# The Source Workbook - Questions



## CHAPTER 9 – ASK THE ANIMALS

**Page 117**

**q-117.1 What does the fossil record tell us about how God created the animals?**

**Page 118 CAMBRIAN PERIOD (550 TO 505 MYA)**

**q-118.1 How do massive animal extinctions testify to God's involvement in creation?**

**q-118.2 How is the Cambrian Period like the agave plant?**

**q-118.3 What happened 550 mya that is a cause for wonder?**

**Page 119 Source Figure 9.1: The Geologic Time Scale**

**Page 120 Recent Fossil Finds**

**q-120.1 In 1909 what was found in the high Canadian Rockies?**

**q-120.2 Why was this find so useful?**

**Page 121**

**q-121.1 According to evolutionists, what was the only known ancestor to all these life forms?**

**q-121.2 How does the abundance of life existing then compare with what is existing now?**

**q-121.3 What discovery in 1984 adds to the time problem and why?**

**Page 122 The Distal-less Gene**

**q-122.1 Summarize the events leading to "life's big bang."**

**q-122.2 What discovery explains the sudden appearance of "complex appendages?"**

**Page 123**

**q-123.1 What major tenet of evolutionary theory is debunked by the Distal-less Gene?**

**q-123.2 Of what is the Distal-less gene an example?**

**q-123.3 How does the gene "tool kit" explain such improbabilities as "parallel evolution."**

**Page 124 Geologic Events; Source Figure 9.2: Cone of Increasing Diversity; Source Figure 9.3: Revised Model**

**q-124.1 What changes in evolution theory have developed because of the Cambrian Explosion?**

**q-124.2 What noteworthy geologic events took place at about the same time as the CE?**

**Page 125 ORDOVICIAN PERIOD (505 TO 438 MYA)**

**q-125.1 What question may arise regarding God's involvement with extinctions?**

**q-125.2 What type of extinction concluded the Cambrian Period?**

**q-125.3 What fossils characterize the Ordovician Period?**

**Page 126 Mountaintop Fossils**

**q-126.1 Based upon accurate volcanic ash dating, what was the rate of specie evolution that fueled the recovery from Ordovician large-scale extinction?**

**q-126.2 What proof of Noah's flood to some Christians submit?**

**q-126.3 What are some of the facts about shells being found on high mountains?**

**Page 127 SILURIAN PERIOD (438 TO 408); DEVONIAN PERIOD (408 TO 360 MYA)**

**q-127.1 What was being formed during the Silurian period that would be a valuable resource for humans?**

**q-127.2 Why is the Devonian Period called "the age of the fish?"**

**q-127.3 Though not specifically mentioned, what also began to appear at this time along with plants?**

**Page 128 CARBONIFEROUS PERIOD (360 TO 286 MYA)**

**q-128.1 What happened at the conclusion of the Devonian Period?**

**q-128.2 Describe what a "cyclotherm" is, and how many have been identified in the State of Illinois?**

**q-128.3 What type of insect appears during this period, and how were some of them unusual?**

**Page 129 PERMIAN PERIOD (286 TO 245)**

**q-129.1 What type of animals start to appear during this period, and how does that compare with the Biblical account?**

**q-129.2 What evidence is there that indicates the super continent Pangea was almost fully assembled during this period?**

**q-129.3 How did the Permian Period end?**

**129.4 What did "superplumes" do to Pangea?**

**Page 130 TRIASSIC PERIOD (245 TO 208); JURASSIC PERIOD (208 TO 144 MYA)**

**q-130.1 Why are dinosaur bones found on most continents today?**

**q-130.2 How did the Triassic Period end?**

**q-130.3 Besides dinosaurs, what other creatures began to appear during the Jurassic Period?**

**130.4 What is the name of the first bird discovered?**

**Page 131 CRETACEOUS PERIOD (144 TO 65); Warming Trend; The World's Greatest Fossilist**

**q-131.1 What happened to the ocean during the Cretaceous Period?**

**q-131.2 What evidence is there that worldwide temperatures were high?**

**q-131.3 Who was Mary Anning, and with what famous tongue-twister is she associated?**

**Page 132 Plants and Insects**

**q-132.1 When a change in water temperature kills phytoplankton, what is likely to form?**

**q-132.2 What development took place in the carbon-dioxide rich atmosphere?**

**Page 133 Asteroid Collisions**

**q-133.1 What is believed to have caused all the dinosaurs to become extinct, and what period did this conclude?**

**q-133.2 What did the Alverez father-and-son team propose?**

**q-133.3 How many asteroid impacts may there have been at this time?**

**Page 134 AGE OF MAMMALS (65 MYA TO PRESENT); Source Source Figure 9.4: The Latest Epochs**

**q-134.1 What did the asteroid collisions cause and with what results?**

**q-134.2 What continental development has occurred since the K/T Boundary Extinction?**

**q-134.3 About how long did it take the animals to recover from the K/T Boundary Extinction?**

**Page 135 PUNCTUATED EQUILIBRIUM**

**q-135.1 What progression of animals does the fossil record reveal between 50 and 20 Mya?**

**q-135.2 What can be said about the "end of the Miocene?"**

**q-135.3 What is a "hominid?"**

**Page 136**

**q-136.1 What did scientists believe about the earth's age before Darwin?**

**q-136.2 What is the "catastrophe theory," and what replaced it?**

**q-136.3 Describe the theory of "punctuated equilibrium." (Punk Eek)**

**Page 137 Cactus Model; Source Figure 9.5: Uniformitarian Model; Source Figure 9.6: Punctuated Equilibrium**

**q-137.1 Why do both Punk Eek and Uniformitarianism fail as model to accurately describe the fossil record?**

**q- 137.2 How does evolutionist R. Dawkins describe evolution?**

**q-137.3 What is the significance of the differences illustrated in Source Figures 9.5 and 9.6? How would you diagram a Progressive Creation (PC) Model of creation?**

**Page 138 Source Figure 9.7: Forest Model of Evolution**

**q-138.1 Give an example of how the "Tree Model" of evolution fails when compared with the fossil record.**

**q-138.2 What modification to the "Tree of Evolution" has been proposed?**

**q-138.3 How does the "Forrest Model" fail when compared to the fossil record?**

**Page 139 Biblical "Kinds": Source Figure 9.8**

**q-139.1 What do the Scriptures indicate regarding the Biblical use of the word for "kinds" found**

**in the book of Genesis?**

**q-139.2 What is the difference in meaning between God's “making” and God's “creating” something?**

**q-139.3 Yes or No. According to Genesis 1:11-12 did the “earth” create plants?**

**Page 140**

**q-140.1 What might be one method by which God could “make things?”**

**q-140.2 What evidence in the fossil record supports the “God making” hypothesis?**

**Page 141**

**q-141.1 In considering the evidence contained in the next chapter, what challenges will we encounter?**

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**End of Chapter 9**

**NOTES:**

# The Source Workbook - Answers



## CHAPTER 9 – ASK THE ANIMALS

**Page 117**

**q-117.1 What does the fossil record tell us about how God created the animals?**

From the fossil record, we learn that creation took place progressively over a long period of time. You can liken God's preparing the earth for human habitation to a very complex construction project. As the earth matured, it changed environmentally. However, each change was met with a whole new set of corresponding processes involving both animal and plant life. Nevertheless, even though the record is one of constant change, there are life forms that have never changed because the role they played is fundamental to the earth's ecology. One example would be the early bacteria that has existed for over 3 billion years without significant change in structure or process. This is not just a simple life form. It is a complex machine with over 1 million parts that is designed to convert carbon dioxide into oxygen. Can anyone really think that such a machine just happened by accident?

**Page 118 CAMBRIAN PERIOD (550 TO 505 MYA)**

**q-118.1 How do massive animal extinctions testify to God's involvement in creation?**

Historically, it has been observed that extinctions are associated with significant changes in the surviving animal populations. It is as if extinctions are a way to sweep aside one animal body type and replace it with another body type. In the past, it was thought that these extinctions were caused by flooding, with Noah's flood being the final event. However, that idea has been replaced with other modes of extinction, such as comets or asteroids hitting the earth. Progressive creationists believe that God is the explanation for why the earth seemed to recover so rapidly after each devastation. Evolutionists, on the other hand, respond by saying that rapid evolution is more likely when populations are small. But this explanation appears to be in direct conflict with Darwin himself who said, "... the new forms produced on large [populated] areas, which have already been victorious over many competitors, will be those that will spread most widely, and will give rise to the greatest number of new varieties and species. They will thus play a more important role in the changing history of the organic world." [Charles Darwin, 1869. On the origin of species by means of natural selection London: John Murray. 5th edition, p. 121-122]

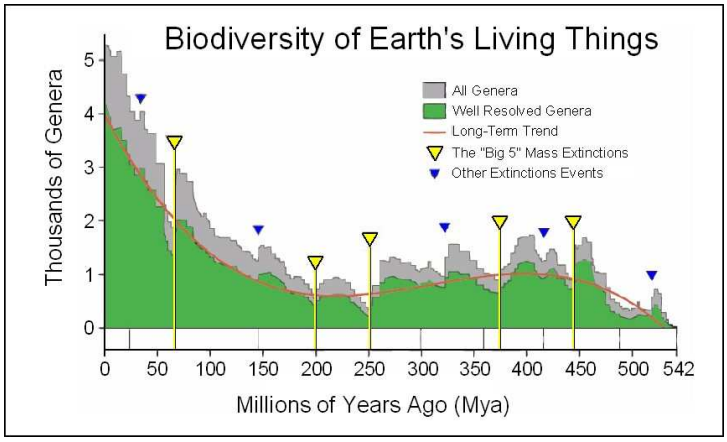



**Figure 9.1:** The known major and minor extinctions.

As a point of interest, there have been five major extinctions throughout earth history. The

worst occurred about 251 Mya at the Permian-Triassic transition which killed 53% of marine families, 84% of marine genera, about 96% of all marine species and an estimated 70% of land species (including plants, insects, and vertebrate animals). This event triggered an essential change in land animal populations. The dominant mammal-like reptiles were eventually replaced by the large dinosaurs that we have all come to love. This event is known geologically as the "Great Dying." It was not the first nor the last extinction. It was only the worst. Since humans and dinosaurs would not be able to coexist, the other significant extinction that wiped out those big overgrown lizards occurred about 65 Mya. This is know as the K/T or Cretaceous-Tertiary Extinction event. It took out about 50% of all species and opened the way for mammals to become the dominant land vertebrates. In all of this, you can see how God was preparing the earth for human habitation.

**q-118.2 How is the Cambrian Period like the agave plant?**

For years the agave plant seems to be doing very little growing. However, when the time is right, almost overnight, it produces a single bloom that may be over 40 feet high. The earth has performed in a similar way. For about 87% of its history, very little seemed to be happening. During this time, God was apparently preparing the earth for something completely new. Then almost over night, geologically speaking, life in abundance and variety sprang into existence and has flourished ever since.

**Figure 9.2:** Agave Plant

**q-118.3 What happened 550 Mya that is a cause for wonder?**

The "Cambrian Explosion" occurred. This event has been called "life's big bang" because every basic animal body plan we know of suddenly appeared. Just as the Universal Big Bang was the creation of God, the same can be said for the Cambrian Big Bang. In chapter 7, we discussed the use of the Hebrew word “bara,” which refers to creating Ex nihilo--a Latin term meaning "out of nothing"--which is something only God can do. In the first chapter of Genesis, the word bara is found three times in Genesis 1: 1, 21, 27. These verses all refer to creations by God: 1, creating the heavens and earth, 21, the creation of sea creatures and birds and 27, the creation of humans.

**Page 119 Source Figure 9.1: The Geologic Time Scale**

**Page 120 Recent Fossil Finds**

**q-120.1 In 1909 what was found in the high Canadian Rockies?**

The Cambrian represents a group of rocks that contains a large variety of dissimilar living organisms that earlier rocks do not contain. There has been considerable effort put forth to discover less complicated, earlier life forms that could serve as ancestors to those found in the Cambrian. To date, the search has not revealed anything significant. There is little doubt now that different animal types rose quickly in the early Cambrian and continued to be introduced at a high rate for the rest of the Cambrian. For instance, we see modern-looking animals such as crustaceans, echinoderms, and fish at about the same time and often in the same fossil beds as creatures like Anomalocaris and Halkieria, which are currently regarded as “aunts” or “great-aunts” of the modern groups. These overlapping families defy the

conventional wisdom that animals kinds evolved over long periods of time by replacing their ancestors.

**q-120.2 Why was this find so useful?**

It is a testimony to how quickly complex, hard-bodied life forms developed. Up to this time, only simple soft-bodied creatures were evident. To creationists, this appears as a loud and clear testimony to the handiwork of God.

**Page 121**

**q-121.1 According to evolutionists, what was the only known ancestor to all these life forms?**

There are no actual Precambrian fossils available. The best evidence for complex life is trace fossils of worm holes.

**Figure 9.3:** A trace fossil of a worm.

**q-121.2 How does the abundance of life existing then compare with what is existing now?**

There are approximately 50% fewer phyla today than originally formed at the Cambrian explosion. At present, one source says that there about about 30 to 35 different phyla existing today. Phyla is a classification that represents the largest generally accepted groupings of animals and other living things that have the same or very similar body plans. Body plans are based on how an animal looks on the inside and not necessarily on the outside. While plants are technically included as being in a Phylum, for them the classification term "Division" is usually preferred by botanists.

**q-121.3 What discovery in 1984 adds to the time problem and why?**

Although fossils from the region have been known from the early part of the twentieth century, Chengjiang became distinctively recognized for its exquisite states of preservation with the 1984 discovery of the naraoiid Misszhouia, a soft-bodied relative of the trilobite family. Since then, the locality has been intensively studied by scientists from all over the world and has yielded a constant flow of new discoveries.

**Page 122 The Distal-less Gene**

**q-122.1 Summarize the events leading to “life’s big bang.”**

Usually we don't think of how God created things. It seems that many envision God creating things by magic. You know the picture, the Genie of the Lamp says, "Abracadabra," and poof, the item appears. It is certainly possible that God could use methods that would have seemed magical to us. However, it appears that God did not prepare the earth for human habitation that way. Instead, He used natural processes acting over long periods of time to accomplish His will. These processes were either built into the creation from the beginning, or God may have tinkered with them here and there to put the essentials into motion so they could then operate on their own. That would be the explanation for why it took billions of years to naturally create all the ecological support to meet the anticipated human needs.

**q-122.2 What discovery explains the sudden appearance of "complex appendages?"**

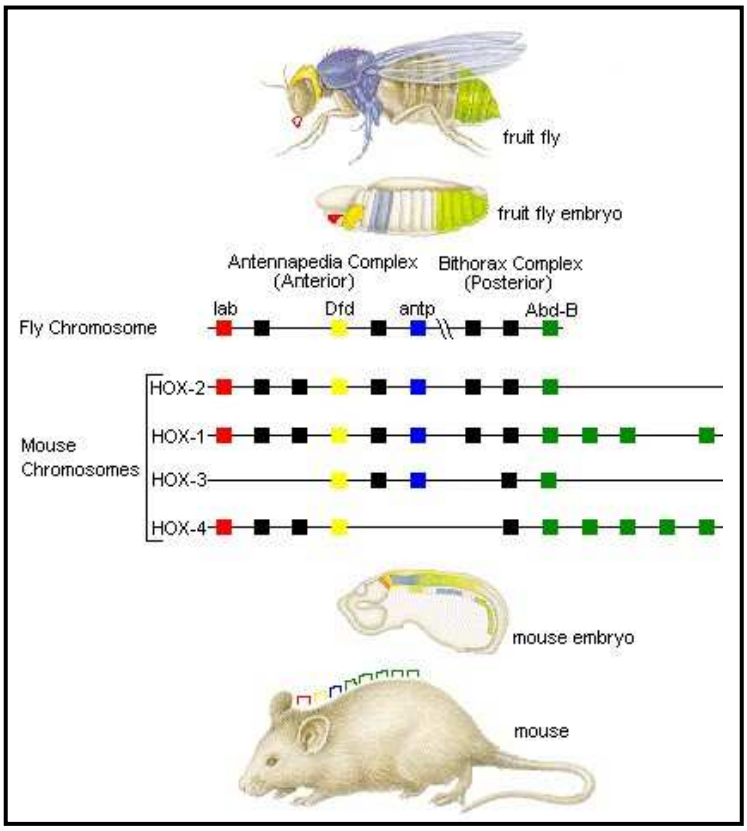



**Figure 9.4:** Hox genes control body part formation in all animals. The colors above show the common way in which hox genes operate in widely dissimilar life forms.

The Source talks about the "Distal-less Gene" as being a "toolkit" of sorts. The Distal-less gene is related to what is called a "homeobox gene." This is a gene set that is made up of a sequence of 180 nucleotides that are found in almost all animal phyla. Though the gene sequence has been present in most animals for the last 550 million years, it is relatively unchanged. For this reason, it has been called a "holy gene" group. This is important because it has been found that even minute changes in the sequence can produce an animal that doesn't work. In Professor Sean Carroll's (mentioned in The Source) book, *Endless Forms Most Beautiful: The New Science of Evo Devo*, we are told, "The first shots in the Evo-Devo revolution revealed that despite their great differences in appearance and physiology, all complex animals--flies and fly catchers, dinosaurs and trilobites, butterflies and zebras and humans--all share a common 'toolkit' of 'master' genes that govern the formation and patterning of their bodies and body parts." In my opinion, the most fantastic thing about this realization is that Darwinists truly believe that such a useful universal toolbox arrangement just happened by accident.

**Page 123**

**q-123.1 What major tenet of evolutionary theory is debunked by the Distal-less Gene?**

A genetic toolkit debunks the idea that design follows demand. With regard to this particular feature, design preceded demand which clearly denotes an intelligent source. How else can you explain a clever genetic module that can form a variety of animal appendages by simply turning on or off the correct genetic switches.

**q-123.2 Of what is the Distal-less gene an example?**

Distal-less or homeobox or a subgroup called Hox genes are, in my opinion, examples of OOP or "Object Oriented Programming." The phrase, "Don't reinvent the wheel," applies to the use of these programming techniques. Instead of recreating every new animal separately, God apparently conserved energy by building upon what already existed using things like hox genes to define His "Program Classes" or Species. In programming jargon, we can substitute "Class"

for "Species" and "Object" for a particular member of the species.

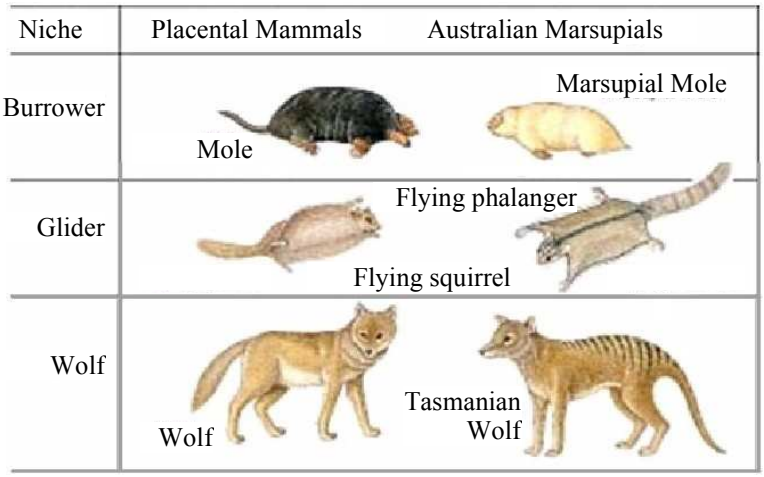



**Figure 9.5:** Examples of parallel or convergent evolution. These animals developed on different, isolated continents and therefore are not related. However, their DNA tool kits provided similar body types to meet various environmental challenges.

Using a dog as an example, its DNA has a set of instructions that specifies the various features of the Class/Species dog. These instructions would define physical and abstract characteristics and behaviors of all dogs. This would be a listing of their shared traits and components, such as their ability to bark or be loyal and loving (traits) along with having fur and teeth (components). The next group of instructions would specify a particular member of the Class/Species such as an Object/Pomeranian dog. The Object instruction code would be similar for all dogs except for a few genetic on-off switches contained in the controlling hox genes that would account for the various physical differences between the 400 recognized purebred dogs, along with an undetermined number of "rare breeds." The hox genes list out chemical commands in accord with the particular body plan for which its program switches have been set. These commands regulate other genes, which describe in 3 dimension what the various physical components look like and where they must be placed. The list may start with the head and work to the tail. As has been said, hox genes are among those referred to as "holy code" because they have not changed since the Cambrian Explosion, as far as we can tell. We do not know where they came from or how they were physically assembled. In essence, every animal that has ever lived contains a basic catalog of original homeobox sequences with the potential for regulating the production of every type of body shape that has been discovered. That is the reason homeobox genes are sometimes referred to as being like "toolboxes." The programming principles discovered in DNA are a clear example of intelligent design. For more information on DNA as a programming language, see: **http://ds9a.nl/amazing-dna/**

**q-123.3 How does the gene "toolkit" explain such an improbability as "parallel evolution?"**

The gene toolkit contains sequences that will be automatically triggered by environmental changes. Even though animals may have never had any contact, their limbs and body plans are still formed by the same DNA toolkits, but with different built-in variations or outcomes. Because of this, an improbable event such as parallel evolution appears to have happened.

**Page 124 Geologic Events; Source Figure 9.2: Cone of Increasing Diversity; Source Figure 9.3: Revised Model**

**q-124.1 What changes in evolution theory have developed because of the Cambrian Explosion?**

The Darwinian tree model of evolution changed to a bush type of model with many of the bush "limbs" stopping along the way because of various extinctions. You could still call it a tree of sorts because the model continues to assert a lucky, undiscovered, single start that very quickly branched out into a bush. However, the real picture might be of all the phyla, denoted by the

limbs of the bush, starting at about the same time by means of outside or built-in control features.

**q-124.2 What noteworthy geologic events took place at about the same time as the CE and with what results?**

The Transcontinental Arch developed at about the same time.

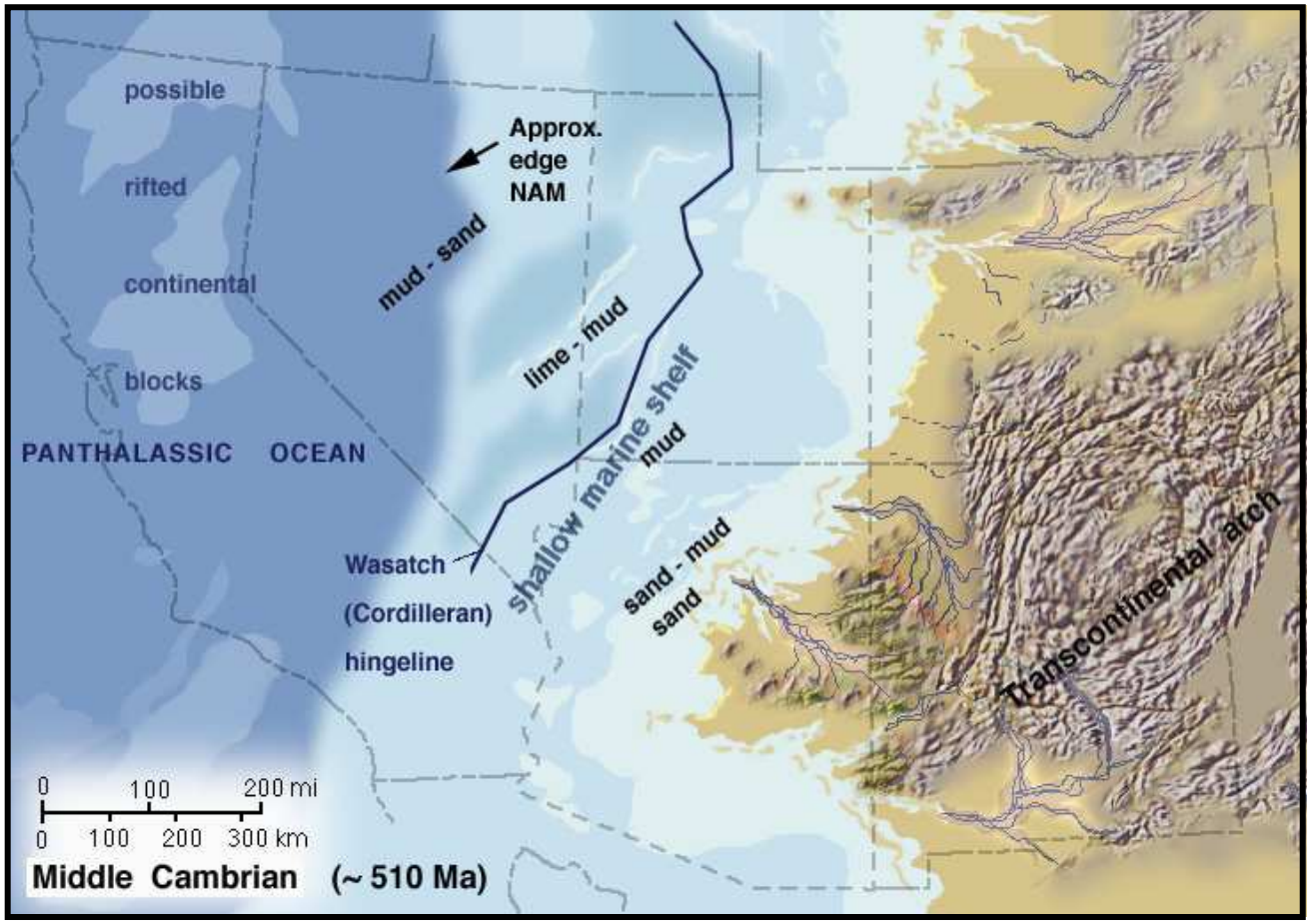



**Figure 9.6:** The transcontinental arch in relation to the United States. Many of the Grand Canyon rock formations were developed by the westward erosion of these rocks. This area of the USA has been covered over with water numerous times. Some individuals believe that Noah's flood caused all these ancient soil deposits to occur in relatively recent times. This idea runs contrary to the evidence.

**Page 125 ORDOVICIAN PERIOD (505 TO 438 MYA)**

**q-125.1 What question may arise regarding God's involvement with extinctions?**

The primary question that arises about God using extinctions as a part of the creative process is a moral one. Critics have said that the numerous recorded extinctions can be viewed as being morally evil. This has been used as an argument against the existence of God. They say no loving God would create such evil that allows animals to be so cruelly slaughtered by the natural processes we observe in nature. We argue, though, that God is not cruel just because he used natural processes to prepare the earth for human habitation, which included animals preying upon each other in a cat-and-mouse fashion. Due to an obvious lack of communication, it is impossible for us to determine how animals experience pain in comparison with how we experience pain. However, it has been clearly established that most, if not all, people who have had traumatic life threatening experiences do not remember the

details nor the pain they may have experienced at the time. This may also be true of violent animal deaths. Such built-in forgetfulness would be evidence of a merciful designer who only created our ability to feel pain for instructional purposes and not as an unavoidable means of torment due to natural processes.

**q-125.2 What type of extinction concluded the Cambrian Period?**

**Figure 9.7:** During the Ordovician, both North America and Europe were covered by shallow seas that flourished with life.

Currently, it is believed that the Cambrian-Ordovician extinction event was a "devastating catastrophe" of some sort that occurred approximately 488 million years ago. This is a revision to the previous date of about 505 mya. This was the first major extinction since complex life appeared. Many different species of newly formed animals were eliminated, such as brachiopods, conodonts, and the trilobite population was severely reduced. It is estimated that about 49% of the animal population was impacted. The actual cause is still under investigation. It could have been due to a change in climate that lead to a depletion of oxygen in the oceans.

**q-125.3 What fossils characterize the Ordovician Period?**

The start of the Ordovician has been revised to about 488 Mya due to clarifications of when the Cambrian-Ordovician took place. The Ordovician was named by the British geologist Charles Lapworth in 1879. He took the name from an ancient Welsh tribe, the Ordovices. The Period lasted for about 45 million years and ended with another extinction that wiped out 60% of the marine animals. This extinction is believed to have been caused by a gamma ray burst that may have temporarily destroyed the ozone layer. Because the ozone layer protects against harmful solar radiation, its loss would have exposed both land and sea animals to danger that could have resulted in many extinctions. The Ordovician Period is best known for the presence of its diverse marine life which included colonies of animals like Graptolites. These colonies started off as a single sexually produced creature called a "zooid," that enlarged itself by asexual "budding" which produced additional zooids. There may be anywhere from two to several hundred zooids found in a colony built up from the single founder zooid. From an evolutionary perspective, you have to wonder how and why such an unusual reproductive feature emerged.

**Page 126 Mountaintop Fossils**

**q-126.1 Based upon accurate volcanic ash dating, what was the rate of species evolution that fueled the recovery from Ordovician large-scale extinction?**

The recovery rate is estimated at 65 new species of animals produced within a 100,000 year period. In general, this period is considered unusual because of such a rapid recovery of new replacement species.

**q-126.2 What proof of Noah's flood to some Christians submit?**

Some have thought that fossilized seashells found on the tops of mountains were evidence of Noah's flood.

**q-126.3 What are some of the facts about shells being found on high mountains?**

Upon closer inspection, it is found that high mountain seashells are salt water marine fossils. This indicates that they were not deposited by a flood of recent origin, but were deposited in a salt water ocean eons ago. Over time, they were subducted, fossilized, and later uplifted to mountain heights by tectonic processes, such as continental drift and collision.

**Figure 9.7**: There are many big ammonite fossils in the Muktinath area of the Kali Gandaki valley, Nepal at around the elevation of 12,000 ft above sea level. This is one of the proofs that the Himalayas were indeed once under water. For people who have faith in the Hindu religion, ammonite is one of the many forms of their Lord Vishnu. They keep the fossil in their worship room and worship it. http://library.thinkquest.org/10131/geology_visual.html

**Page 127 SILURIAN PERIOD (438 TO 408); DEVONIAN PERIOD (408 TO 360 MYA)**

**q-127.1 What was being formed during the Silurian Period that would be a valuable resource for humans?**

Many of our natural resources such as oil, coal, and metal ores were deposited during this period.

**q-127.2 Why is the Devonian Period called “the age of the fish?”**

By the end of the Devonian Period, many fish came into existence. Nevertheless, it should be noted that the term "Age of the Fish" is no longer used to described the Devonian in up-to-date reference materials. Though fish were an important development during this period, plants, insects and vertebrate animals are also being recognized as being equally important groups to consider.

**q-127.3 Though not specifically mentioned in the Bible, what also began to appear at this time along with plants?**

Though the Bible doesn't speak of land animals appearing until the 5th creative day, fossil spiders and insects have been found that date much earlier. Scientists have identified what is believed to be the oldest known insect by its fossilized jaw remains. The mandibles of Rhyniognatha hirsti have two points of articulation which is only known to exist on true insects. Even though there is no evidence of this fossil having wings, the advanced type of

mandibles are only found on insects that do. This is important because until this discovery was made, the oldest winged insect fossils dated back to 320 Mya. To find a fossil dating back to more than 400 Mya with evidence of being winged indicates that wings may have been introduced much earlier than previously thought.

These details appeared in a report published in the journal *Nature* that describes the creature as living between 408 and 438 million years ago. The results of this find pushes back the earliest appearance of winged insects by nearly 80 million years and suggest that such insects were among the very first animals to arrive on land. This shouldn't surprise us because insects and plants can be realistically considered as being part of the same creation due to their mutual interdependence. When the Bible speaks of plants being created on the third day, we can assume that this included many different types of creatures, such as plant-like bacteria and insects. In fact, there is an insect that looks so much like a plant leaf that it is hard to distinguish one from the other. (*Scientific American -- February 12, 2004*)

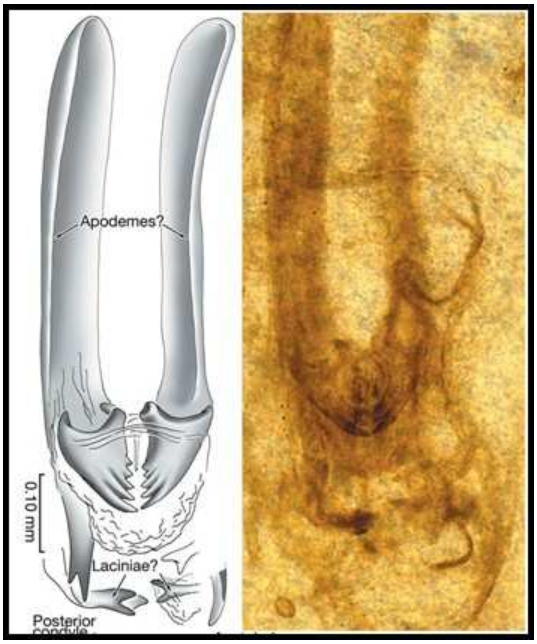



**Figure 9.9:** Rhyniognatha hirsti is the oldest known insect.

**Page 128 CARBONIFEROUS PERIOD (360 TO 286 MYA)**

**q-128.1 What happened at the conclusion of the Devonian Period?**

Again we find that a major two stage extinction occurred towards the end of the Devonian Period about 364 million years ago. The second more devastating stage finalized the Devonian Period. This combination was a one, two punch that places it among the five major extinction events in earth's history.

**q-128.2 Describe what a "cyclotherm" is, and how many have been identified in the State of Illinois?**

A cyclotherm is a process whereby coal deposits are systematically formed. There are 60 known deposit cycles evident in Illinois.

**q-128.3 What type of insect appears during this period, and how were some of them unusual?**

Flying insects, some of which had 3-foot wingspans.

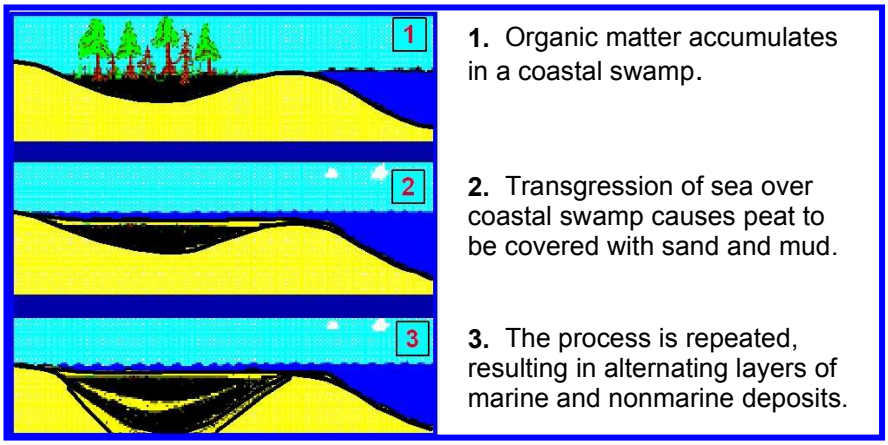



**Figure 9.10:** Cyclotherms and how they are formed.

**Page 129 PERMIAN PERIOD (286 TO 245)**

**q-129.1 What type of animals start to appear during this period, and how does that compare with the Biblical account?**

The first true land mammal started to appear. At Genesis 1:24 God says "Let the earth bring forth the living creature after its kind, cattle, and creepers, and its beasts of the earth after its kind; and it was so."

**q-129.2 What evidence is there that indicates the supercontinent Pangea was almost fully assembled during this period?**

As shown in Figure 9.11, various types of land formations, as well as fossil animals are found in specific areas that suggests the continents were joined together in the past. The Bible indicates that there was only one landmass that was formed into a "supercontinent." The original continent broke up and reformed due to continental drift.

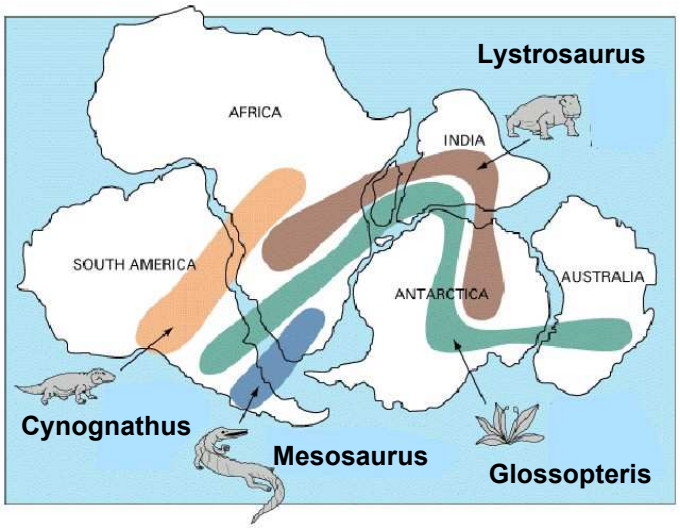



**Figure 9.11:** The relative location of various earth deposits and fossil animals indicate that the continents must have been connected at some time in the past.

**q-129.3 How did the Permian Period end?**

The Permian-Triassic Period division was marked by the most extensive extinction event recorded in the history of the earth. It is estimated that 90% to 95% of marine species became extinct, along with 70% of all land organisms.

**129.4 What did "super plumes" do to Pangea?**

The theory of super plumes (or mantle plumes) as it relates to continental drift is fairly new. A known active super plume caused the Hawaiian Islands and its related chain of islands to form. These hot spots coming from the earth's core may also induce movements under Tectonic and Continental plates at a depth of up to 2900km. The Japanese geophysical scientist Fukao Yoshio has studied the internal structure of the earth using p-waves as his information carrier. Another Japanese geophysicist has interpreted Yoshio's data to suggest that the current theory of plate tectonics is unable to account for all continental movements. It is likely then that super plumes played a significant role in the break-up of Pangaea.

**Page 130 TRIASSIC PERIOD (245 TO 208); JURASSIC PERIOD (208 TO 144 MYA)**

**q-130.1 Why are dinosaur bones found on most continents today?**

For the same reasons considered in Figure 9.11. The super continent, Pangaea, was continuous in the areas roamed by the dinosaurs.

**q-130.2 How did the Triassic Period end?**

Another mysterious extinction.

**q-130.3 Besides dinosaurs, what other creatures began to appear during the Jurassic Period?**

During the Late Jurassic, the first birds appear in the fossil record. They are said to have evolved from small coelurosaur dinosaurs. However, because birds are such a unique warm

blooded creature, it is very doubtful that they can be directly linked by inherited traits to dinosaurs. This is, in my opinion, an example of irreducible complexity.

Interestingly, birds were not the only flying creatures. Pterosaurs were also common, and they ruled the skies above the treetops, filling many ecological roles now taken by high flying birds of prey. Pterosaurs are considered to be the first vertebrates to fly. They had wings something like those of a bat, in that they were formed by a membrane of skin, muscle, and other tissues. Pterosaurs spanned a wide range of adult sizes, from the very small *Nemicolopterus* to the largest known flying creatures of all time, the *Hatzegopteryx* (See Figure 9.12). It is estimated that the skull of *Hatzegopteryx* was probably almost 9.8 ft. (3 m) in length, making it among the largest skulls of any known non-marine animal. The media often make the mistake of portraying Pterosaurs as being a type of dinosaur. In general, the term "dinosaur" is restricted to terrestrial reptiles with a unique upright stance, whether on two or four legs. By this definition, pterosaurs are excluded, along with other groups of extinct aquatic reptiles, such as ichthyosaurs, plesiosaurs, and mosasaurs.

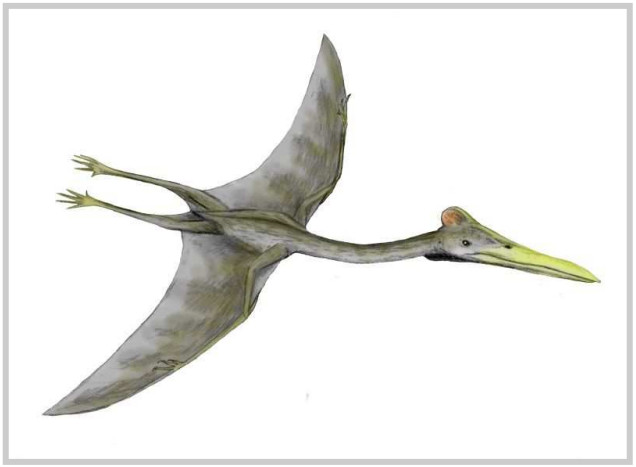


**Figure 9.12:** A specimen of the Hatzegopteryx pterosaur consisting of skull fragments and other parts that indicate the creature had a wingspan of 40 feet (12 m) or more.

**130.4 What is the name of the first bird discovered?**

The first complete specimen of Archaeopteryx was introduced in 1862 in Germany. This was only two years after Charles Darwin published *On the Origin of Species*, and needles to say, the fossil was used as a key piece of evidence in the following debate over evolution.

Since that time, nine additional fossils have been found also in Germany. Whether all nine of these finds are truly Archaeopteryx is a matter of dispute. One interesting related fossil is of a well developed flight-feather. This has led to speculation that feathered birds must be much older because of the time it would take to produce such a well-developed flight resource. Recently, finds in Texas have surfaced that claim to be of an older bird specimen which has been named Protoavis. Even though its appearance in the fossil record is about 60 to 75 million years earlier than Archaeopteryx., its skeletal structure is allegedly more bird-like. However, we can't draw any definite conclusions because the subject is still being hotly debated at this time.

**Figure 9.13-A:** The first fossil found of an Archaeopteryx.

**Page 131 CRETACEOUS PERIOD (144 TO 65); Warming Trend; The World's Greatest Fossilist**

**q-131.1 What happened to the ocean during the Cretaceous Period?**

During the Cretaceous Period, there was a warming trend noted. This trend was probably caused by intense volcanic activity, which resulted in a significant increase in atmospheric carbon dioxide. This was a time of real "global warming." It is also believed

that mantle plumes caused bulges of the ocean floor resulting in rising sea levels, which in turn caused large areas of North America to be covered by shallow seas.

**q-131.2 What evidence is there that worldwide temperatures were high?**

High earth temperatures at this time is one of the reasons why fossils of tropical plants are found in areas as far north as Alaska and Greenland. Even dinosaur fossils have been found within 15 degrees of the Cretaceous South Pole. In the past, it has been argued that these tropical plants proved that, before the Flood of Noah, the earth was like a giant hot house due to a thick water canopy suspended above the earth. However, it can be shown by the laws of physics that the earth's surface temperature would increase to at least 500 degrees Fahrenheit due to the compressive weight of such a heavy water canopy.

**q-131.3 Who was Mary Anning, and with what famous tongue-twister is she associated?**

**Figure 9.13-B:** A fossil flight feather believed to belong to an Archaeopteryx.

Mary Anning, though lacking a formal education, earned a reputation for being an expert in finding and identifying fossils located in the area by the sea where she lived. She was the basis for the tongue twister, "She sells seashells by the seashore." Mary collected fossils for her entire life and made numerous other contributions to early paleontology. The British Association for the Advancement of Science gave her an annuity in her late thirties in appreciation for the contribution to science that she had made. Unfortunately, Mary Anning died of breast cancer at the age of 47 on March 9, 1847. Her untimely death was just a few months after she had been accepted as an honorary member of the Geological Society of London, despite being ineligible for regular membership due to prejudice against women of science at the time. Nevertheless, her obituary was published in the Quarterly Journal of the Geological Society-- even though women were not officially admitted until almost 60 years later in1904.

**Page 132 Plants and Insects**

**q-132.1 When a change in water temperature kills phytoplankton, what is likely to form?**

Oil is produced by such conditions. The natural formation of oil follows a process called The Biogenic Theory. When a massive destruction of prehistoric zooplankton and algae occurs in lakes or shallow seas, a large amount of biomass settles to the bottom. The entrained oxygen within the mass is quickly depleted and further short-term decomposition comes to a halt. Over great periods of time, this organic brew is mixed with mud and other debris while it is slowly being buried under heavy layers of sediment. The heavy confining pressure promotes a rise in the internal temperatures, which causes the organic matter to change chemically. These biomasses can change into a variety of materials that range from a volatile, low carbon-hydrogen combination like methane gas, to a liquid petroleum oil. Or it may compress into a solid material composed of almost pure carbon, like anthracite coal. The biogenic theory was first introduced by Mikhail Lomonosov in 1757. However, there is competition from The Theory of Abiogenic Petroleum Origin which hypothesizes that no organic or living material was involved in the formation of oil and coal. Instead, hydrocarbon compounds, especially natural gas, were present when the earth was originally formed and have subsequently risen to their present locations. According to this hypothesis, there may be a great deal more oil available than is presently believed. However, this theory is not being worked on much at present and may have been introduced by Russia during the Cold War primarily to discredit Western scientists.

**q-132.2 What development took place in the carbon-dioxide rich atmosphere?**

The Cretaceous Period had a plant-friendly environment. Not surprisingly, flowering plant production took off, so to speak. Along with flowering plants, a variety of insects were created to establish symbiotic relationships with specific plants. This period also saw the introduction of insect eating mammals and birds. The earliest fossil of a flowering plant, Archaefructus liaoningensis, is dated to be about 125 million years old.

**Figure 9.14:** This is the oldest plant fossil found to date. It was living when carbon-dioxide levels were high about 125 Mya.

**Page 133 Asteroid Collisions**

**q-133.1 What is believed to have caused all the dinosaurs to become extinct, and what period did this conclude?**

It is believed that an asteroid collided with the earth about 64.7 Mya and finalized the extinction of the dinosaurs. This is called the K/T Extinction because it marked the conclusion of the Cretaceous Period and introduced the Tertiary Period.

**q-133.2 What did the Alverez father-and-son team propose?**

They proposed that a 6 mile-wide asteroid hit the earth, leaving a 112-mile-wide crater in the Gulf of Mexico near Chisxulub in Yucatan, Mexico.

**q-133.3 How many asteroid impacts may there have been at this time?**

There may have been two asteroid hits, one immediately following the other.

**Page 134 AGE OF MAMMALS (65 MYA TO PRESENT); Source Figure 9.4: The Latest Epochs**

**q-134.1 What did the asteroid collisions cause and with what results?**

The asteroid collision is believed to have caused earth-wide temperature extremes, acid rain, forest fires, storm surge waves, and tsunami waves. They resulted in the extinction of some marine organisms and all land animals weighing more than 50 pounds.

**q-134.2 What continental development has occurred since the K/T Boundary Extinction?**

The Age of :Mammals began and continues to the present. This final period consists of seven Epochs. A memory device used by some college students to remember their names and order is "*Put* (Paleocene) *Eggs* (Eocene) *On* (Oligocene) *My* (Miocene) *Plate* (Pliocene) *Please* (Pleistocene) *Harold* (Holocene)."

**q-134.3 About how long did it take the animals to recover from the K/T Boundary Extinction?**

It took about one million years.

**Page 135 PUNCTUATED EQUILIBRIUM**

**q-135.1 What progression of animals does the fossil record reveal between 50 and 20 Mya?**

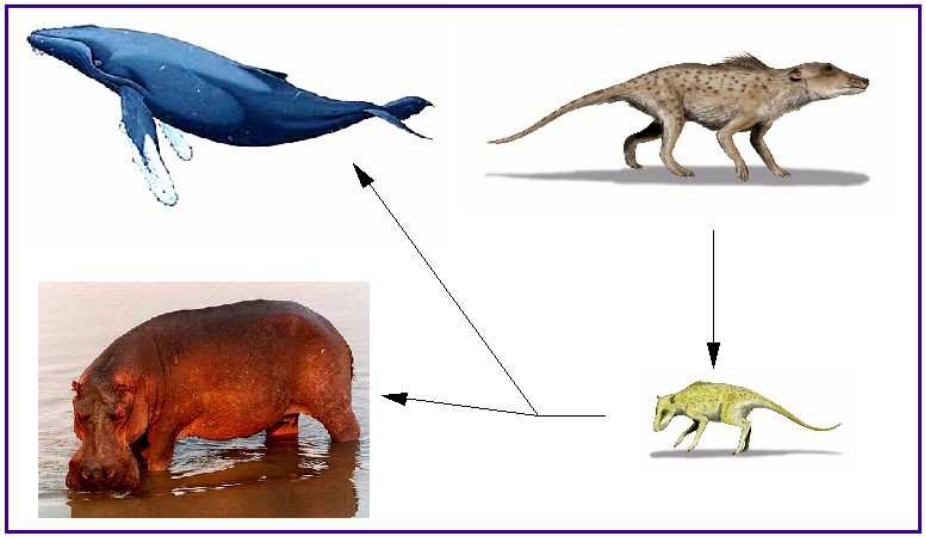


**Figure 9.15:** The proposed evolutionary path of the whale includes the hippopotamus as a land dwelling cousin. It starts with the wolf-sized Pakicetus, travels down through the cat-sized Indohyus where the branch divides as shown above. The entire pathway is hypothesized due to a questionable common ear apparatus and similar bone composition.

Land mammals increased in size concluding with the elephant family. Strangely, sea mammals, such as whales, sea cows, seals and sea lions, started appearing also. Probably the most interesting of these animals would be the whale. The proposed evolution of the whale has always been problematic. What would cause a land animal to go back into the ocean? Even more puzzling are the suggested relatives of the whale. It is now proposed that the closest living relative to a whale is the hippopotamus. Whales are classified as being Cetaceans which includes dolphins and porpoises. All Cetaceans are warm-blooded, breathe in air through their lungs, bear their young alive and suckle them on their own milk, and have hair, although very little of it. Often people get confused about distinguishing between whales and fishes. Some wonder if sharks are also mammals. An easy way to tell the difference is that every fish has a vertical tail and every Cetacean (whales, dolphins, and porpoises) has a horizontal tail called a fluke, and swim by moving it up and down. Fish move their tails from side to side.

**q-135.2 What can be said about the "end of the Miocene?"**

Most of the animals that we would recognize today were present.

**q-135.3 What is a "hominid?"**

The term hominid, as used in *The Source,* refers to what is best described as a bipedal or erect standing primate. Technically, this term would normally include modern humans. However, as indicated on page 144 of *The Source*, we have reserved the use of the term hominid to exclusively refer to the non-human animals that may be said to be ancestors to modern humans. By using this definition of hominid, we would be specifically referring to all of the fossil genera called Australopithecus, Ardipithecus, Kenyanthropus and the non-human members of Homo. This can be confusing because there are a number of fossil animals that look a lot like modern humans, even being placed in the Homo genera classification. This is seen in the fact that, historically, there are two types of Homo sapiens listed, they are Homo sapiens and Homo sapiens sapiens. We believe that the archaic Homo sapiens were actually animals, and the Homo sapiens sapiens are modern human. This two-name classification was made to distinguish between obviously primitive (mentally) and obviously modern types of Homo sapiens. In more recent times, this difference has become somewhat obscured. Unfortunately, the matter is likely to become even more confusing in the future because

evolutionists are in the process of revising these classifications in an attempt to make modern humans appear to be more animal-like. The term, as it is used in *The Source,* would also include the Neanderthal Man as being an animal hominid. So when you see or hear about ancient "human" ancestors, remember that any specimen older than about 40,000 to 50,000 years should be considered an animal and can be referred to as a non-human-hominid.

Figure 9.16 is taken directly from the Talk Origins website. This is a group that promotes the theory of evolution. By including them as a reference, we are not endorsing their viewpoint. However, these pictures are an accurate representation of the skulls that make up what can be called the hominid community members. In *The Source*, with the exception of skulls A, M and N, we would refer to all the rest as being hominid animals. Skull A is that of a Chimpanzee and is not classified as a hominid. Skulls M and N are Homo sapiens sapiens and, therefore, considered modern humans made in the image of God.


**Figure 9.16: Fossil hominid skulls. (Images © 2000 Smithsonian Institution**

**(A) *Pan troglodytes*, chimpanzee, modern**
**(B) *Australopithecus africanus*, STS 5, 2.6 My**
**(C) *Australopithecus africanus*, STS 71, 2.5 My**
**(D) *Homo habilis*, KNM-ER 1813, 1.9 My**
**(E) *Homo habilis*, OH24, 1.8 My**
**(F) *Homo rudolfensis*, KNM-ER 1470, 1.8 My**
**(G) *Homo erectus*, Dmanisi cranium D2700, 1.75 My**
**(H) *Homo ergaster* (early *H. erectus*), KNM-ER 3733, 1.75 My**
**(I) *Homo heidelbergensis*, "Rhodesia man," 300,000 - 125,000 y**
**(J) *Homo sapiens neanderthalensis*, La Ferrassie 1, 70,000 y**
**(K) *Homo sapiens neanderthalensis*, La Chappelle-aux-Saints, 60,000 y**
**(L) *Homo sapiens neanderthalensis*, Le Moustier, 45,000 y**
**(M) *Homo sapiens sapiens*, Cro-Magnon I, 30,000 y**
**(N) *Homo sapiens sapiens*, modern**
**Note: This information is from:**
**http://www.talkorigins.org/faqs/comdesc/section1.html**

**Page 136**

**q-136.1 What did scientists believe about the earth's age before Darwin?**

Most believed that the earth was created in the not too-distant past or about 6,000 years ago.

**q-136.2 What is the "catastrophe theory," and what replaced it?**

Catastrophism proposed that natural disasters were involved in the development of the earth's various land forms and animal life, and it was replaced by the evolutionary theory of uniformitarianism. The most noteworthy proponent of catastrophism in the early 19th century was the French anatomist and paleontologist Georges Cuvier. It was his opinion that after a series of natural disasters, each of which caused massive extinctions, new life with adaptations to survive in the new environments would suddenly arise. He strongly disagreed with the theory of evolution newly introduced by Charles Darwin. Interestingly, from an evolutionary perspective, Cuvier's view has, in principle, greatly modified the Darwinian theory and has replaced uniformitarianism as the dominant player today in explaining the history of the earth. In this regard, you might say that Cuvier was a proponent of the modern theory of Intelligent Design, because he did not incorporate God into his theory, even though he did believe in divine creation. He also expressed the belief that the earth was much older than 6,000 years. This is a good example of how increased knowledge about nature is forcing science to admit that there is an apparent intelligence behind the marvels of creation. From a scientific point of view, however, the intelligence being discovered cannot be classified as God because supernatural explanations are considered unscientific. That is why proponents of Intelligent Design are willing and able to say the designer could be an alien life form without going into any more detail than that.

**q-136.3 Describe the theory of "Punctuated Equilibrium." (Punk Eek)**

Punctuated Equilibrium is a theory that asserts evolutionary changes take place rapidly (punctuated) geologically speaking ("rapid" may involve many thousands of years.) In between these rapid periods of change, there may be a million years of stasis (equilibrium). That is where we get the name, Punctuated Equilibrium, or Punk Eek for short. From its introduction in 1972 by Niles Elderedge and Stephen Jay Gould, this theory looked more like creationism than Darwinian gradualism (the theory that species change gradually). To avoid this appearance, Eldredge and Gould emphasized that the changes occurred within small isolated populations that took thousands of years and operated in accord with Darwinian survival parameters. It should be obvious that Punk Eek looks very much like a modified version of Cuvier's Catastrophism. However, no self-respecting Punk Eek supporter would ever admit to that. Nevertheless, it must be seen as more than a coincidence that the theory of evolution is being modified today to look more and more like the Intelligent Design Theory. This should not surprise us because, if God did create the heavens and earth, then science should eventually discover the fact that outside intelligence is a necessary component of any theory that is to accurately explain our existence.

**Page 137 Cactus Model; Source Figure 9.5: Uniformitarian Model; Source Figure 9.6: Punctuated Equilibrium**

**q-137.1 Why do both Punk Eek and Uniformitarianism fail as model to accurately describe the fossil record?**

First, Punk Eek does not explain the Cambrian Explosion. Next, it uses an illogical mechanism for change. All of species evolution relies upon mutation as the driving force for change. Evolutionary mutations are random events that occur at slow rates. Therefore, to provide enough mutations for evolutionary change, you need very large populations like those seen in bacteria experiments that rapidly develop resistance to specific antibiotics (actually these changes are micro-adaptations and not macro-evolution). However, Punk Eek asserts just the

opposite. It says that rapid change takes place in small isolated populations. But small populations produce far fewer mutations, making the likelihood of beneficial change even less probable. Since most of the mutations that do occur are either benign or harmful, small populations actually increase the likelihood of extinction due to the rapid propagation of a harmful mutation. Large populations quickly eliminate the effects of harmful mutations by what is called the "swamping" effect that dilutes the changes as they are spread throughout the community by random breading habits. If their effects remain at all, they are recessive, like sickle cell or hemophilia. However, small populations do not have sufficient numbers to swamp the harmful mutation, and therefore, it will probably incapacitate all the members eventually. For instance, if a small population had a high incidence of hemophilia, it would probably kill all of them in a relatively short period of time.

**q- 137.2 How does evolutionist R. Dawkins describe evolution?**

Dawkins advocates Darwinian uniformitarianism that produces slow change. He calls this a step-by-step process. The fossil record, however, does not clearly support this procedure, and that is why Punk Eek has become a significant, if not the dominant part of the evolutionary model. Dawkins, incidentally, is an avowed atheist and rants against religion. Because of his open hostility towards creationism, it is difficult to take what he says seriously, even though sometimes it may be true. A good rule of thumb is to not trust anything he says unless verified by other credible sources.

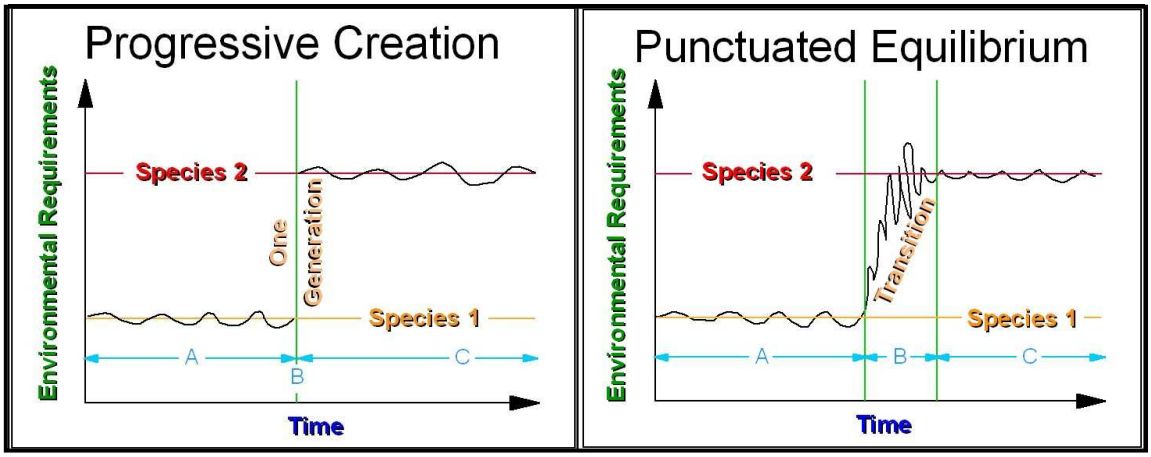



**Figure 9.17:** The PC concept fits the fossil record better than the PE concept. However, both concepts are very similar except for the transition period "B". PE says an isolated, small population will change Species 1 into Species 2 in about 10 to 100 thousand years. PC says the transition is caused by God and can occur within one generation. How God accomplishes the change is a mystery. It is possible that there are yet to be discovered natural processes by which such changes can take place quickly. (See Question p-140.1) The wavy line represents the minor adaptative changes that are constantly occurring in species due to environmental variation like those observed in the Darwin Finch beaks.

**q-137.3 What is the significance of the differences illustrated in Source Figures 9.5 and 9.6? How would you diagram a Progressive Creation Model of creation?**

The Source Figures show the difference between the Uniformitarian Model (UM) and the Punctuated Equilibrium Model (PEM) of evolution. On the drawings, the horizontal direction represents increased complexity and the vertical direction represents time change. The UM diagram indicates that both time and change are always occurring.. However, in the PEM diagram, because great changes take place very quickly, the line appears to move horizontally. Then after all the changes have occurred, there is a period of stasis or no change for a very long

time, as shown by the vertical line. Interestingly, if we were to model the Progressive Creation concept, it would appear much like the PEM diagram.

**Page 138 Source Figure 9.7: Forest Model of Evolution**

**q-138.1 Give an example of how the "Tree Model" of evolution fails when compared with the fossil record.**

In the Tree Model, we expect to find very simple life forms at the beginning and more complexity at the top. However, in actuality, the fossil record reveals extremely complex life from the very beginning. There was a long period of single-celled primitive life because that was all that was needed to make the earth ready for supporting complex multi-celled life forms. After the preparations were complete, complex life "exploded" into existence at the beginning of the Cambrian Period.

**q-138.2 What modification to the "Tree of Evolution" has been proposed?**

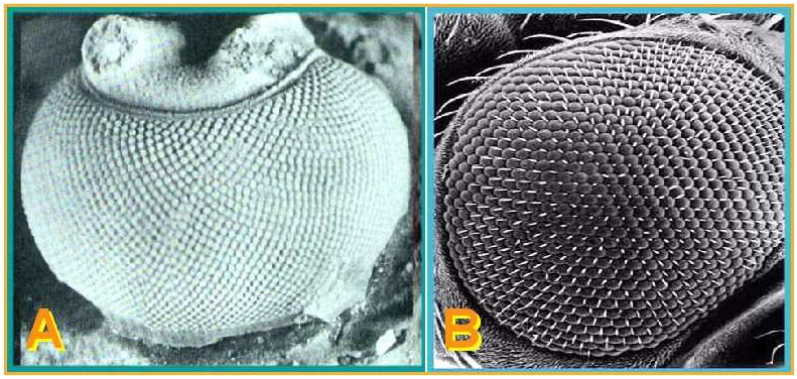



**Figure 9.18:** (A) Trilobite eye. (B) Modern Insect eye.

It has been proposed that the tree be replaced with a forest. This proposal is made because of the complexity issue. For instance, the trilobite eye which appeared early in the fossil record is very similar to those found in some insects living today. According to the tree model of evolution, the trilobite eye should be at the top and not the bottom unless there is more than one tree. In fact, this problem occurs over and over again in the fossil record. This fact has led to the conclusion that there must be many trees or rather a forest of trees.

**q-138.3 How does the "Forest Model" fail when compared to the fossil record?**

Because of the complexity issue, it is unlikely that a single tree had time to evolve all the variety of animals we see around us today. If it is improbable for a single tree to evolve, it is even more improbable for many trees to evolve without the intervention of an Intelligent Designer.

**Page 139 Biblical "Kinds": Source Figure 9.8**

**q-139.1 What do the Scriptures indicate regarding the Biblical use of the word for "kinds" found in the book of Genesis?**

The Scriptures indicate that the word "kinds" is much broader than meaning just a single species. At 1 Corinthians 15:39, the Apostle Paul made a broad reference to "kinds" of animals that would be the equivalent to our "class" of animals as defined today. This broad definition of kinds is more in harmony with what we find in the fossil record today.

**q-139.2 What is the difference in meaning between God's "making" and God's "creating" something?**

When God "creates" something, it is miraculous and only God can do it. However, when He "makes" something, it usually involves pre-existing parts and may be assembled by natural causes.

**q-139.3 Yes or No. According to Genesis 1:11-12 did the "earth" create plants?**

At Genesis 1:11-12, it says " *And God said, Let the earth put forth [tender] vegetation: plants yielding seed and fruit trees yielding fruit whose seed is in itself, each according to its kind,*

*upon the earth. And it was so. (12) The earth brought forth vegetation: plants yielding seed according to their own kinds and trees bearing fruit in which was their seed, each according to its kind. And God saw that it was good (suitable, admirable) and He approved it.*" In this Scripture, it says that the earth "brought forth" (created) vegetation. This is an example of God *making* all the varieties of plants by using the earth's diverse ecologies, coupled with nature's natural laws of adaptation. God said to let the earth do it, and the earth did it. So the earth created all the plants under God's direction. In other words, God did not directly create the unique *blades of grass* found only on the Hawaiian Islands and no place else in the world. Instead, He let the earth's specific ecological needs at that location, working in harmony with the grass DNA toolkits, do it for Him.

**Page 140**

**q-140.1 What might be one method by which God could "make things?"**

God could have made different DNA combinations for every class of animal that would then change by adaptation (micro-evolve) into all the different animal bodies making up the class. If the earth's environment became so hostile that it was beyond an animal's ability to adapt, God could just tinker with its genetic "toolkit" and have a totally new animal produced. God is certainly capable of doing this, just as He did when "the power of the Highest" overshadowed Mary, the mother of Jesus, and at least added a "Y" chromosome to her reproductive gene package that caused her to give birth to a fatherless boy (Luke 1:35). If Mary had not been provided with a "Y" chromosome from an outside source, she could not have had a normal male child. A new area of research in finding a mechanism for these type changes has to do with human engineered viruses.

**q-140.2 What evidence in the fossil record supports the "God making" hypothesis?**

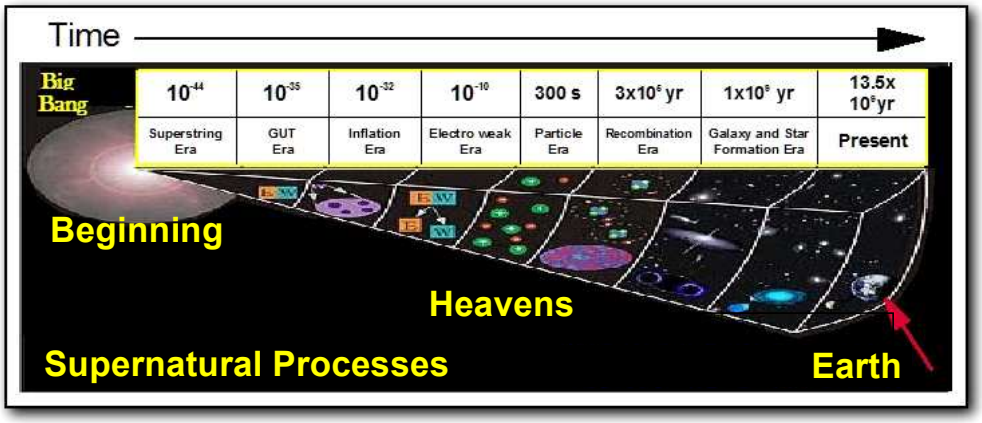
As discussed when considering Punk Eek, it is now recognized that rapid change does take place when natural disasters cause massive extinctions. However, during periods of stasis, minor changes occur also. Thus we can see that animals will adapt up to a point and then something happens that causes rapid change. Evolutionist say that small isolated populations account for the rapid changes, and Progressive Creationists say such changes are due to God's tinkering with animal DNA one way or another.

**Page 141**

**q-141.1 In considering the evidence contained in the next chapter, what challenges will we encounter?**

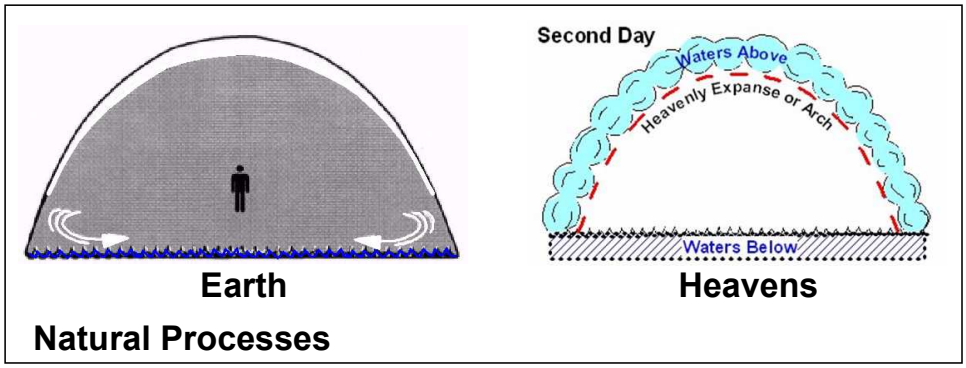
We are probably going to encounter evidence that disagrees with our traditional view of how God created man. In the past, we no doubt envisioned creation as being like "magic." This is what is implied by the Hebrew word for "create." However, we have also learned that along with creating, God also "made" things using the natural laws of nature. A good example of how this can be applied is found at Genesis 2:4 where it says, "These are the generations of the *heavens and of the earth when they were created* in the day that Jehovah *God made the earth and the heavens*." There are three interesting and challenging points made in this simple verse. The term "heavens" is mentioned twice. One heavens was "created" and the other heavens was "made." While this wording agrees with scientific facts, it most likely does not agree with some long-held interpretations of the Bible. The first "heavens" that was created before the earth is mentioned in Genesis 1:1 and refers to the universe since the Big Bang. The second heavens that was made after the earth is mentioned in Genesis 1: 8 and refers to the "expanse" that divided the waters from the waters. This expanse was made by God using natural processes and was called "heaven." So you see that one heaven (universe) was created before the earth and the other heaven (expanse) was made after the earth. This is a very insightful understanding of carefully crafted Scriptures, where every word has a significance which would never have been discovered before we learned about the Big Bang.

**Genesis 2:4** These are the generations of the heavens and of the earth when they were created ... Supernatural Process.




**Genesis 1:1** In the beginning God created the heavens and the earth.

**Genesis 2:4** ... In the day that the Lord God made the earth and the heavens-- Natural Process




**Genesis 1:2** And the earth was without form and empty.
**Genesis 1:8** And God called the expanse, Heavens. ... the second day.

**Figure 9.19:** This may be one of the most unexpected and insightful demonstrations of the Bible's secondary wisdom. It was not until the recent discovery of the Big Bang event that Genesis 2:4 could be properly understood to be referencing not one but two related events. The first event starts with the Big Bang where God initiates the *creation* of the heavenly universe including the earth (creates heaven and earth). The second event begins with the earth and follows the steps God takes in preparing it for human habitation primarily by *making* use of His laws of nature (makes earth and heavens). Is this just another coincidence or what?

**Page 142 Blank Page**

**End of Chapter 9**