Creationist Funhouse, Episode Five

God's Pet Bunny

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What would it take? What *would* it take? What would it *take*? This is what some religious conservatives wanted to ask British biologist J.B.S. Haldane. What would it take to make him admit that evolution was wrong?

Haldane was one of the most colorful scientists of the early twentieth century. He made important discoveries that contributed to our understanding of population genetics, upon which our modern understanding of natural selection is based. He also wrote and spoke for popular audiences. But he was more than that. He was not just an evolutionary scientist but also an atheist. Even more than that, he was a communist, at least until the Soviet leadership turned against the science of genetics.

In short, the closer you are to being a creationist, the more reasons you would have for despising this man, especially because he didn't mind saying what he thought about religious people. His principal target for ridicule was his fellow academic Clive Staples Lewis, known as C.S. Lewis, still one of the most widely read Christian writers. Haldane wrote an article against Lewis titled "More Anti-Lewisite," which refers to a poison gas from World War I. Lewis was not, as far as I can tell, a young-earth creationist. But it was enough for Haldane that Lewis was simply a Christian.

Haldane knew as well as anybody that the evidence for evolution was multifaceted. It was not just that there was a lot of evidence, but there were a lot of *kinds* of evidence: from fossils to biogeography (as I will explain below) to genetics (Haldane's specialty). Scientific acceptance of evolution was the result of what has been called "consilience," the convergence of multiple *independent* lines of evidence. So, it would seem that to tear down the edifice of evolution, you would have to dismantle it one brick at a time—the same way the edifice was built up in the first place.

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But Haldane took something of a risk. Though this is not in any of Haldane's published work, he reportedly told his friend and fellow evolutionary biologist John Maynard Smith about it. What would it take to cause the entire edifice of evolutionary science to come tumbling down like the city walls of Jericho or the temple walls of Gaza from the Old Testament stories? All it would take, Haldane indicated, was a Precambrian bunny.

A Precambrian bunny. That's all it would take.

Or a Precambrian mouse, cat, dog, squirrel, elephant, wildebeest, or in fact any mammal. Or a bird, snake, or frog. In short, any Precambrian land animal. Or, hell, why not a Precambrian fish? Say, a nice Precambrian shark.

A quick primer for those who don't know what *Precambrian* means: The layers of rocks with a lot of large animals in them extend back to about 540 million years ago, the begin-

ning of the Cambrian period. Geologists have given names to each of the periods of earth history. Some, like Cambrian, were named after places where they were first found (in this case, Cambridge); other examples include Jurassic (after the Jura Mountains of France) and Permian (after a city in Russia). Others, such as Ordovician, were named after Celtic tribes. Some, such as the Carboniferous or Cretaceous, were named after some important feature about the deposits (coal and chalk, respectively). These names are not arbitrary divisions. Each transition, from one period to the next, was marked by a major catastrophe on earth, resulting in a measurable increase in the rate of extinction. This was especially true of the end of the Permian, when over 90 percent of species became extinct, and the end of the Cretaceous, when an asteroid slammed into the earth.

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The Precambrian was just the time of earth history before the Cambrian and before there were very many fossils. There are Precambrian fossils, but they are rare and hard to see. The period of earth history from the time it formed until the Cambrian period—which is over 80 percent of earth history—gets lumped into this Precambrian category. This does not mean that conditions were soporifically uniform during the Precambrian. Scientists now know that, on three separate occasions during the Precambrian, the earth almost froze over. These were the three "Snowball Earth" periods. Sometimes it was very hot and sometimes very cold, but there were no plants larger than seaweeds and no animals larger than worms.

Precambrian strata have no large animal fossils because large animals had not evolved yet. But if the Precambrian strata, like all the others, were produced by a flood that occurred on an earth that was already filled with plants and animals that God had created a couple of thousand years earlier, then surely there would be some large animals in the Precambrian layers.

If a worldwide flood occurred, the lowest fossiliferous layers might contain those organisms that were already in low-lying areas, and the highest fossiliferous layers would contain those organisms that either lived higher up on land or could run away from the flood waters better. A flood might therefore have produced a fossil record with mostly fish on the bottom and mostly mammals on the top.

But not perfectly. You would expect that the raging flood waters would have drawn large animals down into the bottom layers. Just one. Just one Precambrian bunny. That's all it would take. But no one has found even one.

Many creationists believe that the Precambrian rocks were those that existed before the flood. This opens up new possibilities but doesn't change things very much—because there aren't any *Cambrian* bunnies either. There are Cambrian fishes. But none of them have jaws.

It gets even more interesting with plants. In case you think that *nothing* could get more interesting with plants, I wish to remind you that I am a botanist. If you think plants are boring, you can read some of my books or visit the website of the Botanical Society of America or, if you are unwilling to do any of these things, you can stop reading right now. No hard feelings, you animal chauvinists. But really, let me explain.

If all the fossil deposits resulted from a flood, you might expect wetland plants to be at the bottom and mountain plants to be at the top. And, in fact, the oldest plant fossils are from wetlands. *Voilà!* But not so fast. Consider the small wetland plants of the Ordovician and Silurian periods. *None*

Fossil of the periderm of a lepidodendrid tree in sandstone near Tulsa, Oklahoma. Note the parallel lines and the leaf scars, only rarely found in modern trees.

of them are the flowering plants that are the most abundant plants on the earth today. Find me a Silurian weed from, say, the aster family or the mustard family. Today, wetlands have little pickleweeds in them, from the spinach family of flowering plants. Yet somehow there were no plants that had flowers in the Ordovician or Silurian wetlands. And what about the swamp forests of the Carboniferous and Devonian periods? Modern swamps have a lot of flowering plants in them. But back in the Carboniferous and Devonian periods, the trees were all tree-sized clubmosses, tree-sized ferns, or primitive conifers. No flowering plants at all—none.

And in those Devonian sedimentary layers, you find, near the bottom, amphibian-like fish, near the top, fish-like amphibians, and right in the middle, animals such as *Tiktaalik roseae* that were as close as you can get to a half-fish, half-amphibian.

So, in a big flood, you might have ended up with a general pattern of aquatic or wetland plants and animals near the bottom and of dry land plants and animals near the top. But it took the special work of God to make sure the pattern was a perfect match to the evolutionary pattern that we see in the fossil layers today—work not mentioned in the Bible.

And in case you think it was only macroscopic organisms and fragments, such as fish and leaves, that God sorted out into a fake evolutionary order, consider that he also did it with microscopic organisms. Take, for example, microscopic single-celled algae known as foraminiferans—or forams for short. Forams have calcium carbonate shells around them, which persist after the foram cell has died. And they are abundant. Nearly every marine fossil deposit has foram fossils in it. The foram shells come in many intricate and exquisite shapes, which allow scientists to distinguish the different species. Each species of foram is associated—some more strongly, some less—with its own particular time and place in the history of the earth. Scientists can reconstruct the timing and location of marine sedimentary deposits by studying the kinds of forams that they contain. You would not expect them to appear in the fossil record in a uniform order, like doodads on a blanket. You would expect them to be random, like stars in the sky. God must have scooched the forams around to have an evolutionary orderliness for some curious reason.

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It wasn't your normal day in Texas, even for about 2000 BCE. For one thing, it was in the middle of the flood of Noah. Now, you probably think that on this day the flood covered the whole earth, which is what the Bible says according to the fundamentalists. But apparently there was a mountain or hill in what is now Texas, where some dinosaurs were hiding out. There were at least two species of dinosaurs there. One was a herd of giant vegetarian sauropod (think of the brontosaurus as a related species) now called *Paluxysaurus*. And there were smaller carnivorous dinosaurs similar to T. rex, now called *Acrocanthosaurus*. The sauropods came out for a stroll; they were not running. The little carnivores may have been hunting them but were not running as fast as they could.

This was odd because all around them the flood was raging.

How do we know all this? Because the dinosaurs left their footprints. And not just footprints but entire trackways. You can see the footprints today in the limestone bed of the Paluxy River near Glen Rose, Texas, at Dinosaur Valley State Park southwest of Ft. Worth. I am grateful to independent scientist Glen Kuban, who has studied these trackways for decades, for teaching me about them.

Dinosaurs left footprints in the limestone bed of the Paluxy River in Texas. Independent scientist Glen Kuban has studied these trackways for several decades.

From fossil bones in other locations, we know how big these dinosaurs were. And from how far apart the footprints are from one another, we can tell how rapidly, relative to body size, the dinosaurs were walking. Some of the little carnivores were running, but for the sauropods, it seemed to just be an

ordinary day.

Now consider how odd this had to be. The dinosaur footprints are in limestone, which is a sedimentary rock, and the limestone layer overlies many other sedimentary layers that were, according to creationists, deposited by the flood. Then, after the dinosaurs walked in the mud, the flood resumed and deposited more layers of limestone over the layer with the footprints in it. In the park today, you can see a lot of limestone layers, but most of those layers contain no footprints. So here's the creationist story: the flood deposited hundreds of feet of sediment, then just briefly the waters receded and the dinosaurs came out of their hidey holes and walked around, then the sun came out enough to dry the mud so that when the flood waters came back and deposited more layers of mud, the footprints would not be obliterated.

Where were the dinosaurs hiding during the flood? And what held the flood waters back long enough for the dinosaurs to come out and romp around? Well, I suppose it had to be God. He must have created a small, shining space of peace, order, and sunshine during the flood, and the dinosaurs walked on Cretaceous mud, under which was Jurassic and Triassic mud. And then God let the flood rush back in and bury the dinosaur footprints under new layers of Cretaceous mud.

At last the great day came, and Noah, convinced by the dove with the olive branch that God had magically made olive trees grow to full size in just a few days' time, let the animals loose. And with a noise that would have made the Chisolm Trail sound like a puff of wind, out they went!

Where did they go?

You would expect that they would have dispersed away from the Ark—which the Bible says landed on Mt. Ararat in what is now Turkey—and kept going until they found a suitable habitat. Some, such as woolly mammoths, would have headed north (only to promptly become extinct—but not to leave any skeletons en route from Ararat to Siberia! No! They all waited until they got to places such as Siberia to die), while jungle animals such as monkeys would have headed south.

Creationists, as it turns out, do not believe that every species, as we recognize them today, was separately created. Genesis says *kinds*, not species, were created. How do species and kinds (*baramin*, in Hebrew) differ? That is the basis of a whole "science" that you have never heard of because only creationists practice it: *baraminology*.

That is, you would expect to find a *Turkocentric* model of animal biogeography. (Biogeography is the science of where species live and how they got there, based largely on the pioneering work of Darwin's younger colleague Alfred Russel Wallace.) You read it here first: I believe I am the first person to have used the term *Turkocentric* in print, unless it is in an obscure creationist publication. It means that animal species would be arranged on earth radiating outward from an Ararat point of origin. And while creationists are studying baraminology, why not study *araratology* at the same time and propose an *araratocentric* model? I made those terms up too.

Both Darwin and Wallace, in their separate travels, observed many biogeographical patterns. Wallace noticed that

Cartoon by Loraine Thompson

the island of Bali had Asian mammals, while the island of Lombok (which is very close to Bali) had Australian mammals. The animals in the Amazon were almost all different from those in the jungles of Africa, which were in turn different from the jungles of India, which were different from those of Australia, which were different from those of Hawaii. Why? Because each set of animals evolved separately in or near the locations where they now live.

And there are local patterns of biogeography too. Spider monkeys and golden lion tamarins both live in South America. But spider monkeys live in the Amazon rainforest, while the tamarins live in coastal Atlantic rainforests.

The same pattern holds true for all major animal groups that live on continents that have been separated (according to scientific geology and continental drift) for millions of years. It is not true for continents that have been connected in the recent past. This is why many of the animals of northern Europe and Asia are similar (and in some cases, such as reindeer and elk, the same) as those in North America. Only about 20,000 years ago, the Bering land bridge connected Asia and North America and allowed large mammals to migrate.

The animal biogeography that people are most familiar with is the marsupials of Australia, such as kangaroos and their relatives. How many species of marsupials are there? A lot! Big ones, medium ones, and small ones. Some hop, some run, some burrow, some fly. You see, for almost any kind of placental mammal (that's the rest of us) that you could name, except for people, there is a marsupial counterpart. There are marsupial bats, moles, wolverines (the wombat), mice, dogs, cats, and squirrels (flying phalangers). Some of them have become extinct, but all these animals existed in recent centuries. Marsupials, just like placentals, live or lived in a wide range of habitats. Some, such as the red kangaroo, live in dry savannas, while some, such as the lethargic little koala, live in forests.

We could ask, from the viewpoint of evolutionary biogeography, how almost all the marsupials ended up in Austra-

lia (excepting the opossum). Well, as it turns out, marsupials evolved in the southern continents and placentals in the northern continents. When these continents came into contact, some of the placentals moved south, and some of the marsupials moved north. But whenever they came in contact, the placentals out-competed the marsupials. Therefore, marsupials became extinct in most southern continents as soon as there was contact with the north. This contact occurred three million years ago between North and South America, which were separate until the Isthmus of Panama rose from the sea. But it occurred much more recently in Australia—not from continental movement but from human contact. Two placental species (humans and dogs) arrived 60,000 years ago. The rest, such as cats and rats, arrived only about 350 years ago. And today in Australia, the marsupials are losing out. Placental dogs have helped lead the thylacine marsupial dogs into extinction. Placental cats spread, and dasyurid marsupial cats are becoming rare.

Plants, of course, show a similar pattern; the major plant families of the southern continents are not the same as those of the northern continents. And, once again, Australia is different: members of the myrtle family (such as eucalyptus) dominate its forests. Trees in the dipterocarp family dominate the rainforests of southeast Asia, so near to (and yet so different from) those of Australia. The succulent plants that dominate the deserts of North America are in the cactus family, but the succulents that dominate the deserts of Africa are in the milkweed and spurge families. And we are talking about a lot of species of myrtles, dipterocarps, cacti, spurges, and milkweeds. They all show this pattern. How could this pattern be explained by floating rafts of vegetation after the flood?

You can also find this pattern within groups of plants. Almost all oaks are native to the northern continents, but you will find different species of oaks in different regions. The evolutionary explanation is that the first oaks evolved when the northern continents were still connected and covered with continuous forest, about 70 million years ago. Then the North Atlantic Ocean began to form (the South Atlantic had begun to form earlier), causing Europe and North America to separate. Meanwhile, the Rocky Mountains and the Sierra Nevada rose, dividing the deciduous forests of North America into eastern and Californian forests. During the last 70 million years, separate species of oaks have evolved in Europe (e.g., the English oak), eastern North America (e.g., the bur oak), and California (e.g., the blue oak). Furthermore, in each of these places, species of live oaks (which keep their leaves in the winter) evolved independently: the cork oak in Europe, the live oak in eastern North America, and the coast live oak in California.

But according to the fundamentalists, we must instead accept an *araratocentric* model of animal biogeography. But to do this we must explain how all those marsupials, after emerging from the Ark, went straight to Australia, except for opossums. (There are quite a few South American opossums as well as the North American Virginia opossum.)

Question: How did the marsupials get to Australia?
Answer: They hopped.

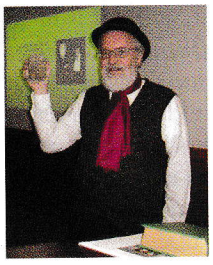
This was the way I began a review of a revised edition of creationist John C. Whitcomb's book about Noah's flood, *The World That Perished*. In the original edition, he didn't really explain it. In the new edition, he added a sidebar that said that a shallow sea (a continental shelf) connected Australia with Asia, and if in the past sea levels were lower, the kangaroos could have hopped into Australia.

**Question: How did the marsupials get to Australia?
Answer: They hopped.**

But that is not the point. We are not asking about the mechanism of locomotion (how) but what caused the pattern (why). Apparently, were it not for God's miraculous efforts, we would see a *Turkocentric* and *araratogenetic* (another new word!) model of animal biogeography.

After all this hard work putting the geological and biogeographic records into order, it is regrettable that God had to wait so many thousands of years before anyone would appreciate the nuances of his work. In the Middle Ages in Europe, when people saw fossils of seashells, they assumed that they were just rocks that happened to look like seashells. It did not occur to them that fossils actually had been seashells at one time. One of the early scholars to recognize fossils was the Danish geologist Niels Stensen (Latinized to Nicholas Steno) in the early seventeenth century. Gradually, all scientists came to accept that if you see a rock that looks just like a seashell, it probably *was* in fact a seashell a very long time ago. God had to wait almost four thousand years before scientists (or anybody else) could appreciate his hard work with fossils, making everything look exactly like it would through evolution. And it took even longer before explorers began to notice biogeographic patterns in the modern world.

In the next episode, we will discover how God manipulated all the DNA in all the cells in the world to trick us into believing that evolution occurred. Quite a task, but he was up to it! ■



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