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Chapter one

GREAT MYSTERIES OF THE EARTH'S SURFACE

All of us love nature. We enjoy spending time hiking in beautiful mountains. Many love to fish or swim in lakes or streams, or ski down a mountain slope. Some of us have a special appreciation for deserts. But did you ever wonder why some mountains are rounded and others sharp, or even how the mountains were formed? Or, have you wondered why some of the valleys are wide and some narrow, or why some rivers meander and others do not?

There are two views about the origin of earth's scenery (figure 1.1). The first is that scenery developed slowly over millions of years through present processes. This is called the principle of uniformitarianism, or simply put, the present is the key to the past (see boxed section at end of chapter). Uniformitarianism constitutes the underlying assumption of geology, as well as that of all earth sciences. The second view is that a worldwide flood caused the scenery. The Genesis flood is described in Genesis chapters 6 to 9. This view is called Flood geology.

Uniformitarian scientists observe rivers eroding and present-day flooding episodes. They conclude that such river activity is responsible for the many flat surfaces of the earth. They also believe slow mountain building and erosion continually re-creates mountain ranges. Conversely, Flood geologists believe the majority of the present scenery is the product of Noah's flood. The Ice Age, rivers, local floods, and erosion have only slightly moderated the earth's surface after the Flood.

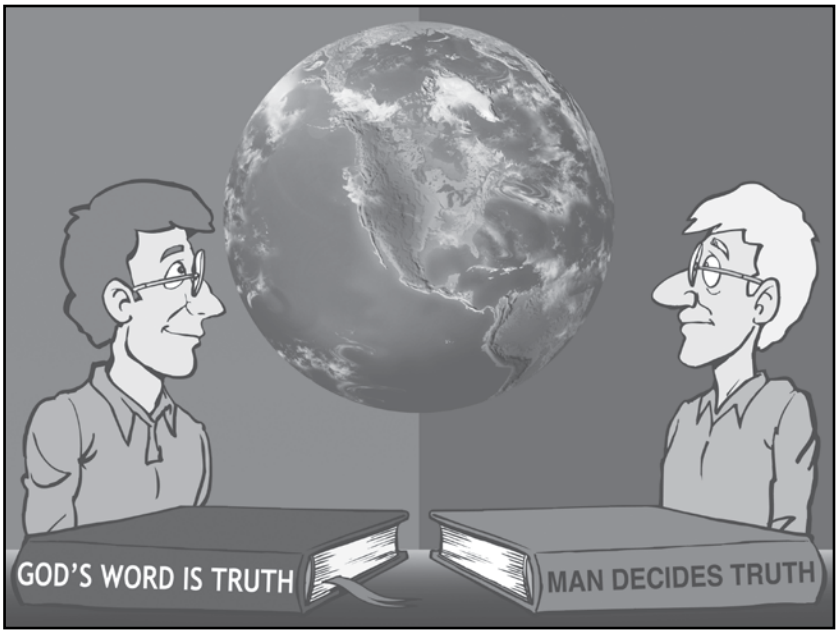

Figure 1.1. Two views of the world (courtesy of AiG).

Flood geology accepts Genesis as history. Noah's flood is very clearly described as a global event. Other Scriptures affirm the totality of the Flood and its purpose. The events unfolded as follows: In the beginning, God created a perfect world and declared it *very good*. Animals were all vegetarians and there was no death for man or animals. Then, mankind's sin in Genesis 3 caused the earth and universe to be cursed. Thorns and thistles grew. Pain and suffering became a part of childbirth, and ultimately physical death affected all mankind. Instead of accepting correction, mankind's

Figure 1.2. The 11,000-foot high (3,350 m) Spanish Peaks of the northern Madison Range in southwest Montanta is seen from the author's study window.

rebellion against God increased. It became so great ". . . that every intent of the thoughts of his heart was only evil continually" (Gen. 6:5; NASB). Mankind required a new beginning. God vastly loved the people but was forced to act, since the situation was beyond repair. He sent the global Flood as described in Genesis 6–9. The Flood was terrible and all humans and all animals that breathed air (except those on the ark) perished. The runoff from the Flood water shaped our mountains, valleys, and plains. Isn't it amazing how our great God can make such a tragedy beautiful by "re-creating" the surface of the earth?

But we are getting ahead of ourselves. Before I discuss how the Flood produced the scenery, I must briefly describe the many landscape features that uniformitarians cannot explain. The study of scenery makes up the geological subfield called geomorphology, and the individual units of the scenery are called landforms (see boxed section at end of chapter).

In the next chapter, we will give evidence that the Genesis flood was a real event of earth history, and that it was rejected during the 1800s for personal reasons and not scientific reasons. We will also describe the various phases of the Flood and their effect on the scenery.

Later, we will show how the Flood easily explains the origin of our landscape, whereas the "slow processes over millions of years" assumption has great difficulty explaining common features of the earth.

MYSTERIES THAT UNIFORMITARIANISM FAILS TO EXPLAIN

Despite about 200 years of study, the origin of many features of the earth's surface remains a mystery to uniformitarian scientists. Something as simple as scenery should have been easy to explain by present processes, if the theory was adequate. In fact, a famous scientist, William Morris Davis, predicted around 1900 the explanations for the earth's landscapes would soon be forthcoming, now that scientists banished Noah's flood and substituted uniformitarianism. In regard to planation surfaces, Davis (1954, p. 272) predicted:

> It cannot be doubted, in view of what has already been learned today [sic], that an essentially explanatory treatment must in the next century [20th century] be generally adopted in all braches of geographical study. . . .

Davis was greatly mistaken.

Despite what some scientists claim, those beautiful mountains still resist explanation to this day. Two Australian geomorphologists, Cliff

Figure 1.3. Spider Rock, in the semi-arid Canyon d'Chelly in northeast Arizona

Figure 1.4. Planation surface eroded by water on tilted sedimentary rocks south of Lander, Wyoming.

Ollier and Colin Pain (2000), wrote a provocative book called *The Origin of Mountains*. They admit that plate tectonics, the standard explanation, rarely helps explain mountain formation. Ollier and Pain go on to list 20 proposed mechanisms for the uplift of mountains, *none* of which can be demonstrated (Ollier and Pain, 2000, p. 307–310). In other words, they do not know why we have mountains. One of the difficulties of explaining mountain ranges is the insufficiency of subsurface data. This leaves us hanging, for without this data, how can you explain mountains?

Flat-topped hills, called plateaus and mesas, grace the earth's surface by the thousands (figure 1.3). Explaining their origin should have been simple if uniformitarianism was true. Erosion over millions of years seems, at first glance, a good explanation. One problem with this assumption is that most of these features retain flat or nearly flat tops. Erosion over millions of years would have dissected and destroyed plateaus and mesas.

The mystery deepens when uniformitarian geologists observe that the rock beneath some plateaus is made up of tilted sedimentary rocks (figure 1.4). Sedimentary rocks are those layered rocks we see all around us. Observation shows that whatever formed the surface of the plateau evenly cut against the dip of hard and soft sedimentary layers, as if they were of equal hardness. These surfaces are called planation surfaces. No one has observed them forming over any significant area today, yet strangely, they cover hundreds or thousands of square miles. Even more difficult for scientist to explain is the presence of rounded rocks capping their surfaces. Rounded rocks indicate *water* was involved in eroding and smoothing the surfaces. In some areas, the rounded rocks have traveled hundreds of miles from their source. Present-day rivers even at flood stage do not have the power to move these heavy rocks, let alone spread them over such a wide area. Uniformitarian explanations fail to explain the unique features of these plateaus even after two centuries of hypothesizing.

Another common, yet mysterious, landform is the pediment. A pediment is essentially a planation surface that lies along the foot of mountains, ridges, or plateaus (figure 1.5). Pediments also are not forming today. Strudley and colleagues (2006, p. 805) asserted: "The curious and ubiquitous nature of this landform suite . . . has baffled geologists

Figure 1.5. The large pediment (arrow) is on the northeast corner of the Beartooth Mountains.

for over a century." Often, the pediments also have rounded rocks capping them.

Isolated rocks, spires, or small mountains rise above planation surfaces. These erosional remnants have been given a number of names. A good general name for them is *inselberg*, a German word meaning "island in the sea." Ayers Rock in central Australia is probably the most famous example of an inselberg (figure 1.6). The problem for uniformitarianism is that inselbergs represent the height of the rocks that once surrounded them and have since eroded away. The area around Ayers Rock is gone, leaving Ayers Rock standing alone. Strangely, the inselberg itself shows little sign of erosion. In normal erosion, vertical faces often erode much faster than horizontal sedimentary rocks. What does this suggest to you? Uniformitarian scientists are left with the question: if the surrounding material eroded away over millions of years, why did it leave tall inselbergs behind?

Rivers appear to have cut overly deep gorges through many mountains and plateaus around the world. Even more interesting is that it seems the river cut across high terrain and through natural obstacles. These gorges are called water gaps (figure 1.7). Mainstream geologists have not been able to find evidence for any of their many hypotheses on the origin of water gaps. Basically, it appears they haven't a clue.

We will also deal with the topography of the ocean bottom, which is called the bathymetry. The ocean bottom holds many mysteries for uniformitarianism as well. First, the formation of the widespread continental shelf and slope is out of character — no present processes can account for them. Next are submarine canyons. They are deep gorges excavated perpendicular to the shoreline through the continental shelves and slopes of the continents and even off some large islands. Many submarine canyons are *deeper* than the Grand Canyon. No present process can explain how they were formed. Flat-topped volcanic mountains, called guyots, are another oceanic mystery.

We will show that these and other features of the earth's surface, which uniformitarian scientists find difficult to explain, fit better with the receding of the Flood water during Noah's flood.

Figure 1.6. Ayers Rock, Australia (photo by Tas Walker)

The Study of Geomorphology

Geomorphology is the geological science that studies the general configuration of the earth's surface, especially the classification, description, nature, and origin of landforms and their relationships to the underlying geological structures (Bates and Jackson, 1984, p. 208). Landforms taken together make up the surface of the earth (Bates and Jackson, 1984, p. 287). They include large-scale features like mountain ranges, plateaus, or plains, and small-scale features such as hills, valleys, slopes, canyons, or alluvial fans. So, geomorphology is concerned with geography, topography, shape, and other pertinent features of the earth's surface. The science of geomorphology may provide a description of a plateau, giving its height, width, slope, etc., and classify it in relation to other plateaus. Geomorphology also extends to the study of the ocean bottom, including how deep it is (the bathymetry), its shape, its relationship to other landforms, etc.Geomorphology developed at about the same time as geology in the 1800s. Geologists in the late 1800s were especially concerned with the origin of the scenery. A number of hypotheses were developed over the years that attempted to explain their origin, the most famous being the "cycle of erosion" developed by William Morris Davis about 1900. This hypothesis is now considered erroneous (Summerfield, 1991). Specialists in this subfield of geology do not leave geomorphology at the descriptive level, but also attempt to explain how these landforms came to be. This is where their problems begin. Scientists cannot definitively speak about the past. They can only look at the present evidence and see if it fits with the theory or story they think is most likely. They technically leave science when they attempt to explain the origin of landforms based upon their assumptions about the past. These attempts are interpretations of the scientific data. I too have assumptions about the past. Creationists assume there was a worldwide flood about four thousand years ago and check to see if the data supports it. The receding of the Flood water during Noah's flood gives a superior explanation, one that fits the hard data far better than uniformitarianism.

Figure 1.7. Nenana River water gap, Alaska. The river starts on the south side of the Alaska Range and passes through a deep chasm to the north of the range.

The Problem Is the Uniformitarian Assumption

Why do geomorphologists experience such difficulty explaining so many landforms? Surely, there has been no shortage of effort, money, or time. After all, landforms and the processes acting on them are easily observed. I propose that the main problem is their key assumption, uniformitarianism. Geomorphologists generally assume that present rates of weathering, river erosion, transport, and deposition can account for all earth's surface features. All they need is enough time.

Until the late 18th century, most people believed that the sedimentary rocks and fossils were laid down and shaped primarily by Noah's flood (Young, 1995). With the advent of the Enlightenment (see chapter 2), men began to look for explanations independent of the Bible. The study of rocks and fossils was strongly affected by the Enlightenment and, as a result, Noah's flood was rejected, not because of factual data or superior reasoning, but because the biblical account fell out of favor with the intellectual elite. At first, it was replaced with a series of catastrophes, but soon, the doctrine of uniformitarianism came to dominate geology, and this core principle did not allow even the possibility of Noah's flood. Thus, the Flood was rejected in favor of a mental construct — the result of choice. It is worth noting that all of this happened before there was much knowledge about rocks or fossils; geology was poorly developed at the time!

But history now shows that the uniformitarian assumption has explained little about the earth's surface or sedimentary rocks (layered rocks that were laid down in water and hardened). Smith et al. (1999, p. viii) admitted: ". . . that present-day landscape cannot be explained solely in terms of current processes or even those that operated in the geologically recent past."

Furthermore, many landforms are in the process of being destroyed by present processes; they are not forming today. Green (1980, p. 255) concluded:

> The most far-reaching implication arises from the recognition that almost all landforms are relics and have not been shaped only, or even largely, by present-day processes. In other words, a powerful variable in the present-day geomorphological system is the relief inherited from the past and often shaped in environmental conditions very different from those of the present.

Relic means that the landform is not forming today but is being destroyed. Relief is the difference between the high and low points in the terrain.

And to top it off, geomorphologists admit the landscapes of the world were eroded and shaped by water. The Australian geomorphologist C.R. Twidale (1996, p. 49) stated, "Water is the critical factor in landform evolution on Earth."

So, uniformitarian geomorphologists have had to concede that some *past unobservable* process involving *water* carved the landscapes of the world. Increasingly, mini-catastrophes are being invoked, but the scope of these landforms suggests something much larger.

CHECKING YOUR UNDERSTANDING

1) What are the two views for the origin of the earth's scenery?

2) What is uniformitarianism?

3) What is the geological subfield of geomorphology?

4) Why did God send the Genesis flood?

5) What is the significance of a nearly flat surface, capped by rounded rocks, on tilted hard and soft sedimentary rocks?

6) What is a pediment?

7) What is an inselberg?

8) What is a water gap?

9) What is a submarine canyon?

10) What are landforms?

11) Why can't geologists explain the many mysteries of the earth's surface?