

**Book Review**  
**Grand Canyon: Monument**  
**To Catastrophe**  
**Review by Greg Neyman**  
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<http://www.answersincreation.org/gcbr.htm>

## **Chapter 1 – The Grandest of Canyons**

In this opening chapter, the authors try to present a picture of the overall scope of their frame of mind.

### **What Mean These Stones?**

There is not much here of scientific value; however, this section is where the authors proclaim their theological positions. Unfortunately, they lead off with a biblical interpretation error, that of the mistaken belief that there was no death before Adam and Eve, something the Bible makes no claims about, but is inferred from several misinterpreted passages of scripture. To see a rebuttal of this, see these two articles:

Death Before the Fall of Man (<http://www.answersincreation.org/death.htm>)  
It's All About Teeth (<http://www.answersincreation.org/teeth.htm>)

On page 3, column 1, the first new paragraph, they state that II Peter 3 says that in the last days people will deny the message of the creation. First notice that they capitalize the word "creation," thus showing that they have put the creation on equal footing with the major doctrines of the Bible. However, the Bible does not say, "Believe in a six-day Creation and thou shalt be saved." This is not a prerequisite to salvation, nor any other Bible doctrinal position.

Yes, it is true that in the last days people will deny the message of the creation. But, what is the "message of the creation?" By simple logic, God created the world. If we look at that world, it should tell us how old it is. Using sound science, the world testifies that it is roughly 4.5 billion year old age, so that must be true. Remember, God is truth, and what we see in creation is true.

Yes, people are denying the message of the creation, but it is the young-earth creationists, the authors of this book, that are denying the obvious message of the rocks. In column 2 on page 3, 10 lines down, they say the Bible teaches that people are willingly ignorant, that they deliberately choose to reject the evidence. Unfortunately, the authors are describing themselves.

True science, which these scientists claim to be, perform experiments, or make observations, and then reach a conclusion based on these observations. That is exactly what geologists do. However, the young-earth creation scientist starts with the assumption that the earth is only 6,000 years old, BEFORE he examines the evidences.

He has already reached a conclusion BEFORE any evidence is even considered. This false, unscientific assumption is what leads to the many errors in their works, as you will discover as you delve deeper into their canyon. Based on true scientific principles, you cannot even call these people, with PhD's in many cases, scientists.

I am, however, thankful for their work. Through their research, they have strengthened the faith of many. However, in their zeal, they have alienated the very world that they seek to save. Not only do they alienate non-Christians, some of these people go so far as to claim that Christians who believe in an old earth are not Christians.

### **Five Themes**

In this section, the authors put forward five themes. While only slightly interesting, they appear to add nothing to the substance of the book, as I have not found them yet throughout the portions I have completed (perhaps they will come into play somewhere, then I will alter this writing). I would characterize this section as "smoke and mirrors," otherwise known to writers as 'fluff,' which is material that is not essential to the main points, and thus can be eliminated with no affect on the whole. The only purpose I can envision is for the authors to gain more credibility with the reader by filling their minds with fancy words.

### **Our Environment**

The authors start with a discussion about creationist's responsibilities toward the creation. As an old-earth creationist, I agree with the first paragraph. They then launch a long section against the evolutionist. Most old-earth creationists do not believe in evolution...so there is no problem here. We believe that as God created species, others became extinct, and we view each new creature in the fossil record as a unique creation. There are Christians who believe that God used evolutionary processes. If you want to believe this, you are against the position of many old-earth creationists, and all young-earth creationists. However, unlike the young-earth creationists, I will still call you a brother in Christ. If you look at the major doctrines of the Bible, none are affected by either position, so go for it. We are all brothers in Christ.

## **Chapter 2 - Geologic Structure of Grand Canyon**

The authors give a good general discussion about basic geologic principles. No rebuttal necessary.

## Chapter 3 – Interpreting Strata of Grand Canyon

The authors give a brief description of the interpretive framework one uses to interpret the strata of the canyon. The first misleading statement made is in the constant use of the term "evolutionist." The authors assume they are arguing against the evolutionists only, however, most Christians who believe in an old earth are not evolutionists. So, from this point on, assume that the term "evolutionist" is used generally to apply to anyone believing in an old earth.

Page 22 gives a statement claiming that evolutionists frequently make the uniformitarian assumption that strata of the Grand Canyon formed during long ages as oceans slowly advanced and retreated over North America over millions of years. Yes, this is the conclusion of geologists, but it is not an assumption...it is based on the evidence. Using scientific principles, the scientist looks at the data, and then formulates conclusions. This is what the geologist has done. However, the young-earth theorist is the one who is guilty of making assumptions. The young-earth person has already "assumed" a young age of the earth, and then examines the data to try and justify it.

Figure 3.2 shows how they propose the two opposing theories of the Grand Canyon emerged...because of the framework of the person examining the data. The Creationist conclusion is absolutely correct...based on their assumption that the earth is 6,000 years old, they must interpret the data as meaning "young." However, the "evolutionist" model is wrong. As a Christian, I've examined the data, along with many other Christians, and we have determined, OUTSIDE of an evolutionary framework, that the earth is old, merely on the basis of data alone.

On page 23, the authors give the example of a Christian geologist, Davis A. Young, and the authors try to point out his narrow-mindedness in not considering both young and old options. They claim "it is imperative" that we examine both uniformitarian and catastrophic frameworks for the Grand Canyon. Why should we examine the evidence based on the "assumption" that the earth is young? Even so, I and many others have done so, and the evidence for an old earth is overwhelming.

### Principles for Interpreting Strata (Page 23)

The authors give a good explanation in this section.

### **Limestones of Grand Canyon**

#### Lime Mud Layers/Rapid Deposition of Lime Mud (Pages 24-25)

The authors bring up some good points about the composition of the limestone. Obviously some questions remain. The authors then use a common argument that is often seen in young-earth literature. They claim that some modern examples of rapid lime deposition occur during hurricanes in the Florida and Bahama areas. They use this "small" example of deposition to prove that it doesn't take millions of years to deposit a limestone. The simple argument here is that if the young-earth theorist can prove it on a small scale, then it is believable on a larger scale. Unfortunately, just because it can be proved on a small scale (several feet of sediment, over a few square miles) does not mean

that it's workable on a large scale (hundreds of feet thick, over thousands of square miles). The authors make the statement "Clearly, catastrophic processes are needed to make these fine-grained limestones." No, they are not...we can see fine-grained limestones being produced today, at a very slow rate. I could argue based on this that it takes a long time to produce fine-grained limestones.

#### Fossil Reefs (Page 26)

The authors make the argument that since there are no large reef structures in the limestones of the Grand Canyon, then there was not much time for these organisms to grow and die before being buried. Since coral reefs take many years to form, the existence of a large reef structure in the Grand Canyon would prove that the limestones there formed over many years, and not during the flood of Noah.

No problem...however, if there are ANY large fossil reef structures in any rock strata anywhere in the world, then there would be definite proof of an old earth. Consider the Coral Caverns of Pennsylvania, where a fossilized coral reef can be seen in the walls of these caverns. Even more conclusive is the reef exposed at Falls of the Ohio State Park. This 387 million year old reef stretched for 1,000 miles, and could not have formed in only weeks, as the Flood requires.

#### Rapid Deposition of Limestone and Source of Lime Sediment (Pages 26-28)

The authors tell about the excellent nautiloid fossils from the Redwall Limestone. While not a major problem, there is some data missing. Concerning the orientation (Fig 3.6) of the fossils, they fail to state which end of the fossil is pointing towards the Northwest. Given the conical shape shown in Figure 3.5, and the argument on the following page about the current coming from the Northwest, we would expect the slender, pointed end to be towards the northwest. However, all we are told is that the long axis is aligned northwest to southeast. Second, a small depression, or incline, could cause these fossils to be oriented in the same direction. Thus, they may not be related to current at all.

Of more importance, however, is the theory of fossil randomization. Using a Flood model, as all the organisms died, they would be deposited in the strata. We should see a completely random fossil record, with nautiloids and other animals mixed throughout the rocks. The most animals would be in the lower levels of rock, as most would have died early, especially the land, air-breathing vertebrates.

Using this model, we should see these nautiloids in other Grand Canyon layers...but we do not see these straight shell nautiloids anywhere else in the canyon layers. Furthermore, the land, air-breathing animals would have died first...so why are they deposited in the layers of rock that are ABOVE the Redwall Limestone? By the Flood model, they were the first to die, and should be the first in the fossil record. Using this test alone is enough to disprove the young age of the earth.

## **Sandstones of Grand Canyon**

### River Sand Deposits? (Page 28)

The authors make some valid points about the lack of deltaic structures in the Supai Group. They state the doubts of geologists as to the deltaic origin. However, they fail to mention one thing about this group...the conglomerates. A conglomerate consists of course, rounded rock fragments (greater than 2mm in diameter), held together by a matrix of sand, clay, and cement. They mostly form in alluvial fans, river channels, and beaches. Conglomerates do not form in a deep-marine environment. Figure 3.7 shows conglomerates at the base and within the Watahomigi Formation, and at the base of the Esplanade Sandstone. The mere existence of these conglomerates is proof that near-terrestrial water deposition caused them, not a “deep” ocean flood environment. Given the various levels of the conglomerates, it is evidence of the advancing and retreating of the ocean/land horizon.

They go on to state that geologists are divided on the origin of these sandstones? This division represents science at work, as we try to understand this formation. However, it does not imply a young earth...it only implies we don't have the whole picture. As I've stated earlier, young-earth theorists make a big deal out of geologists disagreeing with each other. This is because they cannot come up with a plausible explanation themselves that will fit a young earth model, so their only recourse is to cast doubt on the old-earth models.

### Wind Deposits (Page 29)

In this section, the Coconino Sandstone is considered. Here is the problem...you can't have a water deposited formation on top and below the desert, wind-blown sands of the Coconino. This would imply desert conditions right in the middle of Noah's Flood. This must be explained away by the young-earth theorists, and they tried to do so, but failed miserably (<http://www.answersincreation.org/coconino.htm>).

The authors state that on first glance, this wind-blown interpretation would be an embarrassment to young-earth believers. They are right. But on second, third, and all subsequent "glances" the conclusions do not change. The Coconino is definitely wind-blown. Even if they could prove it otherwise, an even larger problem exists, and that is the Navajo Sandstone, another, larger wind-blown formation stretching from Utah to Northern Arizona (<http://www.answersincreation.org/desertproblem.htm>).

### **Footprint Experiments (Page 31)**

The authors claim that footprint experiments, conducted by Dr. Leonard Brand, conclusively prove that the Coconino footprints were made underwater. While apparently conclusive, there is one major hole in this theory.

In order to have a fossil footprint in the first place, you must have two distinct layers...the one that the footprint impression is in, and the one overlying the impression. Consider a dry, desert environment. If a creature made a footprint, and it was immediately covered over with dry sand, you have dry sand, covered by dry sand. This

does not produce the two distinct layers, and the dry sand would appear as one indistinguishable unit. Therefore, in a situation where both layers are dry, you get no footprints.

Now, let's consider the underwater, catastrophic model. You have a constant influx of sediment. The animal makes the impression in wet sediment, which is then immediately filled by more wet sediment. Again, with this wet on top of wet environment, you do not have distinguishable layers to give you the footprints. In a mudstone/silt environment, you could get footprints in a wet-on-wet condition, but not with pure sand.

The only way to get these footprints is in a desert, sand dune environment. How? The animals would have to be walking after a rain event (or period of near 100% humidity), and would be making these impressions on wet sand. Then, after the rainstorm, the footprints were covered over with dry sand. This gives two distinct layers.

His experiment is flawed on another point. He has to make a huge assumption that the tracks were made by a newt-like animal. In fact, we have no clue what kind of animal made these tracks, so any study based on any animal type would be flawed.

### Desert "Dunes?" (Page 32)

After reading this section, I was smiling with joy! I'm going to cut to the chase...the authors use a grain size plot to show that the grains in a desert sand dune plot in a straight line, and the sands in the Coconino Sandstone are more random, and they use this argument as proof that the Coconino is water deposited.

Remember, any dry, desert sandstone would disprove the Flood of Noah as having deposited all the rock layers. If you have a dry sand layer, and water deposited layers on top, then you have a dry period right in the middle of Noah's Flood!

If you have the book, look at the column right above Figure 3.10 on page 32. The first sentence in the first paragraph states that the geologist making this plot in the figure obtained four samples. Where did the desert sand dune samples come from? The reference given for this sentence, number 44, at the end of the chapter, identifies the source. The source of the desert sand dune sample is "Stratigraphic Analysis of the Navajo Sandstone!!!" Its amazing...the authors are actually admitting that the Navajo Sandstone, formed by wind-blown sand, is a desert formation! A quick look at the stratigraphic column above the Navajo, shows thousands of feet of sediment on top of it, including other dunes, floodplains, and beach environments of the Jurassic period. This INCLUDES the Morrison formation, which is the source of massive numbers of dinosaur fossils. How could these dinosaurs be killed during Noah's flood, AFTER the formations of the Grand Canyon were deposited, and more importantly, AFTER the wind-blown desert formation known as Navajo was created (by young-earth models, during the flood). This is totally inconsistent with the flood model proposed by young-earth theorists...and they inadvertently destroy their own theory in this section of the book!

Based on this, you can skip the rest of the discussion on the Coconino...it doesn't matter since we have the wind-blown Navajo Sandstone! (see also <http://www.answersincreation.org/desertproblem.htm>)

## **Shales of Grand Canyon**

### Thin Laminae (Page 37).

In this section, the authors try to disprove the varve theory. They give modern examples of thinly-laminated sediment forming in a rapid fashion. First, you can completely ignore the part about Mt. St. Helen's ash layers. Deposits of airborne ash have no correlation to deposits of water-deposited clay. Second, the Hurricane they mention created a whopping six inches of laminated mud! This in no way proves a hundred's of foot thick shale of the Grand Canyon was caused by the flood. After all, a hurricane, moving over a spot where the clay formed, lasted 12 hours at best. However, not only does Noah's Flood have to produce the finely laminated shale, it must also produce limestone and sandstone, in alternating orders...it can't do this. At a clay accumulation rate, at best, using the hurricane model, of 1 foot per day, and the flood lasting 370+ days, you can see the obvious problem! At most you have 370 feet of sediment, but the Grand Canyon is over 5,000 feet thick.

Third, they give the example of a lake in Switzerland, which forms five laminae pairs per year. Great! So now, the four million laminae of the Green River Formation in Wyoming can be formed in 800,000 years, still much too old to fit the young earth model. Again, this has no relevance to the Grand Canyon.

Fourth, they give the example of the laboratory test on page 38. Unfortunately, shale in the natural world does not form in a test tube. This test proves that the hurricane can produce the lamination, but in a lacustrine environment, proves nothing. The amount of sediment available in the lake environment per square inch is vastly less than that used in the lab experiment. The experiment does lend credibility to the hurricane deposition, but has no bearing on the Green River Formation.

Concerning the experiment on page 39 by Buchheim and Biaggi, their methods are flawed. They incorrectly assumed that the deposition rate of the entire basin is the same throughout the basin! Obviously, the deposition rate would be greatest as you went from the middle of the basin towards the shoreline, which is the source of new material being washed into the basin. The fact that the number of laminae increased by 35 percent, from the middle of the basin towards the edges, is perfectly consistent with the geologic model (see <http://www.answersincreation.org/varves.htm>). The authors also point out that kerogen content decreased as you move from the center outward. This is also consistent with a slowly depositing shale. At the edges, the ratio of silt to biologic material is greater, because of the influx of silt from the edges. You would expect to get a higher ratio of kerogen as you moved away from shore.

This section has proved that annual varves may not be annual, but they provide no proof for a global, one-year flood model.

### Burrows of Organisms (Page 39)

Here the authors make some valid points. Their "alternate interpretation" referred to in the last paragraph has one apparent flaw. Let's suppose that these were escape burrows, caused by animals which were trying to escape rapid burial. Remember, the young-earth creationist claims you need rapid burial in order to fossilize an animal. If

this is the case, then...where are the animal remains? Some would have escaped, to be sure, but some would not have. This would have been perfect conditions to promote fossilization, so we should have them there, but they are not...we only have burrows.

### Shrinkage Cracks (Page 40)

In this section the authors try to explain away the existence of shrinkage cracks, or mud cracks, a common feature seen in dry environments. These would indicate a period of dryness in the middle of Noah's Flood. In the opening section, the authors mention they are abundant in the Grand Canyon, occurring in the Hakatai Shale, the Supai Group, and the Hermit Shale.

They use the argument that some of the shrinkage cracks in the Hermit Shale appear to be syneresis cracks, or, they occurred in underwater conditions, not dry, hot environments. Yes, it is clear that these cracks do appear to be created this way, apparently giving weight to the young-earth model.

But, wait a minute! They argue this for the Hermit Shale...what about the Hakatai and Supai? No argument is made concerning these! IF these were also apparently syneresis cracks, there would be no doubt that they would tell us this...but they do not. They hope that the reader will be convinced that these shrinkage cracks present no problem to a young earth, based on the limited evidence given refuting some of the cracks in the Hermit. Their silence on this issue is proof of the other cracks as being standard, dry-environment mud cracks, which don't fit into the flood model!

### **Long Ages Between Strata?**

The authors explain unconformities in this section, and attempt to explain them away in the following sections.

### The Great Unconformity (Page 45)

First, the authors present some weak points about weathering. Then, they go on to totally confuse the reader! They claim there is evidences for catastrophic erosion can be seen in the large boulders of Shimono Quartzite (Figure 3.23). While interesting, this photo is far from clear. About 3/4 inch down from the top of the photo, and 2.5 inches from the left, one can see a folded stratum. The picture appears to be a slightly metamorphosed rock layer, with blocks of sediment (not boulders) differentiated from the pressure. Part of their argument is that significant erosion can occur from bedrock over a short period of time. If so, we should see rounded boulders...however, the so-called boulders in the picture are all angular. It is apparent that the picture does not represent a flood event, but a metamorphic event. The entire Flood interpretation of the Great Unconformity appears to rest with these so-called boulders.

At this point, let's talk about the Shimono Quartzite. What is Quartzite? It is sandstone that has been put under pressure, to a slight degree, and the sand particles fuse together forming a more solid rock. It is apparent these rocks were pressurized, especially since you can see the folding. Thus, you can ignore the previous discussions in this section...they don't matter. Angular blocks...not boulders!



Take a note of Figure 3.22. I've shown in other articles, that young-earth theorists think geologists date rocks based on how old it looks. In this figure, they are guilty of what they accuse geologists of!

In conclusion, there is absolutely no evidence that would cause one to doubt this unconformity as being millions of years in duration.

#### The Kaibab-Toroweap Boundary (Page 47)

There is evidence in geologic circles that this unconformity is being challenged. As such, we will leave it alone.

#### The Supai-Redwall Boundary (Page 48)

This is a very weak section for the authors. They offer no conclusive proof, only a weak argument about the karst features forming after deposition of the overlying sediment (without anything supporting this theory). Their admission at the end, "This is a topic worthy of further study" is an admission that they are weak in rebutting the old ages implied by this boundary. This is a common "cop-out" used by young earth theorists when they can't explain away the old age of the earth.

Indeed, I was quite surprised at the weakness of their explanation. Their final two conclusion paragraphs present very weak arguments, yet they come to the conclusion in the last sentence that "extensive pre-Supai solution is doubtful." The only way to reach this conclusion from this section is to "presuppose" the age of the earth is only 6,000 years, and if you don't understand it, then say "it needs further study." In other words, ignore the evidence.

#### The Coconino-Hermit Contact (Page 49)

#### The Hermit-Esplanade Contact (Page 50)

Let's consider these two together as a unit. First, the Coconino gives good evidence of this paraconformity. While it is surprising that the authors give so little evidence against this being "old," it is not surprising considering the evidence for it.

Consider the context of the young-earth argument. They focus in on the paraconformity at one location, along the Bright Angel Trail, and claim there is no channel erosion, residual soil, or weathering features that can be distinguished. From this, they then "assume" (and hope the reader will too) that this is true throughout the contact. Is this true? I don't know, since I don't have access to any documentation about it. However, no statements are made about the "entire" contact...only about this one small section of it. Great...they have proved there are none of these features in this roughly 300 foot long exposure of this contact. However, I realize that my argument is not conclusive, either. So consider the following paragraph's evidence.

There is a beautiful picture of this Coconino-Hermit contact in Figure 3.25, and of the Hermit-Esplanade Contact in Figure 3.26. You can easily see the sharp contrast between the Coconino and the Hermit. Looking at the Hermit-Esplanade photo, you can't see this. That is because, as the authors note in the caption, of the intertonguing change in the grain size of sediment. In plain language, as the sediments change type, from shale to

limestone, there is a gradual change, with thin layers of limestone and shale together, alternating as the environment changed. The authors use this evidence of a gradual change as evidence against an unconformity in this location. OK, the evidence for the Hermit-Esplanade unconformity is doubtful.

However, let's apply this logic to Figure 3.25, and the Coconino-Hermit contact. If this is not a paraconformity, there should be evidence of this "intertonguing." There is NONE. Thus, using the young-earth argument against the Hermit-Esplanade contact, you in essence prove the paraconformity of the Coconino-Hermit!

## Summary

There are too many false conclusions here to mention, based on the false arguments of this chapter. In short, in the opening paragraph, the authors claim that evolutionists (i.e. old-earth creationists included) presuppose that sedimentation occurred slowly. NO...old-earth proponents determined this from the evidence, and did not presuppose anything. The authors state that catastrophic flood appears to explain the most common Grand Canyon strata. NO...the weak arguments of this chapter are full of holes. The authors claim that long ages occurring between some strata (unconformities) are doubtful...NO, some are doubtful, while others are conclusively long periods of time.

Section five of their generalizations is enough alone to argue against the flood model. See my rebuttal of the Coconino Sandstone (<http://www.answersincreation.org/coconino.htm>).

Section seven states "Catastrophic geology is alive and well in Grand Canyon." Nothing could be farther from the truth.

The main tactic of the authors in this section has been to draw extracts out of geologists writings that offer differences of opinion between them, and use these to cast a shadow of doubt upon the old ages of the rocks. Instead of disproving the old age of the earth, they have merely pointed the great process that is at work in the field of geology. Through competing research, we are coming to a better understanding of the processes that shaped the earth. We are not, however, disproving the old age of the earth by these disagreements. Except for the young-earth creationists, these scientists that they pit against each other all claim the overwhelming evidence supports the old age of the earth. There is no doubt about this in geologic circles.

**Book Review – Grand Canyon:  
Monument to Catastrophe  
Chapter 4 – A Creationist View of Grand  
Canyon Strata**



**By Greg Neyman  
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Because this chapter takes the viewpoint of the entire young earth creation science framework, it is thus entirely flawed. However, when reading it, some of it may seem to make sense to the uninformed. In order to reach the conclusions of this chapter, the authors rely on the faulty conclusion of Chapter 3. They state with a lot of frequency the word "If..." Their assumptions are that Chapter 3 is correct. However, since Chapter 3 is flawed, this invalidates the creation science arguments in this chapter. Thus, we will not discuss every little point in this chapter, since much of it is already disproved.

**Five Divisions of Grand Canyon Rocks**

They break up the rocks of this region into five eras. This is important to the disproving of the young earth theory. If you don't have the book, here is how they break up the divisions.

Division 1 & 2 - Pre-Flood and Creation Week. This is everything below the Great Unconformity.

Division 3 - Early Flood. This is the rest of the rocks in the Grand Canyon, or the flat, horizontal layers exposed in the canyon.

Division 4 - Late Flood. This is the rocks which overlie the Grand Canyon rocks, and are visible in the Zion Canyon, Arches, and other areas (very important...take note of this for later).

Division 5 - Post-Flood - This is listed as the formations that geologists claim formed in the Cenozoic, which is 65 million years or younger.

One short note...the authors say that the Zoroaster Granite contains crystals up to eight inches in length. Young earth theorists claim that crystals can form rapidly...they have to in order for it to fit their model. However, we can actually watch molten rock harden today in volcanic regions. When we do this, we see lava flows...the deeper we go, we see fine-grained rocks. These crystals demonstrate the need for slow cooling, and long periods of time. The young earth creation science believer would argue (possibly) that the Zoroaster was eroded to reveal these crystals. However, according to their timeline, there is only 1,500 years from creation to the Flood. During this time, the flat layers of limestone, shale, and sandstone need to be deposited. There is not enough time for all of this to happen.

**Early Creation Week Rocks (Page 59)**  
**Creation Week and Pre-Flood Strata (Page 62)**

The authors claim that the base, igneous units known as the Vishnu schists and Zoroaster granites, and the uplifted (tilted) rock layers below the Great Unconformity are all in this category.

Zoroaster Granite (Page 60)

In this section, the authors mention the tourmaline, apatite, beryl, and feldspar crystals that are up to 8 inches long. The only way to get this large crystal size is from slow cooling. Young earth creationism may argue that it did, but the overlying, quickly cooled surface has been eroded away, revealing these crystals. However, in the next column, the authors state that Arizona was a seafloor during the creation week. This ocean environment would rapidly cool the granite, leading to small crystal sizes.

Nonconformity (Page 60)

Here the authors' state there must have been erosion processes that started on day 3 of creation. Since both young and old earth creation science models support erosion here, nothing here can be inferred as error, except the already mentioned false presupposition of a young earth leads them to this fictitious conclusion.

Unkar Group (Page 62)

This group of rock layers is said to have formed after creation, up until the time of Noah's Flood. The claim is made that northern Arizona remained an ocean floor for many years after day 3. Thus, supposing 200 years, that leaves us about 1,300 years to deposit this 5,320 foot thick segment, or about 4 feet per year (however, the young earth creation science model proposes over 2,450 feet of this occurred in one day! (They say the Bass, Hakatai, and Shinumo layers formed on Day 3).

The authors mention the presence of stromatolites. Please note that throughout this Group, no complex fossils are found. You would expect some fossilized animals here, in the Dox Formation, but there are none.

Bass Formation (Page 62)

The authors make a big deal about the presence of oxidized minerals, and the supposed conflict this presents with the old earth view of a reducing atmosphere. Two points...first, the Bass was deposited about 1.2 billion years ago. This is 3.3 billion years after the start of the creation of earth. We have been "oxidizing" for 3.3 billion years, so of course there was oxygen in the atmosphere.

Second, the Bass is a limestone/shale formation, which means underwater deposition. The authors claim the water which deposited the Bass was rich in dissolved oxygen, thus making it capable of oxidizing minerals. Since we have been oxidizing for 3.3 billion

years at this point, it would be reasonable to assume that there would have been plenty of dissolved oxygen present.

The rest of the Bass text does not contribute any information which needs further rebuttal.

#### Hakatai Shale (Page 63)

Nothing of importance here, other than to make a note there are still no complex fossils.

#### Shinumo Quartzite (Page 63)

Again, no complex fossils. The authors argue that the unusual features shown in Figure 4.7 indicate rapid deposition and tectonics, a reference to their belief in the "cataclysmic" nature of the formation of this feature. However, geologic history is full of cataclysmic events, separated by millions of years. You can't single out one single event, and say it applies to all of creation!

The authors say that this feature probably occurred on day three of the creation week. Great. Consider the Bass, Hakatai, and Shinumo...they are formed in water. Day 1 and 2 were the creation of light and the heavens, so on day 3, God separated the waters from the dry land...thus you have to lay down all three of these formations in the 24 hours of the third day...that is a thickness of 2,450 feet of sediment in one day!!!

Also, keep in mind that we have limestones present on Day 3. In today's world, a limestone is formed from the remains of microscopic organisms...however, they were not even created until after Day 3. Yes, you can get limestone from direct precipitation of calcium carbonate from water, but this is an even slower process of formation, therefore the presence of this limestone is too problematic for the young earth creation science model.

#### Dox Formation (Page 64)

It is not said, but here must be where we move past Day 3 of the creation week (or, it also could be inferred not to occur until the creation of the Chuar Group of sediments). The Dox is 3,100 feet of sediment, and no relevant information is presented here. No fossils present.

#### Diabase Sills (Page 64)

These are injected into the Bass, Hakatai, and Dox formations. No relevant information here.

#### The Cardenas Basalt (Page 64)

The only important thing here is the radiometric dates. The authors show discrepancies in the dating of these rocks. While interesting, this does not disprove the

old age of this unit. It only means we do not have a 100% precise method for measurement of age.

#### Nankoweap Formation (Page 65)

A 330 foot thick sandstone formation...no relevant dating information here. No fossils.

#### Chuar Group (Page 65)

This group of formations has a maximum thickness of 6,610 feet. It is here one must ask the question, "where are the fossils?" The Chuar, and the Nankoweap and Dox, are post-creation week, having formed in the 1,500 years from the creation to the Flood. During this time, animals died, yet NONE of their fossils are present in the rocks...anywhere in the world. The young-earth authors argue that this lack of fossils is evidence against the evolutionary theory...however, it is just as valid an argument against the young earth theory. Here is over 6,000 feet of sediment, which according to the young earth creation science model, was deposited after the creation, and before the Flood. Animals were alive, and flourishing, and dying, during these 1,500 years...yet there is no evidence of advanced life forms in these stratum. Once again, the best scientific model is the old-earth model, because the rock layers here and above show increasing complex organisms as you get younger in the geologic record, which is perfectly consistent with the old earth model.

#### Galeros Formation (Page 66)

Shale, limestone, and sandstone, with a maximum thickness of 4,272 feet. No fossils except for the stromatolites. Nothing of importance for the age of the earth, except the lack of fossils that should be there in the young earth creationism model.

#### Kwagunt Formation (Page 66)

Shale, sandstone, with small amounts of dolomite and chert, with a maximum thickness of 2,218 feet. Again, a lack of major animal fossils proves the young earth creationism model could not deposit this.

#### Sixtymile Formation (Page 66)

Mostly sandstone, about 120 feet thick. Again, no significant young earth evidence presented.

#### The Great Unconformity (Page 66)

The authors propose this great erosional feature occurred at the onset of the Flood model, when the underlying rock layers were uplifted and underwent pressure. While this is the only way to explain it, unfortunately for the authors, there is no geophysical

mechanism to cause such massive upheaval. There is no mechanism in place that would cause such an event. They usually claim that the waters that were released from underground caused this uplift. However, the opposite would occur. Yes, you would have local upheaval where the water came out, but overall, with the underlying water removed, the land would sink, not rise. That is...if you believe this nonsense.

The existing geologic model, with millions of years of erosion, fits perfectly with this evidence for a slow, gradual uplifting of the stratum.

#### Early Flood Strata (Page 67)

Here is where the Flood model for these rock layers really disintegrates. These 4,000 feet of strata provide ample evidence for millions of years. By the young earth creation science model, the Grand Canyon layers are all "early flood." Since the waters prevailed on the earth about 370 days, these layers all had to form in the first 185 days of the Flood. That is a deposition rate of 21 feet of sediment per day!

#### Tapeats Sandstone (Page 67)

The Tapeats is a sandstone, with a maximum thickness of 325 feet. Of importance here is the trackways of trilobites. Why do they start to appear here? They must have been alive, by the young earth model, when the pre-flood sediments were deposited...but there are no fossils of them in these sediments. You will notice, as we go up the rock face of the canyon, that the life forms get increasingly complex, which is consistent with a gradual, old earth creation.

At the end, we are referred to Figure 4.12, which gives the author's flood model for the erosion, and deposition of these first layers. Look at the bottom, showing the current speed. This is critical, because of the speed at which a particle of sand or silt will settle out of the water, to the bottom. We have already shown the nonsense of this current speed in another article ([click here](#)). This article deals with the Coconino Sandstone, but the principle is the same. In short, the young earth model cannot move the amount of sediment in the Grand Canyon, at the currents envisioned by the authors.

#### Bright Angel Shale (Page 70)

This sandy shale is very interesting. Look at the nice, homogenous, clean layers of rock in the model in Figure 4.12. As the waters advance, the shale extends, until eventually the overlying limestone is laid above it. According to the young-earth model, you should see one clean layer of nothing but shale.

However, the shale has interbedded limestone throughout. This indicates a fluctuating sea level, not the nice, clean unit we see in the young-earth model. The young earth model cannot answer why we have an apparent fluctuation in sea level. According to the flood model, the waters rose, then fell...no fluctuation. The last sentence does state that it intertongues with the Mauv Limestone...proof of a fluctuating sea level, not a constantly rising one.

Figure 4.13 is interesting. It shows hikers from the Institute for Creation Research examining a rock face for fossils of trilobites. It does not say if they removed some...to remove one from the Grand Canyon would be a federal crime...to remove anything from a national park is against the law. It does not say, but it makes you wonder...

#### Mauv Limestone (Page 70)

A sandy limestone varying in thickness from 350 to 1,000 feet. States the calcium carbonate sediment source as being from west of the Canyon...but according to their model, given in figure 4.12, the current is east to west!

The authors are proposing that as you go westward, then you get less of a current. Okay, then the following statement should be true...where you have the strongest current (in the east) you should have the highest erosion, and thus the thicker formations should be in those areas of faster current. The fastest current caused the first unit, the Tapeats Sandstone (125-325 feet thick), then the Bright Angel Shale (350-400 feet thick), then the Mauv (350-1,000). This is backwards of what the young-earth model should give you! The Mauv Limestone should be the thinnest, since it is formed in the least velocity current, which is not able to move as much sediment as the faster current...however, it is the thickest!

#### Unnamed Dolomite (Page 70)

Nothing important. No mention of fossils.

#### Disconformity Beneath Temple Butte Limestone (Page 70)

Very interesting...in the previous chapter, the authors went to great lengths to explain away all the supposed unconformities in the canyon. They did not mention this one in their discussions. If the authors had good evidence against this disconformity, they most certainly would have mentioned it. They must not be able to refute this one! This section gives a very weak argument, appealing to the emotions of the reader. They hope that you won't go back to Chapter 3 and look at this, or that you will simply remember, "Hey, they disproved all of them in Chapter 3," so the reader blindly accepts it without further thought. Very Interesting.....

Note their tactic...In the middle of the paragraph, they give the standard geologic answer, then they ask if such a long interval is justified by the physical evidence. I don't know...the authors DON'T give any of this 'physical evidence.' Rest assured, if the young earth authors had any such evidence, it would be presented. The lack of evidence, and the author's non-existent arguments, are conclusive proof that the young earth creation science model does not have an answer for this disconformity!

#### Temple Butte Limestone (Page 71)

Thin limestone, containing rare corals, brachiopods, and gastropods. Here we see these fossils for the first time. Below this level we have had trilobites, and stromatolites. It is easy to see the progression of increasingly complex fossils as you proceed up the



canyon walls. Again, we are early in the flood, according to the young-earth model...but with all the land covered, all the dinosaurs should be dead now. Why do the layers below this not have dinosaur fossils....or any mammal fossils, for that matter.

#### Disconformity Above Temple Butte Limestone (Page 71)

This one is not mentioned in Chapter 3 either! Their defense here is a little stronger, but still very weak. Again they appeal to the readers' emotions by asking a question for their conclusion...so they must not have any solid evidence again. The argument about the stream gravels is absurd. Of course there are no stream gravels...why should we see stream gravels in the lenticular infillings??? As the waters rose above this area, you have an advancing beach...you would expect sands...any gravels present would get washed away by the waves at the beachfront, or would be worn down to smaller particles by the wave action. Any sand size particles would be from the limestone source anyway, which is the Temple Butte, so they would probably dissolve back into the water to be precipitated out as the overlying formation.

#### Redwall Limestone (Page 72)

One of the primary cliff-forming formations of the canyon. Increasing complex fossils as you move up the cliff face. Fossils are foraminifera, brachiopods in the Mooney Falls Member, brachiopods, bryozoans, and crinoids in the Thunder Springs Member, and nautiloids, crinoids, horn corals, formaminifera, and brachiopods in the Whitmore Wash Member.

Other than the fossils, not much to note here. It appears as if the authors are guessing...the second paragraph they say 'Creationists might suppose...' In other words, they don't have a clue.

#### Disconformity Above the Redwall Limestone (Page 72)

From the discussion of chapter 3, there is no reason to doubt this is not a millions of years old disconformity. It is interesting to note the authors choice of words. There is a 'slight degree' of relief (relief=elevation change). Then they mention there are 200 foot deep channels in the Redwall...I would certainly not choose the word 'slight,' for a 200 foot deep ravine in a formation that is only 500 feet deep!

#### Surprise Canyon Formation (Page 72)

Nothing to note here.

#### Supai Group (Page 72)

A group of four formations. I'm unsure why the authors chose to do this, but with the earlier Unkar Group (page 62) and the Chuar Group (page 65) the authors maintained the order of the individual formations, from bottom to top. In the Supai, they reverse this, and discuss the formations from top to bottom. I'll reverse them here to put them in their

proper order. There are two possibilities...the editor did not catch this, or the authors are trying to hide something.

#### Watahomigi Formation (Page 73)

A 160-foot thick limestone, with some chert beds, sandstone, and shale (all evidence of fluctuations in sea level).

#### Manakacha Formation (Page 73)

A mix of sandstone, mudstone, shale, and limestone with red chert beds, about 300 feet thick. Nothing to note here.

#### Wescogame Formation (Page 72)

Alternating layers of sandstone and siltstone (again, evidence of fluctuating sea levels). Here we have the appearance of vertebrate fossil tracks. Also, note the presence of conglomerate in Figure 4.15, between this formation and the Esplanade, indicative of river, or deltaic deposition. This conglomerate is not mentioned in the text.

#### Esplanade Sandstone (Page 72)

Three-hundred foot thick sandstone with fossil crinoids and fusulinids. The formation is intertongued with limestone to the west, further evidence of fluctuating sea levels, not constant-level as the Flood would cause.

After the Watahomigi, the authors make conclusions about the Supai Group as a whole. They make the case, based on colorization, that the group is a marine deposit. The presence of the conglomerate at the base of the Esplanade is proof enough to disprove this. They say the uniformity of the red shales and sandstones over large areas argues against continental deposition...why? No reason is given, and the reader is left to accept this as truth without proof. They state they have evidence for marine deposition of red sand. Is there anywhere in the world where we can see marine deposition occurring now with red sand? No...some places, such as Hawaii, has black sand, but the rest is white.

They site the lack of channelized sand as proof of non-continental deposition. They are assuming that they should see these channels if deposited in a deltaic system. The absence of these features does not disprove it...it merely means the portions of the formation that is exposed does not exhibit channelization. Perhaps more erosion will prove this. Here, I will use a statement of the young-earth theorists...this is something that needs more study.

#### Conformity Between the Hermit Shale and Supai Group (Page 74)

Nothing of interest here.

## Hermit Formation (Page 74)

This formation is about 300 feet of mostly siltstone. Of note here is the fossils of ferns, footprints, and a fossil wing of a fly. Again, we have increasingly complex organisms as we get higher in the geologic record, which is perfectly compatible with an old earth theory.

Did that say ferns? Hmmm. The earth is completely buried in water, yet we have a concentration of a terrestrial plant here. They cannot have been brought in by the currents, because they would have been stripped of their leaves by the currents proposed by young earth creationists ([see this article](#)).

Let's take this back one more step. This is the first fossil evidence of plant life...however, when the flood started, there should have been many fossils of plants found in the lowest layers of the flood rocks. Going all the way back to the Tapeats Sandstone, at the start of the flood, we should see rapidly buried trees, plants, and animals, all mixed in this first layer, as these things died at the onset of the flood. However, there are no fossils in the Tapeats. This is very conclusive evidence against a young-earth flood model.

Most of the information given is not evidence for a young earth, but evidence that uniformitarian geologists don't agree about the source of this formation. They have no evidence, so they try to pit these geologists against each other, in an attempt to cast doubt upon their theories. Just because two geologists disagree, is no proof of a young earth!

## Paraconformity Between Hermit and Coconino (Page 74)

Nothing of importance here. The existence/non-existence of this feature is not significant. While the absence of erosional features is noteworthy, it is inconclusive.

## Coconino Sandstone (Page 75)

This 300-foot thick formation is desert in origin, which completely wrecks the wet flood model. To see my rebuttal of this formation, see [this article](#). It proves beyond any doubt that the young-earth model for this formation falls flat on its face. Also check Chapter 3 of this section, under the heading Desert Dunes.

## Toroweap Formation (Page 75)

About 250 feet of limestone, with some sandy limestone, gradually giving way to sandstone above and below the limestone layer. Contains Brachiopods and other fossils. Nothing else of interest.

## Conformity Between Kaibab and Toroweap (Page 76)

Nothing of significance here. Even if we accept the "one ocean" argument, that doesn't imply it was one short-lived, global flood ocean...an ocean lasting millions of years would accomplish this just fine.

## Kaibab Limestone (Page 76)

Limestone layer of about 250 feet, forming the rim of the canyon. Marine fossils are implied, (the same as are in the Toroweap), but the Toroweap does not give a complete listing.

## Late Flood Strata and Erosion Surfaces

Now, referring back to Figure 4.1, the rest of the formations are called late flood. By this time, halfway into our 370 day flood event, the water is receding. Here, they actually give evidence of sea-level fluctuating, by inferring from Genesis that this tidal movement occurred. This is based on the translation of Genesis 8:3a and 8:5a of the King James II Version. I'm not sure which version of the KJV this is, but one thing is certain...as Bible translations are updated, errors are removed, thus we don't have this interpretation in today's KJV. I checked five modern translations, all giving a simple version of recede, or return. Even the KJV II text does not support their argument. In this, they come close to the warning in the Book of Revelation, that we should not add or subtract from the content of the Bible. Be careful, young earth creation science proponents...you're treading on ground I would not want to be on.

## Unconformity Above Kaibab Limestone (Page 77)

Nothing important.

## Moenkopi Formation (Page 78)

Nothing important.

## Chinle Formation (Page 78)

This is where it gets interesting. This layer supposedly overlaid the entire region, which is acceptable. This formation contains a large volume of volcanic ash. Fossils include ferns, logs, dinosaurs, and marine invertebrate fossils.

Dinosaur fossils? This is the first formation in which dinosaur fossils appear. Please note that we are in the late flood period, probably 200 days at least after the rain started. So, did these dinosaurs tread water for the past 200 days? Why did they not appear sooner in the lower rock layers.

In order to explain this, young earth creationism must say the bodies floated on the water, and then sank. Dinosaurs are together because of their specific density...thus they sank at nearly the same time. However, would anything be able to float at this time? A global flood produces water currents that top out at 194 miles per hour over the continents ([Baumgardner and Barnette](#)). Nothing would be able to stay afloat, dead or alive, under these conditions. Given the patterns they propose, the bones would be carried along by the great currents, and deposited when the water current dropped.

Assuming they did manage to float, what would have happened? They used multiple continental shapes in their tests, but they all assumed the land masses on one side of the globe. Therefore, the bodies would be carried along to the other side, and all be in one hemisphere (divided north-south), and deposited in the deep ocean basin. However, we have bones all over the world.

However, that is the least of the young earth creationism problems. Look at Figure 4.1 on page 58. There are many more layers of rock above the Grand Canyon laterally, that are not addressed in this book. Of special interest is two formations, the Navajo Sandstone, and the Morrison Formation (it is not visible in the Zion Canyon area...it lies just below the Dakota Sandstone).

### Dakota Sandstone

The Dakota Sandstone is a massive, desert sandstone, formed by wind. How could there be a desert in the middle of Noah's Flood? For a complete description, see my article on [Desert Problem](#).

### Morrison Formation

The Morrison is another massive formation to the north. It is mentioned once in the book, on page 215. It is famous for its massive numbers of dinosaurs that have been buried in it, and recovered as fossils. By the Flood model, it is Late Flood, as it is underneath the Dakota Sandstone in the figure on page 58. How did these massive numbers of dinosaurs survive until late in the Flood? By all accounts, their fossils should be at the bottom, in the Tapeats Sandstone. In fact, most fossils would appear here...but they don't.

Also, it's not just fossils. Consider the trackways...footprints left behind by dinosaurs. The Morrison, and other later formations, all contain these footprints. Even if you accept the fact that these dinosaur bodies floated around the globe for 200 days before sinking, the evidence of the footprints proves that they were still walking around, 200 days after the start of Flood!!!

And what about nest sites? We have recovered complete, intact nest sites full of eggs from these locations. Now we have dinosaurs laying eggs, 200 days into the flood!!! These are terrestrial dinosaurs, not the swimming variety!

Then there is the evidence from dead dinosaur graveyards. Young earth creationists claim these massive graveyards are evidence of the Flood. However, many of these sites yield bones of one type of plant-eating dinosaur, and right there with it, are the teeth of small, baby theropods (meat-eating dinosaurs). There are teeth marks on the bones, where these small theropods chewed on the bones. So, the flood killed these 20 foot tall plant eaters, and then the small, five-foot tall baby theropods swam underwater to where they were, and ate on them!!! (There are adult chew marks and teeth as well...it was a family buffet)

All this is impossible to explain with a flood model. Clearly, the dinosaurs were thriving, living on land, when they died. The standard, millions of years old geologic model fits these facts perfectly.

Widespread Erosion Surface Above GC Formations (Page 79)

Nothing important...does not prove anything relative to a worldwide flood...since the evidence is washed away!

### **Post-Flood Deposits**

Volcanic Rocks of Western GC (Page 79)

Dated anywhere from 1.3 billion to 700 million years old. Age is irrelevant, due to the fact the underlying rocks cannot be produced by a flood model. For more on Dating Techniques, [click here](#).

Landslide Deposits (Page 80)

River Gravels (Page 80)

Lake Deposits (Page 80)

Nothing important here.

### **Summary**

The authors claim that they have integrated the five main divisions of rock formation into the historic framework of Scripture (i.e. Noah's Flood). From the above discussion, it is obvious they have failed miserably.

## Chapter 5 – How Was Grand Canyon Eroded?

In this chapter the authors try to propose a mechanism as to how the canyon eroded using the young-earth model. They also seek to destroy the uniformitarian, old-earth model.

### Three Observations

In this section, the authors put forth three geologic observations relevant to the forming of the canyon.

#### Amount of Erosion (Page 83)

Nothing of significance here. The authors merely state that it was a lot of erosion, as you can see in the form of the Grand Canyon.

#### Grand Canyon Cuts (Page 84)

Here, the authors are amazed that the canyon took the course that it did, instead of the river draining in some other direction. While interesting, this means only that...it didn't go the direction the young-earth theorists thought it would, which is not critical to the big picture.

#### Uplift Occurred Before Erosion of the Canyon (Page 85)

In order to erode the canyon in the manner that it actually occurred, there would have to be regional uplift before the erosion started. Nothing important here.

In the preceding three observations, the authors are trying to do two things...first, set the stage for their theory (however, what they claim can also set the stage for the old-earth theory as well). Secondly, due to the weak nature of their model, they are trying to make their latter argument credible, by first presenting some credible observations. The hope is that the reader will believe the first, so he will be that much more inclined to accept the latter. This is a standard apologetic technique when you try to sell something.

#### The Antecedent River Theory

##### Problems With the Antecedent River Theory

The authors give the arguments against this theory. Since this is an old theory, we will not discuss here.

#### The “Precocious” Gully Theory

This section, in which the authors try to dismantle the predominant old-earth explanation, shows how weak their scientific methods are. The theory they present here is neither a gully, nor is it even up to date. We will update you on the latest.

The term “gully” is misleading. Obviously, this is no simple gully. Nor was this erosion “rapid” as they state...it has been going on for 5.5 to 6 million years. They claim that geologists would have to postulate many different solutions to the problems they give in the opening paragraph...they have.

They claim that the original Hualapai stream, draining westward, gradually downcut enough towards the east, until it merged, or captured, the Colorado River.

#### Problems With the Gully Theory How Could the Gully Do It? (Page 90)

After a weak, emotional appeal in the first paragraph with no evidence, the authors mention in the next paragraph, that there could not be a hundred-mile long, east-west gully (river) here because the predominant faults in the area are north-south. What the authors fail to realize is their point previously made about an enormous amount of erosion. The overlying layers, the Moenkope and Chinle Formations, are completely eroded away over the Grand Canyon. They assume the same faults now in the canyon would indicate they existed in these formations as well. However, there is no way to know this. Obviously, something removed 1,000 feet of sediment from over the canyon, and once it got to the Kaibab Limestone, it started there as well, and embedded itself into the rock, setting the pattern for the Grand Canyon.

Even without this, they state it is hard to believe that the so-called gully eroded 100 miles towards the Colorado River. This river that drained the Hualapai area had been doing so since the uplift at the beginning of the Miocene, about 25 million years ago. Subtracting the 5.5 million years since the stream capture of the Colorado, that's 19.5 million years. Let's calculate that...100 miles, over 19.5 million years, equals a rate of...8/25ths of an inch per year. You see, once you break it down, instead of taking their word for it, you learn that the river only had to erode less than one-half an inch per year towards the east, for it to gradually capture the Colorado River.

The authors look for proof of this ancient river...let's see, the top 1,000 feet of sediment are gone...so they will never find it. Does that mean it never existed...no, because this is the best model for Grand Canyon formation...after all, we have seen in previous chapters that the rock layers can't be laid down during the Flood of Noah, so we are 100% certain the young-earth model is wrong.

#### When Did the Gully Do It? (Page 90)

Admittedly, there are discrepancies among the radioisotope dates for the canyon...so what. Give or take a million years is fine with me. Just because dates disagree doesn't mean the canyon was formed 4,500 years ago! There are variables in the radioisotope dating process, which gives us a range of dates, and we do our best...it's not perfect...but it's better that “assuming” blind dates based on a 17<sup>th</sup> century theologian who didn't know anything about science! (referring to Ussher, who postulated the earth was created on 3 October, 4,004 B.C.) More will be said on dating in the rebuttal for Chapter 6.



### Could the Landscape Endure? (Page 91)

The authors claim they should be able to see the erosion of the last 70 million years. They can! Look at the 1,000 feet of sediment missing, the Moenkopi and Chinle Formations...oops, you can't look at them...they are gone! Perfect evidence of this erosion!

### Where are Evidences of Ancestral Upper Colorado River (Page 91)

The same answer as above. Erosion occurred to the east as well during this time. Any area that has erosion for 60 million years is going to leave little evidence, UNLESS you reverse the erosion process, and start depositing, filling in the channels to preserve them. We look to flat rock formations, for evidence of deposition, since they are depositing sediments, thus they leave evidence of the past river. Here, we are ERODING!!!

The authors on page 92 mention the fact that they should see river deposits east of the Canyon, but they find only the lake deposits of the Bidahochi Formation. This is nothing new, geologists know this lake was there millions of years ago. It presents no problem, nor have any geologists claimed that this is a river deposit formation! This has no bearing on the discussion.

### The Breached Dam Theory An Extraordinary Proposal

Here we go with the young-earth theory. In the second paragraph, the authors tell the story of the Havasupai Indians, and their tale of the formation of the canyon after a flood. They also mention the hundreds of flood traditions worldwide as support for the flood.

Okay, back to the basics. What happened during the flood? ALL humanity was wiped from the face of the earth, and they started over when Noah and his family left Mount Ararat. HOW do these Indians know the flood caused this canyon? They were not there to witness it? The only living witnesses were Noah and his family! Noah landed on Mount Ararat...he did not land on the north rim of the Grand Canyon! Using this simple logic, ALL flood stories must have been passed down by the descendants of Noah. Local cultures from around the world could not claim "the flood did this," or "the flood did that," because they were not dispersed until after the Tower of Babel.

Here is a basic problem of young-earth scientific work...they would rather listen to the tales of fallible men, than to the very creation that God made.

The authors then propose their lake theory. Three large lakes provided the water for the Grand Canyon Formation (Figure 5.22).

### Examples of Failed Dams (Page 94)

In this section, they prove that dams can fail. Wow, that's a wonderful contribution to science! Actually, everyone already knows this...the authors merely want to lend credibility to their argument.

## Evidences for the Breached Dam

The authors use four evidences for this theory.

### 1) Evidence for an Ancient Lake (Page 97)

Note, they say “an” ancient lake. Yes, there is evidence of the lake they refer to as Hopi Lake, only because there are lake deposits in this location they propose. However, this deposit formed between 16 million and 4 million years ago! This small basin is the only evidence for a lake. What about the other, larger lake in Figure 5.22? Evidence for this is based on “other deposits” that “may be interpreted as ancient lake deposits.” These scattered remnants that “could” be interpreted as lakes are not given...we are left to accept their existence based on the author’s claims. HOWEVER, you can rest assured that if young-earth theorists had solid proof of these lakes, they would be shouting up and down with the evidence...but there is none. Unfortunately for their model, the Hopi Lake is too small to cause their catastrophic canyon formation.

### 2) Evidence for Accelerated Drainage (Page 98)

The authors make more misleading statements here. They mention that river systems upstream are “underfit,” or don’t even have enough water to modify their existing flood plains. Yes, this is true in September, but how about March? Runoff from snowmelt would be greatest, and there is plenty of water then. They say this is evidence of at least one episode of very high discharge. Actually, high discharge happens every spring!

The authors use the incised river meanders as evidence of a greater water flow in the past. However, these incised rivers offer a perfect rebuttal for the young-earth model. Look at the picture in Figure 5.16. The greatest erosional force in a river is at the outer curve of the meander. At the upper right, as the water curves toward us, the greatest erosion happens on the left side of the riverbank. If you increase this water flow to flood proportions, the erosion on this bank would cut right through, and cut off the rest of the meander. A river with a large volume of water would tend away from meandering, and towards a straight line.

The authors then mention the Palouse River in Washington. Look at Figure 5.12 of this river...what incised meanders are they talking about! It looks nothing like Figure 5.16. You don’t have the same degree of stream curvature that is shown in Figure 5.16, which proves that it formed quicker than the Goosenecks of the San Juan River. This proves that a cataclysmic flood model would tend to produce a straighter canyon, in contrast to the slow-forming Goosenecks.

### 3) Evidence for Relict Landforms (Page 99)

The authors use another common trick...if you can prove it on a small scale, then it must be true on a large scale. Sure, you can lower the water level and produce small-scale canyon structures that we see in Figure 5.17. They say they resemble the larger canyons...so what? This proves that they look like canyons!

In the lab, scientists have produced sapping structures that resemble the large landforms we see at Bryce Canyon and in other locations. Again, what does this prove...only that you can create sapping structure look-alikes in the lab. Look at Bright Angel Creek in the Grand Canyon...this creek on the north side of the canyon is 10 miles long, and they propose that the saps in Figure 5.17, at two feet long, prove their model of canyon erosion. Ten miles versus two feet...no comparison at all!

Just above Figure 5.19, the authors use a quote about seeps in alcoves in the Navajo Sandstone. Interesting to note they are using the Navajo, which the authors previously prove as forming in a desert, wind-blown environment, which invalidates their entire Flood model, since you can't have a desert in the middle of a flood (see Chapter 3 and 4).

So, let's assume the sapping structures are right? So what! They have no bearing on the age of these rocks, even though they look alike.

The authors conclude by making the case that there should be more talus at the base of these cliffs if they were truly old. Look at Figure 5.20. They claim there should be a lot more boulders. Two points...first, we are in a desert...erosion is slow. Second, if you look below the surface of the finely eroded material, you will find more boulders, covered by this material. Figure 5.21 is even more deceiving. They state the absence of recent talus at the base of the cliffs...if you look at the picture, there is talus everywhere! Look to the left of the river, 1.25 inches from the bottom, and 2.5 inches from the left...that entire sloping structure is talus. You find it on all the slopes in this picture. The talus that goes into the river is worn down and transported away. The authors actually used a picture that disproved their point!

#### 4) Extraordinary Delta Deposits (Page 102)

The authors argue that if the Grand Canyon was formed catastrophically, we should see Pliocene deltaic deposits in the Gulf of California. They go on to confirm that there is evidence of Pliocene deltaic deposits.

Great! Geologists claim the Grand Canyon formed over the last five million years. The Pliocene began 5.3 million years ago. This is perfectly consistent with the Grand Canyon starting to form just over 5 million years ago.

Even more convincing is the fact that the Pliocene ended 1.8 million years ago! If the Grand Canyon were formed within the last 4,500 years, the outwash sediments would be dated as Holocene, which started 10,000 years ago. The evidence the authors give for the delta deposits actually supports the old-earth theory! ([click here](#) to see the geologic time scale, from the Geological Society of America website.)

Concerning the rhythmically bedded mudstones, they are referring back to the old varve argument and the Green River formation of Wyoming. I discussed this in Chapter Three.

### **How the Breach Occurred**

#### Failure of Dams (Page 102)

Nothing of importance here.

### Configuration of Lakes (Page 103)

The authors explain their lakes. While there was a lake in the position of the Hopi Lake, there is no geologic evidence for the Canyonlands Lake, nor the Vernal Lake. The authors refer to the work of another young-earth creationist for the Canyonlands, and provide no real scientific evidence for its existence. They hope that you will simply take their word, and the word of this other creationist.

The Vernal lake doesn't even get this level of support. No references, no evidences are presented for this fictitious lake. Rest assured, if the young-earth theorists had evidence for these lakes, they would be claiming it in their book. As such, you can ignore this section, as there were no lakes!

### Rapid Erosion of Bedrock (Page 104)

This section likewise is unimportant. Sure, you may be able to rapidly erode bedrock, but since you have no lake....

### Rapid Erosion at Glen Canyon Dam (Page 106)

Sure, this happened. What is the relevance to Grand Canyon? None. It only proves that you can exceed the design capacity of a water tunnel, and cause high erosion rates through cavitation. If I ever create any large water tunnels, I'll keep that in mind.

### Summary

The authors again appeal to the debate about the Grand Canyon's origin. Yes, geologists disagree all the time. Does this prove the young age of the canyon? No. It's like two people disagreeing on the recipe for spaghetti. Either recipe will yield spaghetti, but the argument does not negate the recipe...we still create spaghetti with either recipe.

The authors claim the uniformitarian model has failed to explain the canyon. Actually, there is no problem with our model. Instead, the poor science of the young-earth theorist has failed utterly to convince any reputable scientist that the Canyon is young.

## Chapter 6 – Are Grand Canyon Rocks One Billion Years Old?

This chapter as a whole reveals the underhanded tactics employed by the young earth proponents in order to prove their point...tactics which one would not expect from Christian authors.

The author immediately begins to cast ideas of doubt and suspicion in the minds of the reader. In the opening paragraph, he says "Few people, however, have examined, critically, the methods of dating, and very few people understand the nature of the assumptions..." All of the geologists worldwide who have studied at a university are here called "very few people." However, this represents tens of thousands of people with scientific degrees. The author trivializes their academic studies, and belittles their understanding of this particular branch of science. Implied here is that the only trustworthy scientists are those of the young earth variety, of which the author is one.

To carry this thought further, the author goes into an explanation of the "assumptions" of radiometric dating, and he uses more than eight pages to explain the process, using mathematical formulas to impress the reader with his knowledge of the subject. The authors' real intent here is not to educate people on the intricacies of radiometric dating, but to gain credibility for the author so that the readers accept his arguments that radiometric dating is based on unknowable assumptions, and thus cannot be trusted. The author successfully puts forward the idea that these "assumptions" are enough to cast doubt upon radiometric dating.

However, for the scientist in the field, working with these assumptions, and knowing their limitations, radiometric dating is still a useful tool. We know that radiometric dating has its limitations, and we work within the construct of these limitations, using them to validate the results. In most instances, radiometric dates can be relied upon. There are several instances where it cannot, and we know these limitations. One of these limitations is discussed below.

### **"Ages" of Grand Canyon Rocks (Page 120)**

In this section, the author proceeds to give examples, from the Cardenas Basalt, various diabase sills, and the Uinkaret Plateau Basalt. Each of these formations are of volcanic origin. In the case of the Cardenas Basalt, potassium/argon dating for these formations range from 791 to 954 million years, but when refined are given an age of 715 million years. rubidium/strontium dating yields an age of 1.07 billion years.

The sills are dated 926 million years by potassium/argon, and a spread of .85 to 1.37 billion years for rubidium/strontium. Of this spread, the author says "...is geologically unreasonable, and causes us to question these age models."

For the Uinkaret Plateau basalt, K-Ar ages vary, depending on location of the sample, from 1.2 million years to 117 million years. Rubidium/strontium ages are given in Figure 6.6 as 1.34 billion years.

The authors go on in the next section to say these dates must be challenged. Here is the problem...they already are not trusted by geologists. What is really happening in this chapter...let's see.

## The Truth about Austin's Methods

Geologists have known for many years (at least the last 40) that radiometric dating for young volcanic rocks is unreliable. In discussions with other geologists, I've learned that young volcanic rocks such as these are perfect for what Dr. Austin is trying to do...discredit radiometric dating. Dr. Austin knows this, yet he proceeded to date these rocks anyway, knowing that the dates he would get would be unreliable. It is also understood from one source that the laboratory that did the testing advised Dr. Austin that he would not get an accurate date. Dr. Austin was not after valid dates...he was after erroneous dates, and he knew how to get them. I leave it up to you to decide the ethics of his methods.<sup>1</sup>

Here are some other issues with Dr. Austin and radiometric dating.<sup>2</sup>

- According to one geologist, when examining Dr. Austin's work on a Mount Saint Helens dacite, Austin used the old, conventional method of potassium/argon dating. This method has been discredited for many years. Austin's work was published in 1996, well after the method was discredited
- Dr. Austin admits there is excess  $^{40}\text{Ar}$  in his samples, but he makes no attempt to correct for the excess Ar when calculating the ages

Normally, a geologist doing meticulous work would use the correct formulas when calculating the ages of the rocks. Also, if a geologist knows about the excess argon, as Dr. Austin does, he would compensate in order to account for the excess argon in his equations. Choosing to use an outdated calculation method, because it gives you the best results for disproving radiometric dating, is suspect behavior for a reputable scientist.

This sums up this simple review of this chapter. This review shows you the depth that young earth creationists will go in order to prove their agenda. For those wishing to delve deeper into the scientific principles behind dating Grand Canyon rocks, check out the following online articles:

**A Criticism of the ICR's Grand Canyon Dating Project** - This excellent critical review of ICR's tactics and science is enlightening.

<http://www.talkorigins.org/faqs/icr-science.html>

**Radiometric Dating - A Christian Perspective** - Explains radiometric dating and its usefulness. One need not abandon the Bible if they accept long ages from radiometric dating.

<http://www.answersincreation.org/radio-christian.htm>

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<sup>1</sup> Discussion group email, dated 5 April 2003

<sup>2</sup> Discussion group email, dated 7 April 2003

## Chapter 7 – Fossils

### Snapshots In Time

In this section, the authors give a good background of the positions of both the evolutionists (and old-earth creationists) and the young-earth creationists.

### Fossilization

For the most part, this is a well-written section. At the end, the author claims that decomposing bacteria will quickly break down any remains. This is why rapid burial is needed. However, do we have the same rate of decomposition today as we had two hundred million years ago? (food for thought)

### Earlier Fossils of Grand Canyon

Stromatolites (Page 134)

Not much of interest here. In the last paragraph, the author questions where the first life form came from. The author concludes that it could not have come from the theory of spontaneous generation, and this data provides a powerful argument for the Creator. I agree. God created the first life form, and all subsequent life forms we see in the fossil record and alive today were created by Him.

Chuarria (Page 136)

The only thing of note here is the last sentence of the first paragraph, which states the Precambrian/Cambrian boundary is estimated at 570 million years. This boundary is now at 543 million years. It was adjusted after the publication of this book.

Plant Microfossils (Page 136)

Vase-Shaped Microfossils (Page 136)

Nothing Important

Pollen (Page 137)

Interesting discussion, from which one can gain an understanding of the complexities of getting a clean sample, and a clean, uncontaminated test. Aside from this, nothing of importance here.

Fossil Jellyfish (Page 138)

The only thing of interest here is the reference to one researcher's claim that the impressions were made by falling raindrops. However, by the young-earth model, there

was no rain before the Flood, so how could there be raindrops in these rocks which are claimed to be pre-Flood?

### **Later Fossils of Grand Canyon**

Plants (Page 138)

Ichnofossils (Page 138)

Nothing important.

Sponges (Page 138)

The author here questions evolutionary theory. Because of the nature of sponges, they should be easily buried and preserved, and thus should easily provide a progression of evolution of these organisms. This is no problem for the old-earth progressive creationist, because they denounce evolution as well. This is a question for the theological evolutionist, however.

If these sponges are so easy to preserve, then why don't we see them in rock layers beneath the Carboniferous Period? By the young-earth model, we should see them in both the early Flood rocks, and in the pre-Flood rocks, but they are not there. The authors mention this, to their demise. If they were created during the six days of creation, then we should have them mixed with all other fossils throughout the fossil record.

Foraminifera (Page 141)

This simple organism is used by the author to question the uniformitarian claim that you get increasingly complex fossils as you go up the geologic column. However, this argument is not valid.

To accept this, you have to make the assumption that ALL simple lifeforms were created by God early on in the creation sequence. The presence of this simple lifeform in Carboniferous or Permian strata does not mean that God created it early in the fossil record. God obviously did not stop creating simple life forms when he moved on to more complex forms.

Also, using the flood model, these fossils show up during the deposition of "late-flood" sediments, during the receding phase of the Flood. If all the flat-lying sediments of the Grand Canyon were formed by the Flood, why are there no Foraminifera fossils in the lower layers of Flood rocks? By the young-earth model, they should be there also.

In fact, the fossil record of these sediments should be completely randomized, with dinosaurs, trilobites, and foraminifera fossils all together. However, that's not what we see.

Corals (Page 141)

The authors dismiss the existence of any large coral structure in the Grand Canyon. However, if there are ANY large fossil reef structures in any rock strata anywhere in the world, then there would be definite proof of an old earth.



Consider the Coral Caverns of Pennsylvania, where a fossilized coral reef can be seen in the walls of these caverns. Even more conclusive is the reef exposed at Falls of the Ohio State Park. This 387 million year old reef stretched for 1,000 miles, and could not have formed in only weeks, as the Flood requires.

Also, if corals were created during the creation week, why don't we see them in the layers of rock beneath the Redwall Limestone...why don't they show up in the Mauv, Dox, or Bass Limestones? Using the young-earth model, they should be there...but they are not.

#### Bryozoans (Page 141)

Not much of importance. Again, we should see these fossils in the rock record throughout the Canyon, however, they are not found below the Mauv Limestone. Surely some were killed by the early Flood event, and in the period between the creation week and the Flood, but no fossils appear in the layers of rock the young-earth creationists propose as being creation week and pre-Flood.

#### Brachiopods (Page 141)

Nothing important here for the old-earth progressive creationist. The claim that there are no ancestral forms for these fossils may be an issue for the theistic evolutionist.

These fossils begin to appear in the Bright Angel Shale. Again, if they were created during the creation week, we should see them in the post-creation, pre-flood sediments of the Grand Canyon, which includes the Chuar and Unkar Group of sediments, but they are not there.

#### Mollusks (Page 142)

#### Echinoderms (Page 142)

Nothing important, except that the absence of these fossils from the earlier rock layers, proves that they were not around when they rocks were deposited. However, by the young-earth model, they should have been.

#### Arthropods (Page 143)

No problems here. The author appeals to the apparent complexity of the trilobite as proof against evolution. This presents no problem for the old-earth progressive creationist. However, here as in previous lifeforms, they should have existed prior to the Flood, and should be preserved in the pre-Flood deposits, but they are not, and thus they cast doubt upon the young-earth model.

#### Fish (Page 145)

Nothing important.

## Nonskeletal Fossils of Vertebrates (Page 146)

**Very Important section!** The first sentence sums it up (you can ignore the rest of the section). There are no actual fossils of land vertebrates in the Grand Canyon strata! Why not? During a worldwide flood event, they would have been some of the first animals to die. All the animals in the Canyon strata are marine varieties...you would expect them to endure the Flood longer, since they were underwater, as opposed to the air-breathers. The young-earth creationist model for the Grand Canyon (Figure 4.1) shows there to be early Flood (waters rising) and late Flood (receding waters) sediments in the Canyon. All the land vertebrates were killed during the early Flood phase. Yet, to see a land vertebrate in the fossil record, you have to go into the late-Flood rocks!

By the flood model, you should have dinosaur fossils, along with all the others, mixed together, in the lowest layers of early flood rocks. However, we don't have dinosaur fossils in the Grand Canyon. They are in strata which are above the Grand Canyon rocks, and can be found towards the north. They are in Mesozoic rocks, which according to Figure 4.1, is Late-Flood, or the period of receding water. Please note that at this point of receding water, all life forms are dead. Please note Genesis 7:17-24, which clearly states the waters killed all the life on earth. AFTER this passage, the waters started receding (Genesis 8:1).

Why is this important? Look at the dinosaur rock layers. We have footprints from the dinosaurs, we have egg nests, we have bones that have been chewed on by other dinosaurs (including baby meat-eaters teeth marks), and we have fossil excrement from the dinosaurs.

How could dinosaurs be making footprints, when they were killed months before? How could we have dinosaurs laying nests full of eggs, during the receding phase of the flood? How could meat-eating dinosaurs be feeding on the carcasses of dead plant-eaters? How can we have dinosaurs pooping all over the Mesozoic rocks? At this point in the young-earth model, there should be no living animals on earth, yet here is direct evidence of moving, breathing, eating, and breeding dinosaurs...right in the middle of the Flood!

### **Significance of Grand Canyon Fossils**

#### How Were the Strata Laid Down? (Page 146)

Nothing important here. For a full discussion, see the rebuttal for Chapters Three and Four.

#### Did Life Slowly Evolve? (Page 147)

Nothing important here for the old-earth progressive creationist. This is a question for debate if you are a theistic evolutionist, however.

### A Great Progression? (Page 147)

Nothing important. To see a discussion of what can be inferred from relative fossil positions, see <http://www.answersincreation.org/fossilrecord.htm>.

### Diversity and Disparity (Page 147)

Nothing important here for the old-earth progressive creationist. This is a question for debate if you are a theistic evolutionist, however. Not being overly familiar with evolutionary principles, I shall not try to respond to this.

However, from a common sense perspective, I have a problem with both major theories on evolution. As stated, they predict as speciation events occur, you see the great explosion of different life forms, which is evident in the top two portions of Figure 7.7. However, not all life forms are in a constant state of evolving. The old adage, “if it’s broke, don’t fix it” should be applied here. By this, if an organism is functioning successfully in its environment, it may not have a need to further evolve, and thus may appear throughout geologic time as being unchanged, as you may see as a straight line in the bottom graph of the chart, with no branches. So, while those who believe in evolution may indeed believe in the first two charts, it is also apparent that the bottom chart could also fit well within the evolutionists’ scope for some life forms.

### A Creationist View of Fossil Disparity (Page 149)

Nothing important here for the old-earth progressive creationist. This is a question for debate if you are a theistic evolutionist, however. In the future, this article may include the defense of the theistic evolutionist, if someone wishes to contribute a defense.

### Why Trackways Without body Fossils? (Page 150)

No major issues here. In the second paragraph, the author states that a dead animal would have a higher probability of being fossilized in the strata above its footprints. Duh! You can’t bury him below his own footprints!

In the third paragraph, the author mentions the possibility that the strata above the Canyon, which were eroded away, contained the bodies of these animals which made these tracks in the Grand Canyon strata. True...IF they were not separated by millions of years!

### God’s Judgment and Mercy (Page 150)

Generalities about God’s judgment and mercy. No problems.

### **Conclusion**

There are too many problems with the young-earth model to explain the fossil distribution of the Grand Canyon. The presence of living, breathing dinosaurs, during the latter part of the Flood, cannot be explained by the Flood model.

## Chapter 8 – Biology of Grand Canyon

In this chapter, the main argument of the authors is against the evolutionary position. From an old-earth Christian perspective, whether or not you have an issue with this chapter depends on your belief.

Some old-earth creationists, known as progressive creationists, do not believe in evolution, and thus these people could completely agree with the authors of this chapter.

However, some old-earth creationists are ‘theistic evolutionists,’ who believe the earth is old, and that God used evolutionary principles to create the life forms we see today.

I am a progressive creationist. However, I do not know enough about evolution to debate it, and thus remain open in my beliefs. My rebuttal for this chapter is based solely on a common sense, logical approach. By its very nature, my response will appear to be in support of the evolutionist. However, I am merely pointing out flaws in the young-earth argument. You have to make your own mind up about evolution.

### Design

An Intelligent Design (Page 153)

The Designer’s Genius (Page 155)

In these sections, the authors give background information that does not impact belief in an old earth.

Cooperation (Page 156)

In this section the authors try to create the illusion that evolutionary theory contains myth, particularly the “life-and-death, dog-eat-dog” struggle that life forms go through to survive. They try to paint nature as being the opposite, as cooperating with each other in survival. While partly true, their approach is overly simplistic.

They try to show the evolutionary position as being in constant combat with each other. However, the essence of the theory is not constant combat as the author’s propose. It would more accurately be termed “Looking out for Number One.” Of course evolutionists do not propose that the animal kingdom is in constant conflict...they never have. To state so is to pull the meaning of the struggle for life out of context. Taken as a whole, evolution does not mean constant conflict.

In the second column on 156, they use a quote by Went, stating that plants in the desert share the resources with each other. It states that when resources are limited, the plants will remain small, instead of growing taller. True, but this does not negate the basic premise of evolution. A plant in the desert is only concerned with its own survival. It grows smaller, not because it is cooperating with other plants, but because its roots cannot take in enough nourishment for large growth. Its roots are competing with the roots of other nearby plants, and this limits its resources for growth...thus growth is limited by competition, not by cooperation. Again, this is a young-earth oversimplification of the basic tenant of evolutionary theory.

Under the quote, the authors state that observations reveal the struggle for survival is a myth. No. The very existence of this young-earth book on the Grand Canyon is proof of

this instinct for survival. If the authors did not see old-earth belief as a threat, there would be no need to defend their theory. This book proves they feel threatened, and are defending themselves...a basic part of the theory of the struggle which they aim to disprove.

The authors state that animals cooperate because decreased competition leads to greater diversity, versus the diversity that would come out of a “winner take all” system. Evolution does not propose a winner take all attitude...it only does this if you oversimplify it and take it out of context. There is no winner take all conflicts in the animal kingdom...the lion kingdom is not trying to rule the world...they are only looking out for number one...themselves, and could care less about world domination.

The authors then give four points that prove cooperation. Yes, cooperation deserves as much attention as conflict, but if you look at these points, there is no problem with an evolutionist agreeing with them. Again, if you don’t take evolutionary theory out of context, there is no problem here.

At the bottom of page 157, the authors state a classic example of cooperation, and then claim that “Evolution’s insistence on the theory of struggle for survival would never be able to rationalize such behavior. Actually, looking at this example, I see no problems for the evolutionist. These fish are doing what is mutually beneficial for both, and this “evolved behavior” causes no problems. Only if you “oversimplify” and pull evolution out of context can you make such a silly claim.

#### Peace With the World (Page 158)

All the designs mentioned are wonderful creations of God, but do little to argue against evolutionary theory. This list could be endless, and so would the evolutionists explanations for them. In other words, this section is glossy, for show, with no real meat. It simply amounts to an emotional appeal to the reader, nothing more.

#### Economy and Efficiency (Page 159)

Again, all marvelous examples of God’s creation, but doesn’t present hard evidence against evolution. By providing superficial arguments, the authors are merely appealing to the emotions of the reader, rather to the cognitive minds of their audience.

#### **Life in the Desert**

An interesting section, which will come in handy for visitors to the desert, but no arguments presented for a young earth.

#### **Distribution of Organisms**

Again, handy for the desert traveler, but uninteresting to the young-earth/old earth debate.

## **Life Zone Communities**

More of the same.

## **Research Studies**

An introduction to the next three sections, in which the authors present three arguments against evolution.

## **Glen Canyon Dam**

This example has absolutely nothing to do with evolutionary theory. The authors look at this example of about 50 years in duration, and noted that no new organisms evolved as a result of this dam. That's not surprising, since evolutionary theory proposes changes over thousands, or millions of years.

## **Management of Kaibab Deer**

Again, an argument that proves nothing. Again we have an oversimplification of evolutionary theory. This study occurred over a 33 year period...of course nothing "evolved," nor would any evolutionist claim that something could have evolved.

The example of the Glen Canyon Dam and Kaibab Deer are nothing more than a superficial argument, and they amount to nothing more than an emotional appeal to the readers...there is no real science presented here.

## **Studies of Tassel-Eared Squirrels**

Here the authors compare two different squirrels, separated by the Canyon...by their reckoning, they have been separated since the Flood, about 4,500 years ago. The author's actually make a decent case with this one.

Abert and Kaibab Varieties (Page 174)

Two Varieties/One Population (Page 175)

A Barrier to Migration (Page 175)

Recency of Barrier (Page 176)

Nothing important in these sections.

Testing the Stability of a Population (Page 176)

Here the author's state the Hardy-Weinberg equilibrium problem. The claim is that evolutionists use this to show that a species should or should not be evolving. Are they right? I don't know. Is this a valid theory, or is it old science, as is the case in many young-earth arguments? (If someone out there is willing to address this, let me know).

## Is the Kaibab Squirrel at Equilibrium (Page 176)

The authors present 10 points that go along with the Hardy-Weinberg theory, and use this to show that the Kaibab Squirrel does not fit the model of a non-evolving lifeform.

1. Large Population. According to the authors, this squirrel doesn't have a large population. Two points...what is the definition of "very large," and two...it doesn't matter what the population has been in the last few decades. To be conclusive, they must present evidence based on the population during the majority of this supposed 4,500 year separation. Before man came along, there may have been millions of these squirrels.
2. Mating. Must be completely random. I don't buy this (the evolutionist theory about mating). If this is true, then animals which mate for life, such as doves, could never reach equilibrium.
3. OK, whatever they say.
4. True, valid point.
5. OK
6. Generation overlap. This would rule out almost all animals on earth!
7. Combined with #6 above
8. Egg/Sperm production is normal. True, this would never be valid.
9. And 10, Gene Frequency/Contribution. Not sure I agree with the author's on this one. I don't know enough to debate it, though.

For these restrictions, the Kaibab squirrel fails on most, and thus the squirrel should be evolving rapidly. Since I can't speak from a scientific point of view on this, let's look at the common sense. I have two observations.

First, how long a time is sufficient to see macroevolution in process? Nobody knows. Perhaps its thousands of years, or tens of thousands. Without knowing this, we cannot hazard a guess as to whether or not these squirrels have evolved any. Therefore, both evolutionists and young-earth creationists haven't a clue into the solution to this problem!

Second, the authors prove this for the Kaibab Squirrel...what about the squirrel on the other side of the Canyon, the Abert? Could they not prove this for that squirrel? With no evidence presented for the Abert...it makes you wonder.

## A Proposed Model (Page 177)

Nice, but proves nothing. The evolutionist could use this model...just multiply the time by several hundred to arrive at the millions of years, and you have the same result.

## The Non-Evolution of the Tassel-Eared Squirrel (Page 178)

True, there is no proof of evolution here. However, we have no proof of non-evolution either. We could only know if we saw the original squirrels thousands of years ago right after the flood (or millions of years ago for the old-earthier). We don't know what the original squirrel was like, and thus we can't argue against (or for) evolution.

## **Conclusion**

The authors present some emotional appeals, along with little hard evidence, but it is not enough to put serious doubt upon the evolutionist.



## **Chapter 9 – The Atmosphere Above Grand Canyon**

This chapter is more or less irrelevant to the formation of the Grand Canyon. The authors present it in order to give their model for the Ice Age (singular). However, as you will see, there are many ice ages throughout geologic history.

Please note, that Dr. Michael Oard is the premier young-earth creation theorist when it comes to weather. He is a meteorologist. However, for some reason, this chapter was written by a geophysicist (see page IV).

### **The Night Sky**

### **The Composition of Our Atmosphere**

### **How the Sun Heats Our Atmosphere**

### **General Circulation of Our Atmosphere**

### **Clouds**

There is nothing significant in these five major sections. The authors are merely trying to lend credibility to their arguments concerning the last section.

### **The Sky Has Fallen**

This entire section must be taken with a grain of salt. All the references, with the exception of the first (Fultz) are exclusively from young-earth theorists, and thus are flawed, because of their preconceptions about the earth being only 6,000 years old. True science involves the examination of the data, and then coming to a conclusion, whereas the young-earth theorists have done it backwards...they have reached the conclusion already, before they have looked at the evidence that we see in the rock record.

Concerning the reference to Fultz (#1, in Models section), they do not reference him later in the discussion, and it seems that the only reason for mentioning him in the opening paragraph of the Models section, is just so that they have one non-creationist reference. His inclusion is unimportant to their arguments.

### **Models (Page 192)**

Here the author presents the vapor-canopy model. It is said that this vapor canopy rested on top of the current atmosphere, and contained about 40 feet of water. That would work, if the earth's surface were no more than 40 feet above sea level at any point. Genesis 7:20 states the waters covered the tallest mountains by 15 cubits, which, depending on which definition of cubit you use, would be between 22.5 and 27.5 feet of coverage. That means, not accounting for waters from the rocks that young-earth theorists propose, the land before the flood would have to be less than 20 feet above sea level over the entire earth. This is a minor point, so let's examine the three predictions of the young-earth theorists.

## Greenhouse Effect (Page 192)

The authors claim that prior to the flood, the earth was warmer due to this vapor canopy. They state the evidence that the polar regions were much warmer at one time, and mention the fact that frozen trees are found in polar regions. The authors also mention that the Cretaceous Period (144-65 Million years ago) the average sea-level temperature was 45°F degrees, whereas it is -4°F now.

Yes, there is evidence that the polar regions were warmer at one point, but what they fail to mention is that there is abundant evidence of ancient ice ages, occurring millions of years ago, before these warm periods. If the vapor model were true, you should not have these in the rock record.

Widespread, well-known glacial deposits occur throughout the Southern Hemisphere Gondwanaland landmasses, ranging from Carboniferous to Permian in Age (354 to 248 million years ago).

### Dwyka Formation

These glacial deposits occur throughout southern Africa. The Dwyka is about 1300 meters of sediment, with the middle 800+ containing tillite units. These units rest on widespread striated pavements, and contain striated and faceted clasts. Well-preserved glacial valleys are exposed throughout the area. The tills are typical, including clast orientations, and contain both local and remotely-derived gravel particles. Dates are Upper Carboniferous to Lower Permian, or about 290 million years ago. This formation falls in the category of Early Flood rocks, using the model proposed by the book in Figure 4.1. How could they be early flood rocks, when the only Ice Age proposed by the authors is Post-Flood?

### Permian of Australia

Glaciers were widespread over all of Australia during the Late Carboniferous, with continental ice sheets reaching maximum coverage during Permian time. The evidences for this ice exists throughout the entire spectrum of glacial sediments, which includes outwash, glaciolacustrine, and glacial marine deposits. Glacial pavements with striations, grooves, and crescentic gouges abound.

At Hallett Cove and Fleurieu Peninsula, there are clasts of various plutonic and metamorphic sources. Ice rafting was also common, as evidenced by the large dropstones scattered throughout.

It is estimated that there were dozens of glacial advances in southeastern Australia during the Permian. Referring to Figure 4.1 of the book under review, these rocks are Early Flood rocks. Again, this does not fit the model of the only Post-Flood Ice Age as proposed by the authors.

## Other Pre-Flood Ice Ages

Tillites are well-documented on all continents except Antarctica, with dating to the Precambrian, 650 to 700 million years ago. By the young-earth model, these glacial deposits are considered as creation week rocks, however it seems odd that during the intense mountain building, volcanic-ridden creation week, that glaciers dominated six of the seven continents!

The Varangian Ice Age deposits are found throughout northern Europe, the British Isles, and Greenland. Pebbly mudstones (from ice rafting) are common, with some striated pavements. The Port Askaig Tillite in Scotland and Ireland is over 700 meters thick, and contains glacial marine, glacial fluvial, and nonglacial sediments. In Norway, the Upper and Lower Tillite Formations contains tillites deposited in a glacial marine environment.

In Canada, the Gowganda Formation, also Precambrian, displays typical glacial till features; poor sorting, unstratified, varying particle sizes and sources. Sandstone lenses show evidence of ice rafting. The base of the formation contains striations and grooves in the underlying bedrock. The age of this formation is considerably older, at 1,300 million years old.

All of these examples of ancient glacial deposits occurred during the creation week, or during the early flood stages, if you believe the young-earth model. However, that is totally inconsistent with their argument, and with the evidence.

## Increased Atmospheric Pressure (Page 193)

In this section the authors use the argument that the great winged dinosaurs would have an easier time of taking off and maintaining flight, because of the increased pressure. While interesting, this proves nothing. Reducing the flight speed by 10 miles per hour would indeed show that the dinosaurs could fly easier, but this is only circumstantial evidence at best. No direct evidence of this increased pressure is presented. I'm sure there would be many other benefits to this increased pressure, such as the increased healing time mentioned, but that does not prove that this condition existed. Perhaps the vapor canopy kept out alien visitors until after the Flood, but there is no proof of this.

If they could have produced some direct evidence of this pressure, you can rest assured that they would have included it in this book. The lack of it is proof that their theory is weak.

## Rapid Post-Flood Ice Age (Page 194)

The authors propose this as an explanation for the recent ice ages. In the second paragraph, the authors state there are two requirements for an ice age, which are first, global cooling, and second, substantially increased moisture in the atmosphere.

They claim the moisture came from strong evaporation from a much warmer ocean following the flood. Since I'm not a meteorologist, I can't speculate fully about this theory (please note, the author of this weather chapter is a Geophysicist, not a Meteorologist), but it seems to me that the two, a warmer ocean and an ice age, could not

happen at the same time. Also, the authors claim that it would take about 500 years to reach maximum ice volume, so you have a warm ocean for 500 years. This is not feasible, given the fact that young-earth theorists claim that rapid cooling of granitic rock bodies occurred during the creation week. If the oceans were heated from volcanic activity during the flood, then it would not have taken 500 years for them to cool. In fact, given ocean circulation, they would probably have been cooled during the first year or two. Then for the remaining 498 years they need for this ice accumulation, the sun would have to provide this heat...but that would melt the ice being deposited.

#### Conclusions (Page 195)

There are far too many problems with the young-earth model for it to be considered as a valid theory. Atmospheric evidences are very weak or non-existent, and multiple, pre-flood ice ages in the rock record cannot be explained by the vapor-canopy model.

## Chapter 10 – Early Peoples of the Southwest

This chapter is more or less irrelevant to the formation of the Grand Canyon, although it is interesting reading. The authors present it in order to give their model some support from flood legends of the Native Americans. They do this because the science they propose for the canyon is weak, and they seek to appeal to the emotions of the reader, hoping to lend credibility to their work from these flood tales.

However, since you can't explain the Grand Canyon as being the product of the Global Flood and subsequent post-flood erosion, these stories have no bearing on the creation of the canyon. In short, I prefer to look to the hard evidence that we see in the rock record, rather than to the fairy tales of men, to explain the Grand Canyon.

Am I saying these fairy tales are false...no. I'm merely saying it is not good science to use them to explain the Grand Canyon.

## Chapter 11 – Things to See and Do

Nice chapter if you ever want to visit the Grand Canyon area.

The discussion on Meteor Crater is a real laugh. I can't verify the report that it was thought to be volcanic, and that uniformitarianists were against the drilling attempts to find the meteor. But this has nothing to do with uniformitarianism or catastrophism. Yes, the event itself was catastrophic, but all throughout the uniformitarian history of the earth, there have been many catastrophic events. For more on catastrophism, see <http://www.answersincreation.org/catastrophism.htm>.

At Zion National Park, one can see an excellent example of an ancient, wind-blown desert, the Navajo Sandstone. The authors question its desert origin, but present no evidence. As we have already seen in Chapter 3, the authors use this "desert" sandstone to disprove that the Coconino Sandstone in the Grand Canyon is desert in origin, thus they contradict themselves between this chapter and chapter 3.

One minor point from a John Wayne fan...on the last page, the authors mention the movie "Stagecoach" being filmed at Monument Valley in 1938. Stagecoach was released in 1939 (maybe it was filmed in 1938, then released in 1939?).