CHAPTER SUMMARY

The sixteenth and seventeenth centuries witnessed one of history's most significant intellectual developments, a sweeping change in man's view of the universe. A proud, earth-centered picture of the universe gave way to one in which the earth was only one of many planets orbiting around the sun--itself only one of millions of stars. Because their scientific view of mankind's place in the larger scheme of things had been transformed, men began to rethink moral and religious matters as well. The new scientific methods and concepts were deemed so impressive that ever since, science has been the measuring stick of all knowledge.

The first figure in the new movement was Nicolaus Copernicus, a Polish astronomer in the early 16th century. Copernicus was dissatisfied with the traditional, Ptolemaic astronomical system. To account for the observable, non-circular patterns of the planets, Ptolemaic thinkers had to make many clumsy adjustments in their systems. For the sake of mathematical elegance, Copernicus preferred to place the sun in the center of the universe.

To Copernicus' concern for mathematics, an English thinker, Francis Bacon (1561-1626), added a desire for scientific thought to conform to empirical observation. Only an amateur scientist, Bacon decried reverence for intellectual authority and advocated innovation, change and a close examination of empirical evidence. Science had to have a practical purpose and should aid the human condition. Together, Copernicus' mathematical astronomy and Bacon's empirical method provided the key to the scientific revolution. Tycho Brahe (1571-1630), assembled astronomical data which the German Copernican, Johannes Kepler (1571-1630), used to suggest that the orbits of planets were not circular but elliptical. His contemporary, the Italian Galileo Galilei (1564-1642), provided more support for the theory by publishing the first telescopic observations of the heavens. Nature, said Galileo, was totally subject to mathematical laws, a belief for which the Catholic Church condemned him in 1633.

Baconian empirical observation and induction won great prestige, thanks to its use by Isaac Newton (1642-1727). Newton explained the movement of all physical objects in the universe through mutual attraction, or gravity. His discoveries provided a new belief for the view that the natural universe was a realm of law and regularity, subject to mathematical explanation. The new science provided a new basis for religion. Just at a time when Europeans were tiring of irrational wars of religion, they found grounds for believing in a rational god.

One of the most important and influential political philosophers of the age was John Locke (1632-1704). Locke denied the argument that rulers were absolute in their power; man's natural state was
one of perfect freedom and equality. If a ruler failed in his responsibilities toward his subjects, he violated the social contract and could be replaced. Locke's philosophy came to be embodied in the Glorious Revolution of 1688-1689.

From the perspective of Europe's future, perhaps the most important development of the eighteenth century was its leading intellectual movement, the Enlightenment. Enlightenment thinkers, called philosophes believed that change and reform were both possible and desirable. Before 1700, a belief in innovation through rational criticism had belonged to only a few pioneering thinkers. With the Enlightenment, it came to characterize Western society. By far the most influential of the philosophes, Voltaire, was an admirer of English government and Newton. France, on the other hand, with its decadent absolutism and political and religious censorship, seemed to prove the need for reform. Because many Frenchmen wanted to see changes made, France became the center for the Enlightenment. The publication of the vast Encyclopedia in mid-century spread Enlightenment ideas throughout Europe. This ambitious enterprise, the collective effort of over one hundred authors, set forth the most advanced critical ideas of the day. The project aimed at secularizing learning and replacing the intellectual assumptions of the Middle Ages and Reformation.

One of the major concerns of the encyclopedists and of philosophes, generally, was religion. They considered established churches, particularly Roman Catholicism, to be the chief obstacle to mankind's improvement and happiness. Instead, the Enlightenment offered its own religious creed, Deism, which favored a rational deity and a rational morality. Religious toleration was a positive contribution of the Enlightenment.

The philosophes, however, were primarily interested not in religion, but with humanity and secular values. Through reason, man would discover laws in human relationships similar to those of physical nature - an idea that would form the basis for social science in the nineteenth century. The philosophes hoped that by discovering social laws, they could remove inhuman practices and institutions.

This attitude is reflected in the economic works of the Enlightenment. British economist Adam Smith (Wealth of Nations) challenged governmental policies, and characterized mercantilist doctrine as selfish and unnatural. The full complexity of the Enlightenment is best revealed in its political thought. The philosophes agreed on the need for reform, but not on its methods. Montesquieu advocated an enlightened aristocracy which could limit the power of the king and reform the system (Spirit of the Laws, 1748). Rousseau was an advocate of direct democracy in which obedience to the general will would ensure individual freedom (The Social Contract, 1762). Philosophies of Montesquieu (aristocracy) and Rousseau (democracy) are here discussed.
Most philosophes, however, favored neither aristocracy or democracy as the solution to contemporary problems. Instead, they hoped that enlightened monarchs would reform society from above. The policies of such rulers as Frederick the Great of Prussia, Joseph II of Austria and Catherine the Great of Russia are detailed in the text; they actually appeared to be carrying out the hopes of the philosophes. But, in reality, the heroes of enlightened absolutism, as the phenomenon was called, did not wish to reform their countries for humanitarian or liberal purposes, but to strengthen them for future warfare.

**KEY POINTS AND VITAL CONCEPTS**

1. **The Scientific Revolution:** This term is something of a misnomer, for unlike most revolutions, the Scientific Revolution was neither rapid, nor did it involve large numbers of people. The "revolution" was the work of a few men employing either of two major methods: the imposition of small changes on existing models of thought; or the desire to ask new kinds of questions and to use new methods of investigation. Many of the major figures of this intellectual revolution had to deal with a church which resisted radical ideas that would jeopardize theological doctrine. For years before his condemnation by the Catholic Church, Galileo Galilei had contended that scientific theory and religious piety were compatible. Baruch Spinoza championed freedom of thought, but also believed that everything exists in God and cannot be conceived apart from him. Such teaching ran the danger of portraying the world as eternal and human actions as unfree and inevitable - divine fatalism. The limitations of science and reason were cautioned by Blaise Pascal who argued that reason could not in itself explain the existence of God; but it is more reasonable to believe that God exists and that belief results in the improvement of one's life.

2. **The Philosophes:** In spite of their name, the philosophes were not so much philosophers as individuals who sought to apply reason and common sense to nearly all the major institutions and mores of the day. Leading philosophes disagreed on many issues, but shared a basic unity of thought. They all sought reform for the sake of human liberty. They provided a major source of ideas that could be used to undermine existing social and political structures. The philosophes drew on three main sources for their outlook. Intellectually, they were indebted to the physics of Isaac Newton, which emphasized
empirical experience and the rationality of the natural world. They also profited greatly
from the psychological theory of John Locke, who had argued that man's nature is
changeable and can be improved by his environment. Politically, the philosophes
admired Great Britain, which seemed to exemplify a society in which enlightened reform
served the common good. In terms of religion, the philosophes attacked Christianity for
its rejection of science, otherworldliness and belief in man's depravity. Deism, their
creed, advocated that God's existence could be deduced from a contemplation of nature.
The deists believed in divine reward or retribution in the afterlife for a man's good or bad
actions on earth.

3. **Enlightened Absolutism**: The belief that a well informed monarch should and would
change society from the top was popular with some Enlightenment thinkers. Great hope
was placed in various monarchs to bring this change to European society. Many rulers
attempted to govern in this manner, but the force of conservatism, economic factors and
blunders by rulers prevented any dramatic change in society by 1789. The fear of
revolution and consequent loss of authority stopped attempts at change from the top after
1789.

4. **The Enlightenment Heritage in World Perspective**: The heritage of the Enlightenment
has been more complex than was its political impact in the eighteenth century. One
strand of political thought, advocated by Montesquieu, contributed to constitutionalism
and modes of government in which the power and authority of the central government
stands sharply circumscribed. Another strand, found in Voltaire, contributed to the
growth of strong central governments as was the case with enlightened absolutism. Still
another strand of Enlightenment political thought arising from Rousseau led to the
socialist concern with inequality of property. Consequently, modern liberal socialist and
authoritarian governments partake of the Enlightenment heritage.

**SUGGESTED FILMS**

_The Majestic Clock Work_. BBC Time-Life. Ascent of Man Series. 52 min.
*Voltaire Presents Candide: An Introduction to the Age of Enlightenment.* Encyclopaedia Britannica. 34 min.

*Catherine the Great - A Profile in Power.* Learning Corporation of America. 26 min.

*Civilisation X: The Smile of Reason.* Time-Life. 52 min.