Fossils of Hamilton Cave, West Virginia

Arthur Manning

Hamilton Cave, West Virginia, has a conspicuous, extensive brachiopod assemblage in many of its walls and ceilings. This fossil assemblage exhibits strong evidence for submarine catastrophism as the means for its deposition (such as occurred during the Noachian deluge), as well as evidence against evolution by its content. In addition, many Ice Age vertebrate fossils have been found in this cave at a considerable distance from the entrance. Possible scenarios are offered to account for these vertebrate fossils. It is proposed that a post-Flood catastrophic event of some sort would most likely be responsible for their presence.

Hamilton Cave, in eastern West Virginia, is a significant, wild cave that is very popular with cavers in the mid-Atlantic region of the United States. In a previous paper I described this cave and dealt with its origin and the origin of its geologic features.[1] This paper deals with the fossils which may be seen in Hamilton Cave and those that have been excavated from it.

Invertebrate fossils

The most impressive feature of Hamilton Cave is its invertebrate fossil assemblage. There are probably hundreds of thousands of these fossils exposed in many areas of the walls and ceiling of this cave in what is called the Corriganville formation of Devonian limestone. The vast majority of these are of sea shells called brachiopods. The 'most distinctive fossil [in this formation] is the coarse-ribbed *Eospirifer macropleurus* [a brachiopod fossil now called *Macropleura macropleura*] which is unusually abundant. Large numbers of other fossils weather readily from the New Scotland [Corriganville].'[2] Numerous fossil crinoid (sea lily) sections can also be seen in the walls of this cave. All of these fossils are found in an extensive layer of mostly broken shells abundantly interspersed throughout a limestone matrix (figure 1). These animals were evidently not buried in the environment in which they lived. Nor is it reasonable to interpret this assemblage of fossil shells as a buried ancient seashore since they are entombed in a limestone matrix rather than being a pure aggregation of shell fragments such as is sometimes seen on modern seashores. In addition, these shells usually have sharp edges, which is not what one sees in shells in a surf zone where the waves produce smoothly rounded fragments. Their deposition must have been rapid and the extent of this rapidly deposited formation (the Corriganville extends from West Virginia into Virginia, Maryland, Pennsylvania and New York) demands a catastrophic, hydraulic event. This is what one would expect to find if Noah's Flood was an historic event. When 'all the fountains of the great deep were broken up' (Genesis 7:11), many of the animals living on the sea floor (such as brachiopods and crinoids) would have been violently hurled up into the water, broken into pieces, and eventually would have been deposited together to form a layer because of their similar shape and size. Such an extensive layer of millions of broken up sea shells exposed in the middle of a mountain in West Virginia speaks loudly of Noah's Flood.

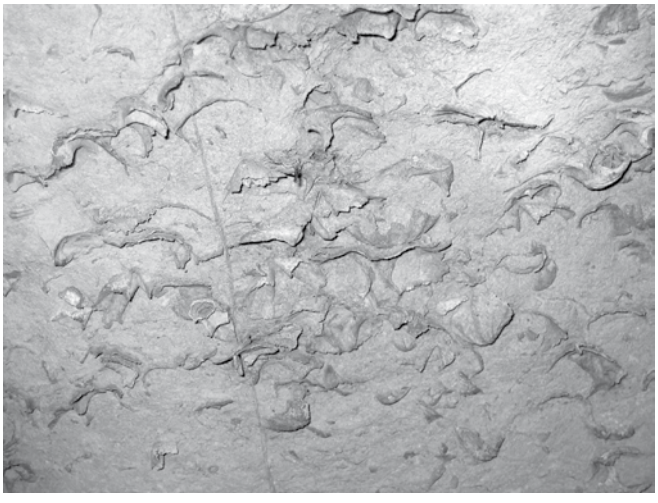

Figure 1. Jumbled, broken brachiopod fossils.

The brachiopod fossil record, part of which is so vividly displayed in Hamilton Cave, offers an excellent argument against evolution, and therefore for creation. These fossils have an outstanding potential to illustrate evolution, if it actually happened. First of all, brachiopod fossils are extremely common, being found all over the world. Second, they can be found in sedimentary deposits which supposedly represent all of the main periods of evolutionary time (in addition, there are still brachiopods living today). Third, there are many species of brachiopods found in the fossil record. And fourth, they exhibit a number of features (overall shape, ornaments, the presence or absence of holes, type of beak, type of hinge). If brachiopods are the products of evolution, then one would expect to see the record of the gradual development of their features by examining their fossils found in strata which evolutionists believe represent succeeding time periods. In his *Origin of Species*, Darwin admitted that the most serious objection to his theory was the lack of evidence for it in the fossil record. He believed that the reason for this was the poverty of that record. But today the fossil record of brachiopods is just the opposite of impoverished. It is extremely rich. So what does that record show?

Alvarez *et al.* state that,

> 'Phylogenetic relationships among higher taxa of articulate brachiopods that developed a spiralium as mineralized support for the lophophore [*Macorpleura macropleura* is included in this group], and the resulting classifications, are not universally agreed upon due to the complex pattern of character evolution within the phylum.'[3]

What is so complex about the supposed evolution within phylum Brachiopoda? Clarkson explains that many of the shell shapes of brachiopods 'tend to appear over and over again in unrelated stocks through time.'[4] He believes that this is due to convergent evolution. However, the result is that evolutionists, when considering the fossil record, cannot determine which kinds of brachiopods evolved into which other kinds. In order to give evidence for evolution, the fossil record must show an orderly progression of the development of traits through time as represented by the supposed chronological sequence of strata. This is not what is observed. So the rich brachiopod fossil record, so dramatically exemplified in Hamilton Cave, is contradictory to evolution, and therefore supportive of special creation.

Vertebrate fossils

Hamilton Cave has other fossils besides those in its walls and ceiling. Many fossils of terrestrial vertebrates have been excavated from the cave's clay floor. The fossils are found in the top 75 cm of this clay. According to Repenning and Grady, 'Seventy-five centimeters could represent an appreciable period of time, but no changes in the fauna were noted during excavation.'[5] In other words, there is no evidence of evolution in these fossils. In addition, these vertebrate fossils were most likely not the result of animals dying in this area of the cave and then slowly getting buried by the gradual accumulation of clay over them. I believe, as shall be explained below, that these vertebrate fossils had to be washed into the area of the cave in which they were found, and therefore the 75 cm would not 'represent an appreciable period of time'.

Large bones as well as thousands of small vertebrate specimens have been retrieved from Hamilton Cave. The variety of amphibian and reptile fossils that have been found in this cave surpasses that of any similar assemblage. It includes 11 species of salamanders, eight species of frogs and toads, one species of turtle, three species of lizards, and nine species of snakes. None of these are extinct and the whole assemblage is very similar to the types of amphibians and reptiles that live in the area today.[6] Evolutionists find this lack of evidence of evolution to be remarkable since they believe the fossils are at least 600,000 years old.

The fossils of mammals include species of shrews, moles, bats, pika, rabbit, woodchuck, ground squirrel, chipmunk, squirrel, flying squirrel, rats, mice, voles, lemming, pocket gopher, beaver, porcupine, coyote, raccoon, bears, ermine, skunks, river otter, badger, jaguar (nearly complete skeleton), American cheetah (the first nearly complete skeleton of this cat[7]), bobcat, sabertooth cat, deer, peccaries, tapir and horse.[8] Altogether more than 60 mammal species have been found, including seventeen that are extinct and nine that no longer live in the area.

Fossils of small mammals found in Hamilton Cave should be of interest to those involved in speciation studies. Repenning and Grady report that in bog lemming fossils found there a 'major transition in tooth morphology took place spontaneously, with no obvious environmental or other external pressure, and in a very short time.'[9] They call it 'one of the more remarkable morphologic transitions known in vertebrate paleontology.'[10] Yet they believe it is most likely due to genetic drift, that is, variation within the kind over generations. This would indicate that these animals had a remarkable genetic potential incorporated into their genome, enabling them to survive in a variety of environments. Such a sophisticated code could only be the product of a Master Programmer.

Mysterious large cat fossils

In addition to bone fossils, fossil dung (coprolites) and many obviously old claw marks (ichnofossils) have also been found in Hamilton cave.[11] Numerous claw marks can be seen in the 'cheetah room' (named for a fossil found there[12]), which is located about 150 m nearly straight back (northeast) from the cave entrance. Much crawling is required for a person to get to this room. One portion of a wall in this room is covered with claw marks, so that it is impossible to discern a particular set of marks. The marks cover an area about 2.1 m wide and extend from about 49 cm from the floor up to a large platform about 3.1 m from the floor (actually, the platform is at the level of the passage that leads to the cave's entrance and the floor below the platform constitutes a lower level). There are

Figure 2. Cat claw ichnofossil.

Claw marks in Hamilton Cave are attributed to a Cheetah-sized feline.

two very similar isolated sets of claw marks near the above-mentioned assemblage that are particularly prominent. One of them consists of four equally spaced scratches about 10 cm across and about 10 cm in length, located on a vertical wall about 140 cm from the floor. The second set consists of four scratches, each 21 cm long except for the first, which is only 13 cm long. Interclaw distances for these scratches are: #1–2: 1.9 cm, #2–3: 3.2 cm, #3–4: 3.8 cm. More claw marks can be seen near the Slab Room, located about 23 m to the northwest of the Cheetah Room (figure 2), and in an unnamed room about 15 m north of the Slab Room. Judging from examination of a cheetah skeleton's foot in the Smithsonian Natural History Museum, the Hamilton Cave claw marks strongly resemble those that would be made by such a cat. However they could also have been made by another kind of large cat, such as a jaguar or a sabertooth cat (fossils of these cats have also been found in the cave). These claw marks are unlike those that would be made by bears or canines. On some walls the marks indicate where their maker(s) most likely ascended to or descended from a platform. But other clawed walls simply rise to the ceiling, with no access to other areas. It seems reasonable to conclude that one or more live, large cats were in this room on at least one occasion. Even though large cats are proficient nocturnal predators, it seems highly unlikely that they would have ventured so far into the cave. Only 31 m from the cave's entrance down the passage leading to the Cheetah Room, after it slightly veers off from a straight line, one finds oneself in total darkness (our light meter registered zero at this point and so did our eyes).

What is the explanation for the presence of claw marks and so many vertebrate fossils far back into this cave? One possibility is that there was formerly access to this part of the cave from another direction besides today's entrance. This additional, previous entrance would have been much closer to the surface, allowing reasonable access to the Cheetah Room by animals. However, an examination of the cave map, the US Geological Survey map of the land above and around the cave, and examination of the Cheetah Room and the land surrounding the cave precludes such a notion. Because of the topography of the region, by far the shortest distance from the Cheetah Room to the surface is via the present entrance to the cave. The only exception to this might be the vertical distance from this room to the surface. In this case, the distance would be approximately 62 m. Such a vertical descent into a cave for denning or any other purposes by any type of vertebrate animal other than bats seems extremely unlikely. The most reasonable conclusion is that the cat(s) got to the Cheetah Room via today's entrance.

But how did this or these cats manage to get so far into absolute darkness from today's entrance? Did these cats frequent this remote, dark area voluntarily or were they washed there by a flood of water? I could find no recorded instances of modern large cats utilizing the dark depths of caves. Did the smaller vertebrate fossils in the Cheetah Room get there voluntarily or were they brought there by the cat(s) or by a flood of water? The many disarticulated fossil bones of the smaller animals which have been found in the Cheetah Room indicate that these animals did not go to this room of their own accord while alive. Some of the bones contain distinct bite marks, indicating that their owners were most likely victims of predation.[13]

But were these smaller animals brought back by the cats as prey for their young or were they washed back by a flood of water? The answer may be assumed to be related to the means by which the clay buried these fossils. Were they slowly buried by a gradual influx of clay as they accumulated due to many years of cat activity or were they washed back from near the entrance and buried in accompanying clay during one or more flood events? An influx of clay into the cave today would favour the gradual accumulation and slow burial scenario. But there does not seem to be any such influx today. It seems that there would either have to have been a gradual accumulation of clay over a long time period from an unknown source or there would have to have been post-cave formation flooding.

According to Cox, clay floors of caves are the result of rock disintegration during cave formation.[14] But this would seem to be contradicted by the presence of vertebrate fossils buried in the clay floor of Hamilton Cave. If the clay was a product of the formation of the cave in a rapid scenario, as proposed by Cox, it would not seem possible for vertebrate fossils to have been buried in it. It seems most likely that the clay in which the vertebrates were buried was neither there as a result of the formation of the cave nor from a slow process; but rather as a result of one or more flood events well after the cave was formed.

Could these large cats have been washed back to this area by a flood of water coming in through the entrance?

The claw marks in the Cheetah Room as well as near the Slab Room may have been produced by a cat trying to escape from such a watery demise. Or perhaps the cat(s) arrived at the Cheetah Room as a result of chasing a cave rat or from getting lost during exploratory behaviour. If the cat(s) reached the Cheetah Room because of an influx of water, then the vertebrate fossils in this room were washed back from the cave entrance by a flood also. If this were the case, then it must have been a substantial flood because it also deposited more than 75 cm of clay in which they are buried. In addition, much of the floor of the entire cave is covered by such clay, including a damp room located far back in the cave and not along the main passageway.

Water washing into the cave's entrance would have most likely washed any remains of cat prey from the area near the entrance straight down the passage which leads to the 'cheetah room'. There they would have been washed down off the above described platform into the lower level where they would have been buried by the clay that washed in with them. However, Holman and Grady state, 'The fossil skeletons of the large carnivores using the cave (cheetahs, jaguars and bears) are well preserved, showing little effect of water transport.'[15] It is my contention that the reason for this is that these animals' bones that have been found in the Cheetah Room were still in their living bodies when they were washed into there. The claw marks, then, would have been made by the cats trying to escape from being washed down into the darkness and being deposited alive in the Cheetah Room. Eventually, they either died from their injuries or from drowning or starvation before they could manage to escape from the lower level of that room. I predict that if further excavation is done in the room beyond the Slab Room (mentioned above, where many claw marks may be seen) it will quite possibly reveal at least one more large cat skeleton. Having made a case for the Cheetah Room cats being the result of deposition, it should be added that if there were a considerable amount of coprolites in this room, this would be supportive of the cats using this room as a habitation. However, there is no definitive statement in the literature regarding the presence or absence of coprolites in this particular room.

Possible local flooding scenarios

An objection to this proposed washing in of the bones into the Cheetah Room would be that the location of the cave, high up on a ridge, would preclude its being affected by local flooding. However, I believe that severe, prolonged rain storms could have possibly elevated the Potomac River to the mouth of the cave, especially if the cave mouth was located closer to the river in the past (either by a deeper river or by a higher river bed or both). In order for sufficient water to enter the cave to wash bones 150 m back into the cave and deposit clay over the floor, I believe the volume of that water must have been considerable. Perhaps the proposed post-Flood 'hypercanes', with their torrential downpours and extremely powerful horizontal winds, as described by Vardiman, could have provided such an increase of river depth.[16]

A second possibility is that a large tsunami was responsible for washing copious amounts of water into the cave. The formation of the Chesapeake Bay meteor crater is believed by conventional scientists to have caused at least one enormous tsunami in this part of the world about 35 million years ago.[17] A large wave rushing in from such an event could conceivably have moved up the Chesapeake Bay and then up the Potomac River and then on up its South Branch to the cave. However, the tsunami from the Chesapeake Bay meteor supposedly occurred 35 million years ago and the fossils in the cheetah room are supposedly less than one million years old. Although these dates are at odds with a Bible-based chronology, they indicate that this tsunami likely preceded the deposition of these fossils and is therefore not responsible for it. In addition, Spencer and Oard present evidence that the Chesapeake Bay meteor occurred during the Abative Phase of the Recessional Stage of the Flood.[18] But it is possible that another such tsunami could have been responsible.

A third possibility is that rapid melting of the Ice Age ice cap could have provided much water for the flooding of Hamilton Cave. However, there is not believed to have been any glaciation in West Virginia during the Ice Age. The ice cap was apparently located significantly to the north and any melting directly to the north of the cave would have most likely drained off into the main course of the Potomac River and would not have gone upstream in a southerly direction up the river's South Branch.

All three of these possibilities are catastrophic in nature and all are also speculative. However, any of them may have been more likely to have occurred if the bottom of the valley below the cave was significantly higher in the past or if the South Branch of the Potomac River had a greater depth in the past. If there was such catastrophic post-Flood flooding in this region, perhaps it could have eroded the valley much deeper to its present depth. Evidence for such a deepening of the valley can be found in the fossils found in another cave located in the same ridge as Hamilton Cave: New Trout Cave. This cave is located very close to the modern bottom of the valley, far lower than Hamilton Cave. The fossils of New Trout Cave have been assigned a date of only 17,000 years, as compared to the supposed 600,000 year old fossils of Hamilton Cave.[19] Although these dates are at odds with a biblical chronology, they imply a period of time between the accessibility of the two caves, with the lower cave's access being more recent. This indicates the lowering of the valley or at least the water level of the South Branch of the Potomac River. Since either the valley or the river level was apparently higher in the past, this would have made the flooding of Hamilton Cave more feasible.

I can imagine no other viable explanation for the

fossils and claw marks in the Cheetah Room other than that the bones and live cat(s) were washed back that far by a significant amount of water. Even the suggestion that the bones in this room and the live cat(s) therein entered by being washed in through fissures reaching to the surface directly above this room seems highly improbable because of the lack of topographic and speleological evidence for such a route. In addition, it is doubtful that such a forced vertical descent would have deposited a live cat to such a depth without killing it. Also, such a route could hardly be imagined to have only deposited animal bones. In such a case there should have been much plant material and rocks deposited, as well. But a flood of water from outside the cave may have quickly attained such a height that any floating material being transported would have quickly risen well above the cave entrance so that only water would have entered the cave. So the presence of these fossils in the Cheetah Room seems to require a catastrophic hydraulic event in the past, subsequent to the Flood that formed the cave initially. In addition, such flooding could have contributed to additional cave enlargement as discussed in my previous article.[1]

Conclusion

Hamilton Cave is a very popular cave because of its accessibility and its lack of vertical passages necessitating technical expertise. It should also be a significant cave to creationists because of the prominent assemblage of brachiopod fossils in its walls and ceiling. These fossils offer dramatic testimony to the Flood. The brachiopod fossil record is also contrary to the expectations of evolution. In addition, a rich post-Flood vertebrate fossil record has been discovered in Hamilton Cave which gives no indication of evolution. These fossils can best be explained by post-Flood flooding. This cave is a great place for a creation field trip, not only because of these reasons, but because it is the home of some special vertebrates (bats) which offer wonderful evidence for intelligent design and a lack of fossil evidence for evolution. Finally, an experience in visiting this cave (or any cave) can be illustrative of spiritual truths regarding cooperation and especially regarding darkness and light.

Acknowledgments

I wish to thank Jayson Auxt, Phillip Auxt, Tim Auxt, Tricia Auxt, Cameron Eaby, Jordan Keefer, Daniel Smoker and Jared Smoker for their invaluable assistance in measuring and photographing various features of Hamilton Cave. In addition, special thanks are due to Emil Silvestru and an anonymous reviewer for their suggestions concerning this article.

References

1. Manning, A., Formation of Hamilton Cave, West Virginia, *Journal of Creation* **21**(2):82–89, 2007.
2. McCue, J.B. *et al*., Limestones of West Virginia, *West Virginia Geological Survey* **XII**:24, 1939.
3. Alvarez, F. *et al*., The Classification of Athyridid Brachiopods, *Journal of Paleontology* **72**:827, 1998.
4. Clarkson, E.N.K., *Invertebrate Paleontology and Evolution*, George Allen and Unwin, London, p.114, 1979.
5. Repenning, C.A. and Grady, F., The microtine rodents of the cheetah room fauna, Hamilton Cave, West Virginia, and the Spontaneous Origin of *Synaptomys, U.S. Geological Survey Bulletin* **83**:1, 1988.
6. Holman, J.A. and Grady, F., The fossil herpetofauna (Pleistocene: Irvingtonian) of Hamilton Cave, Pendleton County, West Virginia, *The NSS Bulletin* **51**(1):34–41, 1989.
7. Valkenburgh, B.V., Grady, F. and Kurten, B., The Plio-Pleistocene cheetah-like cat *Miracinonyx inexpectatus* of North America, *Journal of Vertebrate Paleontology* **10**(4):434, 1990.
8. Grady, F., Fossil mammals from Hamilton Cave, a progress report, *Research on the Late Cenozoic of the Potomac Highlands* **1**:65–66, 1987.
9. Repenning and Grady, ref. 5, p. 26.
10. Repenning and Grady, ref. 5, p. 1.
11. Grady, ref.8, p. 63.
12. Grady, F., A Pleistocene cheetah from West Virginia, *D.C., Speleograph* **37**(9):7, 1981.
13. Grady, ref. 8, p. 64.
14. Cox, D., Cave formation by rock disintegration, *CRSQ* **13**:155–161, 1976.
15. Holman and Grady, ref. 6, p. 34.
16. Vardiman, L., Hypercanes following the Genesis Flood, *Proceedings of the Fifth International Conference on Creationism*, pp. 17–28, 2003.
17. Poag, C.W., Koeberl, C. and Reimold, W.U., *The Chesapeake Bay Crater*, Springer-Verlag, Berlin, p. 447, 2004.
18. Spencer, W. and Oard, M., The Chesapeake Bay impact and Noah's Flood, *CRSQ* **41**:206–215, 2004.
19. Holman, J.A., Appalachian Pleistocene herpetofaunas; general stasis in the epoch, *Proceedings of the Appalachian Biogeography Symposium*, p. 147, 1999.

Arthur Manning has a Master's degree in biology from the Institute for Creation Research Graduate School and teaches high school science in Utah. He gives creation presentations in a wide variety of settings and has conducted many creation field trips to several places, including the Smithsonian and Hamilton Cave, West Virginia.