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Chapter 1—Introduction

Objectives

- Define basic scientific facts about the stars
- Present a biblical view of the origin and placement of the stars
- Reveal what the Bible says about the purposes of the stars
- Provide a biblical rationale for studying the stars

Outline of Chapter

I. What is a star?
II. How many stars?
III. How far away are they?
IV. Where did God place the stars?
V. What are the purposes of the heavenly bodies?
   A. Lights
   B. Signs
   C. Seasons
   D. Days and Years
   E. Governing the Day and the Night
VI. How are the stars and earthly rulers connected?
VII. Why study the stars?

Teaching Ideas

Refer to Appendix Seven in the text for a discussion of mathematics of parallax.

Refer to Appendix Eleven in the text for a discussion of precession.

As background to the concepts taught in the section VI (How are the stars and earthly rulers connected?), the student needs to understand the following (you might want to teach these truths as a lesson in conjunction with this portion of the text):

- God rules over the minds of men—even His enemies (see Proverbs 16:1, 9; 19:21; 20:24; Isaiah 40:23).
- Study carefully Isaiah 10:5–16. Assyria thought that it conquered by its own initiative, but in reality it was sent and commissioned by God.
- Study Jeremiah 25:8-9. Nebuchadnezzar was a godless king but, in spite of that, he is called God's servant. He did God's will whether he liked it or not. Daniel recognizes this as he sees his city falling into Nebuchadnezzar's hand by God's plan (Daniel 1:2).
- Study Habakkuk 1:5–11. God says that He is raising up the Chaldeans to achieve His purpose. The Chaldeans were a wicked and idol-worshipping people, yet God said He would send them. Verses 12–17 are the horror that Habakkuk has at the thought of God using wicked people for His purposes.
- These Scriptures show the intrepid faith of the men of the Bible. They saw all men knowingly or unknowingly participating in the unfolding plan of God. This understanding is the only anchor in the storm of international upheaval.

Learning Activities

Making a pocket solar system

One way to understand the tremendous distances in space is to construct a simple model of the Solar System. For this activity you will need a blank register tape (obtain from a stationery store) at least 40 yards long, crayons or magic markers, a tape measure, and a room at least 40 yards long.

The pocket solar system will represent, in proportion, the planetary distances on the register tape. Let one astronomical unit (1 AU) be equal to 1 yard (If you let 1 AU = one inch, then you could hang your model on a wall).

Use the following table for marking your register tape.

Celestial Object	Average Distance from the Sun (in miles)	Average Distance from the Sun (in AU)	Distance from Sun on Register Tape	Distance between objects on Register Tape
Sun				14 inches
Mercury	36 million miles	0.38	14 inches	12 inches
Venus	67 million miles	0.72	26 inches	10 inches
Earth	93 million miles	1.00	36 inches	1 inch
Moon	93,238,000 miles	1.04	37 inches	18 inches
Mars	142 million miles	1.52	55 inches	11 feet
Jupiter	256 million miles	5.20	15.6 feet	13 feet
Saturn	885 million miles	9.59	28.6 feet	29 feet
Uranus	1,787 million miles	19.2	57.6 feet	33 feet
Neptune	2,800 million miles	30.1	90.3 feet	29 feet
Pluto	3,699 million miles	39.5	119 feet	152 miles
Alpha Centauri	24,863 billion miles	268,000	152 miles	

To make the pocket solar system, unravel about 1 yard of the register tape. At the end, draw a large Sun. Now use the "Distance between objects on Register Tape" column of the table and draw Mercury 14 inches from the Sun. Measure the other celestial objects in like manner (except Alpha Centauri—you cannot buy a register tape long enough to record its distance!).

Solutions for Questions for Review and Discussion

Short sentence answers:

1. **Define the following words:**
   a. **Star**—a gigantic atomic furnace where heat is generated by the conversion of hydrogen into helium.
   b. **Lucid star**—a star which can be seen with the naked eye.
   c. **Radio star**—a star which give no visible light but can be detected by radio telescopes.

d. **Scientific notation**—a short hand notation for writing large numbers (e.g. 3,000,000,000 in scientific notation is 3×10^9).

e. **Parallax**—a method whereby astronomers can measure stellar distances.

f. **Astronomical unit**—the distance between Earth and the Sun.

g. **Light-year**—the distance that light travels in one year.

h. **Galactic redshift**—a calculated shift to the red side of the electromagnetic spectrum that is proportional to the distance that a remote galaxy is from us.

i. **Gravitational time dilation**—the force that causes clocks and all physical processes to tick at different rates in different parts of the universe.

j. **Cosmogony**—the study of ideas about the origin and generation of the universe.

k. **Cosmology**—the study of the nature and workings of the observable universe.

l. **Solstice**—occurs when the Sun is at its greatest distance from the Celestial Equator; the shortest day of winter and the longest day of summer.

m. **Equinox**—occurs when the path of the Sun crosses the Celestial Equator; the beginning of spring and autumn.

n. **Chiasm**—a Hebraic grammatical form where ideas are presented in a "sandwiched" fashion instead of logical order.

2. **List the five purposes of the heavenly bodies according to Genesis 1:14–16:**

(1) lights, (2), signs, (3) seasons, (4) days and years, and (5) governing the day and the night.

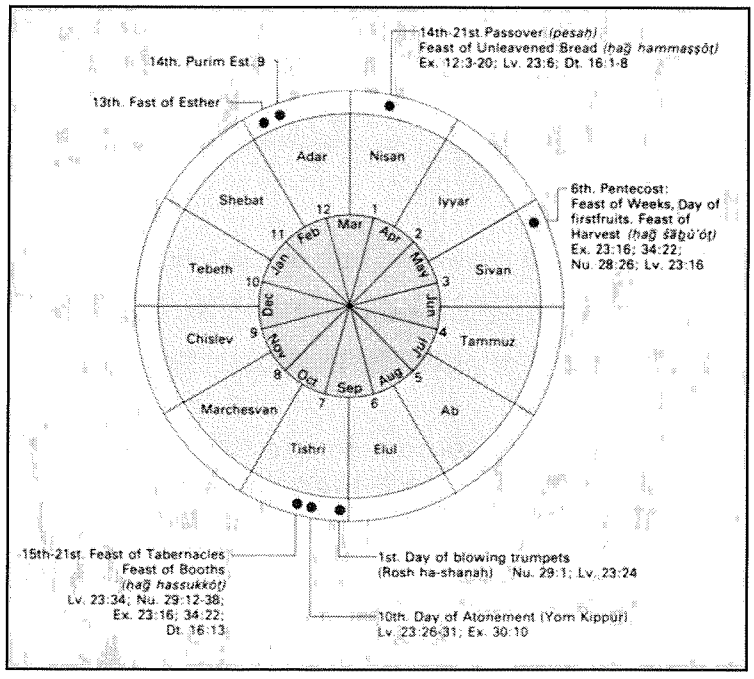
Long Essay:

1. **How would you respond to the following statement, "How can you believe in a recent act of creation, some 6,000 to 10,000 years ago, when science has shown that some galaxies are more than one million light-years distant?"**

The student should explain the three answers to this question as related in the text: (1) the message of Genesis 1:17 and the corresponding work of D. Russell Humphreys, (2) the work of Barry Setterfield, and (3) the use on Non-Euclidean geometry and curved space-time.

2. **Explain how the phases of the moon correspond to the Old Testament feasts.**

The Hebrews used a lunar calendar that consisted of twelve months, each month consisting of about 29.5 days. Each month began with each new moon (visible crescent). According to II Chronicles 8:13, the Moon designated the feasts of the Lord. The Moon marked the first day (New Moon) and the fifteenth day of the month (Full Moon). During Nisan (our March-April), the Hebrews celebrated the Passover feast. On the fifteenth day of this month, they celebrated the Feast of Unleavened Bread (Leviticus 23:4-8).



Seven Sabbaths (fifty days) after the Passover (Leviticus 23:15-16), they celebrated the Feast of Pentecost (or Weeks), during Sivan (our May-June). During Tishri (our September-October), the Feast of Trumpets began on the first day (Numbers 29:1-6; Psalm 81:3). On the fifteenth day of this month, the Feast of Tabernacles began (Leviticus 23:34-36).

3. **Carefully explain and relate Psalm 19:1–4 to Romans 10:17–18.**

   The student should write out both passages and detail the context of each (Psalm 19 with the revelation of God in creation and His word, Romans 10 with Gospel of Christ). In Psalm 19, David details the fact that the heavens, in their own unique way, are an inscription of the glory of God. The student should note that Christ is the focal point of this glory (John 1:14). The expanse of the heavens manifests His handiwork. Each day and each night reveals knowledge about God. This knowledge is something that you can see with the eye. This knowledge is in picture language, the only speech that everyone in the entire world could understand. Paul, in detailing the Gospel of Christ, says that faith comes by hearing, and hearing by the word of Christ. Then, he quotes from Psalm 19:4 proving that the ends of the world have already heard this word concerning Christ in the heavens. The word concerning Christ can be "heard" by gazing into the night sky. Since all in the world have seen this revelation and know it in their hearts, they are without excuse (Romans 1:18–20). In fact, all have perverted the glory of the incorruptible God into corruptible images of birds, beasts, and creeping things (Romans 1:23—this verse may refer to the corruption of the pristine purity of the original zodiac). The revelation of God in Christ, the reality to which the shadows of the sky point, is to be proclaimed in all the world by the beautiful feet of God's appointed preachers (Romans 10:14–15).

4. **Write a newspaper article explaining the fall of ancient Babylon using the Old Testament imagery found in Isaiah 13.**

   The student should show his understanding of the symbolic nature of the "stars being darkened" by referring to parallel passages (Ezekiel 32, Joel 2). The student should also summarize the important points of chapter 13 in the essay: (1) battle, (2) destruction and resulting desolation, (3) fear, (4) sorrow, (5) amazement, (6) The Medes as the instrument of judgment, and (7) the reason for judgment: sin. The student should relate these disasters to the symbol of the heavens collapsing.

5. **Write a newspaper article explaining the fall of a modern nation in the light of Old Testament imagery.**

   Photocopy and distribute the essay "The Russian Invasion of Afghanistan," found in Appendix Two; it was written by the author in 1980 and serves as a model for this exercise. Since this article was written, world events have verified the truth that "God rules in the affairs of men and of nations."

Research:

Do a research project on one of the following:

1. **The work of astronomer Barry Setterfield and the decreasing speed of light theory.**
2. **The work of physicist D. Russell Humphreys and the Young-Earth Relativistic Cosmogony.**

   For a list of resources, contact Master Books, P.O. Box 26060, Colorado Springs, CO 80936 USA. NOTE: The mathematics involved in these works is highly advanced. An understanding of the Calculus is basic to them. However, Grade 10–12 students could summarize some of the material.