Part IV

Fossil Evidence

The location of the Flood/post-Flood Boundary is not just shown by sedimentary rocks. The contained fossils and organic matter also show that the Flood/post-Flood boundary is in the Late Cenozoic. This evidence includes mineralized fossils; thick, pure coal seams; amber; oil and gas; microorganism layers; and the unique Cenozoic mammal characteristics.

Chapter 12

Mineralized Fossils

The fossilization or mineralization of organisms seems like an almost unique phenomena today that can be explained by the Flood but would be very difficult after the Flood.

Mineralization of Organisms Rare Today

Unique conditions are required to create a fossil. An organism must be rapidly buried otherwise, predators, scavengers, and the many biological and mechanical degradation processes will destroy the remains.[1] Even shells of marine organisms degrade fairly fast on the sea bottom, since they are composed of calcium carbonate held together by a network of *organic* tissue. Once the shell's organic tissue degrades, it falls apart. Raup and Stanley noted:

> As soon as an oyster or other mollusc dies, its shell is subject to deterioration resulting from attack by a great variety of boring organisms, including worms, sponges, other molluscs, and algae. Most sea bottoms on which living shelled organisms are abundant have surprisingly few intact, empty shells.[2]

Even if an organism is buried rapidly, there is no guarantee it will become a fossil. Biological and chemical degradation, even of hard parts, continue after it was been buried *within* the sediment or soil.

Before an organism can become a fossil after burial, its cells must be filled with inorganic matter, or in cases of complete fossilization, the organic matter must be replaced. This process is called permineralization or simply mineralization (the rarer fossilization mechanisms, like carbonization, will not be discussed in this chapter). Calcium carbonate and silica are the most common chemicals used during mineralization.[3] They are also the most common cementing agents for sediments. The carbon to mineral replacement process must act quickly, or even bones and shells will decay. Modern ground water generally is too low in silica to form fossils.[4] Therefore, mineralization, as well as the lithification, of sediments, is rare today.

A Global Flood Provides an Ideal Environment for Mineralization

Organisms buried in the Genesis Flood would be rapidly fossilized at the same time as the accumulating sediments are lithified. Highly mineralized water would pass through the sediment pores, and rapidly mineralize the sediments along with the buried organisms. This is the most logical explanation for the billions of fossils, the beautiful state of preservation of some fossils, and huge fossil graveyards like dinosaurs[5] and fish[6] that we observe today. There is abundant evidence that sedimentary rocks once held high amounts of dissolved silica. Much of it precipitated out and formed layers of chert (a form of silica) that are now part of the sedimentary rocks. Under the high pressure of the thick sedimentation during the global Flood, the silica

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[1] Raup, D.M. and S.M. Stanley, 1978. *Principles of Paleontology*, second edition. W.H. Freeman and Company, San Francisco, CA, pp. 14–25.
[2] Raup and Stanlery, Ref. 1, p. 15.
[3] Pinna, G., 1990. *The Illustrated Encyclopedia of Fossils*. Facts on File, New York, NY, p. 13.
[4] Pettijohn, F.J., 1975. *Sedimentary Rocks*, third edition, Harper and Row, New York, NY, p. 242.
[5] Oard, M.J., 1997. The extinction of the dinosaurs. *Journal of Creation* 11(2):137–154.
[6] Coffin, H., 1983. *Origin by Design*. Review and Herald Publishing Association, Washington, D.C., p. 33.

would also be forced into limestone creating nodules (Figure 12.1). Highly pressurized silica also formed a multitude of pure silica quartz dikes (see Figure 7.2). The evidence of vast amounts of silica, as well as carbonate, in the pore water of the sediments points toward the Genesis Flood being the cause of rapid fossilization. Raup and Stanley conclude fossilization would require catastrophic conditions:

> The more we investigate the difficulties of fossil preservation, the more surprised we become that the fossil record is as good as it is...it has been suggested in this chapter that geologically unusual or even catastrophic conditions contribute to the preservation of fossils. But to what degree? We do not have enough information yet to answer this question.[7]

Figure 12.1. Black chert within gray limestone from western Kentucky.

Because the most likely time for fossilization and mineralization of sedimentary rocks was during the Genesis Flood we can conclude the vastly different fossilization potentials of the Flood and post-Flood period defines the boundary separating the two. We can also form the general rule that a mineralized fossil is likely from the Flood, while one that is surficial and not mineralized would likely be post-Flood.

[7] Raup and Stanley, Ref. 1, p. 25.

Cenozoic Mineralization

Most Cenozoic fossils are mineralized, which would indicate that they were buried during the Flood. Cenozoic mollusks are also mostly closed shelled (Figure 12.2), reinforcing the conclusion that the fossils were rapidly buried.

Is it possible that post-Flood catastrophes can cause mineralization? It seems that the putative sedimentation event would have to bury the organisms deeply and that the sediments have to be wet and chemically charged enough to cause the movement of groundwater fast enough to fossilize the hard parts. Under conditions other than the Genesis Flood, this seems very difficult. If post-Flood catastrophism were true, we should find a multitude of unfossilized bones in the Cenozoic since many bones would not decay in the 4,500 years since the Flood, as shown by the existence of a huge number of Ice Age animals buried in sediments.

Figure 12.2. Closed-shelled mollusks, mostly from the Cenozoic, indicating rapid burial (courtesy of Dennis Bokovoy).

A Few Examples

The general rule predicts the majority of bones and wood from the Flood would be mineralized while those after the Flood would not. The animals that went extinct at the end of the post-Flood Ice Age, woolly mammoths and their ecological mates, are hardly ever fossilized. For example, Siberian mammoths are unfossilized bones and tusks. Irena Dubrovo stated:

> The content of collagen in bones buried under such conditions for thousands of years is almost the same as in the bones of living animals. The bones were not mineralized but were frozen.[8]

Wood buried by wind-blown silt (loess) in central Alaska is not mineralized.[9] Of course, one could counter that these woolly mammoths, as well as other animals, and the wood from the far north were frozen before they had a chance to mineralize. However, other Ice Age animals at lower latitudes are predominantly un-mineralized.

Figure 12.3. Cap of well-rounded quartzite gravel transported long distances and ending up as a lag on top of the Wintering Hills, about 15 miles (25 km) south of Drumheller, Alberta, Canada, approximately 1000 feet (300 m) above the surrounding plains.

In the Hand Hills, east of Drumheller, Alberta, Canada, both un-mineralized and mineralized fossils have been discovered.[10] Approximately 3,000 bones recovered from burrow casts were not mineralized, unlike bones found in the quartzite gravel capping the hills. The burrows cross sand cross beds and periglacial features, and are beneath glacial debris, indicating they lived in the ice-free corridor after the Flood before glaciation. Periglacial features form near an ice sheet

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[8] Dubrovo, I., 1990. The Pleistocene elephants of Siberia; in: Agenbroad, L.D., J.I. Mead, and L.W. Nelson (Eds.), *Megafauna & Man: Discoveries of America's Heartland*. The Mammoth Site of Hot Springs, South Dakota, Inc., Hot Springs, South Dakota, p. 3.

[9] Péwé, T.L., G.W. Berger, J.A. Westgate, P.M. Brown, and S.W. Leavitt, 1997. *Eva Interglaciation Forest Bed, Unglaciated East-Central Alaska: Global Warming 125,000 Years Ago.* GSA Special Paper 319, Geological Society of America, Boulder, CO.

[10] Young, R.R., J.A. Burns, R.B. Rains, and D.B. Schowalter, 1999. Late Pleistocene glacial geomorphology and environment of the Hand Hills region and southern Alberta, related to Middle Wisconsin fossil prairie dog sites. *Canadian Journal of Earth Sciences* 36:1,567–1,581.

or glacier, such as solifluction (sliding) deposits or ice wedges. The quartzite gravel, dated late Cenozoic, is definitely from the Flood,[11] and the fossils found within it are mineralized, as expected. I have found small pieces of petrified wood within the quartzite gravels of Alberta and Saskatchewan, indicating erosion of not only quartzite layers from sedimentary rocks, but also beds with buried trees that had already petrified. The quartzite gravel on top of the Hand Hills and the Wintering Hills, south of Drumheller (Figure 12.3) represents a lag laid down over a large area with subsequent erosion of about 1,000 feet (300 m) over the High Plains of Alberta.

Exceptions

It is to be expected that the rule for dating the mineralization of organisms would have exceptions. For instance, most dinosaurs are mineralized, so dinosaurs very likely were buried in the Flood. Some dinosaur bones, however, are un-mineralized, which could be due to a lack of cementing chemicals. Dr. Mary Schweitzer and others have made many discoveries of soft tissue and even red blood cells in un-fossilized bones of dinosaurs like the *T. rex* skeleton from a sandstone in eastern Montana.[12,13] She later reported dinosaur soft tissue, including flexible and elastic blood vessels, and likely red blood cells from another *T. rex* discovered in Montana.[14,15,16] Red blood cells and soft tissue should break down almost immediately upon death. Luis Chiappe and Lowell Dingus tell us:

> "One reason for this improbability [of finding blood within insects in amber] is that blood breaks down quickly after an animal dies. Rotting actually begins within minutes after death, which is why bodies must be embalmed if a person is to be buried and is also why blood that is donated for operations must be maintained under strict temperature controls."[17]

Dinosaur soft tissue is being found more often. For instance, a mummified duck-billed dinosaur was found in north-central Montana.[18] Kevin Anderson and Mark Armitage of the Creation Research Society have found excellently preserved un-fossilized dinosaur tissue in a large *Triceratops* horn in southeast Montana (personal communication).

There are examples today of rapid fossilization, such as the minor's felt hat found in a Tasmanian mine.[19] The hat lay submerged in water for 50 years and was cemented by calcium carbonate into hard rock—a *hard hat*.

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[11] Oard, M., J. Hergenrather, and P. Klevberg, 2005. Flood transported quartzites–east of the Rocky Mountains. *Journal of Creation* 19(3):76–90.

[12] Schweitzer, M.H., C. Johnson, T.G. Zocco, J.R. Horner, and J.R. Starkey, 1997. Preservation of biomolecules in cancellous bone of *Tyrannosaurus rex*. *Journal of Vertebrate Paleontology* 17(2):349–359.

[13] Schweitzer, M.H., M. Marshall, K. Carron, D.S. Bohle, S.C. Busse, E.V. Arnold, D. Barnard, J.R. Horner, and J.R. Starkey, 1997. Heme compounds in dinosaur trabecular bone. *Proceedings of the National Academy of Science* 94:6,291–6,296.

[14] Schweitzer, M.H., J.L. Wittmeyer, J.R. Horner, and J.K. Toporski, 2005. Soft-tissue vessels and cellular preservation in *Tyrannosaurus rex. Science* 307:1,952–1,955.

[15] Schweitzer, M.H., Z. Suo, R. Avci, J.M. Asara, M.A. Allen, R.T. Arce, and J.R. Horner, 2007. Analysis of soft tissue from *Tyrannosaurus rex* suggest the presence of protein. *Science* 316:277–280.

[16] Asara, J.M., M.H. Schweitzer, L.M. Freimark, M. Phillips, and L.C. Cantley, 2007. Protein sequences from mastodon and *Tyrannosaurus rex* revealed by mass spectrometry. *Science* 316:280–285.

[17] Chiappe, L.M. and L. Dingus, 2001. *Walking on Eggs: The Astonishing Discovery of Thousands of Dinosaur Eggs in the Badlands of Patagonia.* Scribner, New York, NY, p.129.

[18] Perkins, S., 2002. Dear mummy—rare fossil reveals common dinosaur's soft tissue. *Science News* 162:243–244.

[19] Anonymous, 1995. 'Fossil' hat. *Creation* 17(3):52.

A possible exception to the rule that post-Flood animals would not be mineralized comes from Ice Age animals dredged from the bottom of the North Sea by the hundreds of thousands.[20] The animals are also found along and just off the coast of the Netherlands. All the bones are variably fossilized; this criterion is mostly used to place the bones within age slots within the late Pliocene and Pleistocene—likely not a sound procedure. The fossils in the late Pleistocene are well preserved but not mineralized, while those in the late Pliocene to mid Pleistocene are mineralized.[21] But these dates are an exercise in circular reasoning since their state of mineralization was used to date them. Moreover, some of the fossils could have come from fossil-bearing strata at the bottom of the North Sea and could be Flood strata.

So, based on the rule that mineralized fossils are from the Flood, should we place the Flood-post-Flood boundary in the mid-Pleistocene, the general location where Holt placed it?[22] Or could the fossils have been mineralized after the Flood by silica-rich ground water while buried or from silica rich bottom water of the North Sea? These questions cannot be answered without more information.

It is interesting that a variety of mammoths and elephant fossils are found, many of which are not directly associated with the "last" ice age, such as the woolly mammoth. So, maybe these elephants or mammoths, are from the strata below the surficial sediments and hence from the Flood, since I would expect a large variety of elephant types to have lived before the Flood and been buried in the Flood. In fact because of the Flood bottleneck, the decrease in variety caused by the permanent extinction of particular genes, I would expect much more variety of elephants in Flood strata than in Ice Age or post-Flood sediments.

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[20] Mol, D., K. Post, J.W.F. Reumer, J. van der Plicht, J. de Vos, B. van Geel, G. van Reenen, J.P. Pals, and J. Glimmerveen, 2006. The Eurogeul—first report of the palaeontological, palynological and archaeological investigations of this part of the North Sea. *Quaternary International* 142–143:178–185.

[21] Mol, D., G.D. van den Bergh, and J. de Vos, 1999. Fossil proboscideans from The Netherlands, the North Sea and the Oosterschelde Estuary. *Deinsea* 6:119–145.

[22] Holt, R.D., 1996. Evidence for a Late Cainozoic Flood/post-Flood boundary, *Journal of Creation* 10(1):128–167.