

Of course, in view of the fact that I have very generously made the problem much more difficult by assuming that all the Cretaceous carbonates are chalks, all the foregoing discussion is rather academic. Overall, it must be said that it does not appear that Johns has read my work too closely, as his arguments are not only fallacious but (in most cases) have already been dealt with in my original 1986 paper and the attached replies to the uniformitarians' criticisms. In conclusion, it remains, in fact,

possible to reconcile the coccolith deposits with an earth of only several thousand years' age.

I would like to close by pointing out that all my works have recently been reprinted in a single volume: **Studies in Flood Geology**, by John Woodmorappe (1993). It is available from the Institute for Creation Research, PO Box 2667, El Cajon, California, 92021, United States of America for US\$12.95 plus postage.

**REFERENCES**

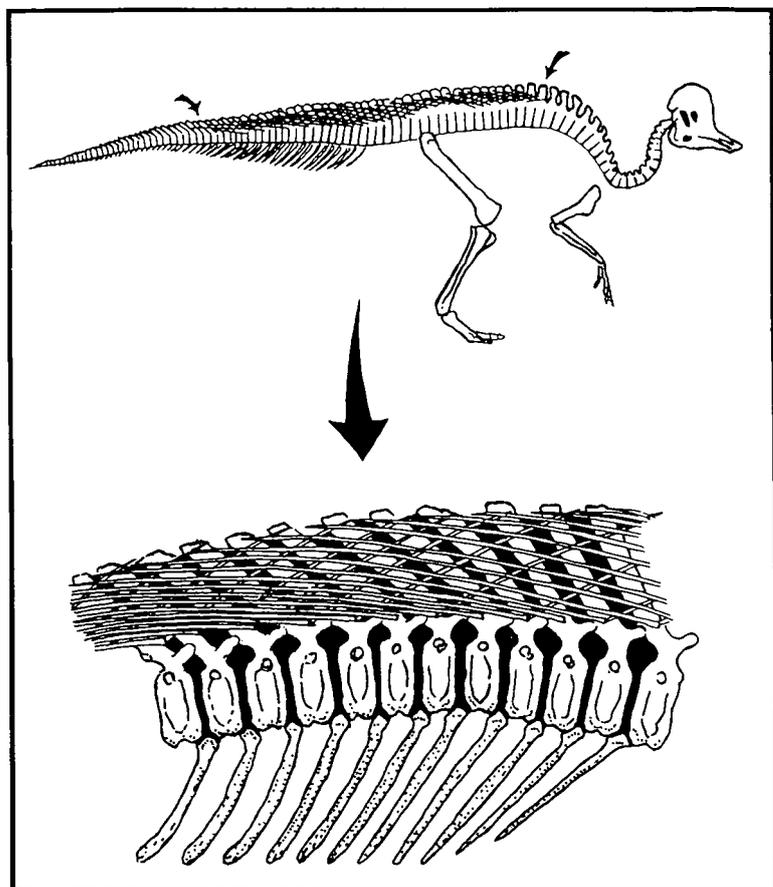
1. Woodmorappe, John, 1986. The antediluvian biosphere and its capability of supplying the entire fossil record. *In: Proceedings of the First International Conference on Creationism*, R. E. Walsh, C. L. Brooks and R. S. Crowell (eds), Creation Science Fellowship, Pittsburgh, pp. 205-218.
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3. Woodmorappe, Ref. 1, p. 216.
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**DINOSAURS AND DRAGONS**

Dear Editor,

D. (Lee) Niermann wrote about dinosaurs and dragons in **CEN Tech. J.**, 8(1):85-104. I very much agree with his conclusions and would like to add an interesting detail. When the Bible says in Job 40 about *behemoth* (which means literally a very large animal), '*He moveth his tail like a cedar: the sinews of his thighs are knit together*', this can be interpreted as a special structure in the pelvic region of the large animal for the purpose of controlling tail movements. This type of extraordinary structure can only be found in dinosaurs (see Figure 1). It is incredible how exactly the Bible gives us the description of a dinosaur.

Pekka Reinikainen,  
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*Figure 1. Drawing of knit bony tendons which enable control of the giant tail of a Corythosaurus (from Bakker, R., The Dinosaur Heresies, p. 155).*

**PUNCTUATED EQUILIBRIUM**

Dear Editor,

I was quite disappointed in reading Don Batten's article<sup>1</sup> to realize that creationists still fail so miserably to understand punctuated equilibrium.

**Punctuated Equilibrium  
Comments**

It is extremely important for us as humans that, as we evaluate the writings of **others**, we carefully consider those writings in their context (as we must consider the context of biblical passages, the milieu of literary works,

etc.). In this light it is important to note that Eldredge and Gould's punctuated equilibrium model was birthed and defended in the context of the gradualist school of evolutionary theory. If this was adequately understood most of the misconceptions about punctuated equilibrium would (I believe) evaporate.

Gradualists have traditionally held certain conceptions of how biological transformation must have occurred in the past — within species, between species, and between higher groups. To oversimplify,<sup>2</sup> gradualists understood changes at all these levels to be similar enough to simply extrapolate the results of early artificial breeding experiments to the origin of varieties, species, and finally major groups. Thus in their understanding of the world, all changing characters in a species are expected to change in concert within an entire species population along a continuous path at a constant rate. For the desirable purpose of simplicity and theoretical elegance this idea was thought to operate at all scales of change (from transitions between varieties all the way up to transitions between phyla and kingdoms). **If** such an evolutionary concept **were** a reflection of reality, the fossil record of **species** might be expected to show:—

- (1) an abundance of interspecific stratomorphic intermediates;
- (2) interspecific stratomorphic intermediates with similar degrees of transformation in all changing characters;
- (3) a continuity or near-continuity between species (creating unambiguous species lineages); and
- (4) documentable change within species.

Furthermore, since it was to operate on higher levels in a similar way, one would expect to see transitions between **higher groups** with:—

- (5) an abundance of stratomorphic intermediates between higher groups;
- (6) stratomorphic intermediates between higher groups with similar degrees of transformation in all changing characters;
- (7) a continuity or near-continuity between higher groups (creating unambiguous phylogenies among higher groups); and
- (8) documentable change within higher groups.

In the midst of this view of the world, Eldredge and Gould advanced (and later strongly defended) their observation that there were no undisputed examples of interspecific stratomorphic intermediates in the fossil record. For all practical purposes the lack of interspecific stratomorphic intermediates challenged gradualist claims (1) through (3). They further documented species stasis, which challenges gradualist claim number (4). It is from these two observations — which challenged gradualist speciation claims — that Eldredge and Gould proposed **punctuated equilibrium**. My first claim is that punctuated equilibrium is basically a palaeontological theory — **NOT a biological theory**. The only **obligate** core of punctuated equilibrium is the paleontological observations of stasis and ‘abrupt appearance’; the **optional** component to punctuated equilibrium is the mechanism invoked to explain that observation.<sup>3</sup> Many potential mechanisms can be invoked, including non-biological mechanisms (for example, rapid burial of distinct species, as in the Flood model). It **must** be understood that biological mechanisms are **not** necessary components of punctuated equilibrium theory. It is thus **not** valid to equate (or confuse) punctuated equilibrium with speciation theory or any particular speciation theory (for example, peripheral isolate theory of allopatric speciation, Goldschmidt’s speciation theories, saltation theories, or ‘punctuational models of speciation’), such as Batten does in his article. Nor is it valid to equate (or confuse) punctuated equilibrium with macroevolutionary theory or any particular manifestation of macroevolutionary theory (for example, species selection), such as Batten does in his article.

Returning to the origin of punctuated equilibrium, it needs to be understood that Stephen Jay Gould, like many scientists, prefers simple, elegant theories to those that are convoluted. This desire led to an early difficulty for

Gould. Paleontologically, the pattern of species stasis and abrupt appearance was at least roughly paralleled in the fossil record of higher taxa. Yet, although a biological mechanism seemed to be readily available for explaining the species data, it was not evident that that same mechanism could be extrapolated to explain the similar pattern at higher taxonomic levels. In fact, no mechanism for the pattern at higher level seemed to be available. He was therefore constrained to present the theory of punctuated equilibrium for the observations on **species** and hope that further work would produce an acceptable theory for the observations on higher taxa. It was also hoped that such work would produce an elegant theory which would explain **all** the paleontological observations — both at the level of the species and at the level of higher groups. This is the yet-to-be-forged ‘coherent punctuational theory’ to which Gould alluded in one of the quotes given in Batten’s article. My second claim is that punctuated equilibrium is only about species — and **not about higher groups**. As Batten indicated in his article, punctuated equilibrium theory was originally intended to be a theory about species. It is important that punctuated equilibrium (if it is ever to be useful to creationists and evolutionists alike) continues to be restricted to a study of species (as Gould and Eldredge always have). It is not valid to equate or confuse punctuated equilibrium theory with transitions between higher taxa, or with Gould’s ‘coherent punctuational theory’ as Batten does in his article.

A last point on punctuated equilibrium is that to my knowledge neither Eldredge nor Gould has ever claimed that **all** fossils fit into a punctuated equilibrium pattern, or that **all** organisms must fit a punctuated equilibrium mode. It was always presented as a dominant or usual mode in the history of life. It is thus not valid to accuse Gould or anyone else as changing on that issue just by accepting

other modes of change, as Batten does in his article.

### Comments *not* on Punctuated Equilibrium

Stephen Jay Gould, like many scientists, does not just think and write about one topic (for example, punctuated equilibrium). Thus although punctuated equilibrium does not necessarily have to do with evolutionary theory, he also writes about evolutionary theory. Likewise, although punctuated equilibrium applies only to species, he also makes paleontological observations on the higher groups. In this arena (outside of punctuated equilibrium discussions) he has challenged other gradualist claims. For example, he claims that rather than stratomorphic intermediates between higher groups being common, as gradualists might expect, they are actually very rare, thus challenging gradualist claims (5) and (7). He has never (to my knowledge) claimed there are **no** stratomorphic intermediates between higher groups or even that there are **no undisputed** stratomorphic intermediates between higher groups, as Batten has claimed in his article. Beyond this, Gould not only claims that the stratomorphic intermediates between higher groups are actually rarer than gradualists might expect, but that they are actually of a form unexpected by gradualists. Rather than having similar degrees of transformation in all changing characters, the stratomorphic intermediates have turned out to be mosaics or chimeras, where different characters are simply in different combinations rather than similar stages of evolution. This observation challenges gradualist claim number (6). In his book *Wonderful Life*<sup>4</sup> Gould has reinforced these claims and gone further to claim that within-group change has been exaggerated in at least some taxa, thus potentially challenging gradualist claim number (8).

I would claim that punctualists in general, and Gould in particular, have

made enormous strides in struggling with evolutionary and fossil record issues which truly challenge their world view. It is my opinion that rather than insulting them (for example, by not understanding their theories), we should encourage them, as they are actually moving in the right direction empirically (although they are unaware of where they're going!). I would also encourage us all to let others change their positions over time and not use the past claims of people against them without first understanding where they stand now. I make this last point because Stephen Jay Gould's position has changed over time — and should, as should all our positions with increased knowledge.

Dr Kurt P. Wise,  
Dayton, Tennessee,  
UNITED STATES OF AMERICA.

### REFERENCES

1. Batten, D., 1994. Punctuated equilibrium: come of age? *CEN Tech. J.*, 8(2):131–137.
2. This following discussion is an extreme oversimplification. Many primary researchers in evolutionary biology did not hold these views. However, the textbooks and a vast majority of the lesser-informed evolutionists held to this general view of evolution.
3. This is regardless of how proponents of punctuated equilibrium actually feel, or write, or are perceived to write!
4. Gould, S. J., 1989. *Wonderful Life: The Burgess Shale and the Nature of History*, Norton, New York, New York, 347 p.

### The Author Replies . . .

I agree with much of what Kurt Wise has written, but I don't believe I have misconstrued, or taken out of context, what Gould or Eldredge have written on punctuated equilibrium (PE). The purpose of a review is to draw together what authors have written on a topic, and where appropriate to critique it. I can only review what authors have written, and I think I have done that. There is a curious footnote in Wise's letter which possibly sheds light on the basis for his criticism. Wise

says,

*'The only obligate core of punctuated equilibrium is the paleontological observations of stasis and "abrupt appearance"; the optional component to punctuated equilibrium is the mechanism invoked to explain that observation'*

and a footnote (3) adds,

*'This is regardless of how proponents of punctuated equilibrium actually feel, or write, or are perceived to write!'*

This is an incredible statement. How is this reviewer to do his work then? If I cannot read what the major proponents of PE have written and from that understand what PE is all about, how then am I to review PE? Wise has his version of PE (a valid and useful creationist contribution), but I reviewed mainly the work of the major evolutionist proponents, Gould and Eldredge, the originators of the concept. Wise has reduced PE to the elements that evolutionists and creationists can hold in common and that's fine, but let us not kid ourselves that that is the full story. It seems that since I did not come up with Wise's version of PE, I have failed in the review!

I'm sorry if Wise sees my review as insulting to Gould — I don't think it is, except perhaps in my criticism of Gould's uncritical acceptance of the 'walking whale', *Ambulocetus natans*, and the story of whale evolution. In my concluding statement I wrote,

*'undoubtedly Gould and Eldredge have done palaeontology a great service by giving the real data of palaeontology, that is, stasis and abrupt appearance, theoretical breathing space.'*

I think I have given credit where credit is due. In describing the shift in position of Gould from the 1970s, with PE being pushed as virtually replacing phyletic gradualism, to the 1993 review where it is merely complementary, I merely called it as it is. Levinton, an evolutionist, saw the shift also. In a response to Gould and Eldredge's 1993 review, Levinton said,

*'Gould and Eldredge have*

*devolved their claims of punctuation from an "alternative" to being "complementary" [to gradualism].*<sup>1</sup>

Wise wants to divorce PE from biological mechanisms for speciation. However, more than half of Eldredge and Gould's original 1972 paper is devoted to allopatric speciation and re-interpreting some of the published fossil data in the light of this **biological** theory. Indeed they tried to claim that the concepts of abrupt appearance and stasis were palaeontological predictions derived from their understanding of allopatric speciation. In 1977 they wrote, '*Our model of punctuated equilibria is a hypothesis about mode.*'<sup>2</sup> (Emphasis mine.) That is, they saw it primarily as a biological mechanism of evolution. Later, they wrote of allopatric speciation models as being '*. . . the very heart and soul of punctuated equilibria.*'<sup>3</sup> This does not sound like an optional component of PE, as claimed by Wise. However, I agree with Wise that PE is basically a palaeontological theory, or rather observation, but Eldredge and Gould have tried to cast it as a prediction of the biological theory of allopatric speciation.

Wise also wants to completely divorce PE from macroevolution, but this is not possible either. Again the original Eldredge and Gould paper devoted a section to '*some extrapolations to macroevolution*'. In their 1977 paper they wrote at length on '*Punctuated equilibria as the basis for a theory of macroevolution: the speciation theory.*'<sup>4</sup> Furthermore, in the summary to their 1993 review they stated two significant implications of PE as:

*'the recognition of stasis . . . and . . . the recasting of macroevolution as the differential success of certain species.'*<sup>5</sup>

Wise wants to recognise the first but ignore the second. It is well to remember that macroevolution still entails speciation.

Wise says that, to his knowledge, Gould '*has never . . . claimed there are no stratomorphic intermediates between higher groups . . .*' In my paper

I cited Gould as saying,

*'The absence of fossil evidence for intermediary stages between major transitions in organic design . . . has been a persistent and nagging problem for gradualistic accounts of evolution.'*<sup>6</sup> (Emphasis mine.)

I stand by my review. I believe I have accurately reviewed PE, **as perceived by Gould and Eldredge**, although I concede that this may encompass more than the PE of Wise.

Dr Don Batten  
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AUSTRALIA.

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4. Gould and Eldredge, Ref. 2, pp. 139-145.
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6. Gould, S. J., 1980. Is a new and general theory of evolution emerging? **Paleobiology**, **6**:127.

## SPEED OF LIGHT DECAY

Dear Editor,

Lots of statistical treatments, based mainly on regression analysis, have been submitted to this journal claiming that the hypothesis of Barry Setterfield that *c*, the speed of light, has decreased in the recent past is without proper statistical and scientific foundation. I cannot recall that any author has submitted the historic measurements of *c* to an analysis of variance. This test has been used to establish the significance or otherwise of regression equations but has not been applied directly to the *c* data itself. I have therefore performed an analysis of variance on this historic data. This analysis compares the variance **within** each individual determination of *c* with

the variance **between** each individual determination. The result of this test indicates that there is a far greater statistical variation within the estimates of *c* than there is between the estimates. The result is highly significant ( $p = <0.01$ ). This result is not surprising when one considers that the early measurements using very crude methods carry very large standard errors compared with the measurements made post-1947 using electronic methods and whose standard errors are very small. This result supports the claim of Aardsma, Brown, Evered and others that *c* is a real constant, and means that the claim of Setterfield, Norman and Montgomery that *c* has undergone a statistically significant reduction in the last 300 years cannot be substantiated when the true nature of the scatter of the data is taken into consideration.

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## NAMES FOR GOD IN GENESIS

Dear Editor,

May I be permitted to add something to Dr Taylor's paper on Genesis, which appeared in **CEN Tech. J.**, **8**(2):204-211? Dr Taylor has done us all a great service in helping to restore our faith in the truth and integrity of the book of Genesis. We are, however, left with one big question. How did the covenant name for God find its way into Genesis? For we are plainly told, when God appeared to Moses, that the name Jehovah (YHWH) was a new revelation, not before revealed to the people of God. In Exodus 6:3 we read, '*I am the Lord (Jehovah or YHWH). I appeared to Abraham, to Isaac and to Jacob as God Almighty, but by my name Jehovah I did not make myself known to them.*' This seems plain enough, and on the basis of this statement we should not