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Trouble in the Garden of Eden

A critique of creation “science.”

Morpheus

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Retrieved on 2nd August 2020 from
https://web.archive.org/web/20070707071600fw_/http://question-everything.mahost.org/Philosophy/eden.html

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In 1615 the Inquisition summoned Galileo to Rome. They threatened to execute him unless he retracted his belief that the Earth revolves around the sun and not vice versa. As silly as it seems, believers of medieval theology similar to the Inquisition still exist today. These people, known as creationists, have tried to gain credibility in recent years by attempting to portray their religious beliefs as a scientific theory. However, creationism is not a valid theory. It conflicts with established scientific theories, which are supported by mountains of evidence, and one of the keys to their beliefs, that the Bible be interpreted literally, is nonsense.

Creationist claims conflict with many modern scientific theories. They believe that the Earth was created 6,000 years ago (Morris), that dinosaurs and humans lived together (Nelkin 76), that there was a giant worldwide flood which brought many species to the brink of extinction and that anything stated in the bible is true when interpreted literally (Dorman et. al). Such

beliefs are in direct contradiction with biology, geology, cosmology and several other branches of science.

In order to show the fallacy of creationism we must first understand exactly what they are claiming. Their claims are more or less the following: Six thousand years ago a sentient being created Earth, the universe and all life on Earth, including humans. All life, whether it exists now or went extinct several years ago was created within a week of Earth's creation. Life did not evolve into its present form but was created that way. A thousand years after the Earth was created there was a world wide flood that some claim caused many species to become extinct. A man named Noah was warned by the being that created Earth about the flood and told to build a giant ark and place seven or fourteen of each kind of animal on board. After the flood these species were supposed to repopulate the Earth. They further claim that there is scientific evidence supporting these claims.

The Earth and the universe are several billions of years old, not several thousand. There is a variety of evidence supporting this. For one, if the universe was only 6,000 years old then we should only be receiving light from stars 6,000 light years away. The light we are seeing from stars does not arrive instantaneously; it takes time for the light to get here. While in a vacuum, light travels at approximately 300,000 kilometers a second. Thus, if you are standing 300,000 kilometers away from someone and you shine a light at them it will take one second for them to see the light (it will take longer if there are gasses such as air in the way as it will slow the light down). If you are standing 600,000 kilometers away it will take two seconds, etc. A light year is how far light will travel in a year (in a vacuum). So, when we look at the star Alpha Centauri, which is about 4 light years away, we actually see what Alpha Centauri looked like 4 years ago because that's how long it took the light from it to get here.

There are quite literally millions of celestial objects well over 6,000 light years away. The Andromeda galaxy, for example, is two million light years away. If the universe was only 6,000 years old then we should only be able to see 6,000 light years away. The light from anything farther away than 6,000 light years would not have had time to reach us. Yet, we can see more than 6,000 light years away indicating that the universe is more than 6,000 years old (Godfrey, et al. 42).

We can determine the age of many rocks by using radiometric dating. There are many radioactive materials, all of which decay. They are unstable, and their nuclei often spontaneously convert to different nuclei (Futuyma 70). In order to change into a different atom they have to change the number of subatomic particles they contain and as such emit particles when transforming. These particles are known as radiation. While we cannot predict with accuracy when any particular radioactive atom will decay we can predict the approximate amount of time it will take for a large amount of it to decay. The amount of time it takes for half of any amount of a radioactive material to decay into another material is called its half-life. We can determine the half-life of any material by measuring how much of it decays in any time period. We do not need to stand and watch the whole thing decay. We can extrapolate from how much it decays in a smaller amount of time. This process does not occur for most elements, but only for those with large nuclei. In general, the larger the nucleus of the element is the shorter its half-life (Godfrey, et al. 37).

Most radioactive material with nuclei larger than uranium has long since decayed away, their half-life being very small. We have found many radioactive materials and used radiometric dating to determine their age. We simply determine how much of the material has decayed away and from that we can extrapolate backwards (Godfrey, et al. 38). The oldest rocks found on Earth have been dated between 3.8 and 3.9 billion years ago by using several radiometric methods. Some of these

rocks contain materials that themselves are 4.1 to 4.2 billion years old. Rocks this old are relatively rare, but rocks on many different continents have been found and dated over 3.5 billion years old. Although these rock ages cannot directly establish the age of the Earth, they do establish that it must be at least 4.1 billion years old (Dorman, et al.).

By counting the rings of trees we also find that the Earth must be much older than creationists claim (Dorman, et al.). The growth of new wood in trees varies from season to season, causing periods of rapid and slow development during a given year. This results in a series of concentric rings that can be found in the cross section of a trunk. There is one ring for each year. The width of each ring varies with each year, depending on how much the tree grew. By examining dead trees and fossil records we have found that the number of rings (each representing one year of its life) in the oldest trees is equal to about 8,000 years, which is about 2,000 years longer than creationists claim the Earth has existed (Godfrey, et al. 34).

There is also the matter of radiocarbon dating. There are several types of carbon isotopes. One of them, Carbon 14, is radioactive. However, it has a half-life of only 5,730 years, and therefore any carbon that was created during Earth's creation has long since decayed away. However, new carbon 14 is constantly being created when cosmic rays strike Nitrogen 14 in the atmosphere. This newly formed carbon 14 oxidizes with oxygen to form carbon 14 carbon dioxide. The new Carbon 14 then begins to decay and an equilibrium between the creation of carbon 14 and its decay is reached. On average, there is approximately one Carbon 14 dioxide molecule for every million million carbon dioxide molecules.

This Carbon 14 Dioxide is absorbed by plants and then absorbed into animals when they eat the plants. Carbon 14 spreads into all known life by this means. When an animal or plant dies it stops absorbing it as it can no longer eat the carbon. Since there is no new carbon 14 entering it, all of

Rebas, Martin. "Usenet Stuff" available <http://www.dtek.chalmers.se/~d3rebas/interesting.html>. 10 Feb. 1998.

the carbon 14 in it will have decayed at least a little by the time we examine it. We can measure how long it has been since the creature died by measuring how much the carbon 14 has decayed. There are inaccuracies that come up due to the small amounts of carbon 14 found in the creature. These inaccuracies usually only occur when most of the carbon 14 has decayed or when it has not had enough time for some of it to decay. Many fossils have been found and dated using this method, and a large number has been found to be older than 6,000 years (Godfrey 38).

There is a great deal of evidence supporting the view that life evolved into its present form and was not initially created that way. Their claim that life simply appeared out of nowhere in its present form contradicts the evidence.

There is a misconception that evolution hasn't been proven. In fact, it has been observed many times. *Biston betularia*, an English moth, has two different races. One is dark colored and the other is light. H. B. D. Kettlewell found that prior to 1848 fewer than 2% of its population were dark colored moths. In 1898 95% of the moths in Manchester and other industrial areas were dark colored. During this time England was going through the industrial revolution, and the amount of black soot being sent into the air was increasing. The light colored moths stood out against the black soot and were caught more often by predators. This is proof of evolution. There have also been cases where viruses have evolved resistance to vaccines and flies in the laboratory have evolved different characteristics (Dorman et al.). Despite what many creationists claim, transitional species (species with characteristics of two groups, through which one species evolved into another) have been found in the fossil record. *Archaeopteryx* is one example of this (Godfrey, et al. 182).

Creationists claim that there was a great flood that covered all the Earth in water and that a man named Noah built a giant ark and saved all animal species by carrying them on it. How-

ever, there are many problems associated with such an idea. These range from problems with constructing the Ark itself, gathering the animals and problems in the geological record.

Building an ark of this size would have been extremely hard, if not impossible. The ark was supposed to be made out of wood, yet wood is not a very good ship building material. Today, the longest wooden ships are approximately 300 feet long while the Ark is supposed to be 450 feet long. Today's ships have iron reinforcing and have such horrendous leaks that they have to constantly pump water out of the ship to keep it afloat. If today, with our all our modern technological gadgets, we can barely keep a 300 foot ark afloat, then there is no way that a man living several thousands of years ago working with inferior technology could make a 450 foot ark (Dorman, et al.)

It would also be extremely hard to gather the animals. There are many different types of animals from all over the world. Noah could not gather all of them together into his Ark. Some species, like penguins, can't even travel on land very fast. Many species lived in different climates and could not have survived the climate change. Other species, like Koalas, require a special diet to survive. All the animals could not have possibly lived near Noah. Even if the environment had been suitable to all animals (which, to date, no such an environment has ever been found) the increased competition from all the different species would have driven some extinct (Dorman, et al.).

A global flood would also have certain implications that differ from collected evidence. Ice cores from Greenland have been recovered and examined and show no evidence of a world wide flood. A world wide flood would leave air bubbles, changes in salinity and a layer of sediments. This flood should also have broken up the polar ice caps, yet they still exist. It would have taken a very long time for them to grow back, much longer than the time between now and when the flood supposedly occurred. The Greenland ice cap couldn't even grow back under modern conditions (Dorman, et al.).

The final counterpoint they often bring up is that the world could have been created old. The fossils could have been already buried, light from distant stars started out already moving towards Earth and radioactive substances partly decayed.

There is absolutely no evidence for this position. While there is no way to disprove it, it cannot be proven either. Belief in such an idea is a pure act of faith. It is not a valid theory but rather a religious conviction. If you wish to hold such a conviction be aware that it is based upon faith and nothing more. There is no evidence supporting it.

Galileo, under a death threat from the Inquisition, retracted his beliefs about the solar system. He was forced to agree that the Sun revolved around the Earth and that the Earth was the center of the universe. In 1615 religious fanatics had the power to force scientists to agree with their claims. They no longer have this kind of power and are unable to silence the voice of reason. Due to its conflict with scientific theories and the inherent contradictions in the bible creationism cannot be considered a legitimate theory.

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ble standard by interpreting some parts of the bible literally, yet ignoring other parts (Rebas).

There are several other arguments creationists often bring up. These arguments are usually based on a misunderstanding of a scientific theory or otherwise flawed.

One is that some partially developed organs would not have any survival value and thus could not survive. The human eye is one such organ. It is very complex and would require quite a bit of evolution for it to get into its current state. A partially developed eye would be useless. Thus, without any immediate survival value, they wouldn't evolve.

A complex structure, however, does not have to be fully developed for it to have some value. Primitive versions are often quite beneficial. There are primitive versions of the eye in many worms and jellyfish. They do have an advantage over ones without eyes even though theirs aren't nearly complex as ours (Futuyma 192). You can also observe the same thing in venomous snakes. Many snakes are semi-venomous that "drip" their venom, while other snakes "inject" their venom through hollow teeth. The simpler version of venom and all other complex organs are not worthless (Dorman, et al.)

Others claim that the second law of thermodynamics makes evolution impossible and proves creationism. The second law more or less states that all systems will gradually go from an ordered state to disorder. They claim that the universe couldn't naturally proceed from a lifeless state to a state with complex lifeforms like we see today.

This argument is based on a misunderstanding of thermodynamics. The second law only applies to closed systems. The Earth is not a closed system; we receive energy from the sun and radiate heat every day. If their interpretation of the second law was correct snow flakes couldn't form. A snowflake is a complex form that arises naturally. If complex forms couldn't arise naturally then snowflakes would never form. The fact that complex forms do arise naturally disproves this argument.

Many creationists claim that a large portion of species died off during the flood and that this accounts for the large number of fossils found. Once again, there are problems with this assertion. First, animals would probably die off in more or less random orders. The probability of them dying in a manner so that their fossils would be found to be consistent with evolution is extremely low. One would think that at least one dinosaur would have made it to the high grounds with other animals. There shouldn't be any orderly pattern to it, yet there is (Godfrey, et al. 289). Coral reefs hundreds of feet thick and miles wide would not have had enough time to grow over fossils found beneath them. If humans with ship building existed at this time then some of their artifacts or fossils should have been found at much more varied depths, rather than the upper most part of the strata where they are found.

All these animals could not have possibly lived at the same time. Look at the Karoo formation in Africa, which contains the remnants of approximately 800 billion vertebrate animals. Robert E. Sloan, a paleontologist at the University of Minnesota has studied this formation and says that it contains creatures from the size of a small lizard to a cow. If we took each of these animals and evenly spread them throughout the Earth then there would be approximately seven for every Acre on Earth (Godfrey, et al. 289). If we assume, rather conservatively, that the Karoo formation contains 1% of the land fossils on Earth then there must have been 2100 creatures per acre at the time of the flood! Most creatures, let alone a human culture, cannot survive under the circumstances (Dorman, et al.).

If there was a world wide flood then many types of fish should have gone extinct. Rainwater has a different composition than other types of water and would have caused the composition of fish's water to change. Many fish would die off if placed in water with different types of water (Dorman, et al.).

For several reasons it would have been hard for the people and animals in the Ark to survive (Godfrey, et al. 184). Sickness,

short lifetimes and predators would have driven several species extinct.

The people in the Ark would have had to be extremely sick. Otherwise all the diseases would have died off. Measles, smallpox and typhus are among the diseases that would have had to be carried by humans. Otherwise these diseases would have become extinct. Other animals must have suffered from specific diseases as there are other diseases that attack specific animals only (Dorman, et al.).

Some short lived species should have become extinct. For example, adult mayflies live only a few days. Their larvae require shallow fresh running water to survive. If the story of Noah's flood is true they should be extinct (Dorman, et al.).

Predators would also have gone extinct. Animals at the top of the food chain must eat animals lower than them to survive. If they had eaten the lower level species then they would be extinct (Dorman, et al.).

There would also be problems with putting the animals back into their respective habitats (Godfrey, et al. 184). Koalas would have had a hard time crossing the necessary oceans to get into Australia. Not to mention the number of species that live on islands. The necessary environments for these species did not exist between the point in which they left the ark and their eventual destination (Dorman, et al.).

The Creationists interpret the Bible literally and claim that it is accurate. Yet a book with so many internal inconsistencies cannot be interpreted literally and expected to be accurate.

One of these contradictions can be found in Isaiah 40:28, where it states that God never grows weary or tired. Yet in Exodus 31:17 he is tired and rests. He also becomes weary in Jeremiah 15:6.

There is another contradiction between Matthew 19:26 and Judges 1:19. Matthew 19:26 it states that "with God, all things are possible." However, in Judges 1:19 he was unable to remove inhabitants from a plain because they had iron chariots.

It stated that there was something God cannot do, so it is conflicting with Matthew.

If we take the Bible literally then we will never be able to construct a theory around the creation of the Earth due to conflicts in Genesis. Genesis 1:25,26 and 27 say that animals were created before man. But in Genesis 2:18 and 19 it says that the animals were created after man.

The Bible cannot even agree on who sins. 1 Kings 8:46 and Romans 3:23 say that all men sin, but in 1 John 3: 6,8 and 9 it says that Christians are sinless. Both statements cannot be true!

Yet another contradiction occurs in James 1:13 and Genesis 22:1. James 1:13 says "... God cannot be tempted with evil, neither tempteth he any man." However, in Genesis 22:1 God tempts Abraham.

In the seventh Chapter of Mark Jesus went through Sidon on his way to Tyre to the Sea of Galilee. Not only is Sidon in the opposite direction of his destination but there wasn't even a road between the Sea of Galilee and Sidon in the first century AD (Rebas).

In Exodus 20:13 God utters the famous words "Thou shalt not kill." Yet in Exodus 32:27 God contradicts himself and orders "Thus saith the Lord God of Israel, Put every man his sword by his side... and slay every man his brother..."

The Bible cannot even agree on whether anyone has even seen God. Genesis 32:30 says, "I have seen God face to face, and my life is preserved," but this is contradicted by John 1:18 that says, "No man hath seen God at any time."

Isaiah 11:12, Revelations 7:1, 1 Samuel 2:8, 1 Chronicles 16:30, Job 37:3, Joshua 10:12, 1 Chronicles 16:30, Psalm 93:1, Psalm 96:10 and Psalm 104:5 speak of the Earth as if it were flat with four corners, immovable and resting on pillars. The Earth is obviously not flat; centuries of research (and people flying around the globe) have proven this to be true. Creationists hold a dou-