

TABLE OF CONTENTS

Table of Figures	v
Forward.....	vii
Preface	viii
Chapter One: Introduction.....	1
<i>What is a star?</i>	<i>1</i>
<i>How many stars?</i>	<i>1</i>
<i>How far away are they?</i>	<i>2</i>
<i>Where did God place the stars?</i>	<i>4</i>
<i>What are the purposes of the heavenly bodies?</i>	<i>7</i>
<i>How are the stars and earthly rulers connected?</i>	<i>12</i>
<i>Why study the stars?</i>	<i>15</i>
Chapter Two: North Circumpolar Stars	19
<i>Big and Little Dippers</i>	<i>19</i>
<i>The Big Dipper Clock</i>	<i>23</i>
<i>Two "Naked-eye" Galaxies</i>	<i>24</i>
<i>The Milky Way</i>	<i>24</i>
<i>Facts and Faith</i>	<i>25</i>
<i>Earth in Space by Design</i>	<i>28</i>
<i>More North Circumpolar Constellations</i>	<i>29</i>
<i>What is the message of these stars?</i>	<i>31</i>
Chapter Three: Star Movements During The Night.....	33
<i>Geocentricity or Heliocentricity?</i>	<i>33</i>
<i>The Celestial Sphere</i>	<i>36</i>
<i>Finding directions from the stars</i>	<i>38</i>
Chapter Four: Seasonal Stars	41
<i>The Winter Stars</i>	<i>41</i>
<i>The Spring Stars</i>	<i>49</i>
<i>The Summer Stars</i>	<i>53</i>
<i>The Autumn Stars</i>	<i>57</i>

Chapter Five: The Zodiac Constellations	61
<i>The Ecliptic</i>	<i>61</i>
<i>Astrology</i>	<i>62</i>
<i>The Federation of Twelve</i>	<i>65</i>
<i>The Federation and their Decans</i>	<i>66</i>
<i>The Zodiac by Season</i>	<i>67</i>
<i>Zodiac Summary</i>	<i>79</i>
<i>Responding to God's glory</i>	<i>81</i>
Appendix One: The Greek Alphabet.....	85
Appendix Two: Geometry and the Circumference of Earth	86
Appendix Three: Apparent Visual Magnitudes of Celestial Objects	87
Appendix Four: Limiting Magnitudes for Various Instruments	88
Appendix Five: The Twenty-Five Brightest Stars	89
Appendix Six: Types of Stars	90
Appendix Seven: Trigonometry and Parallax	91
Appendix Eight: Geometry and Latitude	92
Appendix Nine: Kepler's Laws of Orbital Motion	93
Appendix Ten: The "Star" of Bethlehem	94
Appendix Eleven: Precession	96
Appendix Twelve: Cepheids	98
Bibliography	99
Star-Name Glossary and Pronunciation Guide.....	101
Glossary of Astronomical and Related Terms.....	110
Scripture Index.....	117
General Index.....	119



Chapter One

Introduction

Have you ever taken the time and effort to find a place away from city lights on a clear, moonless night and look up? If you have, then you know the meaning of the “inspiring enchantment of awe.” What you are gazing at is the grandest view that we can have of the physical universe in which we live. The author can remember taking his then three-year old daughter out for her first look at the stars. They first positioned a sleeping bag on the cool ground. Lying supinely with her on his chest, they fixed their eyes on high. As her eyes became dark adapted,¹ she began to spontaneously cry, “Oh ... Ah ... Look!”

One of the goals of this book is to motivate the reader to “lift your eyes on high” and behold the intricate wonders revealed by gazing at the night sky. It is also the goal of the author to encourage the reader to view these wonders from a biblical perspective. These wonders came into being, not as the result of eons of chance processes, but by the creative decree of the God of the Bible.

Let us commence our voyage of wonder by first asking and answering a few important questions.

What is a star?

By scientific definition, a star is a ball of fire like our Sun, a gigantic atomic furnace. It is a large globe of intensely heated gas, shining by its own light. At its surface, a star can reach temperatures of thousands of degrees; in its interior, its temperatures can reach millions of degrees. When it is this hot, a nuclear reaction² occurs, which explains the energy source of a star.

The size of an average star is extremely large. An average sized star can hold more than a million Earths. Some are so big that thirty thousand million of our Suns could fit into them! (We can write this number in a shorter version by using scientific notation. Using this notation, it becomes 3×10^{10}).

How many stars?

On a clear, bright night, you could, with the naked eye, count between three to five thousand stars in about two hours. Scientists call stars seen with the naked eye lucid stars. Lucid stars make up a very small proportion of the total number of stars in the universe.

1. What happens when the human eye, under little or no illumination, becomes increasingly sensitive to light from distant objects.
2. Conversion of hydrogen into helium.

Modern science has given us powerful tools with which we can explore the heights of the heavens. Astronomers tell us that within the range of the largest telescope there are 10^{11} (one followed by eleven zeros) galaxies³ with each galaxy containing about 10^{11} stars. Using the arithmetic of powers, we multiply 10^{11} by 10^{11} and discover that there are 10^{22} stars within telescopic range.

But we are not finished yet. Albert Einstein estimated that the number of stars in total space is 10,000 (10^4) times larger than the number of stars within telescopic range ($10^{22} \times 10^4 = 10^{26}$). How large is the number 10^{26} ? Counting one number every second, it would take three thousand trillion centuries to do it! With the recent invention of the radio telescope, stars that give no visible light can be "heard." In our own galaxy, one of the 10^{11} observable galaxies, there are 10^{11} such radio stars! The human mind cannot even begin to fathom the exact magnitude of the number of stars in the heavens.

How far away are they?

The closest star to Earth is Alpha Centauri⁴ (below our southern horizon⁵). It is one pointer to the constellation called the Southern Cross or Crux. It is about 2.54×10^{13} miles away.

Astronomers use special mathematical techniques (see Appendix Seven and its discussion of parallax) to measure these stellar distances. These distances are so great that standard distance units like miles soon become useless. To rectify this, astronomers have created a new unit of measure, called the light-year. A light-year is the distance that light travels in one year.

Light travels at an amazing 186,000 miles per second. How fast is this? If we had a space vehicle that could travel at this speed, we could orbit Earth seven times in one second! We could reach the Moon in two seconds, the Sun in eight minutes, and the planets in a couple of hours.

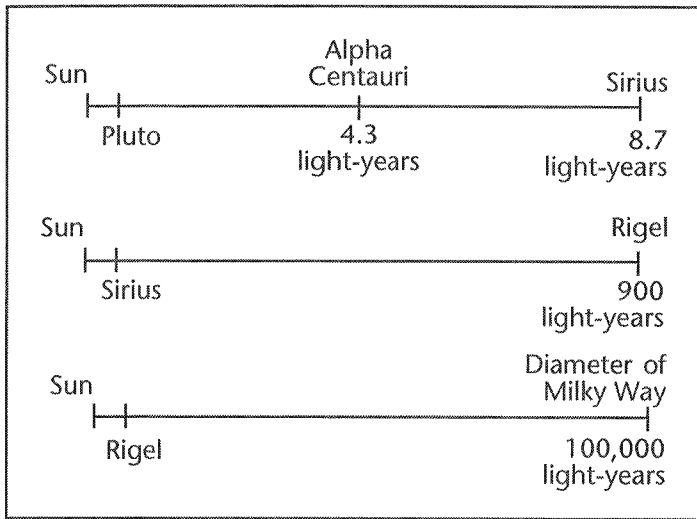
In one year, light travels about 5.87×10^{12} miles (186,000 miles/sec. times 31,556,926 sec./year). Therefore, Alpha Centauri is 4.3 light-years from Earth (2.54×10^{13} divided by 5.87×10^{12}). How far away is this? Let us represent Earth by a marble. The Sun, the size of a medicine ball,⁶ would sit about 300 yards away. Alpha Centauri would be about 50,000 miles away! By way of another model, let us represent Earth by a mote—a speck of dirt just barely visible to the naked eye. The Sun, one inch in diameter, would be three yards away, and Alpha Centauri would be 400 miles away.

The astronomical unit (AU) is another common unit of measure. It is the distance between Earth and the Sun (approximately 93,000,000 miles). One light-year would be equal to 63,245 AU; therefore, the distance of Alpha Centauri from Earth is 271,953.5 AU.

One way to help us comprehend the immensity of the visible universe is to shrink it down. For example, the diameter of the Milky Way galaxy is about 100,000 light-years. From Earth, we can see stars in all directions at a maximum of 1.4×10^{10} light-years away (radius from Earth). Looking from a different viewpoint, let's say our galaxy is four inches in diameter. The visible universe would extend from Earth in a nine-mile radius (eighteen-mile diameter). You would find another galaxy like ours every twenty-five to thirty-five inches uniformly distributed throughout that eighteen-mile diameter!

-
3. A galaxy is a gigantic gathering of stars, gas, and dust, all bound together by gravity.
 4. Alpha Centauri has a companion star, Proxima Centauri, that is thought to be slightly nearer to us than Alpha.
 5. The horizon is the boundary between the sky and the Earth. It is the place where the sky seems to meet the surface of the Earth.
 6. A solid weighted ball tossed for exercise and is usually thirteen inches in diameter; originally a leather-ball, but is now made of plastic.

Figure 1-1: The Distant Stars



Astronomers often speak of distances such as 100,000 light-years and more. The Andromeda galaxy (catalogued as M31⁷) is estimated to be about 2.2 million light-years away. For those who believe the biblical doctrine of a recent creation, these great distances expose an apparent contradiction. This doctrine says that the universe is the product of an act of creation only 6,000 to 10,000 years ago.⁸ If this is so, many people ask, “How is it that we can see objects millions of light-years away? Surely such light would take millions of years to reach us.” Several answers can help a biblical Christian to respond to such questions.

As preparatory background, we must realize that people are thinking in evolutionary terms when they ask this question. The questioner is presupposing an evolutionary view of the stars.⁹ At a certain point in the past, because of one evolutionary process or another, a specific star acquired a sufficient level of energy to start emitting light rays. These rays then began to travel across billions of miles of space until they eventually reached us. Note that scientists have never seen a star evolve and their ideas about star evolution are entirely speculative.

A first possible answer comes from a study of the fourth day of creation. Genesis 1:17 says, “And God set them (Sun, Moon, and stars) in the firmament of the heaven to give light upon the earth.” The implication is that light from the stars reached Earth immediately. God created the stars with light from them already reaching Earth. Look at a star that tonight is at a distance of 100,000 light-years. God created this star at an instant of time only 6,000 to 10,000 years ago. God supplied the light from all those other supposed years in His instant act of creation.¹⁰

Physicist D. Russell Humphreys has developed an interesting thesis that explains how this could have happened. His conclusions are based upon Albert Einstein’s general theory of relativity that posits an expanding cosmos where clocks (and all physical processes) tick at different rates in different parts of the universe. These different rates can be verified experimentally. The force that causes this phenomenon is called *gravitational time dilation*.¹¹ According to Humphreys, during the fourth day of creation, billions of Earth years elapsed in the distant sky, allowing light from galaxies to reach Earth within one ordinary day of Earth’s time.¹²

The Australian astronomer Barry Setterfield has proposed a second possible answer to this question.¹³ His studies have shown a decreasing trend over the past 300 years in the computed speed of light. For example, in 1675 Olaus Roemer computed the speed of light to be 186,806 miles/sec., ±

7. According to the French astronomer Charles Messier’s (1730–1817) late eighteenth century compilation of galaxies.
8. We know these approximations through the study of Bible chronology. See Philip Mauro, *The Wonders of Bible Chronology* (Swengel, PA: Reiner Publications, n.d.).
9. See Chapter Two, the section entitled “Facts and Faith” for more detail.
10. See Henry Morris, *The Genesis Record* (Grand Rapids: Baker Book House, 1976), pp. 65–68.
11. W. Rindler, *Essential Relativity*, rev. 2nd ed. (New York: Springer-Verlag, 1977), p. 21.
12. D. Russell Humphreys, *Starlight and Time: Solving the Puzzle of Distant Starlight in a Young Universe* (Colorado Springs, CO: Master Books, 1994).
13. For more information on his studies write to Creation Science Foundation Ltd., P. O. Box 6302, Acacia Ridge D.C. Qld., 4110, Australia, Creation Science Foundation (N.Z.), Fowey Lodge, 215 Bleakhouse Road, Howick, Auckland, New Zealand, or Master Books, P.O. Box 26060, Colorado Springs, CO 80936.

125. In 1976, scientists have computed the speed of light to be 185,871.32 miles/sec. His resulting thesis: The speed of light is not constant; i.e., the speed of light was significantly higher in the past.

If Setterfield's statistics and mathematical model can be proven to be correct,¹⁴ then light could have reached Earth from the farthest visible object in only a very short time—only 6,000 years ago. His statistical analysis shows that, about 4000 B.C., the speed of light began decreasing. If c (speed of light) was greater in the past, radioactive decay would occur more rapidly. Scientists calculate enormous age ranges by applying radiometric methods on rocks. Underlying these methods is the assumption that c is constant. These radiometric dates and their exceptions can now be explained using Setterfield's slowing of light theory; i.e. they become shortened to some 6,000 years, instead of being evidence for great age.

A third possible answer considers the space idea proposed by Albert Einstein's special relativity theory. Einstein's theory says that light does *not* travel in a straight line (as stipulated in Euclidean geometry), but along curved surfaces. The nineteenth century German mathematician Bernhard Riemann formulated this non-Euclidean idea. In essence, you can leave the stars at their "astronomical" locations in Euclidean space. Yet the light from these stars can get to us in very small periods of time—at the most 15.71 years.¹⁵

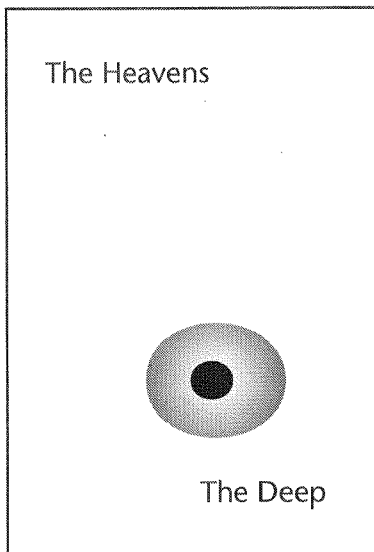
Where did God place the stars?

God set them [Sun, Moon, and stars] in the firmament of the heavens... (Genesis 1:17).

What does the Bible mean by the phrase, "firmament of the heavens?" To understand this phrase, we must return to the first two verses of Genesis 1.

In the beginning God created the heavens and the earth. And the earth was without form, and void; and darkness was on the face of the deep. And the Spirit of God was hovering over the face of the waters (Genesis 1:1–2).

Figure 1–2: The Deep



A straightforward reading of the text would indicate that Earth was originally a shapeless and lifeless region located within what might have been a sphere of waters called "the deep." Over the surface (or face) of the deep was darkness. The heavens were above the deep. The Spirit of God is pictured as hovering over the surface of the deep. In Genesis 1:3–5, God speaks light into existence. This light source is more than likely the outshining, radiant glory of God and could be linked to the hovering Spirit of God. This same light appears again in the shekinah radiance (glory cloud) localized in the holy of holies of the tabernacle/temple complex and in the New Jerusalem of the new heavens and earth, i.e., the Church (see Revelation 21:23; 22:5; Hebrews 12:22–24). Using this luminary source, God divided the light from the darkness and the creation experienced its first day—evening and morning. This means that the deep was rotating. A reference point on the surface of the deep would have rotated full circle—from the dark side of the deep to the light side of the deep—marking off one complete day.¹⁶

14. Setterfield's statistics and modeling have been challenged. See E. F. Caffin, "A Determination of the Speed of Light in the Seventeenth Century," *Creation Research Society Quarterly* 29:3 (1992): 115–120.
15. See Harold S. Slusher, *Age of the Cosmos* (San Diego: Institute for Creation Research, 1980), pp. 33–37. Slusher's work is based upon a paper published by Parry Moon and Domina Spencer in the August, 1953 issue of the *Journal of the Optical Society of America*.
16. The Word of God states that the creation took place in six twenty-four hour days. If not, then Exodus 20:9–11, part of the Ten Commandments, is deceiving us. God does *not* deceive us with His word.

The events of day two contribute to an engaging analysis:

Then God said, "Let there be a firmament in the midst of the waters, and let it divide the waters from the waters." Thus God made the firmament, and divided the waters which *were* under the firmament from the waters which *were* above the firmament; and it was so. And God called the firmament Heaven.... (Genesis 1:6–8).

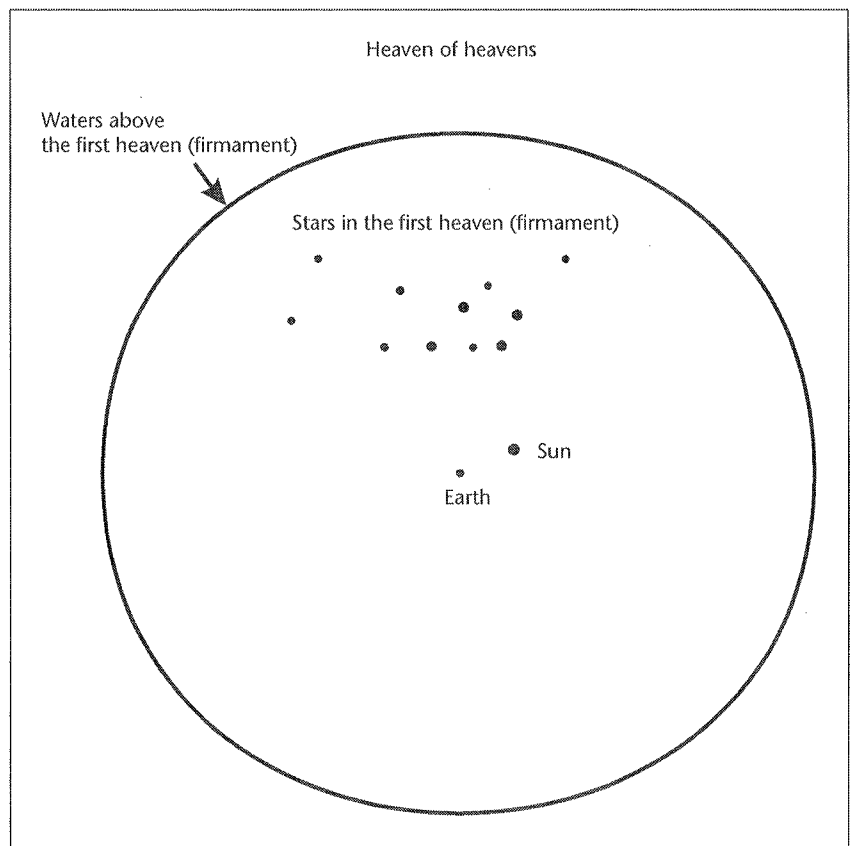
On day two, God made a firmament or expanse.¹⁷ In the middle of the waters of the deep, God let this firm material exist. This firmament separated the waters—there are now waters below and above the firmament. How did God do this? There are a significant number of passages in Scripture indicating that God "stretched or spread out" the heavens. Psalm 104, a psalm of creation, states in verse two that God stretched out the heaven like a tent curtain.¹⁸ It seems that God separated the waters by first placing the firmament in the middle and then stretched the firmament out. God called this firmament heaven.

The created universe now has two sets of waters. One is below the firmament and the other above the firmament. On day three, God gathered the waters below the firmament into one place, let dry land appear, and called the dry land Earth (Genesis 1:9–10). The water above the firmament could possibly be a spherical water boundary encircling the firmament, what we know now as interstellar space.

Above this boundary, there exists the highest heaven, or the heaven of heavens (I Kings 8:27). The Apostle Paul spoke of the third heaven, called Paradise (II Corinthians 12:2). There are, therefore, three heavens:

1. The firmament, known as interstellar space, created on day two. As we look upward toward the first heaven, we gaze through Earth's atmosphere, signified in Scripture as "the face of the firmament" (Genesis 1:20). On day four, God created lights (Sun, Moon, and the innumerable stars of all 10^{11} galaxies) and placed them in this firmament (Genesis 1:17). This firmament is a public display of "His handiwork" (Psalm 19:1).

Figure 1–3: The Structure of the Heavens



17. The Hebrew, *raqia*, means "extended surface." It comes from the verb, *raqa*, which means "to stamp, spread out, or expand." The Septuagint's translation (Hebrew to Greek) for this word is *stereoma*. It means "what is made firm."

18. See also Job 9:8; 26:7; 37:18, Isaiah 40:22; 42:5; 44:24; 45:12; 48:13; 51:13, Jeremiah 10:12; 51:15, and Zechariah 12:1. The Hebrew, *natah*, means to "extend, stretch out, or spread out." The Hebrew words in these verses translated as "spread out" come from the verbs *matach*, *taphach*, or *raqa*. The last verb, from Job 37:18, is linked to the noun "expanse" (*raqia*) in Genesis 1. (See footnote 17.) Note the use of simile (a figure of speech in which two essentially unlike things are compared using the words "like" or "as") in the phrase, "God stretched out the heavens *like* a tent curtain." That God stretched the heavens in some manner is established. This stretching is compared to what happens when you stretch a tent curtain.

2. Above the first heaven, beyond the reach of the most distant galaxy, is a spherical wall of water. This wall separates the first heaven from the second heaven, called in Scripture the heaven of heavens. God created the second heaven on day one. We know that even this heaven cannot contain God (I Kings 8:27); that is, it is finite in extent.
3. We know that the third heaven is Paradise. This is where God dwells and His throne is established (Isaiah 66:1; Psalm 11:4). All the angels surround His throne in majestic and glorious praise and worship. Where is this heaven? In one sense, it exists in another dimension, a dimension of spirit, infinitely near to us, yet also infinitely far away.¹⁹ Does it also physically exist somewhere beyond the “waters above the heavens”? Job 22:12 states, “Is not God in the height of heaven? And see the highest stars, how lofty they are!” It appears from Scripture that God manifests His glory²⁰ *beyond* the stars. His glory is set above the heavens (see Psalm 8:1; 113:4–6). He has to “humble Himself” in order to see the things that are in heaven and on Earth! The Bible does not reveal the specific locality of His glorious dwelling place above the stars, but some hints are given (see Chapter Two, under the discussion of Polaris).

We can derive two important conclusions from this discussion. First, matter in the universe is bounded. It has an edge and center. Earth is most likely located near the center of the material universe and the waters above the firmament form the boundary of the material universe. In contrast, most evolutionary scientists arbitrarily posit that the universe is unbounded. It has no edge or center. Earth has no special place in the cosmos. Note the comments by British theoretical physicist Stephen Hawking (1942–) and George Ellis:

However we are not able to make cosmological models without some admixture of ideology. In the earliest cosmologies, man placed himself in a commanding position at the centre of the universe. Since the time of Copernicus we have been steadily demoted to a medium sized planet going round a medium sized star on the outer edge of a fairly average galaxy, which is itself simply one of a local group of galaxies. Indeed we are now so democratic that we would not claim our position in space is specially distinguished in any way. We shall ... call this assumption the *Copernican principle*.²¹

Note the phrase, *admixture of ideology*. The assumption of the *Copernican principle* is not based upon observational fact, but upon a pre-commitment to an ideology (for more detail, see the section in Chapter Two subtitled “Facts and Faith”). Note the comments of astrophysicist Richard Gott:

In astronomy, the Copernican principle works because, of all the places for intelligent observers to be, there are by definition only a few special places and many non-special places, so you are likely to be in a non-special place.²²

These eminent astrophysicists have basically defined the biblical God out of the picture. Using the words of Harvard Genetics professor Richard Lewontin, they “cannot allow a Divine Foot in the door.”²³ To them, we are on this planet as the result of random and violent processes only—not

-
19. In Psalm 22:3, we see that God “sets up His throne” upon the praises of His people. God’s throne is as close to us as the praises upon our lips. In Isaiah 6, the prophet sees God sitting on His throne, lofty and exalted, dwelling in unapproachable light (I Timothy 6:16). God’s holiness creates an infinite chasm of separation between sinful man and Himself. The proposition that a holy God can dwell in the praises of sinful man is simply amazing. John Newton, the songwriter of old, said it better than anyone could, “Amazing grace.” The blood of Jesus Christ shed for our sins bridges the gulf between a God infinitely far away from us in judgment and a God infinitely near to us in mercy.
 20. The Hebrew for *glory* means “to be heavy, to have weight, to carry significance or to have importance.” The word is first used in Genesis 12:10, “the famine was *severe* in the land.” The next occurrence is in Genesis 13:2, “Abram was very *rich*.”
 21. Stephen Hawking and George Ellis, *The Large Scale Structure of Space-Time* (Cambridge: Cambridge University Press, 1973), p. 134.
 22. Richard Gott, “Implications of the Copernican Principle for Our Future Prospects,” *Nature* 363 (27 May 1993): 315–319.
 23. Cited in Phillip E. Johnson, *Objections Sustained: Subversive Essays on Evolution, Law & Culture* (Downers Grove, IL: InterVarsity Press, 1998), p. 17.

because of the choice of a purposeful God, the “Divine Foot”—and thus it would be unlikely we are in a “special place.”

Second, the cosmos has expanded. Both camps, evolutionary scientists and the Bible, articulate this. This expansion explains why astronomers observe galactic red shifts.²⁴

The bounded/unbounded assumption is of profound importance. If you input the assumption that the material universe is unbounded into Albert Einstein’s general theory of relativity equations, the output is the “Big Bang” cosmogony²⁵ with its attendant billions of years for the age of the universe. What is the destiny of the universe given the unbounded assumption? The universe will ultimately, after billions and billions of years, result in a Big Squash. If you input the assumption that the material universe is bounded into the same equations, the output is what D. Russell Humphreys calls the “Young-Earth Relativistic” cosmogony.²⁶ What is the destiny of the universe given the bounded assumption? All creation will ultimately, at some God-appointed time in the future, be reconciled in and through Christ (Colossians 1:19–20).

What are the purposes of the heavenly bodies?

Then God said, “Let there be lights in the firmament of the heavens to divide the day from the night, and let them be for signs and seasons, and for days and years; and let them be for lights in the firmament of the heavens to give light on the earth”; and it was so. And God made the two great lights, the greater light to rule the day, and the lesser light to rule the night. *He made the stars also* (Genesis 1:14–16).

He counts the number of the stars; He calls them all by name. Great is our Lord, and mighty in power; His understanding is infinite (Psalm 147:4–5).

Lift up your eyes on high, and see who has created these *things*, who brings out their host by number; He calls them all by name, by the greatness of His might and the strength of *His* power; Not one is missing (Isaiah 40:26).

There is one glory of the Sun, another glory of the Moon, and another glory of the stars; for *one* star differs from *another* star in glory (I Corinthians 15:41).

Our biblical and scientific understanding of the stars reveals the power, the might, the knowledge, the purpose, and the wonder of the Creator God. It is He who made the stars and put them in their heavenly heights. It is He who counts the stars. It is He who has a name for each, all 10²⁶ of them!

The Bible says more about the purpose of the stars than their scientific makeup. Yes, the stars are gigantic atomic furnaces. If we stop at scientific definition, however, we will fail to see what God intends for us to see. C. S. Lewis (1898–1963), distinguished professor of Medieval and Renaissance literature at Cambridge University, wrote more than thirty books in his lifetime. In his famous Space Trilogy series, he attempted, using his unique gifts, to expose the errors of radical materialism (i.e., stars are *just* gigantic atomic furnaces) with its concomitant cosmic impersonalism:

But Ransom, as time wore on, became aware of another and more spiritual cause for his progressive lightening and exultation of heart. A nightmare, long engendered in the modern mind by the mythology that follows in the wake of science, was falling off him. He had read of “Space”: at the back of his thinking for years had lurked the dismal fancy of the black, cold vacuity, the utter deadness, which was supposed to separate the worlds. He had not known

-
24. The wavelengths of light from each galaxy are shifted toward the red side of the electromagnetic spectrum by a factor proportional to the distance of the galaxy from us. Astronomers have calculated this red shift and it seems to indicate that distant galaxies are moving away from us at speeds approaching the speed of light.
 25. Cosmogony refers to the study of ideas about the *origin* and *generation* of the universe. In contrast, cosmology is a study of the nature of the observable universe; i.e. how the universe *presently works*. Modern scientists sometimes cloud the difference between these two concepts.
 26. See the excellent technical discussion of these issues in his book, *Starlight and Time*. The author acknowledges that many of the ideas presented in the previous section have been culled from this book by Humphreys.

how much it affected him till now—now that the very name “Space” seemed a blasphemous libel for this empyrean²⁷ ocean of radiance in which they swam. He could not call it “dead”; he felt life pouring into him from it every moment. How indeed should it be otherwise, since out of this ocean the worlds and all their life had come? He had thought it barren: he saw now that it was the womb of worlds, whose blazing and innumerable offspring looked down nightly even upon the earth with so many eyes—and here, with how many more! No: Space was the wrong name. Older thinkers had been wiser when they named it simply the heavens—the heavens which declare the glory....²⁸

Scripture lays down the general principles on which the investigation of the stars must rest. Scripture provides a true framework for interpreting the facts. Knowing these Scriptural perspectives enables the Christian to pursue the knowledge of the stars in a way that honors and glorifies his or her Creator. With this in mind, we will study Genesis 1:14–16 which reveals five purposes of the heavenly lights—*lights, signs, seasons, days and years, and governing the day and the night.*

By way of introduction, it is important to understand that Old Testament Hebrew often employs a literary method called *chiasm*. Instead of listing related ideas in a logical sequence (Greek method), the Hebrews often related ideas in a sandwiched fashion. For example, the Greeks would say: Statement A relates to statement B. Statement C relates to statement D. Statement E relates to statement F. The Greek way of relating the ideas of Genesis 1:14 and 16 would be as follows, “The stars are for signs, the lesser light for seasons, and the greater light for days and years.” The Hebrews would say: Statements A, C, and E relate to statements F, D, and B. Genesis 1:14 and 16 uses this device: Signs (Statement A) are associated with the stars (Statement B). The seasons (Statement C) are associated with the lesser light, the Moon (Statement D), and the days and years (Statement E) are associated with the greater light, the Sun (Statement F).

Figure 1–4: Chiasmic Structure of Genesis 1:14 & 16

A	14. Let them be for signs
C	14. and for seasons
E	14. and for days and years
F	16. the greater light to govern the day
D	16. the lesser light to govern the night
B	16. He made the stars also

Lights

First, the astral bodies are *lights*. Light in Scripture is a symbol of the nature of God (I John 1:5). Light points to beauty, purity, and holiness. Song of Solomon 6:10 says, “Who is this that grows like the dawn, as beautiful as the Full Moon, as pure as the Sun, as awesome as an army with banners?” Paul’s first epistle to the Corinthians speaks of the uniqueness of the stars in their glory (I Corinthians 15:41). Glory here speaks of brilliance, outshining radiance, and awesome significance. Modern science has gifted biblical Christians with the ability to inspect the starry wonders in closer detail. Using the telescope, we can discern more of the glorious handiwork of our Creator. As we investigate deep sky wonders such as star clusters, galaxies, nebulae, and novas, we marvel at our Creator’s ingenuity.

27. The highest reaches of heaven, believed by the ancients to be a realm of pure fire or light; the abode of God and the angels; e.g., paradise.

28. C. S. Lewis, *Out of the Silent Planet* (New York: Scribner, 1996), p. 32. For more on the ramifications of cosmic impersonalism, see Gary North, *The Dominion Covenant: Genesis* (Tyler, TX: Institute for Christian Economics, 1987), pp. 1–11.

Signs

Second, they are *signs*. A sign points to someone or something. In ancient times, signs were used as a witness of a special covenant either between God and mankind or between different peoples on the earth (see Genesis 9:12–13; Exodus 31:16–17; Joshua 24:25–27; I Samuel 7:12). In the Hebrew, the word “sign” could mean a map that gives directions that point to “Him who comes.” Psalm 19 and Romans 10 confirm this:

So then faith *comes* by hearing, and hearing by the word of God. But I say, have they not heard? Yes indeed: Their sound has gone out to all the earth and their words to the ends of the world (Romans 10:17–18).

In Psalm 19:1–4 we see the Psalmist David detailing the fact that the heavens, in their own unique way, are an inscription²⁹ of the glory of God.³⁰ Their firmament stands out and boldly manifests His handiwork—the work of His strength and power. Every day bubbles forth³¹ poetic word and each night breathes out³² intelligent understanding. There is no poetic word or speech where their extensive voice is not heard. Their outline³³ has gone out through all the earth even to the end of the world. This outline, this speech, is something that you can see with

the eye. This speech is poetry in pictures, the only speech that everyone in the entire world could understand. Paul, in detailing the wondrous gospel of Christ, says that faith comes by hearing, and hearing by this gospel; i.e., the word of God. Then, he quotes from Psalm 19:4 proving that the ends of the world have already heard this word concerning the gospel in the heavens.³⁴ The word of God in the gospel can be “heard” by gazing into the night sky. Since the entire world has seen this rev-

Figure 1–5: Chiasmic Structure of Psalm 19:1–2

Verse 1 — The testimony of the heavens

A	The heavens
C	declare
E	the glory of God;
F	His handiwork.
D	shows
B	And the firmament

Verse 2 — The testimony is continuous

A	Day unto day
C	utters
E	speech,
F	and knowledge.
D	reveals
B	And night unto night

29. The Hebrew for *declare* (“inscribe”) means “to cut into, to engrave like letters on stone, or to write.” It is also used for the concept of counting (Genesis 15:5) or narrating (Genesis 24:66).

30. Psalm 19 deals with God’s revelation in creation (v. 1–6) and through His written word—His law (v. 7–14). These two revelations are complementary. The wrath of God abides upon all mankind, because they have suppressed the knowledge of God revealed in His created order (see Romans 1:18–32). God’s revelation of Himself in creation is sufficient to condemn mankind in sin. This revelation will be corrupted by man and man can only come to a truthful understanding of God’s creation through: (1) regeneration—the new birth (John 3:1–7) and (2) submission to God’s written word as the basis for understanding His created order (Proverbs 1:7; 9:10; Psalm 36:9).

31. The Hebrew for *utter* (“bubbles up”) is translated elsewhere as “to prophesy.”

32. The Hebrew for *reveals* (“breathes out”) literally means “to breathe.”

33. The Hebrew for *line* (“outline”) means “measuring line.” This is a metonymy (a figure of speech in which one word or phrase is substituted for another with which it is closely associated). A carpenter uses a measuring line to mark out his work. According to H. F. W. Gesenius’ (1786–1842) *Hebrew Lexicon*, it is a stylus or engraver with which an artist sketches the outlines of a figure that is later to be sculptured (see Isaiah 44:13). The stylus or outline of God’s glory can be seen in the heavens. The sculpture that it points to is the written word (the law) of God (Psalm 19:7–11) embodied in the Lord Jesus Christ.

34. Christ is the glory of God manifested in the flesh (John 1:14).