

Matt and Tiffany stay in the same region, continuing their geology discussion with Art Chadwick.



Discussion Leader: Dr. Stan Hudson was a geology major at the University of California at Riverside before becoming a Christian. He then shifted his studies to theology, eventually earning a Doctor of Ministry degree at Fuller Theological Seminary. Today he combines both interests, co-hosting the weekly radio program “Sink the Beagle,” a light-hearted approach to creationism and evolution issues. He currently pastors two churches in the university towns of Moscow, Idaho and Pullman, Washington.

The standard model for the formation of the layers of rock in the Grand Canyon believes it took over 250 million years. Such rock layers are considered to be part of the “geologic column” that we studied last program. Over the years the standard understanding of how fast the Canyon was eroded to roughly what we see today has shrunk from 15 to 10 million years... some even say it “only” took 15,000 years.

1 QUESTION:

But as Dr. Chadwick pointed out, it was here in Arizona that “gradualism” (sometimes called “uniformitarianism”) was first challenged. And it happened as a result of reviewing photos taken in 1869 and comparing them to recent photos of the same places in the canyon. Who was the early American explorer who traveled down the Colorado River to explore and map it?

ANSWER:

John Wesley Powell, a major in the Civil War.



2 QUESTION:

What did the photos show? How did this challenge the ideas that the major features of the canyon were the result of very gradual processes?

ANSWER:

They showed one of two things after one century—either nothing much had changed (right down to the same small rocks being in exactly the same place on the same boulders), whereas some parts of the canyon were *totally changed* (as apparently the result of flash floods, landslides and/or earthquakes). *Gradual* processes weren’t at work! The percentage of overall change was 30% of the features that were photographed.

DEFINITION:

UNIFORMITARIANISM—The belief that geologic processes seen today are the same as those of the past. Popularized by geologist Charles Lyell in the early 1800s, this means processes of building up and eroding down mountains have been fairly constant, allowing for the estimation of their ages. The practice of determining ages based on current rates of change has influenced the dating of such things as caverns, trees and ice packs, and it is fundamental for the use of carbon 14 and other types of radiometric dating.

DEFINITION:

CATASTROPHISM—The belief that many of the features of the earth’s surface can best be explained by catastrophic events, such as the Flood. It is the rough opposite of uniformitarianism, which holds that most features can better be explained by long, slow processes.. Catastrophists are often creationists (though not always), believing that such geologic features as the Grand Canyon and Monument Valley are better explained by rapid water deposition and erosion than by long age processes.



3 QUESTION:

A model that is being accepted more now over the last twenty years, one that’s kind of between gradualism and catastrophism is called “actualism.” But what’s the major challenge with this approach?

ANSWER:

It’s hard to study! You have to be present for the landslide or flood to measure it...otherwise you have to guess about how geologic features were formed. It’s a frustrating model for scientists.

4 QUESTION:

Dr. Chadwick has studied the Tapeat Sandstone layer in and around the Grand Canyon. This layer is in the early Cambrian period, when creationists believe some of the first deposits from the Flood were made. The standard model believed that this sandstone came from an ancient shallow sea. But Dr. Chadwick believes there is strong evidence that this sand and its fossils were deposited in what conditions?

ANSWER:

In deep water!

5 QUESTION:

Dr. Lee Spencer stated that Genesis is not a science book, but that it still contained interesting things that sounded scientific. For instance, he mentioned the four rivers watering the earth when there was no rain (this is before the Flood); the Bible said the source of water was a subterranean “fountain of the deep.” Since no such fountain exists today, how did he say we should look at this? Was his a good viewpoint?

ANSWER:

Dr. Spencer said we have to believe this “by faith,” since there was no science to support or deny it. It’s a reasonable viewpoint if you believe in God and that His Word is reliable. Otherwise, it’s no better than any other view.



DEFINITION:

ICE AGE—In the standard chronology there have been many so-called ice ages where the world was thought to have gone through a major cooling period, but we are referring to the more “recent” one characterized by fossils found in the Pleistocene layer of the Geologic Column. Besides fossil evidence (where there is an abundance of animals more adapted to cooler climates, like mammoths), generally cited is geologic evidence (glacial erosion) and chemical evidence (in ice cores) in support. The last ice age ended supposedly about 10,000 years ago. Creationists believe there was an intense period of climate instability after the Flood, likely lasting several centuries; meteorologist Michael Oard has promoted this model of rapid change as best explaining such remarkable occurrences as mammoths frozen and preserved with food still in their mouths

DEFINITION:

FLOOD—The event (sometimes called “Noah’s Flood”) recorded in Genesis 6-9 where God destroyed a world He considered as having become too violent to allow to continue. Jesus considered it as an example of God’s future judgment of the world. The fossil record and the many thousand cubic miles of sedimentary rock in the world’s crust suggest such a catastrophe has happened. Most ancient cultures recall a flood in earth’s early history. The language of Genesis makes it clear that it was not a local flood: the need for a boat, 120 years of preparation, the repeated phrases of “everything that breathed under heaven” was destroyed, the requirement of male and female animals to repopulate the earth, the promise from God that He would never send a worldwide flood again and made rainbows as a sign of that pledge (local floods have continued), the “fountains of the deep” bursting forth, suggesting major earthquakes, volcanic eruptions and a source of water injected into the atmosphere that would be sufficient for such an inundation and so on. Even Bible scholars who doubt the Flood support the position that the author of Genesis certainly thought it worldwide.

6 QUESTION:

The program mentioned geologist J. Harlan Bretz, who proposed a then-controversial theory that hundreds of cubic miles of rock and dirt were carved out of the Columbia River Gorge (and land all the way up to Missoula, Montana) by rushing water during a recent ice age in the matter of *just a few hours*. It took decades for the science community to accept this as truth. Why do you suppose it was so hard to accept the clear support for this catastrophe?

ANSWER:

Because there has been a strong prejudice against catastrophes explaining any of the features of the geologic column. Perhaps it reminded them of the Biblical Flood model?

7 QUESTION:

Dr. Chadwick then mentioned a rock layer he had studied in and near the Grand Canyon that contained fossilized nautiloids, a marine mollusk (today’s swimming “nautilus” is a relative). It was a layer that was several feet thick, hundreds of square miles in size and literally contained millions of these fossilized creatures. He wondered out loud how slow processes could account for the preservation of so many animals; he suggested it would be easier to account for a single event doing this. Do you agree?

ANSWER:

There are no processes similarly going on today we can observe that would do this. Usually marine animals decay fairly quickly at the bottom of oceans when they die. To preserve them, especially by the millions, would require millions of tons of sediment covering them over quickly.

8 QUESTION:

Dr. Leonard Brand was cited as having studied the Coconino sandstone in the Grand Canyon. This sandstone was supposed to have been at one time dry sand dunes. Why would that be a problem for creationism?

ANSWER:

The Biblical Flood is believed to have made almost all of the geologic column. It would be hard to imagine how some major layers were made in dry conditions!



9 QUESTION:

Dr. Brand studied some well-preserved footprints of small animals in this sandstone. What did he discover about them, especially after he went back to the laboratory and tried to recreate similar tracks?

ANSWER:

He found that dry sand would not hold very well animal footprints. Instead, if animals were walking on sand *in shallow water*, they could make tracks that looked identical to the Coconino tracks. He therefore suggested that the Coconino sandstone was formed in water.

10 QUESTION:

Professor Chadwick described some amazing research he's done on "paleocurrents." What are paleocurrents?

ANSWER:

The movement of water in the ancient past.

11 QUESTION:

He found out that major portions of the geologic column appear to have been deposited by water from the same direction. In particular he noticed that much of the sediments had been laid down coming from the northeast direction; it was true for both North and South America! Why is this good evidence for the Flood?

ANSWER:

If the Flood was indeed worldwide in size, there should be evidence in the geologic column. You would expect evidences of huge waves of mud and sand covering large areas of land very rapidly. It would make sense that this might come from a single direction.

12 QUESTION:

When Dr. Chadwick showed this evidence to a standard model-geologist friend, what did that friend do?

ANSWER:

He shook his head in amazement and frustration. The standard model cannot easily accommodate this evidence.

13 QUESTION:

In 1929 an earthquake struck off the coast of Newfoundland. It started an underwater mudslide that broke telephone cables many miles apart. They measured the time between breaks when the lines went dead and calculated that mud traveled up to 40 miles per hour and for a distance of 350 miles, all underwater! This led to the discovery of "turbidites;" what's that?

ANSWER:

A slow-witted caveman. No, seriously, these are rock layers that were deposited swiftly underwater. Now even standard model believers accept that they're fairly common in the geologic column. For creationists, their abundance makes sense.

14 QUESTION:

Matt finished the program with comments about how he appreciated these "new ways" of looking at things. And he added that it was important to have "tentative views." Do you agree?

ANSWER:

Truly open minds are not easy to find, and that's anywhere in these subjects. But Matt was clearly more impressed with scientific supports than with Tiffany or other people's "well, I just believe" sorts of statements. He really needed evidence. Maybe we should all be willing to say we don't know everything. But on the other hand, shouldn't we be able to really know some things?

