

The Fossil Record

Since ancient times, people have noticed that fossils existed of animals that did not resemble living species. Also, seashells could be found in the strangest places, even on the tops of the highest mountain ranges. Even the ancient Greeks were aware of these fossilized remains of creatures. Herodotus (484-425 BC) suggested that they came about as a consequence of changes in the positions of the sea and land.

Many theories regarding fossils have been propagated. Fossils were recognized as extinct species whose place has been filled by the creatures living today. The catastrophic model was also accepted by Bible-believing scholars, who attributed the fossils to the destruction of animals during the Flood described in Genesis.

But as more and more people accepted the idea of long ages of time as an explanation for what we see in the world, numerous questions also grew concerning the validity of the Biblical account.

How did all the animals get into the ark? Why is there a particular order in the fossil record? How did the animals get to the various continents from the ark? Why do the animals found in the fossil record look so different from ones we see today?

These questions led to a search for naturalistic explanations for the fossil record and the origin of life. Before Darwin, Jean-Baptiste Lamarck (1744-1829) proposed that the geological discontinuities in the record represented gradual changes in the environment and climate to which the species were exposed, and through their effects on organisms, these changes led to the transformation of species.

Geologists Hutton and Lyell expanded this concept, and Charles Darwin added the biological arm. The fossil record is today considered to be the severest blow to all anti-evolutionary ideas. But is it?

Ironically, the scientific views on the question of origins have a tendency to go full circle. Although catastrophism was rejected by evolutionists, many scientists are today returning to catastrophism and even to the Biblical account of the Flood to explain many of the features of the geological column and the fossil record.

The universality of the Flood is the one feature that is still often discarded by the modern scientific mind. The idea is often scoffed at that God would have destroyed the whole world, and that the life forms existing today are the descendants of the sea creatures that survived the catastrophe and land creatures that entered the ark.

However, the Bible is not the only source that speaks about the worldwide Flood. Virtually every society on every continent has the story of a global deluge in its folklore.ⁱ

There is indeed evidence in the geological column that there was a universal flood covering of the earth—compelling evidence that cannot readily be ignored:

Massive fossil graveyards show evidence of plants and animals being washed into position.

Huge sedimentary deposits speak of large-scale coverage by water. Nearly 75% of the earth's exposed surface is covered with sedimentary rock deposits.

Vast coal and oil fields of the world are further evidence of a global catastrophe. No process occurring today can even remotely approach the magnitude of the flood necessary to account for such a vast scale of universal burial of plants and other organic material.

Chalk deposits of the world are universal. Chalk is formed from the skeletons of marine protozoa and algae, and can only settle out of relatively shallow water. In deep oceans, the calcium carbonate shells dissolve on the way down to the ocean floor. The chalk deposits are thus an indication of worldwide coverage of a relatively shallow sea. Chalk deposits of the same age are found in North America, Australia, Europe, Asia, and Africa, and all of these deposits are resting on the same type of glauconitic sandstone.ⁱⁱ For these factors to be so universal, the same conditions must have existed universally.

Order in the Fossil Record

The Eras

The layers of the fossil record are divided into three main eras: Paleozoic, Mesozoic, and Cenozoic. These eras are characterized by different kinds of fossils.

The Paleozoic era is known for marine life, amphibians, and reptiles. In this layer of the fossil record we find extensive coal beds made up mostly of extinct plants such as giant horsetails, ferns, seedless plants, and club mosses.

The Mesozoic era is known for its dinosaurs and many other reptiles. This era is associated with massive extinctions. In a catastrophic flood model, this era is the end of the flood period, before the continents reemerged out of the waters that covered the earth.

The Cenozoic era is known for mammals and birds. Cenozoic plants are similar to the species that exist today.

Simple to Complex?

The type of fossil found in the various layers changes as one goes up the geological column, from invertebrates, fish, amphibians, and reptiles, to the mammals and birds in the upper layers. This order in the fossil record is one of the prime evidences used by scientists to establish evolution as a fact. However, the sequence

is not from simple organisms to complex organisms as evolutionists suggest, but rather from marine sessile to free swimming to land dwelling.

There is no simple generalized animal in the fossil record that proves that organisms develop from simple to complex. George Gaylord Simpson, the famous evolutionist, stated in his book *The Meaning of Evolution*, "It has been suggested that all animals are now specialized and that the generalized forms on which major evolutionary developments depend are absent. In fact, all animals have always been more or less specialized and a really generalized living form is merely a myth or an abstraction."ⁱⁱⁱ

The earliest organisms in the fossil record were complex. There is no evidence for the progression from simple to complex required by the theory of evolution. Many organisms, such as trilobites and ammonites, existed in the past and do not exist today. This does not make them primitive. They were just as complex as anything living today.

The fossil record shows a staggering wealth of organisms. Surprisingly, most of the organisms of the past were much larger and more impressive than present day animals. In fact, the fossil record is evidence for devolution rather than evolution.

Layers of Fossils Explained

There are many reasons beyond progressive development that could be given for the order of fossils. The sequence from sessile to free-swimming to terrestrial indicates habitats being destroyed progressively.

Imagine a bulldozer rapidly covering a duck pond with soil. The organisms in the pond would be buried in sequence. The bottom dwelling worms and snails would be at the bottom. The fish would be somewhat higher, and the ducks would be on top. The sequence would represent where the animals lived—not the order they evolved in. The same holds true for the fossil record.

We do find groups of fossils in the same sequence in the fossil record as they occur in present-day habitats. The ability to float or not would also change where an animal would be buried. Mammals and birds float due to bloating or trapped air in feathers and hair and are thus found in higher layers.

No model provides all the answers, but the flood model does provide a very satisfactory explanation for the series found in the fossil record.

Fossils Prove a Flood

Evidence of an ancient worldwide Flood is very widespread in the fossil record. The mere fact that most fossils are embedded in deposits laid down by water indicates catastrophic formation. Geologists recognize that "waterborne sediments are so much more widely distributed than all other agents of burial that they include the

great majority of all fossils."^{iv}

Some fossils show immaculate preservation of detail and these creatures must have been buried instantly to prevent decay. The state of preservation can thus be an indication of how long the animals were exposed to the elements before they were buried.

In a flood scenario, some creatures would have remained uncovered longer than others. For example, we find perfectly preserved specimens of fossil fish, as well as specimens without heads or scales, and sometimes we find only the bones or pieces of specimens. During putrefaction, the scales and heads of fish drop off quite rapidly, and so it is clear that some were buried instantly while some floated before burial.

There are four major types of fossils:

1. **Molds and casts**, comprising footprints and molds that have been filled in with rock forming material.
2. **Petrified fossils**, or fossils turned to stone by replacement of the tissue with the elements of the surrounding strata.
3. **Carbonized fossils**, such as coal.
4. **Unchanged fossils** such as animals trapped in amber or the preserved parts of animals trapped in tar pits. Seashells and tooth and bone fragments also belong to this group.

Since fossilization requires very specific, complex conditions, the vastness of the fossil record does not support the idea of uniformitarianism. When we consider the giant dinosaur fossil, we ask, "What buried these creatures so quickly?"

Dinosaurs are sometimes found in relatively large numbers. They are mostly washed into position, with many of them showing distinct stream orientation. Scientists explain this by stating that these creatures lived in the plains and were periodically overcome by floods. However, these fossil beds often stretch over thousands of square kilometers, which would not be consistent with such a scenario.

Fossil Footprints

Fossil footprints can provide useful insights about ancient conditions. The state of the ground the prints were made in, the direction the tracks lead, and the connection between the footprints and actual fossils can tell us about the animals' lives and deaths. This information can help us better understand catastrophism.

The Ground

In the Grand Canyon and other places around the world, there is a portion of the fossil record that seems to indicate a desert period. The Coconino Sandstone in the

Grand Canyon is one example of this. It is made of quartz sand and is up to 1000 feet deep in some areas. This sand is crossbedded, indicating the presence of moving wind or water. These crossbedded dunes lead scientists to believe that this layer of the fossil record is a desert.

The Prints

The Coconino Sandstone layer contains fossil tracks of both vertebrates and invertebrates. Most of these tracks were made while the animals were moving uphill. Studies of these prints show that these tracks were made in wet sand.^v The tracks look like those made by animals trying to escape rising water levels.

If these animals were in fact escaping a flood, then the crossbedded dunes are not deserts but rather underwater formations. In the 1970s, Coconino and other regions were reevaluated, and many scientists agree that these dunes were more likely formed by water than by wind.^{vi, vii}

The Connection to Animal Fossils

The distribution of animal fossils and their prints among layers of the fossil record is in line not with a slow evolution, but rather a catastrophic history.

We would expect that fossil layers containing footprints of an animal would also contain the fossils of the animals themselves. However, this is not always the case.^{viii}

Bird and mammal footprints and fossils occur mostly in the same layer. Amphibian and reptile fossils, however, don't match up with the footprints. For example, there are very few reptile footprints and no amphibian prints in the Cretaceous layer.

The only reptile prints are from dinosaurs. However, amphibians and reptile body fossils are extremely abundant in the Cretaceous layer.

If each layer in the fossil record really represents millions of years, how do the footprints and the body of an animal end up in different layers? If, however, the layers were deposited quickly during a global flood, it's logical that animals and their prints turn up in different layers.

Mammals and birds float in water, and therefore would not make footprints deep underwater. These animals would also be inclined to seek high ground during initial flood events. During these early flood events, reptiles and amphibians would be moving about, thus producing footprints that would be covered by rapid mudflows. This mud would preserve the footprints.

Later in the flood, very few reptiles and amphibians would be making footprints. Only larger creatures were still alive, such as dinosaurs. This explains how there could be few footprints but many body fossils in the Cretaceous layer. Only dinosaurs were making prints because the other reptiles had died, producing the abundant amphibian and reptile body fossils in that layer.

The catastrophic model of origins fits the earth's evidence better than the evolutionary model. Fossil footprints help lead us to that truth.

Dinosaurs and the Flood

Dinosaur fossils are used as evidence to support the theory of evolution. However, when we look closer, we can see that the fossil record in fact supports the creationist perspective.

Dinosaurs were buried rapidly. They are sometimes found in large numbers, and often have distinct stream orientation, which means that they were washed into position by a flood. Scientists say that floods often happened in the plains where the dinosaurs lived.

However, dinosaur fossil beds sometimes stretch over thousands of square kilometers. These beds are not made from small, seasonal floods.

Some dinosaur fossils were even found in marine deposits, suggesting that they were washed out to sea. Not too long ago, a *Scelidosaurus* fossil was found surrounded by algae and mollusks. This fossil even had skin tissue.^{ix}

Dinosaurs in the Fossil Record

The heaviest dinosaur on record is the 100-ton *Argentinosaurus*. The largest is a sauropod that could have been 50 meters long and 14 meters tall. These animals do not prove evolution, but rather disprove it. Animals with such diversity in size and form must have had a recognizable lineage, but this lineage cannot be found in the fossil record.

Large groups of dinosaur eggs have been found in Argentina, and scientists believe these clusters were dinosaur nurseries. However, these well-preserved eggs were buried rapidly in silt from a flood.^x

An article about paleontologist Luis Chiappe and the Argentinean cluster of dinosaur eggs says this:

Scientists found so many embryonic remains that it appears catastrophe struck the nesting ground, keeping many eggs from hatching...Floods may have penetrated the porous shells and drowned the embryos.^{xi}

Dinosaurs and Birds

Some say that dinosaurs did not become extinct, but rather evolved into the birds we see today. The evolution of birds is traced to dinosaurs, but there are some major problems with these assumptions. The feathered dinosaur *Compsognathus* has been linked to birds, but only because it has feathers.

Birds lack the embryonic thumb that dinosaurs had, making it "almost impossible"

for them to be related.^{xii} As well, the differences between the dinosaur lung and the bird lung make it unlikely that birds could have evolved from dinosaurs. Scientist John Ruben and his team studied the feathered *Sinosauropteryx*, and said that its “bellowlike lungs could not have evolved into the high-performance lungs of modern birds.”^{xiii}

Fossils are the crux of the theory of evolution. However, the very fossils so crucial to evolution contain evidence to prove that dinosaurs and birds are in fact not related. The fossil evidence also shows proof of a worldwide flood, which could destroy the very foundations of the evolutionary theory.

Petrified Trees

Age Implications of Petrified, Fossilized Trees

One of the finest modern-day detective stories regarding catastrophism in the fossil record is the story of the petrified trees found in Yellowstone National Park.

The general distribution and vertical layering of the petrified trees in the Yellowstone National Park and other petrified forests of the world are interpreted to indicate a series of up to 40 successive forests whose combined age was estimated as being well in excess of time-restraints imposed by a flood model.

It was believed that each forest was destroyed by volcanic activity, to be replaced in the course of time by a new forest. It was argued that this evidence could not support a young age for the earth. Dr. Harold Coffin carried out a detailed investigation of these petrified forests and discovered that they strongly support the catastrophic model.

As many of the trees stand upright in an apparent position of growth, it was accepted that they were the remains of an actual forest. However, the strata are uniformly flat and unlike any modern forest which, if covered by volcanic ash, would show trees growing on slopes and other uneven topography. Closer examination reveals that the petrified trees have no bark with side branches and root stocks ripped off. This is inconsistent with trees being covered with ash while in a position of growth.

There are not only upright trees in these strata, but many horizontal trees as well.^{xiv} In places, the vertical separation is actually very small; the new layer lying just above the stumps of the older layer. Close examination of the strata reveals typical evidence of sorting of layers, which tend to show reverse grading with the coarser material on top. This is consistent with material that has been deposited by water-induced slides and slumps, and does not support deposition of dry volcanic ash.

The organic layers, which previously were considered to represent the compacted forest floors, are water sorted, which belies a mere forest situation. Analyses of tree

orientation show that both horizontal and vertical trees are orientated in distinct directions.

By comparison, the orientation of fallen trees in standing forests in Oregon, deciduous forests in Michigan, and redwood forests in California show a lack of orientation.

A solution to these anomalies came in 1980, when Mount St. Helens erupted. The March 30 eruption melted the glacial ice, precipitating a flood on the south side of the mountain. Along with cold volcanic ash, the rushing water carried a large number of trees down the side of the mountain.

These trees of varying sizes were stripped of their side branches, bark, and roots. The logs were buried in the volcanic ash with a predominant stream orientation. This is similar to the orientation of the petrified trees on the slopes of Mount Horniday.

On May 18, Mount St. Helens erupted again, with an accompanying earthquake. Tremendous pressure within the mountain was released after a rockslide, and the top 400 metres of the mountain were blown off in a catastrophic explosion. A force equivalent to 500 Hiroshima atomic bombs was unleashed. The destruction of the forest was total, with the trees literally blasted out of the ground. Debris falling in the lakes surrounding the mountain caused tidal waves, which washed uprooted trees into newly formed and existing lakes.

In Spirit Lake a study found that the logs that had root stumps rapidly righted themselves, assuming a vertical position. A recent sonar scan of the bottom of the lake revealed 19,500 upright trees on the bottom of the lake.^{xv} If we apply this scenario to the situation prevailing in Yellowstone National Park, we can readily account for the existing situation on the basis of the catastrophic model.

More than one eruptive cycle would cause many currents and account for the numerous layers positioned over each other. Moreover, studies on the chemical composition of the volcanic deposits show that they were from eruptive events occurring simultaneously over a short period of time. This means that the relationship between chemical components in volcanic ejecta is constant only for single eruptive cycles.

Studies on lava flows in Hawaii show that eruptive events separated by more than three months can be distinguished on the basis of the magma composition. The time implications for the formation of the petrified forests are thus consistent with the short chronology. Further evidence for catastrophism can be found in fossils that are embedded in more than one geological layer simultaneously a situation which is impossible if uniformitarian principles are applied.

How long would it take wood to petrify? It has always been believed by scientists that petrification must take place over millions of years. However, these processes

can take place rapidly. Instant petrification has been achieved artificially and under natural circumstances. By impregnating wood with solutions high in minerals such as silicon and aluminum, instant petrification has been achieved and even patented.^{xvi}

Given the right circumstances, it would not take long for petrification to take place. Floodwaters together with volcanic ash would provide the perfect mineral combination for this process.

The Biblical Flood

The Biblical Flood would have been a catastrophe of awesome magnitude. It would have totally restructured the world. According to Scripture, the whole world was submerged under water, and the restructuring of the earth to produce the present topography must therefore be a post-Flood phenomenon.

Evidence for total submersion of the continents is widespread on Earth. Water deposition is a feature of the geological column, but one layer in particular—the Cretaceous layer—points to a transition between the pre- and post-catastrophic events in the Flood model.

The Cretaceous layer comprises chalk deposits caused by vast deposits of coccolith shells and other microorganisms with calcium carbonate skeletons. The Cretaceous layer is evidence that at some point in history, there was a worldwide shallow sea.

The calcium carbonate skeletons of certain algae would only settle out in large quantities if the seas were shallow and conditions favored algal blooms. Such disturbed ecological conditions would have prevailed immediately after a worldwide Flood.

The Cretaceous layer varies in thickness, a condition which could have been brought about by currents or by differences in the time that the various areas were submerged under water. In the area of the white cliffs of Dover, the deposits are substantial, possibly indicating that these areas were submerged for a long period.

These type of deposits do not occur today, as the calcium carbonate skeletons would dissolve in the deep oceanic waters presently existing.

Although no present-day scenario can parallel the Flood model, there are some events today that can shed light on what might have happened in the past.

The present-day agricultural endeavors and chemical industries have disturbed the ecology around them, resulting in some extraordinary algal blooms in waters rich in inorganic salts. One such area is the Mediterranean, where masses of chemicals provide environments conducive to massive algal blooms.

The post-Flood waters would have been rich in minerals and decaying organic

materials. In such circumstances, the algal blooms that produced the chalk layers could have been deposited in a very short time. Shifting continents would then have caused water drainage, recycling of sedimentary deposits, and subsequent burial of the chalk layer, plant debris, and decayed animal remains. The chalk bed deposits of the Cretaceous period are proof that everything was underwater.

Further evidence supporting this model can be found in the tertiary deposits, which are packed with fossil graveyards and pieces of broken mammalian bones, a condition which is difficult to explain using the standard evolutionary paradigm, but is to be expected in the case of catastrophism. Moreover, stream-orientation of fossils is evident in the tertiary which further points towards catastrophism.

A catastrophe of this magnitude must surely have left its mark on the stratigraphic record. Indeed, the later Cretaceous is associated with huge-scale extinction of numerous species including the dinosaurs. Of the animals that survived this great extinction at the end of the Cretaceous period, more than 50% of marine organisms also died in the destruction.

In fact, the post-Cretaceous world is a mere shadow of what it was prior to this time period. The ammonites and belemnites suffered complete destruction, and of all the swimming reptiles only three survived. Only 30% of all swimming marine organisms survived, whereas the survival rate of the freshwater organisms (97% survival) was much better.

Marine organisms are adapted to stable conditions and a large-scale upheaval of the marine environment can be expected to lead to large-scale destruction. Numerous fossil beds of redistributed corals and molluscs account for massive destruction of the once-stable marine environment. It is therefore not surprising that only about half of the bottom-dwelling marine organisms survived this event.

It's no wonder that scientists have debated the reasons for this massive extinction with such vigor.

Among the hypotheses are intense volcanic activity, epidemics of disease, large-scale greenhouse effect with rise in CO₂ levels leading to death of dinosaur embryos, change in plant composition, change in ocean salinity, high ultraviolet radiation, and dust clouds caused by collisions with comets or asteroids.

Most of these theories concentrate on the dinosaurs, but fail to explain the large-scale destruction of all the other life forms. Surprisingly, a worldwide destruction by water comprising large scale upheaval of the ocean floor and submergence of the continents is totally absent from all scientific discussion, although all the evidence points precisely to such an event.

Reasons for Extinction

If we were to seek a reason as to why so many of the great creatures that once roamed the earth are now extinct, we might guess that the post-catastrophic world is not conducive to their survival.

Salt Levels in the Water

Firstly, there is evidence for a massive increase in the salinity of the oceans. As a comparative physiologist, I have always been fascinated by the fact that marine fish (both the cartilaginous and bony fishes) are anatomically and physiologically adapted to a fresh water environment.

A fish's internal salt concentration is approximately one third of that of seawater and its kidneys are adapted for the elimination of water—although this function is not required in seawater. In fact, their low salt concentration causes them to lose water by osmosis so that they cannot afford to lose water via the kidneys.

The cartilaginous fishes (sharks and rays) solve this problem by retaining urea (a toxin) to raise their osmolarity to a level higher than seawater so that they can gain water by osmosis, whereas bony fishes desalinate the seawater with a salt pump in their gills. Obviously these organisms were adapted to much lower in the past and only survive because of their ability to osmoregulate under these circumstances.

The retention of toxins by a cartilaginous fish is an indication of an emergency solution to which they eventually adjusted. Only organisms that could either conform to the new conditions or regulate their salt content survived. The more sensitive are now extinct.

How could marine and fresh water organisms survive if the waters of the earth were all dumped together during the global Flood? The separation between fresh and salt water would only have been re-established once the continents rose above the water level. Surprisingly, however, large bodies of fresh and saline waters, or even large bodies of fresh water from different sources can coexist side by side without much mingling along the contact zones.

This is seen in the great Amazon River, where two bodies of water run side by side for kilometers on end with limited mingling at the contact zone. During the Flood, organisms adapted only to fresh water would have been able to survive in large bodies of fresh water that remained relatively distinct. Moreover, the marine life is enhanced where great bodies of fresh water come into contact with the ocean, and many species can only spawn in fresh or brackish water, thus indicating that these were the conditions to which they were earlier accustomed.

One would expect large-scale destruction of aquatic life in areas where the water composition was rapidly and radically changed due to hypersalination from underground aqueducts and through catastrophic mingling of the water masses, and this is exactly what we do find. The fact that so many marine organisms use rivers

and estuaries as their spawning grounds indicate that the best survival salinities for these creatures must exist under these low saline conditions and that is why they will migrate long distances to spawn in such areas.

The Thermal Environment

In terms of coping with the thermal environment, only two categories of land organisms exist today. Terrestrial animals are either endothermic or ectothermic.

Endothermic animals (largely mammals and birds) control their body temperatures by increasing their metabolic rates where environmental temperatures drop. Ectothermic animals control their body temperatures by selectively utilizing external sources such as solar radiation. In the absence of solar radiation, the body temperatures of these animals is the same as that of their environment. We also speak of these categories as warm-blooded and cold-blooded animals.

In a world with climatic extremes, all animals would have to belong to one of these two categories to survive. There is evidence that the great reptiles of the past were probably neither endotherms nor ectotherms, but somewhere in between. The same probably holds true for many of the now extinct giant amphibians and mammal-like reptiles.

Studies of bone-to-marrow ratios show that the dinosaurs and other creatures were in this intermediary condition and would thus require stable environmental conditions.

Plant fossils suggest that the earth had a relatively warm climate prior to the catastrophe, but the post-catastrophic climate was likely less stable. Moreover, the large-scale reduction in vegetation associated with the destruction means that many food sources were no longer available and precludes survival of these animals.

The paleontological record shows that far greater varieties of plants and animals existed in the past than are living today. It is also possible that only non-specialist feeders could have survived destruction of a preferred food source, so that many of the great creatures of the past are no longer with us because the planet does no longer provide their niche food

Fossil Reefs

Coral reefs and coral islands hold secrets about the age of the earth. They can tell us about the shaping of our oceans and the continents. They can also challenge catastrophism since they seem to have developed slowly over a long period of time.

Coral reefs consist of a hard core covered by living organisms that are able to resist the ocean's wave action. Reefs are one of the most complex marine ecosystems in the world. Reefs are constructed of both trapped sediments and the organisms that live on them.

In the fossil record, reefs appear to suggest long periods of stability. But did fossil reefs form the same way current reefs do?

How Reefs Form

Reefs can form in two ways. They can either grow slowly in one place until they reach full size, or they can be formed relatively quickly by transported sediments. If a reef is formed by transported sediments, the coral could have grown elsewhere in pieces and been transported by water movement to its current position. This movement would likely have occurred during a global flood.

Fossil reefs show evidence that they were formed by transported sediments. The diverse organisms found in fossil reefs are in a specific orientation that would not happen if the organisms had all grown together in one location.

The transportation process would not have taken millions of years. Fossil reefs such as the Nubrigyn Algal Reefs in eastern Australia are now seen as the result of massive flows of sediments. The pre-Flood reefs were broken up and washed away by the Flood, then deposited in layers we can see in the fossil record.

These recycled reefs show that the ocean floor was ripped up and warped during the Flood, in order to pour water over the continents. Then, the reverse would have occurred as the water drained off the land, forming the ocean basins we see today.

The question of how long this process took can be answered by both living coral reefs and dead coral islands

The Speed of Reef Growth

The previous article, Fossil Reefs, discussed the different ways reefs can form, and how the fossil reefs show a quicker formation than is usually considered. Now we will see how the speed of reef growth points to a global flood.

Living Reefs

Living reefs are considered to be slow growers. They also require certain conditions to grow.

Reefs are constructed of many organisms, including mostly coral and algae. Since algae are photosynthetic, the reef must be in contact with enough light to sustain the algae. However, once the reef reaches the surface of the water, its growth is stunted because the organisms are sensitive to air and UV radiation. Maximum coral growth occurs a few meters beneath the water's surface. However, the coral cannot usually grow up from the bottom of the ocean because it is too deep.

Estimates for coral reef growth are usually studied at the surface, where growth is not optimal. However, high rates of growth have been recorded below the surface of the water. In fact, a number of ships have sunk in areas where reef has unexpectedly grown up quickly. Usual reef growth rate estimates are 0.8 to 26 mm/year, but maximum rates of 414 mm/year have been recorded. Studies also show that if

water temperatures are 5°C warmer, the growth rates double.

The Enewetak reef in the western Pacific is 1405 meters thick. According to surface growth rates, this reef would have taken many thousands of years to develop. However, according to the optimal growth rate of 414mm/year, this structure could have grown in around 3400 years, which fits into the Biblical timeline.

If ocean temperatures were higher in the past, which is likely, reefs would have developed even faster. Reefs grow as fast as the temperature and light allow. They can grow—and have grown—much faster than the usual growth estimates suggest.

Dead Reefs

If coral must have sunlight in order to develop, how did the dead corals in the deep ocean form in the first place?

Clearly, these corals must have been in contact with light at some point, otherwise they could not exist. But now that they are on the ocean floor, they can no longer grow or survive because of the lack of light.

A reasonable solution to this problem is that the ocean floor was higher in the past, and at some point dropped to its current level. The ocean floor must have dropped at a rate slow enough to allow coral to grow, but fast enough in some places to kill the corals that were cut off from light.

Thus, reefs give us a model for what happened during and after the Flood. At the time of the Flood, the ocean floor was raised, dumping water and marine species onto the land. This explains the massive marine deposits we find on the continents. At the end of the Flood, the ocean floor warped down. This warping was fast in some areas and slow in others, forming the current ocean floor.

The Post-Flood World

The post-Flood world must have been very wet, and it is therefore not surprising to find numerous algal deposits with ferns, reeds, reed fish, and dragonfly nests in these deposits. Furthermore, very wet and hazardous conditions are implied by the numerous inland basins and relics of giant lakes.

Today's Great Salt Lake in Utah, USA, is about 6% of its original size, and only fractionally as deep as it was originally. In fact, it is estimated that the lake must have been some 230 meters deep at one stage. Collapsed limestone caves from this time period also contain fossils of bats which date from the post-flood era. Interestingly, these creatures are identical to present-day forms.

Recolonization

After the Flood, recolonization would have begun. There is evidence of ecological succession in the fossil record of this time. Also, we can deduce that the conditions

were considerably warmer than those of today, by the numerous temperate-adapted fossil plants and animals found in regions that today are climatically unsuitable for their existence.

Recolonization of the new earth would have had to be consistent with current concepts of ecological succession. There is evidence of succession in the youngest geological layers. Even distribution patterns of animals suggest colonization patterns consistent with a Biblical perspective. For example, genetic studies have shown that colonization routes in Africa were in a north-south direction, and in Asia and into the Americas in a west-east direction.

Once recolonization had largely been completed, ecological barriers caused by desertification, mountain formation, or climatic changes could have separated populations. An example could be the African and Indian elephant populations, which are probably relics of a larger population with its origin midway between the two—a scenario to be expected in the catastrophic model. In view of humankind's great generation length, humans would have been the last organism to spread across the new world.

Did Humans Evolve?

The evidence for the evolution of humans is extremely scant, and as more information becomes available, more and more intermediate forms are removed from the family tree. Interestingly, there has been an ongoing debate about the origin of humans. Did we originate in Africa or Asia? Protagonists of the two viewpoints have been at loggerheads since the first fossils of so-called human ancestors were discovered on the two continents.

In recent times, the theory that humans evolved in Africa held sway, but recent evidence again supported the view that humans evolved in Asia. The compromise viewpoint that humans appeared almost simultaneously in both regions is even more surprising. Again, it can be argued that the data is consistent with a distribution from an area midway between the two disputed regions, making the story of Noah's ark even more plausible.

Volcanoes and Glaciation

After the reoccupation of the post-catastrophic world, the earth experienced a further cycle of catastrophism. Evidence for this can be seen in the vast volcanic deposits present in the youngest layers of the geological column. Volcanism of this scale was probably unleashed when the super-continent *Pangaea* split up to form the present-day continents. It is estimated that 50,000 volcanoes (the mid-Atlantic Ridge and the Pacific ring of fire) were active at this time.

The volcanoes spewed vast amounts of volcanic ash into the air, thus blocking some of the sun's heat and causing a rapid drop in temperature. Even relatively minor present-day volcanoes influence global weather patterns after eruption. The combination of warm oceans and sudden drop in radiant energy is ideal for the

formation of glaciers, as it can provide the necessary sustainable precipitation to allow glacial advance. This would have induced the ice age.

Studies at the Athabasca glacier and glacial bed F26 show that complete glaciation and deglaciation need not have taken more than 600 years. Moreover, evidence for more than one ice age is scant.

The glaciers would have separated populations such as the woolly mammoth into a northern and southern population, but conditions must still have been relatively warm in coastal areas, as evidenced by coexistence of animals adapted to different climatic conditions. An example would be hippopotami and reindeer coexisting in England at that time, as evidenced from the fossil record.

Ancient Mammals

The mammals of the Cenozoic layers are often depicted as bizarre and very different to what exists today. Common illustrations are the sabre-toothed tiger, the giant land sloth, and the woolly mammoth. A feature of these animals is their size and diversity.

Obviously, in a post-catastrophic world with low population densities, the potential for variation would have been great until increase in population density increased the selective pressures and weeded out the extremes of the range. The assumption that these large mammals existed very long ago and must have represented ancient ancestral forms of modern mammals is not consistent with the facts.

In Siberia, woolly mammoths are found in the ice in such a state of preservation that the flesh is intact. They must have been buried and frozen instantly because such large animals have large heat stores and would have rotted.

In South America pelts have been found of giant sloths indicating a very recent existence. Today we know that reduction in size need not take millions of years, but can be achieved rapidly by increases in competition or changes in climate. Animals on islands frequently undergo large scale reduction in size within the space of a few generations.

Human Evolution

Human evolution is a contentious subject. Unfortunately, the discussion is centered more on opinions than the facts we can see in the fossil record.

Evolutionary human lineage is based on a scarce sampling of fossils. Since humans tend to live in large groups, why have so few fossils been found? There are countless legends of master civilizations and lost continents in global folklore. Could it be that most of the human fossils are in Atlantis, now buried under sediment at the bottom of the ocean?

Most of the speculation on human evolution is based on small apelike fossils called Australopithecines. The famous fossil Lucy, discovered in Ethiopia in 1972, is part of this group. Another fossil group is the archaic Homo sapiens, or Neanderthals.

While these fossils may appear to be ancient humans, we must remember that all primates existed at the same time. Humans, Australopithecines, and Neanderthals all lived on Earth simultaneously. Therefore, these other fossil groups cannot be our ancestral line.

Australopithecines

As research continues, fossils are being removed from the human ancestral line. For example, Lucy and other Australopithecines were said to walk upright, leading to the conclusion that they are human ancestors. However, Australopithecines had curled toes and the same knuckle-walking anatomy as chimpanzees and gorillas.^{xvii}

Also, the shape of their ear canals and their long, curved fingers and toes show that they could not have walked upright.

Footprints were found in Laetoli, Tanzania that were supposedly made by Australopithecines. However, Dr. Russell Tuttle concluded that the prints from Laetoli are identical to those made by humans who habitually walk barefoot. Considering that humans and Australopithecines lived at the same time, it is logical to conclude that humans made the prints.

There is no evidence that Lucy and her kind were not simply apes. Lucy's status in the human ancestral line is based on arm-to-leg length ratios that are midway between those of apes and of humans. However, the bones available for the study are so fragmented that this ratio cannot be properly measured.

Lucy's hip is apelike, not like a human hip. To argue this, scientists claim that Lucy's hip is distorted from its original shape. However, no one can prove this, as there is no undistorted hip to compare it with. Also, the knee in the Lucy fossil is used to prove that Australopithecines walked upright, but it was not even found with Lucy.

Neanderthals

The Neanderthal fossil is simply a human fossil. It has brain capacity larger than that of humans today. The fossil shows evidence of bone deformity produced by rickets. Any human who is aged and diseased will have the hunched posture and bone features that the Neanderthal fossils do.

Where on Earth did Humans Originate?

There has been an ongoing debate about where humans originated. Some say we originated in Asia, others say it was in Africa. Still others hold the view that humans originated in both places at the same time. The evidence, however, shows that humans spread out from an area midway between Africa and Asia, making the Biblical story scientifically plausible.

Key Controversies in the Field

Anthropologist Roger Lewin says that the confusion about human origins is fueled by competition among researchers. Lewin's book *Bones of Contention: Controversies in the search for human origins* cites eight main controversies in the field:

1. **The Taung child in South Africa.** This fossil was once rejected as a human ancestor. It has since been accepted.
2. **The Piltdown Hoax.** A human skull and Orangutan's jaw were altered to make evolution look credible.
3. **The Nebraska Man.** In 1917, geologist Harold Cook found a tooth. Scientists believed it was from an undiscovered ape, an ancestor of humans. However, in 1925 scientists discovered that the tooth actually belonged to an extinct pig.
4. **Neanderthals.** The original descriptions of the Neanderthal fossils were distorted to make the fossils seem more primitive than they are.
5. **Ramapithecus.** This species was once considered a human ancestor, but is now known only as a relative of the orangutan.
6. **East African Volcanic Dating.** There is a heated debate over the age of a volcanic layer that is associated with human fossils in East Africa.
7. **Australopithecines.** Paleoanthropologists Richard Leakey and Donald Johanson disagree on where the newer Lucy-type finds were located.
8. **The Force of Change.** There are ongoing conflicts about whether predation, hunting, or cooperation caused human evolution.

Lewin says this about the theory of human evolution:

In the physical realm, any theory of human evolution must explain how it was that an apelike ancestor, equipped with powerful jaws and long, daggerlike canine teeth and able to run at speed on four limbs, became transformed into a slow, bipedal animal whose natural means of defense were at best puny. Add to this the power of intellect, speech, and morality, upon which we "stand raised as upon the mountain top" as Huxley put it, and one has the complete challenge to the evolutionary theory.^{xviii}

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