

*“For when I look at the Moon I do not see a hostile, empty world.
I see the radiant body where man has taken his first steps into a frontier that will never end.”*
David R. Scott (Commander *Apollo 15*)

ANSWERING THE CRITICS

Learning Objectives

1. Assess the significance of the earth and moon in regard to the universe.
2. Cite the value of the moon in regard to Earth.
3. Illustrate whether our universe is just one of many universes.
4. Respond to the critics' beliefs that the creation account is only an excuse for an incomplete understanding of nature.
5. Describe the role of the scientific method in regard to the supernatural.
6. Identify the role of the creation view in regard to scientific research and inquiry.
7. Evaluate whether great distances in space require a vast time scale.
8. Discuss why the moon looks old.
9. Debate the evidence that the early moon revolved faster.

Words to Recognize

mediocrity principle,
scientific method





1. Are the earth and moon insignificant specks in the universe?

It is popular in astronomy literature to deny any special significance for the earth or moon. This emphasis on terrestrial irrelevance follows from the assumption of a chance origin of the earth, moon, and life itself. It is stressed that the earth is “just” an average-sized planet within the solar system. The solar system, in turn, is located in the distant outer region of the spiral Milky Way Galaxy. If the galaxy were reduced to the size of North America, then our entire solar system would be no larger than a teacup. Often connected with this view is the *mediocrity principle*. This is the assumption that there is nothing unique about the evolution of life on Earth, and life is probably duplicated in countless forms in distant regions of space.

In contrast, Scripture gives great physical and spiritual significance to the earth. Planet Earth was

created three days *before* the sun, moon, and stars. The divine purpose of the stars relates directly to the earth: to provide signs, a calendar system, illumination (Gen. 1:14), and to declare God’s glory to mankind (Ps. 19:1). Planet Earth is also a universal reference point in that Christ walked here among men, and will one day return again. Also, an unseen spiritual battle between the forces of good and evil focuses on this earth and extends to high places (Eph. 6:12).

Some creationists suggest that the earth is positioned at the physical center of the universe. This may be true, but presently there is no way of verification. The exact location of the earth and moon in space is less important than God’s special attention, which has been directed toward the earth throughout its history.

2. Would we be better off without the moon?

In 1991 a tabloid headline appeared saying, “Scientists Plan to Blow Up the Moon.” This bizarre idea originated with American mathematics professor Alexander Abian, who taught that the moon had a deleterious effect on the earth’s weather.

He claimed that destruction of the moon would somehow eliminate severe climates and world hunger. Similar ideas have been expressed by a group of Russian scientists. However, the book you are now holding demonstrates the exact opposite: the moon is essential

to our health and welfare (see chapter 3). Thankfully, the tabloid headline is an impossible idea. Current technology could not destroy the moon even if it was attempted. Scientists have considered the consequences for the earth if the moon did not exist (Comins, 1993). They conclude that, on a long time scale, the earth would have a rapid rotation, high winds, severe seasons, and a poisonous atmosphere. In other words, without the moon, we could not exist. So much for the misguided suggestion to eliminate the moon!

3. Is our universe just one of multiple universes?

This question comes in response to the abundant design evidence in nature. It is suggested that our known universe is just one of an infinite number of other universes. Therefore, the providential design of the moon, earth, and physical constants



is meaningless. After all, there must be many other universes where the conditions are less hospitable to life. With a sufficient number of universes, at least one of them is bound to be ideal for the evolution and development of life, and we happen to live in it.

In response, it should be realized that the multiple universe idea is entirely unprovable and unscientific. Our single universe is all that we can possibly know about. The suggestion of additional universes beyond ours is a desperate attempt to increase the sample size and to manufacture a large statistical group in which our universe is just one member. Theory and mathematics may explore the multi-universe concept; however, this is not reality but instead is *metaphysics* or philosophy. Concerning known universes, the sample size is *one*. The physical universe we inhabit is all we know of, is all that Scripture describes, and it clearly reveals creative design.

4. Is creation an excuse for our incomplete understanding of nature?

Critics often complain that the creation story is a *cover-up* for our lack of science understanding. Since we do not yet understand mechanisms such as the origin of life, we simply say that God did it. This is sometimes called “God-of-the-gaps” reasoning. Critics further predict that the appeal to the Creator eventually will be eliminated, as gaps in our understanding are gradually filled in with further science progress.

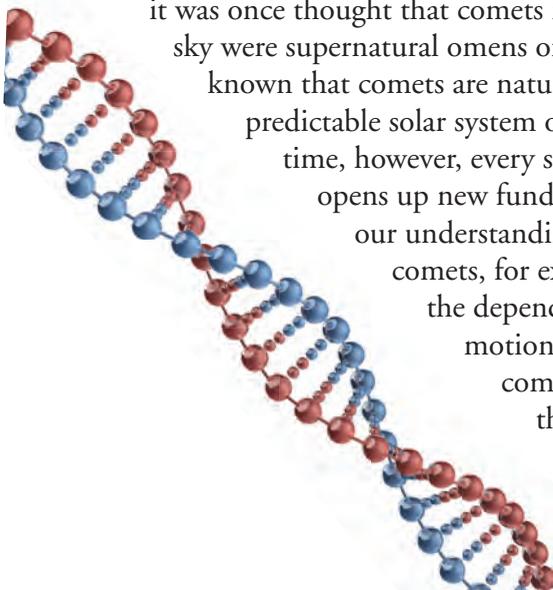
Two comments are in order.

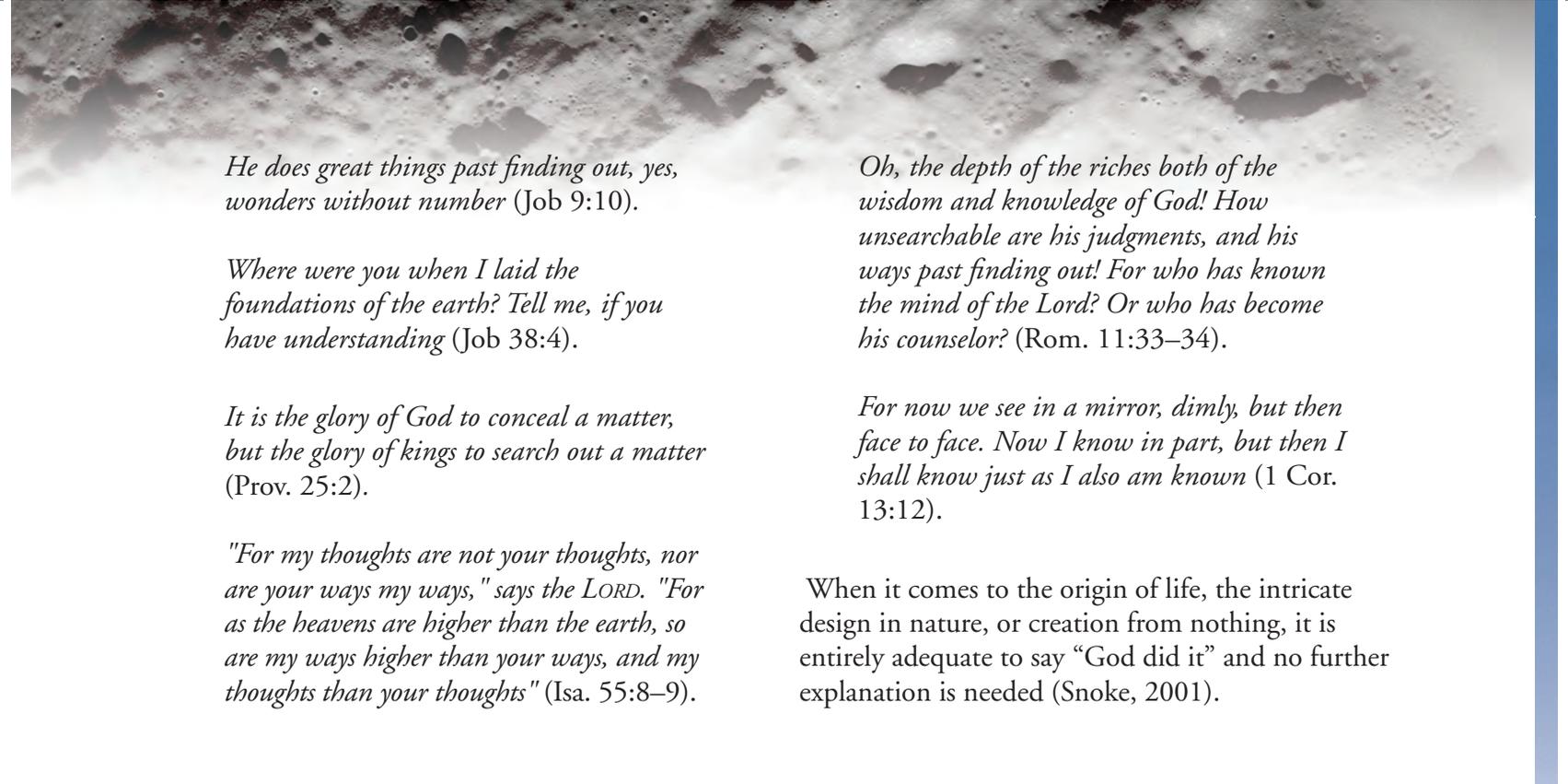
First, it is certainly true that science has “closed the gap” in many areas of knowledge. For example, it was once thought that comets in the night sky were supernatural omens of evil. It is now known that comets are natural objects with predictable solar system orbits. At the same time, however, every scientific discovery opens up new fundamental gaps in our understanding. Regarding comets, for example, how did the dependable laws of orbital motion arise? How did comets form, and are there really vast

numbers of comets in the outer realms of the solar system? In other words, over time the number of gaps in our knowledge increases rather than decreases.

Second, evolution theory includes some very fundamental gaps that remain forever beyond natural explanation. One example is the mystery of the spontaneous origin of life. All attempts to replicate life or its DNA component using raw materials have failed. Atheistic theories also fail to explain human consciousness, love, and the universal desire of people to worship a higher power (Eccles. 3:11). Such “gaps” in scientific understanding are to be expected by creationists. After all, a supernatural origin lies beyond science inquiry. Consider these supporting references:

The secret things belong to the LORD our God, but those things which are revealed belong to us and to our children forever, that we may do all the words of this law (Deut. 29:29).





He does great things past finding out, yes, wonders without number (Job 9:10).

Where were you when I laid the foundations of the earth? Tell me, if you have understanding (Job 38:4).

It is the glory of God to conceal a matter, but the glory of kings to search out a matter (Prov. 25:2).

"For my thoughts are not your thoughts, nor are your ways my ways," says the LORD. "For as the heavens are higher than the earth, so are my ways higher than your ways, and my thoughts than your thoughts" (Isa. 55:8–9).

Oh, the depth of the riches both of the wisdom and knowledge of God! How unsearchable are his judgments, and his ways past finding out! For who has known the mind of the Lord? Or who has become his counselor? (Rom. 11:33–34).

For now we see in a mirror, dimly, but then face to face. Now I know in part, but then I shall know just as I also am known (1 Cor. 13:12).

When it comes to the origin of life, the intricate design in nature, or creation from nothing, it is entirely adequate to say “God did it” and no further explanation is needed (Snoke, 2001).

5. Does the scientific method rule out any appeal to the supernatural?

The scientific method is a plan of action often used in problem solving. The method can be summarized in four steps.

1. Understand the problem.
2. Predict a solution.
3. Carry out this solution.
4. Is the problem solved? If not, return to step 2.

Notice that there is nothing magical about the scientific method. It is simply an approach to problem solving that we all use in everyday experiences.

Science study today is extremely naturalistic. The *supernatural* has been redefined as *superstition*. However, science is not *required* to be antagonistic toward the supernatural in this way. The historical meaning of science (from the Latin *scientia*) is simply

knowledge. Many of the best-known astronomers have held great respect for creation and spiritual truth. Some of the names are listed in Table 5-1. Their testimonies show that the scientific method is *not* at all in conflict with the supernatural. Instead, the spiritual dimension lies entirely beyond the scientific method. Scientific analysis alone cannot give a complete picture of origins, history, or the future.

6. Is the creation view opposed to science research and inquiry?

One critic has stated that the ultimate goal of creationists is to close down all the research laboratories and simply say, “God did it.” But nothing could be further from the truth.

Instead, we have a biblical mandate to study the creation so we can better understand its details. The Genesis

1:28 command is to “subdue the earth.” This certainly includes the study of nature’s details so that we can better manage the earth, bring out its potential blessings, and care for it. Acknowledgment of the Creator of the universe is the best possible starting point for scientific investigation and progress. Consider these references:



*And to man he said,
“Behold, the fear of the Lord,
that is wisdom,
And to depart from evil is understanding.”*

Job 28:28

*The fear of the LORD is the
beginning of wisdom;
A good understanding have
all those who do His commandments.
His praise endures forever.*

Psalms 111:10

*The fear of the LORD is the
beginning of knowledge,
but fools despise wisdom and instruction.*

Proverbs 1:7

*The fear of the LORD is the
beginning of wisdom,
and knowledge of the Holy One
is understanding.*

Proverbs 9:10

*The fear of the LORD is the
instruction of wisdom,
and before honor is humility.*

Proverbs 15:33

*Let us hear the conclusion
of the whole matter:
Fear God and keep his commandments,
for this is man’s all.*

Ecclesiastes 12:13

Science research proceeds today at a rapid pace. Each year there are about one million new technical articles published. Most of these are read by only a few highly specialized experts. This flood of data and analysis is almost always given a completely secular interpretation. And yet, all research into nature is in truth *creation research*, whether this fact is recognized or not. Everyone has the same data, but the interpretations vary greatly. The purpose of this book is to show the excitement of applying science data to just one area of study, our created moon.



7. Do great distances in space require a vast time scale?

Distances in space extend outward for billions of light years, each light year being about 6 trillion miles (9.5 trillion km) in length. How then can we possibly see far distant objects if the universe is young and recently created? It would seem that there hasn't yet been time for the distant light to reach us.

In the big-bang theory, distance and time are directly connected. The expansion of the universe to its present vast size from a concentrated initial point requires billions of years. However, the creation view does not require this constraint of a gradual big-bang expansion. Instead, the vast universe was instantly and supernaturally formed. In this way the light from distant galaxies reached the earth immediately. This concept of a mature, fully functioning universe is consistent with creation. Notice that God said, "Let there be lights in the firmament of the heavens . . . and it was so" (Gen. 1:14–15).

There are several other possible explanations for seeing distant stars in a youthful universe, aside from a mature creation. One suggestion is that light traveled much faster in the early universe. In this way distant starlight arrived here in a short time. Measurements of light do not clearly show a changing speed today. However, the physics community has found possible indications of a slightly more rapid light speed in the distant past (Weiss, 2001). Perhaps the speed of light was infinite at the moment of creation, when stars were made, and then directly adjusted to its present, lower, constant value.

Another approach to explaining the visible universe involves separate clocks for the earth and outer space.

Relativity theory and experimental data indicate that time itself is a quantity that can be *contracted* or *stretched*. This variation in the passage of time becomes significant at high speeds or in the vicinity of large mass. The possibility thus exists that, while normal 24-hour creation days took place on the earth, vast ages transpired in space, and light traveled great distances. This idea of *relativistic time dilation* has been popularized by creationist Russell Humphreys (1994) and also by astronomer Gerald Schroeder. Caution is needed here regarding the validity of inserting present-day physics theory into the supernatural creation week. At some point, the *natural* and *supernatural* must be mutually exclusive.

There is much talk today about additional spatial dimensions beyond the familiar dimensions of length, width, height, and time. Some physics theories predict seven or more additional, unseen dimensions invisibly "folded" within space. This conclusion follows from elegant mathematical equations and models that attempt to describe the nature of the universe. In unknown ways, higher dimensions could be consistent with a rapid formation of the universe and an initial near-infinite light speed.

In the end, it must be realized that God's ways are "past finding out" (Job 9:10; see also Job 5:9). Regarding the particular question under discussion, seeing the distant stars, the challenge for the creationist is to carefully distinguish between the concepts of distance and time. They are entirely separate quantities, and great distance does *not* require a vast timescale.



Name	Specialty	Comments
Fabricus, David 1564–1617	Variable stars	Was a Dutch Reformed pastor in addition to being an astronomer.
Galileo Galilei 1564–1642	Physics	Believed biblical truth.
Keckerman, Bartholomew 1571–1609	Comets	Saw comets as a sign from God.
Kepler, Johann 1571–1630	Planetary motion	Concerning his discoveries, he wrote, "God has passed before me in the grandeur of His ways."
Wendelin, Gottfried 1580–1667	Planets	An ordained priest, he held a deep faith in the Creator.
Gassendi, Pierre 1592–1655	Planetary motion	Taught that God created atoms in a single stroke.
Newton, Isaac 1642–1727	Physics	Wrote, "Our system of planets ... could only proceed from . . . an intelligent and powerful being."
Bradley, James 1693–1762	Stellar motion	Held a strong Christian faith.
Ferguson, James 1710–1776	Instruments	Gave God credit for design in nature.
Wright, Thomas 1711–1786	Milky Way	Taught that religion alone could explain the cosmos.
Herschel, William 1738–1822	Double stars	Wrote, "The undevout astronomer must be mad."
Herschel, Caroline 1750–1848	Comets	Wrote her own epitaph "[She] followed to a better life her father, Isaac Herschel."
Herschel, John 1792–1871	Nebulae	A devout Christian.
Mitchell, Maria 1818–1889	Comets	Wrote, "Every formula is a hymn of praise to God."
Riemann, Bernhard 1826–1866	Mathematics	Defended the Book of Genesis.
Maunder, Edward 1851–1928	Sun	Defended the Bible's accuracy in science matters.
Leavitt, Henrietta 1868–1921	Variable stars	Known for her sincere Christian life and character.
Eddington, Arthur 1882–1944	Stellar interiors	Wrote that the spiritual realm was as real as nature.
Braun, Wernher von 1912–1977	Rockets	Wrote that space "confirms our belief in the certainty of its Creator."

Table 5-1. A partial list of pioneer astronomers who supported creation, listed in order of birth year.



8. If the moon is young, why does it look old?

This question is frequently asked about the earth's age. How can the recent-creation position possibly be defended in the light of our surroundings? We see deep valleys, eroded mountain ranges, and thick sediment deposits. Many of our national parks with their cliffs and valleys are described as "monuments to time." On the moon, as well, we see craters from the distant past, soil that has been pulverized by many impacts, and rounded hills that are regarded as "ancient."

We respectfully suggest that these many features are not ancient, nor do they actually look old when inspected carefully. The important factor in aging is the *rate of change* in the past. Although the earth and moon may show only small changes today, this does not mean present rates have always existed. With the earth, events such as the Genesis flood rapidly altered the entire surface of the planet. Instead of an ancient appearance, the earth's crust can be interpreted as greatly disturbed by the global Flood. This includes tectonic activity, worldwide flood deposits, and the fossil record.

Aside from craters, lava flows, and dust accumulation, the moon's surface may appear much as it did at the time of creation. That is, it may well have been formed with its rolling hills, highlands, and low areas. To say that the moon *looks* old is to show a prior assumption of a long time scale. As a comparison, the Garden of Eden on Earth was surely created with soil and full-grown trees. There was an immediate appearance of age or maturity.

A further answer to this question of appearance concerns rapid changes occurring on the earth. For example, the Mount St. Helens volcano of Washington state erupted in 1980. Observers were astounded at the near-instantaneous change of the landscape for many miles around. This included massive mudflows, explosive destruction of forests, and rapid erosion by moving water. Then, in the following years, a rapid healing of the land began.

Vegetation grew back and animal life returned. A visitor today might guess that the volcanic eruption took place centuries ago, followed by a gradual recovery. Such events as Mount St. Helens show how misleading landscape appearance can seem, whether on the earth or moon.



Moon Beliefs

A popular, non-serious idea from the 16th and 17th centuries was that the moon was made of green cheese.



9. How can the majority of scientists be wrong about the moon's origin?

It may sound arrogant to suggest that most scientists are radically wrong in their views of origins, earth history, moon age, etc. After all, how can thousands of professionals worldwide possibly be mistaken? We hold firmly to the recent-creation view, but with humility rather than arrogance. We believe that more emphasis needs to be given to the *tentativeness* of science pronouncements. In fact, considering the history of science, the majority of scientists have *always* been wrong. The philosopher Thomas Kuhn wrote about this phenomenon in 1962. He describes how a particular science theory or belief system grows in popularity until it becomes the "standard view." But its lifetime is limited. Sooner or later a new theory arises and replaces the original. Sometimes the change is minor, and at other times there is a complete change of direction. An example of a major change was the acceptance of plate tectonics and continental drift by geologists in the 1960s, after decades of opposition. Another example is the transition from geocentrism to heliocentrism four centuries ago. And the story does not end with heliocentricity, since concepts of

relativity and curved space will further alter our view of reality.

The most basic answer to the question of possible science error must be biblical. Many references declare that the truth often may be a minority position:

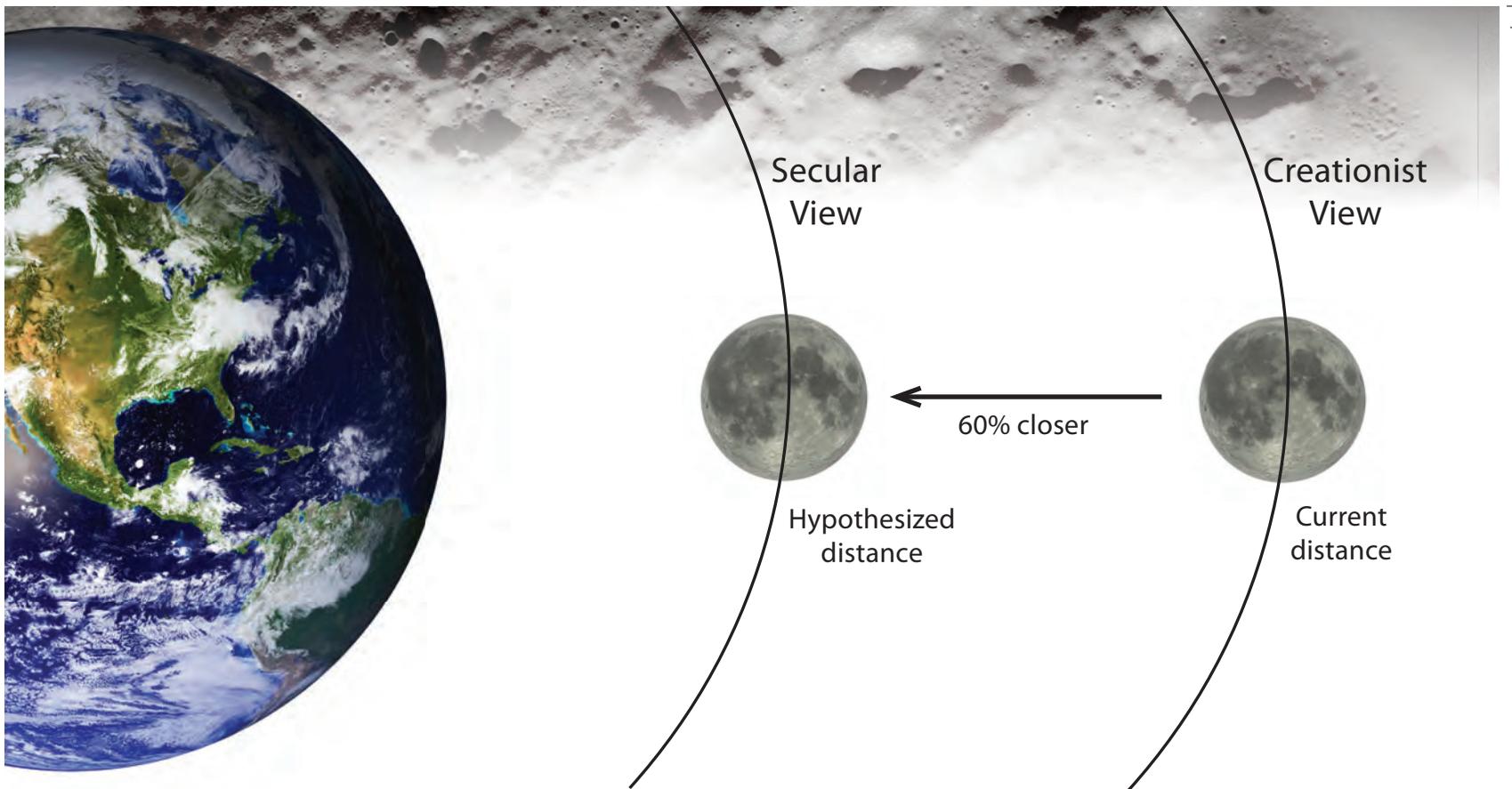
Because narrow is the gate and difficult is the way which leads to life, and there are few who find it (Matt. 7:14).

For many are called, but few are chosen (Matt. 22:14).

What then shall we say to these things? If God is for us, who can be against us? (Rom. 8:31).

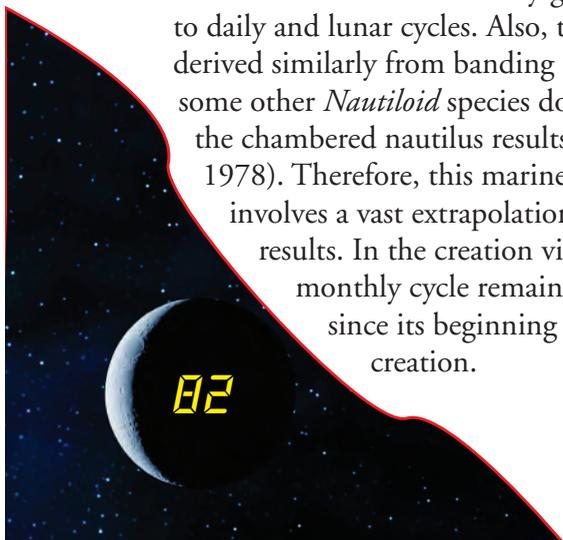
These verses refer to those who know their Creator personally. Although the context is not scientific truth, the verses declare how important the less popular position may be.





10. What about the evidence that the early moon revolved faster?

Some secular scientists have used fossil data in an attempt to “prove” that the moon was 60 percent closer to the earth 400 million years ago. Some of the fossils considered are those of the chambered nautilus. As the nautilus grows, it incorporates two repeating structures: first, new chambers in which it lives, and second, growth lines within each chamber. It is usually assumed that the growth lines occur daily, and further that a new chamber is tidally induced with each lunar cycle. If true, then the nautilus does indeed preserve a historical record of the number of days per lunar month. The number of growth lines is found to decrease sharply for fossil shells when compared with modern specimens, as few as 9 days each lunar month instead of the current 29. Thus, the conclusion is drawn that the fossils reveal short lunar months in the distant past. However, it remains an unproven hypothesis that the nautilus shell actually grows according to daily and lunar cycles. Also, the lunar records derived similarly from banding in corals and from some other *Nautiloid* species do not agree with the chambered nautilus results (Kahn, et al., 1978). Therefore, this marine fossil evidence involves a vast extrapolation with inconsistent results. In the creation view, the moon’s monthly cycle remains virtually unaltered since its beginning on the fourth day of creation.





Around the Moon

One trip around the moon is equal to a round-trip flight from New York to London.



11. Are there scientific errors in Scripture?

The Bible is sometimes attacked as an untrustworthy book. If true, how then can we value its pronouncements about the moon or anything else? Upon close inspection, however, alleged Bible errors show a complete lack of insight by the critics. As one example, let us consider a supposed error involving mathematics.

In 1 Kings 7:23 a large round vessel is described, built by King Solomon around 950 B.C. as part of the temple complex in Jerusalem. Called *the Sea*, the metal container is described as 10 cubits in diameter and 30 cubits around. Now for any circle of diameter d and circumference C , the ratio C/d is the constant number, $\pi = 3.14$. However, the d and C values for Solomon's vessel give $C/d = 30/10 = 3$. Critics therefore claim that the Scripture dimensions give an incorrect value for pi, 3 instead of 3.14, or an error of nearly 5 percent. There are at least three possible explanations for the number difference. *First*, the numbers in 1 Kings 7:23 may be rounded off and approximate, as is commonly done with numbers. *Second*, the vessel may not have been perfectly circular. If slightly elliptical in shape, the Scripture numbers would not be expected to give the pi value exactly. *Third*, the diameter measurement may have been an outside measurement with the circumference on the inside. Suppose a cubit is 18 inches and the vessel thickness was 3 inches. Then the actual inside diameter would be $180'' - 6'' = 174''$, and the inner circumference then would be $30'' \times 18'' = 540''$. The ratio then is $C/d = 540''/174'' = 3.1$, within 1 percent of the actual value of pi.

Another example of an alleged biblical error is found in Matthew 13:32. A mustard seed is described as "smaller than all other seeds." Mustard

is *not* the smallest known seed today. However, the Matthew reference further describes this seed which "a man took, and sowed in his field . . . when it has grown, it is the greatest among herbs." True to the text, mustard was indeed the smallest seed commonly used by Palestinian farmers and gardeners.

Many other challenges to Scripture accuracy likewise could be described and answered. On close inspection, all questions about accuracy have clear, simple answers. Biblical truth always remains while the criticisms fade away.



Figure 5-1. Photographs of the First Quarter (top) and Third Quarter (bottom) moons





MOON WEIGHTS

Weigh several objects and calculate their weight on the moon. You can do an online search for “weight on the moon” for various calculators.

MOON DISTANCE

At 238,866 miles from earth, how many times would one have to walk around the earth in order to reach the distance to the moon?



Moon Weight

The weight of the moon is approximately 81 quintillion tons (give or take a ton). Just one quintillion has 18 zeros so 81 quintillion would be expressed like this: 81,000,000,000,000,000,000.



CHAPTER WORD REVIEW

mediocrity principle — the assumption that there is nothing unique about the evolution of life on earth

scientific method — can be summarized in four steps: (1) understand the problem, (2) predict a solution, (3) carry out this solution, and asking (4) Is the problem solved? If not, return to step 2.