister and Campbell, 295.
- [14] *Sinonyx jiashanensis* can be found at Zhou, et al., 391. For a reconstruction of the skull of *Rodhocetus kasrani*, see Philip D. Gingerich, S. Mahmood Raza, Muhammad Arif, Mohammad Anwar, and Xiaoyuan Zhou, “New whale from the Eocene of Pakistan and the origin of cetacea swimming,” *Nature* 368 (1994):845.
- [15] Gould, 10.
- [16] The standard scheme is depicted in Carroll (1997), 331. *Pakicetus inachus* is known from only the back portion of a skull, jaw parts, and a few teeth. Philip D. Gingerich, Neil A. Wells, Donald E. Russell, and S. M. Shah, “Origin of Whales in Epicontinental Remnant Seas: New Evidence from the Early Eocene of Pakistan,” *Science* 220 (1983):403-406.
- [17] Michael J. Novak, “Whales leave the beach,” *Nature* 368 (1994):807.
- [18] The Eocene epoch is divided into early (Eocene 1), middle (Eocene 2), and late (Eocene 3) subepochs. Eocene 1 corresponds to the Ypresian stage, and Eocene 3 corresponds to the Priabonian stage. Eocene 2 is divided into the Lutetian and Bartonian stages. The Ypresian is dated from 56.5 to 50 mya, the Lutetian from 50 to 42.1 mya, the Bartonian from 42.1 to 38.6 mya, and the Priabonian from 38.6 to 35.4 mya. W. Brian Harland, Richard L. Armstrong, Allen V. Cox, Lorraine E. Craig, Alan G. Smith, and David G. Smith, *A Geologic Time Scale 1989* (Cambridge: Cambridge University Press, 1990), 172. As for the uncertainty in the dating of Pakicetus, see R. Ewan Fordyce, “Cetacean Evolution and Eocene/Oligocene Environments” in Donald R. Prothero and William A. Berggren, eds., *Eocene-Oligocene Climatic and Biotic Evolution* (Princeton: Princeton University Press, 1992), 368, 370, 372, 376; M. J. Benton, ed., *The Fossil Record 2* (London: Chapman & Hall, 1993), 760-61; and Fordyce and Barnes, 430-31.
- [19] *Rodhocetus kasrani* is known from a skull, lower jaws, vertebrae, pelvic bones, and a femur. Philip D. Gingerich, et al., (1994):844-47. Gingerich dates the Ypresian-Lutetian boundary between 48-49 mya. See, *ibid.*, 845. Thus, if *Pakicetus* is moved to the early Lutetian, by Gingerich’s dating it would be at or under 48 mya. Gingerich has, on at least one occasion, estimated *Rodhocetus* to be “about forty-eight million years old.” Philip D. Gingerich, “The Whales of Tethys,” *Natural History* (April 1994):88.
- [20] *Ambulocetus natans* is known from a skull, ribs,

vertebrae, and significant portions of fore and hind limbs. J. G. M. Thewissen, S. T. Hussain, and M. Arif, "Fossil Evidence for the Origin of Aquatic Locomotion in Archaeocete Whales," *Science* 263 (1994):210-12.

- [21] Carroll (1997), 333 says *Ambulocetus* is about two million years younger than *Pakicetus*. Thus, if *Pakicetus* is moved to about 48 mya (Gingerich's early Lutetian date), that would push *Ambulocetus* to about 46 mya. *Rodhocetus* and *Indocetus* are nearly contemporaneous fossils from the early Lutetian of the Domanda Formation in Pakistan (whereas *Pakicetus* and *Ambulocetus* are from the Kuldana Formation). *Indocetus ramani* is known from a skull, pelvic bones, vertebrae, and parts of hind limb bones. A. Sahni and V. P. Mishra, "Lower Tertiary Vertebrates from Western India," *Monograph of Paleontological Society of India* 3 (1975):1-48; P. D. Gingerich, S. M. Raza, M. Arif, M. Anwar, and X. Zhou, "Partial Skeletons of *Indocetus ramani* (Mammalia, Cetacea) from the Lower Middle Eocene Domanda Shale in the Sulaiman Range of Punjab (Pakistan)," *Contributions from the Museum of Paleontology of the University of Michigan* 28 (1993):393-416.
- [22] *Protocetus atavus* is known from a well-preserved skull and from vertebrae, ribs, a tooth, and part of a second skull which have been referred to it. Lawrence G. Barnes and Edward Mitchell, "Cetacea" in Vincent J. Maglio and H. B. S. Cooke, eds., *Evolution of African Mammals* (Cambridge, MA: Harvard University Press, 1978), 585. Gingerich and others place it in the middle Lutetian, but the holotype was collected from the basal portion of the lower Mokattam Formation in Egypt, which some experts date to the early Lutetian. *Ibid.*; Benton, 760-61; see also, Fordyce, 370.
- [23] *Protocetus* was found in deep-neritic deposits. Gingerich argues that *Protocetus* was completely aquatic and that its lumbocaudal trunk was flexible like that of modern whales. Gingerich, *et al.*, (1994):844-845.
- [24] This is not to suggest any conscious manipula-

tion on the part of these scientists. It is simply an acknowledgment that evidence that fits expectations is more readily received.

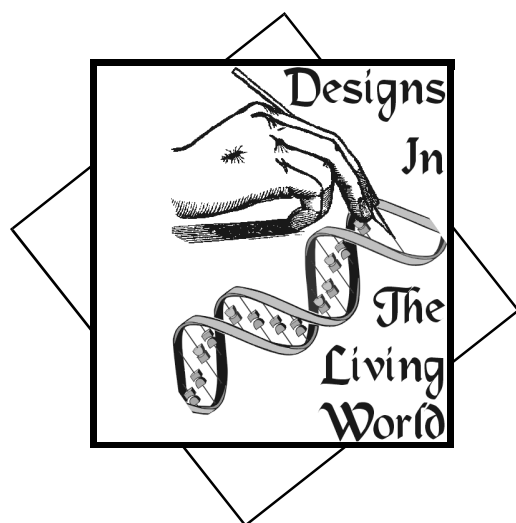
- [25] This gigantic marine archaeocete reportedly possessed small but functional hind limbs that have been interpreted as copulatory guides. Philip D. Gingerich, B. Holly Smith, and Elywn L. Simons, "Hind Limbs of Eocene *Basilosaurus*: Evidence of Feet in Whales," *Science* 249:154-157 (1990).
- [26] Fordyce, 376.
- [27] Carroll, (1988), 523-24; Gingerich, *et al.*, (1990):250.
- [28] Ernst Mayr, *Animal Species and Evolution* (Cambridge, MA: Harvard University Press, 1963), 238 (citing the work of J. B. S. Haldane). See also, Robert Wesson, *Beyond Natural Selection* (Cambridge, MA: MIT Press, 1991), 53. In this regard, it is noteworthy that the skull of *Pakicetus* was only one-half the size of the skulls of *Ambulocetus*, *Rodhocetus*, and *Indocetus*. Gingerich, *et al.*, (1994):844-845.
- [29] This fact is noted in G. A. Mchedlidze, *General Features of the Paleobiological Evolution of Cetacea*, trans. from Russian (Rotterdam: A. A. Balkema, 1986), 91.
- [30] George Gaylord Simpson, "The Principles of Classification and a Classification of Mammals," *Bulletin of the American Museum of Natural History* 85 (1945):214.
- [31] A. V. Yablokov in "Convergence or parallelism in the evolution of cetaceans," *International Geology Review* 7 (1965):1463.
- [32] Lawrence G. Barnes, "Search for the First Whale," *Oceans* (March 1984):22. The old consensus has been broken, but the dispute remains unsettled. "Relationships of Mysticeti and Archaeoceti are uncertain, with insufficient fossil evidence to demonstrate close relationships." Edward Mitchell, "A Phylogeny of Cetacea," *American Zoologist* 15, no. 3 (1975):824. "Debate has continued without resolution as to whether the Archaeoceti were ancestral to the Odontoceti, the Mysticeti, or both." Barnes and Mitchell, 595. "The fossil record of cetaceans

is incomplete and has not provided unequivocal evidence on whether archaeocetes gave rise to one, both, or neither suborder of living whales." Michel C. Milinkovitch, Axel Meyer, and Jeffrey R. Powell, "Phylogeny of All Major Groups of Cetaceans Based on DNA Sequences from Three Mitochondrial Genes," *Molecular Biology and Evolution* 11, no. 6 (1994):939.

- [33] Fordyce and Barnes, 426.
- [34] Fordyce and Barnes, 420, 431. They label remingtonocetids as "bizarre." Elsewhere Barnes calls them "a radically divergent group of archaeocetes" and describes them as having "almost crocodile-like skulls and teeth." Lawrence G. Barnes, "Whale" in *McGraw-Hill Yearbook of Science & Technology 1993* (New York: McGraw-Hill, 1993), 484.
- [35] Quote from Andre Wyss, "Clues to the origin of whales," *Nature* 347 (1990):428-29. Banister and Campbell likewise remark, "The origins of present-day cetaceans are poorly known." Banister and Campbell, 294. Regarding phylogenies, see Barnes and Mitchell, 594; Barnes, (1984):21; Lawrence G. Barnes, Daryl P. Domning, and Clayton E. Ray, "Status of Studies on Fossil Marine Mammals," *Marine Mammal Science* 1, no. 1 (1985):17; Barnes, (1993):483.
- [36] "It is now clear that several derived archaeocetes, such as *Basilosaurus*, did not give rise to modern taxa." Thewissen, 173.

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Creation and Evolution — a Side Issue?

by Helen "Penny" Fryman

In academia, on the internet, and in churches there are tremendous battles being waged regarding the creation-evolution controversy. How important are they? Can't people be won to Christ without reference to Genesis 1-11? Isn't bringing people to Christ what we are supposed to concern ourselves with?

People do think and ask about the world in which we live, and the stars we see above. And they do have questions about it all. So, do we approach Christ via creation, or just not worry about creation? Is it just a minor point in the scheme of God's Word? The best thing to do is to go to the Word to find out.

In Revelation 4, we find the first two of a series of praise hymns. The first one, in verse 8b, praises God for who He is:

Holy, holy, holy
is the Lord God Almighty
who was, and is, and is to come.

It is interesting that, before the beautiful praises in the next chapter concerning Christ's sacrifice and His redemption of mankind, there is this hymn, at the end of chapter 4 (verse 11):

You are worthy, our Lord and God
to receive glory and honor and power
for you created all things,
and by your will they were created
and have their being.

This hymn attributes glory, honor, and power to the Lord because of creation. Reading through Isaiah chapters 40-45, we also find the following:

"To whom will you compare me?
Or who is my equal?" says the Holy One.
Lift your eyes and look to the heavens:
Who created all these?
He who brings out the starry host one by one,
and calls them each by name.
Because of his great power and mighty strength,
not one of them is missing. [40:25-26]

This is what God the LORD says —
he who created the heavens and stretched them out,
who spread out the earth and all that comes out of
it,
who gives breath to its people
and life to those who walk on it:
"I, the LORD, have called you in righteousness;
I will take hold of your hand...." [42:5-6a]

This is what the LORD says —
your Redeemer, who formed you in the womb;
"I am the Lord,
who has made all things,

who alone stretched out the heavens who spread
out the earth by myself...." [44:24]

For this is what the LORD says —
he who created the heavens, he is God;
he who fashioned and made the earth,
he founded it,
he did not create it to be empty,
but formed it to be inhabited —
he says:

"I am the LORD,
and there is no other." [45:18]

It is evident that God has a very strong identification with creation itself. He uses creation as a witness to Himself as well as saying, in effect: "See this? All this? I made it. It is mine." I think we should do no less when talking to others about our Lord. At some point, it needs to be stated, "See all this? See the heavens and the earth and all, down to the tiniest subatomic particle? God made it. He did it, and it is HIS."

When we talk science to non-believers, we may not be using Bible words, but we are following the example of God Himself as He spoke through the prophet Isaiah. We are praising Him for creation in the same way the 24 elders do in Revelation.

Of course the Bible itself is totally sufficient for those who already know it is God's Word. But for those to whom it has been presented only as a myth or legend, God has also given us His creation to use in showing, as the hymnist has written:

O Lord my God! when I in awesome wonder
Consider all the worlds Thy hands have made.
I see the stars, I hear the rolling thunder;
Thy power throughout the universe displayed:

Then sings my soul, my Savior God, to Thee:
How great Thou art, how great Thou art!....

Looking to creation, then, as evidence for God and His power and provision makes the creation-evolution dispute important in our Christian witness. It is not a side issue.

Penny Fryman is the mother of six children, ages 13-24. She works in the education system at the county level — teaching children who are either falling through the cracks of the system for one reason or another, or those who for various reasons are not in the public classrooms.

Scripture quotations are from the NIV Study Bible, ©1985, Zondervan. "How Great Thou Art" is ©1955, Manna Music.

Speaking of Science

Commentaries on recent news from science

Wolves, Dogs, and Foxes

A study of mitochondrial DNA in dogs, wolves, coyotes, and jackals supports the hypothesis that the wolf was the ancestor of dogs. [1] However, the controversial aspect of the research is the proposed date for domestication of the dog: over 100,000 years ago compared to the archaeologists' 14,000 years. The researchers also concluded that there were two unique common ancestors of dogs, implying two separate domestication events.

They also found evidence that dogs had been bred back to wolves ("multiple founding events") to increase genetic variability for further selection. Apparently there was no evidence of breeding dogs back to coyotes or jackals. However, because the mtDNA is maternally inherited, the article noted that they could not detect cases of interbreeding between female dogs and male coyotes or jackals.

More interesting to creationists, perhaps, is a follow-up letter which appeared in a later issue of the same journal. [2] The authors cited a report about domestication in silver foxes. [3] Similar changes in silver foxes were achieved in one man's lifetime (about 20 fox generations) rather than in the 100,000 years proposed for domestication of the wolf. These changes included a modified reproductive cycle (2 estrus cycles per year rather than 1), barking behavior, drooping ears, and altered coloration.

[1] Vila, C. *et al.* 1997. Multiple and ancient origins of the domestic dog. *Science* 276:1687-1689. See also research report by Morell in the same issue (pp. 1647-1648).

[2] Federoff, N.E. and R.M. Nowak. 1997. Man and his dog. *Science* 278:205.

[3] D.K. Belyaev. 1979. *J. Hered.* 70:301.

— submitted by Glen W. Wolfrom

A Dispute for the Birds

The June 1998 issue of *Scientific American* includes a letter from Alan Feduccia, Larry Martin, Zhonghe Zhou, and Lian-Hai Hou written in response to the article "The Origin of Birds and Their Flight" that appeared in the February 1998 issue. The focus of the letter is the illustration of *Confuciusornis* that appeared on the cover. Feduccia, Martin, Zhou, and Hou were the original describers of *Confuciusornis*, and they believe it was grossly misrepresented in the illustration. For example, they write: "Although *Confuciusornis* is a primitive, sauriurine bird, in life it would have appeared very much like a normal perching bird, such as a small crow, not a feathered dinosaur. The cover illustration has nothing to do with *Confuciusornis*, ..." Later they write, "What is particularly disturbing is that the bird shown has a vertical, dinosaurian pubis, but the fossils show a backwardly directed pubis, as in modern birds."

Padian and Chiappe, the authors of the original article, open their reply letter with, "Most readers can easily distinguish between

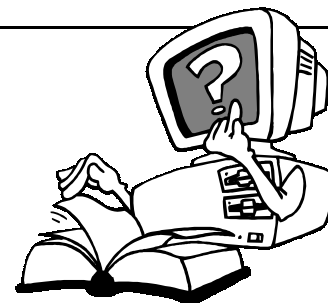
science and art. And while some license is necessary in restorations of extinct animals, artist Kazuhiko Sano worked from Feduccia *et al.*'s own reconstruction published in *Science* in 1996." They defend the illustration and then suggest that Feduccia *et al.* are essentially cranks who don't know when they've lost. They write, "All their well-worn objections have been answered. This 'debate' ceased to be scientific a decade ago."

I find a couple of things particularly interesting. First, it highlights the degree of subjectivity that exists in such depictions. Though *Confuciusornis* is now known from hundreds of specimens, leading experts are diametrically opposed regarding the propriety of this illustration.

Second, it shows how the label "unscientific" is used to delegitimize the position of opponents. The fact Feduccia *et al.* publish their critiques of the dinosaur origin of birds in leading science journals does not insulate them from this charge. It is a political weapon, so those who wield it are not terribly concerned with its accuracy.

— submitted by Ashby L. Camp

What



Are

Creationists Thinking about ...?

As new scientific discoveries make the headlines, have you ever wondered how your fellow creationists are reacting? Have you ever thought of a "crazy" new idea about origins and wanted to bounce it off another creationist?

Now you can keep in contact daily with creationists from all around the world. The Creation Research Society sponsors **CRSnet**, an online community of hundreds of creationists who have e-mail access to the Internet. Not only do participants discuss the latest scientific findings related to origins, but they also receive news about the CRS — its research, publications, and activities — and other creation-related news. A directory of participants is provided, as time permits.

For more information, send an e-mail message to Glen Wolfrom at <CRSnetwork@aol.com>. Participation is limited to those who adhere to a recent creation and a worldwide catastrophic flood.

Creation Calendar

Note: Items in "Creation Calendar" are for information only; the listing of an event does not necessarily imply endorsement by the Creation Research Society.

June 28-July 3

Twin Peaks Family Science Adventure
Alpha Omega Institute, Grand Junction, CO
(970)523-9943

August 3-8

Developing & Systematizing the Creation Model of Origins
1998 International Conference on Creationism (ICC)
Geneva College, Beaver Falls, PA
Creation Science Fellowship
Dennis Wert, (412)341-4908

August 9-11

Niagara Falls Bus Tour (following the 1998 ICC)
Creation Quest Expeditions, Creation Research Society
John Meyer, (520)636-1153

August 9-14 or 16-21

Red Cloud Family Mountain Adventure
Alpha Omega Institute, Grand Junction, CO
(970)523-9943

August 20-26

Bob Marshall Wilderness Trail Ride (Montana)
Creation Quest Expeditions, Creation Research Society
John Meyer, (520)636-1153

September 28 - October 3

San Juan Mountains Trail Ride (Colorado)
Creation Quest Expeditions, Creation Research Society
John Meyer, (520)636-1153

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