study of the physical world. By demonstrating the powers of the human mind, the Scientific Revolution gave thinkers great confidence in reason and led eventually to a rejection of traditional beliefs in magic, astrology, and witches. In the eighteenth century, this growing skepticism led thinkers to question miracles and other Christian beliefs that seemed contrary to reason.

1 The Copernican Revolution

In proclaiming that the earth was not stationary but revolved around the sun, Nicolaus Copernicus (1473–1543) revolutionized the science of astronomy. Fearing controversy and scorn, Copernicus long refused to publish his great work, *On the Revolutions of the Heavenly Spheres* (1543). However, persuaded by friends, he finally relented and permitted publication; a copy of his book reached him on his deathbed. As Copernicus anticipated, his ideas aroused the ire of many thinkers.

Both Catholic and Protestant philosophers and theologians, including Martin Luther, attacked Copernicus for contradicting the Bible and Aristotle and Ptolemy, and they raised several specific objections. First, certain passages in the Bible imply a stationary earth and a sun that moves (for example, Psalm 93 says, "Yea, the world is established; it shall never be moved"; and in attacking Copernicus, Luther pointed out that "sacred Scripture tells us that Joshua commanded the sun to stand still, and not the earth"). Second, a body as heavy as the earth cannot move through space at such speed as Copernicus suggested. Third, if the earth spins on its axis, why does a stone dropped from a height land directly below instead of at a point behind where it was dropped? Fourth, if the earth moved, objects would fly off it. And finally, the moon cannot orbit both the earth and the sun at the same time.

Cardinal Bellarmine
ATTACK ON THE COPERNICAN THEORY

In 1615, Cardinal Bellarmine, who in the name of the Inquisition warned Galileo (see Sections 2 and 3) not to defend the Copernican theory, expressed his displeasure with heliocentrism in a letter to Paolo Antonio Foscarini. Foscarini, head of the Carmelites, an order of mendicant friars in Calabria, and professor of theology, had tried to show that the earth's motion was not incompatible with biblical statements.

Cardinal Bellarmine to Foscarini (12 April 1615)

My Very Reverend Father,

I have read with interest the letter in Italian and the essay in Latin which Your [Reverence] sent me; I thank you for the one and for the other and confess that they are full of intelligence and erudition. You ask for my opinion, and so I shall give it to you, but very briefly, since now you have little time for reading and I for writing.

First, . . . to want to affirm that in reality the sun is at the center of the world and only turns on itself without moving from east to west, and the earth . . . revolves with great speed around the sun . . . is a very dangerous thing, likely not only to irritate all scholastic philosophers and theologians, but also to harm the Holy Faith by rendering Holy Scripture false. For your [Reverence] has well shown many ways of interpreting Holy Scripture, but has not applied them to particular cases; without a doubt you would have encountered very great difficulties if you had wanted to interpret all those passages you yourself cited.

Second, I say that, as you know, the Council [of Trent] prohibits interpreting Scripture against the common consensus of the Holy Fathers; and if Your [Reverence] wants to read not only the Holy Fathers, but also the modern commentaries on Genesis, the Psalms, Ecclesiastes, and Joshua, you will find all agreeing in the literal interpretation that the sun is in heaven and turns around the earth with great speed, and that the earth is very far from heaven and sits motionless at the center of the world. Consider now, with your sense of prudence, whether the Church can tolerate giving Scripture a meaning contrary to the Holy Fathers and to all the Greek and Latin commentators. Nor can one answer that this is not a matter of faith, since if it is not a matter of faith "as regards the topic," it is a matter of faith "as regards the speaker"; and so it would be heretical to say that Abraham did not have two children and Jacob twelve, as well as to say that Christ was not born of a virgin, because both are said by the Holy Spirit through the mouth of the prophets and the apostles.

Third, I say that if there were a true demonstration that the sun is at the center of the world and the earth in the third heaven, and that the sun does not circle the earth but the earth circles the sun, then one would have to proceed with great care in explaining the Scriptures that appear contrary, and say rather that we do not understand them than that what is demonstrated is false. But I will not believe that there is such a demonstration, until it is shown to me. . . . and in case of doubt one must not abandon the Holy Scripture as interpreted by the Holy Fathers. I add that the one who wrote, "The sun also ariseth, and the sun goeth down, and hasteth to his place where he arose," was Solomon [King of ancient Israel], who not only spoke inspired by God, but was a man above all others wise and learned in the human sciences and in the knowledge of created things; he received all this wisdom from God; therefore it is not likely that he was affirming something that was contrary to truth already demonstrated or capable of being demonstrated.

REVIEW QUESTION

1. On what grounds did Cardinal Bellarmine reject the Copernican theory?

2 Expanding the New Astronomy

The brilliant Italian scientist Galileo Galilei (1564–1642) rejected the medieval division of the universe into higher and lower realms and proclaimed the modern idea of nature's uniformity. Learning that a telescope had been invented in Holland, Galileo built one for himself and used it to investigate the heavens. Through his telescope, Galileo saw craters and mountains on the moon; he concluded that celestial bodies were not pure, perfect, and immutable, as had been believed. There was no difference in quality between heavenly and earthly bodies; nature was the same throughout.