

CHAPTER 4

GOD'S WORD AND GOD'S WORLD IN CONFLICT?

PARALLAX AND ITS ROLE IN THE HELIOCENTRIC/GEOCENTRIC DEBATE

Parallax is an optical illusion in which a nearby stationary object appears to move because of the motion of the observer. Try this experiment right now:

- ▶ Hold up a finger or pencil vertically in front of your face, about ten inches from eyes.
- ▶ Close one eye and look through the other eye at your finger. Note carefully where the finger appears compared to objects on the wall on the far side of the room.
- ▶ Move your head two inches to the right or left without moving your finger. You'll see that the finger *appears* to have moved; it is now in front of a different spot on the wall!

Your finger is like a nearby star, and the far wall is like the distant stars in the background. Your two eyes are like a telescope on Earth that is in two different positions as the Earth moves around the Sun. For example, in April a nearby star appears in one location (like looking through one eye). But six months later, in October, the Earth has moved to the far side of the Sun, and the nearby star now appears in a different spot.

The scientists of Galileo's day reasoned that if the Earth orbits the Sun, nearby stars should appear to move by parallax. Careful observations did not reveal any parallax, and this was seen as evidence that the Earth was stationary and the heliocentric model was wrong. What the scientists didn't know is that even the nearest stars are very far away from Earth, too far to easily detect parallax. Try looking at your finger as you did above but with the finger near your eye, then farther away from your eye. When the finger is far away, it appears to move less. If it were very far away, the apparent motion would be too small to notice. In the same way the parallax of stars closest to the Earth is too small to see with the telescope Galileo used. It took significant advances in telescope technology before this parallax was finally measured in 1838. In the meantime, scientists became convinced of the heliocentric model by other discoveries, such as the phases of Venus and Newton's law of gravity.