

The next major stop is near the Grand Canyon and the Vermillion Cliffs, where Matt and Tiffany try to understand the science behind the Geological Column, the backbone of Geology.



**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.

## 1 QUESTION:

This program's guide is Dr. Art Chadwick, whom the National Park Service has granted access to study some of the Grand Canyon's features. He pointed out that the geologic column is an "artificial construct." Is it complete at the Grand Canyon? Anywhere else?

### ANSWER:

It's not complete anywhere. There are often gaps, sometimes representing many millions of years. However, it is otherwise pretty consistent (layers don't generally show up reversed or in the wrong places).



## 2 QUESTION:

Also featured on the program was Dr. Lee Spencer, a paleontologist. He said that there really is order in the fossil record. Species show up in specific layers consistently; they "come in" at one place, they "go out" at a higher layer. Is this consistency a problem for creationists? Why?

### ANSWER:

Absolutely! It and radiometric dating (see Program #9) are the two biggest scientific challenges for Bible believers. If the Flood was indeed a worldwide event, one might expect most of the animal remains to be pretty mixed up; dinosaurs, mammals, everything should be all throughout the rock layers. But they definitely aren't! One way to possibly explain this is to think of the Flood as a series of consecutive destructions of habitats and the plants and animals that lived in them. This might produce some order in what creatures were preserved and where. In any case, the fossil order that we see is not one that has "simple creatures developing into complex ones later on." There is complexity from the lowest layers.

## DEFINITION:

**FOSSIL**—The preserved remains (like bones) or traces (like footprints) of life forms.

**DEFINITION:**

**CAMBRIAN EXPLOSION**—The dramatic description given to the immediate appearance of nearly all phyla of animal life in the Cambrian layers of the geologic column (standard model starting about 542,000,000 years ago), while following the comparatively fossil-free Pre-Cambrian layers. Creationists believe this boundary may be roughly where sediments from the Flood began to accumulate and preserve the fossil record.

**3 QUESTION:**

What is the lowest layer in the geologic column to have significant numbers of fossils?

**ANSWER:**

The Cambrian layer. Fossils found below this layer are rare and/or controversial. The Cambrian has many life forms as fully complex as today's.

**4 QUESTION:**

Speaking of this, the immediate appearance of nearly every basic type of vertebrate animal (phyla) in the Cambrian layer has led to the usage of the term "Cambrian explosion." It's sort of the "Big Bang" of life on earth! Dr. Chadwick used another accepted term for this miraculous sudden appearance: "kryptogenesis." Was he talking about some superhero?

**ANSWER:**

The word means "hidden beginning." In other words, the beginnings of life in the fossil record remains hidden from scientists.



**DEFINITION:**

**GEOLOGIC COLUMN**—The layers of rock in the earth's crust. They represent the history of earth's geologic events. The standard interpretation suggests a record spanning billions of years, while those believing in the Flood read it as a more recent record of a worldwide catastrophic destruction and as a preservation of billions of life forms.

**5 QUESTION:**

What was the name of the now-extinct creature that was described as like a pill bug that lived in water? It was immediately found in the lowest layers of the Cambrian and is remarkably complex.

**ANSWER:**

The "trilobite."

**6 QUESTION:**

Another statement that Dr. Chadwick made was this: "Evolutionists ask us to believe that life began in the Pre-Cambrian period and that all of the Cambrian's complexity in life forms started then...and they ask us to believe this by *faith without any evidence!*" What do you think about that statement?

**ANSWER:**

Religion is not the only place where faith operates! Scientists would probably use other language. See Program #11.

**7 QUESTION:**

In terms of fossil order of a specific kind of creature, what two examples were cited as probably evolution's best?

**ANSWER:**

Whales and horses. The latter is the better of the two. With whales the belief is that after coming from water and developing legs, they lost those legs and returned to water over time. There have been some fossils that look like they might fit this model in roughly the right geologic layers. The horse series has been promoted since the 1800s.

**DEFINITION:**

**FOSSIL ORDER**—One of the best arguments for evolution, the apparently consistent distribution of fossil types throughout the earth’s geologic column. The order that animal and plant remains are found is highly organized, suggesting to many a record of evolution. Creationists have tried to answer this problem with theories of successive Flood destructions of ecosystems (like sea bottom dwellers, then fish, then moving upward to various land systems), sorting by animal mobility, “bloat and float” studies (don’t ask) and so on. They also point to the lack of transitional fossil forms in any case.

**8 QUESTION:**

Are there many others that are reasonably complete?

**ANSWER:**

Nope! And that’s why fossil order is also a challenge to evolutionists. There are practically no complete chains of development...no “half-mouse, half-bats.”

**9 QUESTION:**

The geologic column is divided into three eras (above the Precambrian layer). Do you remember them?

**ANSWER:**

The Paleozoic (meaning “early life”), the Mesozoic (meaning “middle life”) and the Cenozoic (meaning “recent life”). These are the fossil-bearing layers, representing in the standard model about 542 million years.



**10 QUESTION:**

What layers are dinosaur fossils found in?

**ANSWER:**

The Triassic, Jurassic and Cretaceous Periods of the Mesozoic Era, going from bottom to top. Most are found in the Cretaceous. See Program #13 for dinosaurs!

**DEFINITION:**

**TRILOBITES**—An extinct class of arthropods, ubiquitous in number and diversity immediately at the beginning of the Cambrian layers. They dwelt along the shores of bodies of water (some swam in the water) and resemble beetle-like bugs. They are the stars of the Cambrian explosion, and a puzzle to evolutionists as to their complexity and widespread distribution.

### DEFINITION:

**MISSING LINKS**—One of the strongest arguments against evolution, the absence in the fossil record of transitional life forms. Evolutionists are generally aware of this problem; Darwin thought it would be solved with the discovery of more fossils. However, with a century and a half of aggressive searching, the problem remains. In other words, still to be discovered are half-mouse and half-bat fossils, for example. Some creative solutions, like Stephen J. Gould’s “punctuated equilibrium,” have yet to gain wide support.



### 11 QUESTION:

Dr. Chadwick brought up another problem for the standard millions-of-years model: erosion rates. If you use the standard understanding of how much material is washing down rivers into the ocean, the Grand Canyon’s many layers should have long been eroded away. The amount of time needed to erode those layers would be 15-25 million years. Since the layers in the canyon represent that amount of history times ten, it’s a problem. It’s been said that most continents should be gone by now, too. What sorts of things were mentioned that can affect rates of erosion?

#### ANSWER:

Plant coverage and unusual rain systems.

### 12 QUESTION:

Dr. Spencer said different worldviews lead scientists to look for clues in different places. Evolutionists would look at data one way, creationists another...and this affects the questions they ask. Even within the creationist community different views prevail. What example did Dr. Spencer cite? [Hint: Remember the subject for today’s program!]

#### ANSWER:

Where in the geologic column the Flood sediments actually begin... Cambrian? Or are there fossils from before the Flood?



### 13 QUESTION:

Dr. Chadwick closed with an affirmation of his belief in God’s Word. He was quite able to live with unanswered questions; he didn’t need to know all of the answers. What do you think of his attitude?

#### ANSWER:

Science is comfortable with unanswered questions; it’s what drives scientific enquiry.

