

A Whale of a Tale?

Fossilised bones found in Pakistan are claimed to be those of a 'walking whale',¹ supposedly an ancestor of today's whales. The main claim of Thewissen *et al* is that this was a **walking** whale. That is, it had hind limbs which functioned as legs on land and paddles/flippers in water.

The skeleton is incomplete, with critical parts missing. It is also highly fragmented. To establish hind leg function it is necessary to have the pelvic girdle to demonstrate that the leg bones (femur and small proximal piece of tibia) belong to the rest of the skeleton and to determine muscle attachments. The pelvic girdle is missing!

With the forelimbs, the humerus and scapula are missing which are again crucial to interpreting function, as well as establishing connectedness to the skeleton.

Prothero *et al*² suggest five features to unite whales:-

- (1) All incisors parallel with the tooth row — not preserved in *Ambulocetus*
- (2) Medial lambdoidal crest semicircular — not preserved in *Ambulocetus*
- (3) Nasals retracted — rostrum (snout) not preserved in *Ambulocetus*
- (4) Protocones small
- (5) Accessory cusps large

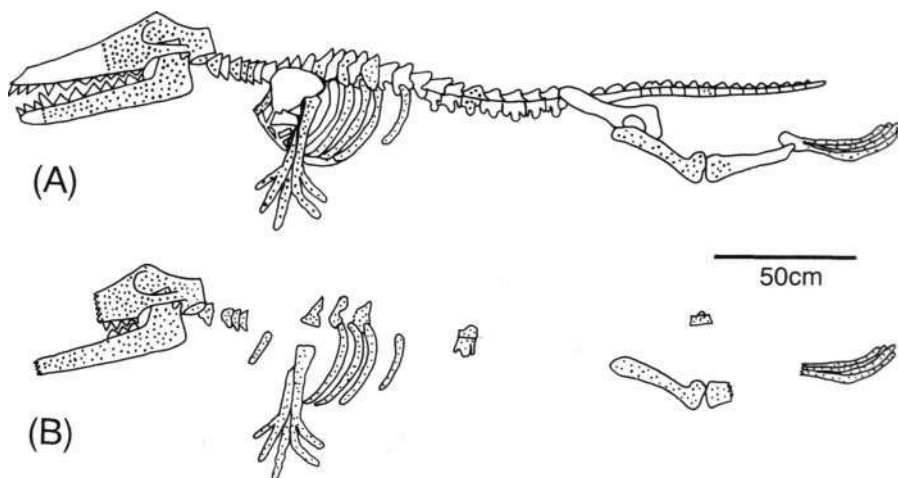
Thewissen *et al*. use their own list of purported whale characters to establish *Ambulocetus* as a whale, but as Berta³ points out, some of these characters may have a broader distribution than whales. Thewissen *et al*. use a phylogenetic definition of a whale. That is, they assume common ancestry (evolution) and so justify including the supposed ancestor with the whales, choosing characters which were common as their criteria. In the footnotes, the authors mention one major difference viz. 'Unlike most other archeocetes, the pterygoid processes are enormous ...'; but there are many big differences,

including the degree of variation and specialization of vertebrae.

A major characteristic of whales is the horizontal tail flukes. Involvement of the tail in swimming requires strong caudal vertebrae with large processes for muscle attachment. Thewissen *et al*. show **one** 'caudal' vertebra which has almost no processes for muscle attachment. Furthermore, this one caudal vertebra was not even found with the rest of the skeleton, being 'referred material', found 5 metres above. In other words, the whole of the lumbar, pelvic and caudal parts of *Ambulocetus* were 'constructed' from just one lumbar vertebra, one femur, a small piece of tibia (no fibula, no pelvis), a small piece of the ball of the ankle joint and a few foot and toe bones. And yet a detailed description is given of how the animal **moved** in water and on land! The robust femur and presence of a hoof suggest that *Ambulocetus* was a land-dwelling creature.

The paper was received by **Science** journal on 28 October, 1993 and ac-

cepted on 3 December, 1993, indicating that the paper passed the refereeing process with no, or only minor, changes being required before publication, and yet the paper is full of highly conjectural material. The reconstruction of the skeleton **assumes** it is a 'whale'. The authors said, '*Little is known about the tail, but there are always many caudal vertebrae in primitive cetaceans and their relatives*' and so they sketched in a long tail for *Ambulocetus*! There are several paragraphs of conjecture about locomotion on land and in water and yet there is not even a pelvis or any associated vertebrae! The movement of the forelimbs is also presented in detail and yet there is no humerus or scapula! If a paper of this quality was submitted for publication in an empirical field of science such as molecular genetics it would be rejected outright. Why then was this accepted so readily? It's probably an indication of the status of paleontology as a 'science' and also the desperate desire of neo-Darwinian evolutionists to find some fossil evidence of an 'intermediate' form to reinforce belief in gradualism or indeed in evolution itself,



(A) Reconstruction of *Ambulocetus*, 'at the end of the power stroke during swimming', by Thewissen *et al*.

(B) The stippled bones were all that were found. With the 'additions' removed there really isn't much left of *Ambulocetus*!

as the lay newspapers obligingly and uncritically report the 'find'.

The *Ambulocetus* fossil was found in 'lower to middle Eocene' beds. Fossils of whales of the suborder Archeoceti have been found in lower Eocene strata,⁴ so *Ambulocetus* is unlikely to be an ancestor of modern whales, as claimed by Thewissen *et al.*

There are too many crucial parts missing to be sure what *Ambulocetus* is. Whatever it is, it is unlikely to be a walking ancestor of the whales.

REFERENCES

1. Thewissen, J. G. M, Hussain, S. T. and Arif, M., 1994. Fossil evidence for the origin of aquatic locomotion in Archeocete whales. *Science*, 263:210-212.
2. Prothero, D., Manning, E. M. and Fischer, M., 1988. *In: The Phylogeny and Classification of the Tetrapods*, M. J. Benton (ed.), Clarendon, Oxford, Vol. 2, pp. 201-234.
3. Berta, A., 1994. What is a whale? *Science*, 263:180-182.
4. *Encyclopedia Britannica*, 15th Edition, 1992, Vol. 23, p. 434.

D.B.

Kentucky Fried Dinosaur?

Research by Barreto *et al.*¹ on juvenile duck-billed dinosaur bones from Montana shows a lot of similarities to chickens. The arrangement of cells around the growth plates is very much bird-like rather than like reptiles or mammals and suggests that bone growth was rapid, as in birds. It also suggests that the dinosaurs must have been endothermic (warm-blooded) rather than exothermic (like reptiles) because fast bone growth requires a high metabolic rate, as in endothermic creatures. The ultrastructure of bone cells is also very similar to birds. Perhaps dinosaurs were designed just like birds (without feathers).

If bone growth occurred quickly, it suggests that the juvenile phase in dinosaurs was relatively short and that they did not continue growing throughout their lives, as reptiles do. This would mean that juvenile dinosaurs taken on the Ark would mature quickly enough to live independently

after the Rood. Presumably the largest dinosaurs would take a couple of years to reach full size.

It is fascinating that these bones, which are claimed to be 72 to 84 million years old, have not been mineralised. The calcium:phosphorus ratios in the bones were comparable with modern bird bones. It is worth reading the original paper to see the fine histological detail preserved, just to reinforce the sense of wonder at how the bones could possibly be millions of years old. The degree of preservation accords better with the creationist model which presupposes such bones would be thousands of years old, not millions.

REFERENCES

1. Barreto, C, Albrecht, R. M., Bjorling, D. E., Horner, J. R. and Wilsman, N. J., 1993. Evidence of the growth plate and the growth of long bones in juvenile dinosaurs. *Science*, 262:2020-2023.

D.B.

The Religious Nature of Evolution

Renowned Canadian science philosopher Dr Michael Ruse made astonishing admissions about the religious nature of evolution at a symposium titled 'The New Antievolutionism' (during the 1993 annual meeting of the American Association for the Advancement of Science.)¹ These statements shocked his colleagues because he has written a book, **But is it Science?**, denouncing creationism because it is religious and was the last person expected to give the game away.

He appeared to admit that evolution is based upon a dogmatic exclusion of a miraculous creation/creator — in effect, a faith commitment to naturalism, the unprovable, religious, belief that no supernatural element exists or is relevant.

Ruse said this (emphasis added): *'at some very basic level, evolution as a scientific theory makes a*

commitment to a kind of naturalism, namely that at some level one is going to exclude miracles and these sorts of things, come what may.'

He went on to defend this non-provable assumption by the fact that, in his view, it works. Nevertheless, said Ruse, *'evolution, akin to religion, involves making certain a priori or metaphysical assumptions, which at some level cannot be proven empirically.'*

Further on, he said that one can't just say that evolution is science, creation is religion, period. One has to have some other

'coherence theory of truth, or something like that. I still think that one can certainly exclude creation science on those grounds.'*

Law professor Phillip Johnson has

severely criticized Ruse's anti-creation testimony at the 1982 Arkansas trial at which the sorts of admissions above failed to surface. Johnson quoted Ruse as stating that it is OK to say different things on this subject to different audiences:

I mean I realize that when one is dealing with people, say, at the school level, or these sorts of things, certain sorts of arguments are appropriate. But those of us who are academics... should recognize... that the science side has certain metaphysical assumptions built into doing science, which — it may not be a good thing to admit in a court of law — but I think that in honesty that we should recognize, and that we should be thinking about some of these sorts of things.'

Many people do not realise that the