to the comparatively *gradual* disintegration of Pangaea in the Jurassic. Since then, Robinson,[13] citing Fouts,[14] has distanced himself from that view in print; the rest of us are also non-committal.

In principle, we agree that there should be interaction between the relevant scientific disciplines in discussing how Genesis relates to the geological record. We do not, however, believe that McIntosh *et al.* have identified the essential problems of the proposals currently on offer, nor that there is much value in criticism that fails both to understand and to address basic geological data.

None of us is satisfied with the model that we proposed in 1996. In the light of the problems encountered, our thinking has moved on, albeit not in a direction that McIntosh *et al.* would approve of. On the other hand, we remain convinced that Genesis preserves a trustworthy historical record of a global Flood.

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References

1. McIntosh, A., Edmondson, T. and Taylor, S., Flood models: the need for an integrated approach, *CEN Tech. J.* **14**(1):52–59, 2000.
2. McIntosh, A., Edmondson, T. and Taylor, S., Genesis and catastrophe: the Flood as the major biblical cataclysm, *CEN Tech. J.* **14**(1):101–109, 2000.
3. Robinson, S.J., Can Flood geology explain the fossil record? *CEN Tech. J.* **10**:32–69, 1996.
4. Garton, M., The pattern of fossil tracks in the geological record, *CEN Tech. J.* **10**:82–100, 1996.
5. Garner, P., Where is the Flood/post-Flood boundary? Implications of dinosaur nests in the Mesozoic, *CEN Tech. J.* **10**:101–106, 1996.
6. Tyler, D.J., A post-Flood solution to the chalk problem, *CEN Tech. J.* **10**:107–113, 1996.
7. Garner, P., Continental flood basalts indicate a pre-Mesozoic Flood/post-Flood boundary, *CEN Tech. J.* **10**:114–127, 1996.
8. McIntosh *et al.,* Ref. 2. p. 106.
9. McIntosh *et al.,* Ref. 1. p. 56.
10. McIntosh *et al.,* Ref. 1. p. 57.
11. McIntosh *et al.,* Ref. 1. p. 53.
12. McIntosh *et al.,* Ref. 2. p. 105.
13. Robinson, S.J., Genealogy is not chronology, *Origins*, *Biblical Creation Society*, **26**:15–21, 1999.
14. Fouts, D.M., Peleg in Genesis 10:25, *J. Evangelical Theological Society* **41**:17–21, 1998.

McIntosh, Taylor and Edmondson reply:

We appreciate the opportunity to address the criticisms of Garner, Garton, Robinson and Tyler, and to further clarify our position. We address in order the points raised in their letter:

The acknowledgements at the end were meant in good faith. We simply mentioned the helpful exchanges that had taken place, particularly with Michael Garton who painstakingly explained their viewpoint. We recognise that strong convictions are held on both sides of this debate concerning the biblical texts about the Flood, and the geological mechanisms during the Flood and afterwards. Our aim, as we stated in the closing paragraph was, and still is, to encourage open and courteous debate, particularly on the biblical approach to the Flood.

Post-Flood fossilisation

Garner *et al.* state *'We did not go into the question of what proportion of the fossiliferous rocks might have resulted from post-Flood catastrophes'*. However, we note that they argue for a Carboniferous/Permian (using terms from the geological column, which we do not necessarily accept as a strict chronology) Flood/post-Flood boundary. This implies that a large proportion of the fossil bearing sediments is post-Flood. The Permian rocks and above contain reptiles (in particular dinosaurs), mammals (such as horses, elephants etc.) and birds. Consequently, in their thinking, the air-breathing land animals fossilised in these rocks must be regarded as post-Flood. Thus, though they state that they 'did not go into the question', their articles have strong implications concerning the amount of fossils which indeed **are** post-Flood. Robinson's article[1] is typical of their approach. He interprets the fossils in the higher strata as re-colonisation after the Flood. The number of such fossils is considerable.

Garner *et al.* state *'we do not believe that fossilisation implies, let alone requires, catastrophic processes'*. Our paper summarised the main thrust of their written views and they certainly refer to considerable catastrophic, post-Flood activity.[2] How could large dinosaurs be buried in the Cretaceous without catastrophe? But, even if the air-breathing land creatures in the Triassic, Jurassic and Cretaceous were not buried catastrophically, their model still has great difficulties to answer. Where did all the Mesozoic sediments come from? How could the Rainbow promise be fulfilled if there were whole continents under water after the Flood?[3]

Dinosaurs and dinosaur tracks

As we acknowledged in a separate letter, our original article contained a mistake and gave a wrong impression. The wording concerning dinosaur tracks should have read 'vertebrate tracks', since the tracks of dinosaurs are only found in the Mesozoic. Also, we accept that Garton's reference[4] to trapped creatures in the Carboniferous was to amphibians, and not dinosaurs as we incorrectly said in our last communication.

However, the thrust of our argument remains unaltered, that the Cretaceous burial of the dinosaurs

was a Flood event. We simply extend Garton's[4] model of trapped creatures in Carboniferous floating forests. We maintain that it is also plausible for ***land based dinosaurs*** to have been trapped in floating forests, and eventually buried late in the Flood.

Cretaceous chalk

We thank Garner *et al.* for correcting the detail here. Chalk, though it may include shell fragments, is predominantly composed of coccoliths from planktonic algae, forming fine-grained limestone.

This point is worth unfolding a bit more. Tyler[5] argues that the chalk deposits in the upper Cretaceous must be post-Flood because they contain hardgrounds, burrows and bentonite horizons. He maintains that these features would require a relatively placid environment,[6] and argues that there were successive inundations for decades after the Flood, separated by bentonite ash deposition.

The weakness in this argument is the thickness of the chalk layers. Where could all the algae and carbonate come from, particularly in those areas where some 100 bentonite horizons are found?[7] The great thickness suggests prolific algae production in warm pre-Flood seas. Their answer is to lengthen the formation time for these layers from days (advocated by Snelling[8]) to months and years, with ongoing inundations deep into the hearts of continents. This conflicts with a straightforward understanding of the Flood being a singular event, not to be repeated. The Mesozoic strata are nearly all found globally, which suggests that they are indeed from the one global inundation — the Flood.

Garner claims that although the ***continents*** were repeatedly inundated *'God kept his promise! — never again did the waters destroy the earth with a Flood'*[9] because some land was still available. In our opinion this is a very weak view of the Rainbow promise. Scripture must lead in our thinking. Genesis 9 states in vv. 15–16:

'And I will remember my covenant, which is between me and you and every living creature of all flesh; and the waters shall no more become a flood to destroy all flesh. And the bow shall be in the cloud; and I will look upon it, that I may remember the everlasting covenant between God and every living creature of all flesh that is upon the earth'.

If this promise allows for continental inundations — not just once, but repeatedly — then it gives very little security to the ordinary descendant of Noah, or to all the creatures! The hydrodynamics of such a scenario imply upheaval, which would be felt across the globe. It is difficult to conceive how half a continent could be flooded without considerable global instability.

The advancing warm seas of the rising floodwaters, full of nutrient and much richer than the cool, post-Flood seas, would have produced plenty of blooms of planktonic algae. Tyler acknowledges that small fish and shells are often found together in these upper Cretaceous chalk deposits[10] indicating rapid burial and fossilisation *in situ*. It is possible, as Snelling[8] suggests, that these inundations occurred during the final stages of the transgressive part of the Flood, and that the burrows were made over days, not years. The bentonites thus represent repeated sub-aerial ash falls, as successive sediments inundated the ground until it finally succumbed to the rising floodwaters. There may yet be other solutions to this difficult puzzle. It is significant that hard ground burrows are also evident much lower in the Palaeozoic. This suggests that we do not yet understand the mechanisms that formed hardgrounds. It is in our view premature to regard the post-Flood theory as the only alternative.

The 350 years after the Flood

Garner *et al.* say they do not believe that only 350 years separate the Flood from the end of the dinosaurs. As their re-colonisation theory has developed, one can understand why, in the face of the proliferation of Mesozoic and Cainozoic creatures buried all over the globe, they claim this is too short a time. But then they are faced with waters inundating continents into Abraham's time and beyond! This really is the Achilles heel of their argument. The evolutionists accept that the dinosaurs (and many other creatures in the Cretaceous) suddenly disappeared, though on a millions-of-years time scale. For creationists, the Flood is the biblical answer. We recognise here a major apologetic for the Scriptures. The rocks witness to a Flood that destroyed vast numbers of creatures, both in the initial extremely violent 40 days, ***and*** as the final stages of the floodwaters engulfed the larger creatures. In this respect, the original Flood model of Whitcomb and Morris is still very plausible.

We can accept that some creatures descended from Ark stock died in post-Flood disasters. However, to argue for large scale fossilisation by floods and/or other catastrophic activity way into the times of the patriarchs could never be acceptable biblically. Are they advocating large gaps in the genealogies to accommodate more time? This point has to be faced head-on. Certainly Robinson believes that there are considerable gaps[11]. We would argue against this, and that taking a Scripture-first approach leaves little doubt that those genealogies are a tight chronology, particularly as the names are repeated three times in Scripture (Gen. 11, 1 Chr. 1 and Luke 3), and as the time the father lived after the birth of the son is given (Gen. 11).[12] We have already argued that the Rainbow promise precludes any continental inundation after the Flood year. The world was a relatively settled environment within a generation after the Flood, so that by Abraham's time all major global activity would have long ceased.

The 'blot-out' theory

Although Robinson's exegesis of *'machah'* may not be the key reason for espousing their Flood model, they

have to face the biblical implications of their position. One can rightly ask, 'So what happened to all the air-breathing, land creatures buried in the Flood?' This has led to the proposal by Robinson[13] and supported by the rest of the group,[14] that *'machah'* (translated 'destroy' in Gen. 6:7 and other places) means 'blot out without trace'.

Their admission that the biblical exegesis is not the key reason for espousing their Flood model, shows the weakness of their thinking. Their science is driving their interpretation of Scripture, and not the other way round. From this unproven (and in our opinion false) premise, they construct a model that owes more to a desired allegiance to the geological column than to Scripture. In fact their model runs into conflict with post-Flood Scriptural chronology and timescales.

We admit that it is not always easy to interpret science from a 'Bible-first' mentality. There are puzzles to solve, but these are far less perplexing than the massive post-Flood inundations required by their model. Such a model raises great questions about whether God meant what He said when He stated *'neither shall there any more be a flood to destroy the earth'* (Gen. 9:11). We have dealt with the importance of the Rainbow promise in our article.[15]

Gen. 10:25

This has been taken by some to justify a splitting of the earth, and continental drift. Garner *et al.* acknowledge that some of them were of that view, but that Robinson has distanced himself from it.[16] We are happy to stand corrected as to their view on this passage. By moving away from this interpretation, they now have very little Scriptural warrant to justify enormous post-Flood activity. At best they must argue that Scripture is silent, but we maintain that the Rainbow promise will not allow the level of catastrophe that they propose.

Garner *et al.* state *'we remain convinced that Genesis preserves a trustworthy historical record of a global Flood'*. While these are good words, they must spell out their model in much more detail. Do they believe in a tight chronology after the Flood (approximately 350 years to Abraham)? Where did all their post-Flood sediments come from? Where is their apologetic for the Flood itself? What of the Rainbow promise?

From our perspective, the fossil record into the Cretaceous and further, testifies strongly to God's act of judgment on this world. The fossil record powerfully argues the authority of Scripture, God's righteousness, and to the fact that God's judgments leave a mark, in exactly the same way that the Dead Sea reminds us today of God's judgment upon Sodom and Gomorrah.

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References

1. Robinson, S.J., Can Flood geology explain the fossil record? *CEN Tech. J.* **10**(1):32–69, 1996, see p. 62.
2. Garner, P., Geology and the Flood, *Genesis Agendum Occasional Paper 1997,* p. 8, 1st column, 2nd paragraph, *'... this leads to the re-inundation of some continental areas after the Flood ...'.*
3. Garner, Ref. 2, p. 8.
4. Garton, M., The pattern of fossil tracks in the fossil record, *CEN Tech. J.* **10**(1):82–100, 1996, see pp. 97 and 98.
5. Tyler, D., A post-Flood solution to the chalk problem, *CEN Tech. J.* **10**(1):113, 1996.
6. Tyler, Ref. 5, pp. 110–111.
7. Tyler, Ref. 5, p. 112.
8. Snelling, A.A., Can Flood geology explain thick chalk layers? *CEN Tech. J.* **8**(1):11–15, 1994.
9. Garner, Ref. 2, p. 8, 4th line from bottom of 1st column.
10. Tyler, Ref. 5, p. 108.
11. Robinson, S.J., Genealogy is not chronology, *Origins*, *(Biblical Creation Society)*, **26**:15–21, 1999.
12. Sarfati, J., Review of *The Genesis Question* by Hugh Ross, *CEN Tech. J.* **13**(2):22–30, 1999.
13. Robinson, S.J., The Flood in Genesis: What does the text tell geologists? in: Walsh, R.E. (ed.), *Proceedings of 4th International Conference on Creationism*, Pittsburgh, USA, pp. 465–474, 1998.
14. See for instance Garner, Ref. 2, p. 6, 1st column, last line to end of first paragraph in 2nd column. Garner, relying on a 'blot-out' interpretation of 'machah', states *'No trace of land dwelling air breathers — not even in fossil form — was left'.*
15. McIntosh, A., Edmondson, T. and Taylor, S., Genesis and catastrophe: the Flood as the major biblical cataclysm, *CEN Tech. J.* **14**(1):101–109, 2000, see p. 106.
16. Robinson, Ref. 11.