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A man with a beard and mustache, wearing a brown jacket, stands on a balcony overlooking a vast canyon. He is holding a professional video camera. The background shows a clear blue sky and the rugged, layered rock formations of a canyon, with some green trees in the foreground.

## How Can You Verify Evolution?

This chapter describes how the author formulated his first experiment to test evolution.

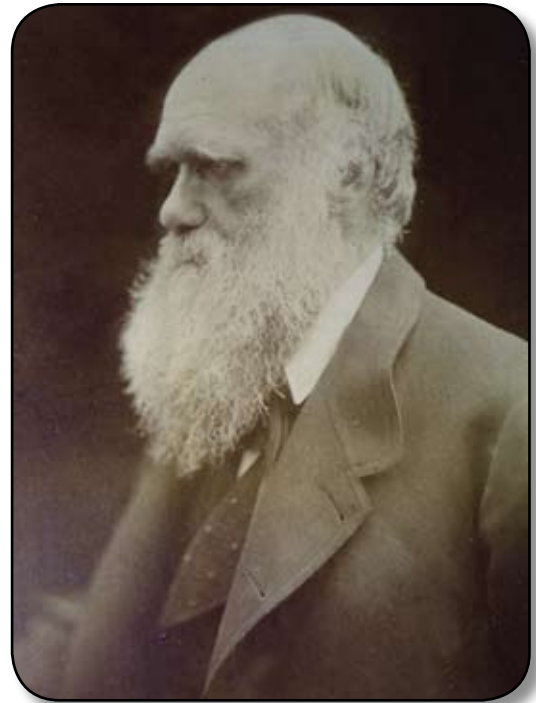
Chapter 2

# Evidences for and against Evolution

Given the enormous complexity of the theory of evolution, I began to contemplate how to dissect and evaluate the theory. I started with what I knew at that moment. There were many evidences for evolution *but* there were also many evidences against it. Here were my lists:

## Evidences for Evolution

1. **Ontogeny Recapitulates Phylogeny.** When I took on the challenge, this was the best evidence for evolution that I had ever heard.
2. **Most scientists believe it.** Most university professors of biology and paleontology would offer their support for the theory of evolution without reservation. However, just because scientists believe a theory does not make it true. For example, the majority of scientists once believed the earth was the center of our planetary system, but this is false. The sun is the center. The majority also thought spontaneous generation was the explanation for how life began. This theory suggested that mice came from dirty underwear and that maggots came from rotting meat. I could offer other examples, but the point is that science is not a democracy where the majority vote wins. Time tests the validity of scientific ideas.
3. **Ape-men.** Given the overwhelming evidence that ape-men existed in the past, how could evolution not be true? Ape-men are the Holy Grail of evolution, the missing links, proving that man evolved from apes. If evolution was not true, then all of the proposed ape-men would be either just apes or just men, including Lucy, *Africanus*, Neanderthal, etc. At the time I accepted the challenge, that was hard to believe. Since then, I have conducted interviews with the anthropologists involved in the recovery of these fossils. (This new information will be addressed in Volume III of this series.)
4. **Some fossil evidence of animals changing from one animal type into another.** When I took on the challenge, there were these few well-accepted examples of animals changing from one type into another: the evolution of modern horses from four-toed animals, the evolution of birds from dinosaurs, the evolution of amphibians from fish, and the evolution of mammals from reptiles. In each case, scientists reported finding the connecting links between these animal groups, thereby proving evolution.



*Charles Darwin, 1809-1882,  
father of the theory of evolution.*

## Evidences against Evolution

1. **Too many missing links.** Millions of fossils have been collected by museums, yet the evolutionary ancestors have not been found for most animals and plants. (This was presented in Volume I.)
2. **The big bang theory does not work.** When scientists apply the laws of physics to the big bang model, the laws of physics simply do not work.<sup>1,2</sup> To me, this was evidence against a natural, spontaneous beginning of the universe.
3. **Life could not begin spontaneously.** Proteins are necessary for life to exist, yet they do not form out of chemical elements, spontaneously, in the laboratory. Without proteins, life could not have begun. (This was presented in Volume I.)

At first glance, it appeared there were evidences both for and against evolution, but you can't have it both ways. If evolution is true, everything should line up under the first list. If evolution is not true, everything should line up under the second list. Remember, Copernicus, Galileo, and others had those few nagging astronomical observations concerning the sun, which they could not reconcile with the earth being the center of our planetary system. By tenaciously clinging to the few pieces of information that didn't fit, they eventually arrived at the correct explanation.

As a college student, I remember looking at these two lists with daunting emotion, knowing that to verify any one of these evidences might take years. To test *all* of them might take decades. Already, my plan of having this all wrapped up in a few years was beginning to unravel.

## The Scientific Method

In order to test a theory, one must apply the scientific method, defined as the body of techniques used to investigate phenomena, acquire new knowledge, and verify theories.<sup>3</sup>

Using the scientific method, a scientist will start with an idea (theory or hypothesis) and then test the validity of his idea by vigorously trying to *disprove* it. If he or she can't falsify it, then the original theory remains tentatively true.

In my case, if I could not refute the theory of evolution with an extremely tough evaluation, then evolution would remain tentatively true.

For me the stakes were high. If evolution was verified, I could, once and for all, abandon the last vestiges of my religious faith without guilt or reservation. On the other hand, if the theory of evolution was not supported by the evidence, then I had lots of soul-searching to do regarding my beliefs. For me, a left-brained person, it was either black or white. I needed to know the answer — mechanistic evolution or metaphysical creation?

## Postscript

Many scientists believe that evolution is true and no experiment could be designed to disprove it, but I disagree. How can anyone be so sure of any theory without evaluating and testing it? I at least intended to apply an honest effort and test the idea — evolution is either supported or not supported by the evidence.

# Designing My Experiment

For the next 18 years following my college classmate's challenge, I immersed myself in reading and studying the topic of evolution. I digested books in every pertinent area — geology, biology, and biochemistry — anything that would help me test evolution. At one point, I even opted for a downgrade from the position of medical director of a metropolitan emergency room to a less busy emergency department to allow me more time to read. Yet, there came a time when merely reading about evolution became woefully inadequate. Secondhand information from articles and books was no longer enough. I needed to be in the field, touching the fossils and talking with the specialists. I was now ready to take my investigation to the next level and design an experiment. But which area of evolution would I choose to test first? I thought about this for nearly two decades. Finally, while driving to work one day in 1997, the design for my first experiment clearly solidified in my mind. To say the least, I was excited to come up with a simple test. Let me explain.

Evolution teaches that 1) animals and plants changed dramatically over time, from one type into a completely different type, through random mutations, and 2) in this ever-changing line of animals and plants over millions of years, due to the principle of the survival of the fittest, the weaker predecessors became extinct. I would take the opposite stance in order to test evolution. ***I predicted that if evolution was not true, then animals and plants would not change significantly over time. Accordingly, I predicted I should find fossils of modern animal and plant species in the "older" fossil layers.***

To carry out my experiment on a smaller, more manageable scale, I decided to focus on just one section of the rock layers — the fossil layers associated with dinosaurs, the Triassic, Jurassic, and Cretaceous rock layers. At the time, I did not know of a *single* modern plant or animal living during the dinosaur era, except for a few well-recognized so-called "living fossils." **Living fossils are fossils which look very similar to modern plants or animals.**<sup>4</sup> But even these dinosaur-era "living fossils" — the dragonfly, the garfish, the coelocanth fish, and the horseshoe crab — were so different from the living forms they were assigned different



*Above: The Grand Canyon*

genus and species names indicating they could not reproduce with modern forms (if they lived at the same time).

Because I did not know of any modern species of animals or plants found in dinosaur rock layers, my experiment seemed destined to fail from the start. But I was determined to plow ahead.

## A Few "Slight" Details Remaining

Now there were a few "slight" details remaining: How would I pull this whole thing off? In order to test my idea, I would have to gain access to and photograph the fossils at the various dinosaur dig sites and museums throughout the world and compare them to modern forms. How would I do this? Even more important, how would I enlist my wife's support? I thought about this for a few months, and finally, after taking a very deep breath, I made a proposal to my wife. I asked her if she was willing to make "a trip out West" in order to further my research of evolution and possibly write a book.

I was afraid that all of my research up to this point would be for naught and it would all come down to one terse, "Forget it." Frankly, her answer surprised me.

Now, Debbie knew I was becoming exceedingly frustrated in concluding my thoughts about life by merely reading books and articles, so she agreed, but with one stipulation. She explained to me that she was not sure anyone would believe my results, without some sort of *proof* for my findings, no matter what they were. "Why would anyone take

your word?" she asked. "What good would it do for you to go out to these dig sites and see these fossils? Who would believe you? Even if you did uncover something, how could you prove your findings one way or another to a doubting audience?" She suggested that if I were going to do this, I better do it right and document everything so we weren't wasting our time. When she said "we," I knew she had thrown herself in the ring and was willing to go with me.

I now found myself in a unique position to carry out this project, this quest. Everything was falling into place. I had a wife with many talents. I wasn't rich, but I had enough money to independently fund the project. In order to gain access to the museums and scientists and to document my findings, I formed a natural history television and book production company (Audio Visual Consultants, Inc.), charged with finding answers to the deepest scientific ques-

tions concerning the origin of life. Soon we were buying high quality photographic equipment, along with television quality video equipment. Before our first trip, we began practicing, photographing dime-sized objects and filming television-quality interviews. In six month's time, we were ready to start out on an itinerary that covered dinosaur dig sites from Denver, Colorado, to Alberta, Canada.

Little did I realize that this "trip out West" was just the beginning. Eventually, we trekked 108,561 miles over three continents — three times the number of miles that Charles Darwin traveled on his famous HMS Beagle trip. I had no idea we would invest such an enormous amount of time and money in all this.

I know this may sound somewhat unbelievable. But as I described myself earlier, I am very skeptical and curious. I had to find the answer.

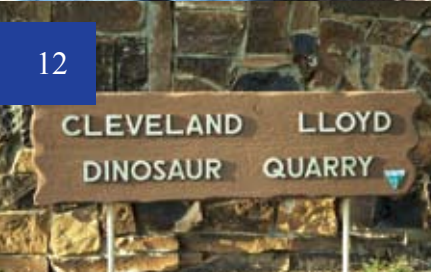


**Left:** Over time, our equipment and techniques became more sophisticated. Here Debbie is photographing fossils with a detached flash at the Museum Victoria in Melbourne, Australia. (Her flash is lying on her shoulder as she checks focus and frame.)

**Right:** By the time we reached our 80,000th mile, we began to grow tired and hired a second film crew to help us. Here we are filming an interview at the Carnegie Museum with Debbie running one camera and a local film crew running a second camera and sound.



*"I had no idea it would lead to all of this. We trekked 108,561 miles over three continents to finish the challenge."*





# Our Journey Begins

Later that year, in 1997, we headed out West. Our plan was to fly to Colorado, rent an RV, and then drive to the dig sites and museums from there. It was a good plan except for one slight hitch — the astronomical rental cost (\$175 to \$250 a day plus gas) for a 25-foot RV. That was a lot of money. Upon learning this, I asked Debbie to shop around for something less expensive. After further research, she found a whole line of “economy rental RVs.” Over the phone, we settled for one at \$125 a day, and yes, the old adage still holds true: We got what we paid for.

At the Denver airport terminal, I knew we were in trouble when we climbed into the RV and it looked like something out of the 70s. We could live with that. But as the young lady from the RV rental company began to show us the “features” of the RV, we realized we were dealing with more than a cosmetic problem. We soon learned the refrigerator wouldn’t operate. (This was an issue because my wife is addicted to diet Coca-Cola.) Then the RV company representative tried to show us how to check the engine’s oil level, but she couldn’t get the hood open. (Later, we couldn’t drain the sewage tank.) I won’t bore you with the other details, but this RV, which affectionately came to be known as “Betsy,” was a bomb.

Because I had booked our first interview for later that day at the University of Wyoming in Laramie, and the RV rental store was 60 miles in the *opposite* direction, we didn’t have time to switch rental RVs. We had no choice but to accept the refined piece of

tin, sign the rental papers, and move on. On that note, we began our journey. I couldn’t help but wonder what other surprises lay ahead.

Several days later, we arrived at the Wyoming Dinosaur Center in Thermopolis, the first dig site on our itinerary. My experience there — touching and examining actual fossils — was incredible. After years of preparation, I was now able to begin my experiment by asking this one simple question: **“Have you found any fossils of modern animal or plant species at this dinosaur dig site?”** But getting an answer wasn’t as easy as I had hoped.



*Above: One of the dozen scientists we interviewed on our “trip out West,” Dr. James Kirkland at the Mygatt Moore Dinosaur Quarry.*



*Above: The famous one-hub-cap “Betsy” in her glory.*

# Learning *How* to Ask

**D**ebbie and I both shared in the interviewing process at the various dig sites. She ran the video and audio equipment as I conducted the interviews. At times, she would purposefully play the role of the “dumb blonde” and ask the most difficult questions. Other times, she would chime in with incredibly intuitive questions.

Right from the start, my question (concerning the possibility of modern plant and animal species living with dinosaurs) met with resistance. I soon discovered that the scientists at the dig sites were staunch supporters of the theory of evolution and for them, finding “modern” life in ancient rock layers was in opposition to their beliefs. One scientist even refused to be interviewed after reading my questions. I quickly realized that getting answers for my experiment was going to be difficult, to say the least.

After many frustrating encounters, I finally got a break while interviewing Dr. William Clemens from the University of California at Berkeley. At the time, Dr. Clemens was embroiled in a huge scientific argument over the topic of asteroids killing off the dinosaurs. When I asked Dr. Clemens why he didn’t believe the idea that dinosaurs went extinct as a result of an asteroid hitting the earth, his answer astounded me. He said that if an asteroid impacted the earth and killed off the dinosaurs, it should also have killed off the butterflies, bees, frogs, and salamanders that were living with the dinosaurs. *WHAT?* This was the first time I had been told that butterflies, bees, frogs, and salamanders were living during the time of the dinosaurs! He did not say these were modern species, but I wondered if they

could be nearly the same as those living today.

From that point forward, in order not to offend anyone and to get the information that I wanted, I radically changed my approach and posed this question to the scientists: “*Some scientists, such as Dr. Bill Clemens, have suggested an asteroid did not cause the extinction of the dinosaurs because environmentally vulnerable animals, like salamanders and butterflies, lived through this dinosaur extinction event. At this site, where you are working, have you found any animals that survived the dinosaur extinction event — any modern-appearing animals that are still alive today?*”

The query, as revised, did not specifically challenge the theory of evolution, rather, it focused on dinosaur extinction. And because I switched my choice of words from “modern” to “modern-appearing,” scientists were now much more relaxed, open, and willing to talk. In these conversations, I was given examples of modern-appearing animals and plants that were found at dig sites alongside dinosaurs; yet, they always pointed out that the ancient fossils had different genus and species names.

By framing my question in this manner, my list of “modern-appearing” animals and plants quickly grew. Still, I didn’t know what this all meant since I predicted finding “modern” plant and animal species with dinosaurs, not “modern-appearing.”

It wasn’t until later that I realized that something was awry with the *naming* of species — a questionable and observable pattern which I call “The Naming Game.”



**Above:** Dr. William Clemens, University of California, Berkeley. Our interview with him gave me the break that I was looking for.



**Above:** Setting up for an interview at the South Australian Museum in Adelaide.