Volume II

HERITAGE OF WESTERN CIVILIZATION

EIGHTH EDITION

John L. Beatty

Oliver A. Johnson

Heritage of Western Civilization

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Preface

I have made a number of changes in this eighth edition of *Heritage*, many of them as a result of suggestions made to me by readers of the seventh edition. Most of the introductions have been revised, and several, including the general introductions to Rome, The Middle Ages, The Renaissance and Reformation, Early Modern Europe, and The Contemporary World, have been completely rewritten. Changes have been made in the selections themselves, and a number of new ones have been added, including Lucretius, *De Rerum Natura*; Thomas Aquinas, *Summa Theologica*; Bishop Bossuet, *Politics Drawn from the Very Words of Holy Scripture*; Olaudah Equiano, *The Life of Gustavus Vassa*; Rudolf Hoess, *Autobiography*; and the *Alma-Ata Declaration*.

O. A. J.

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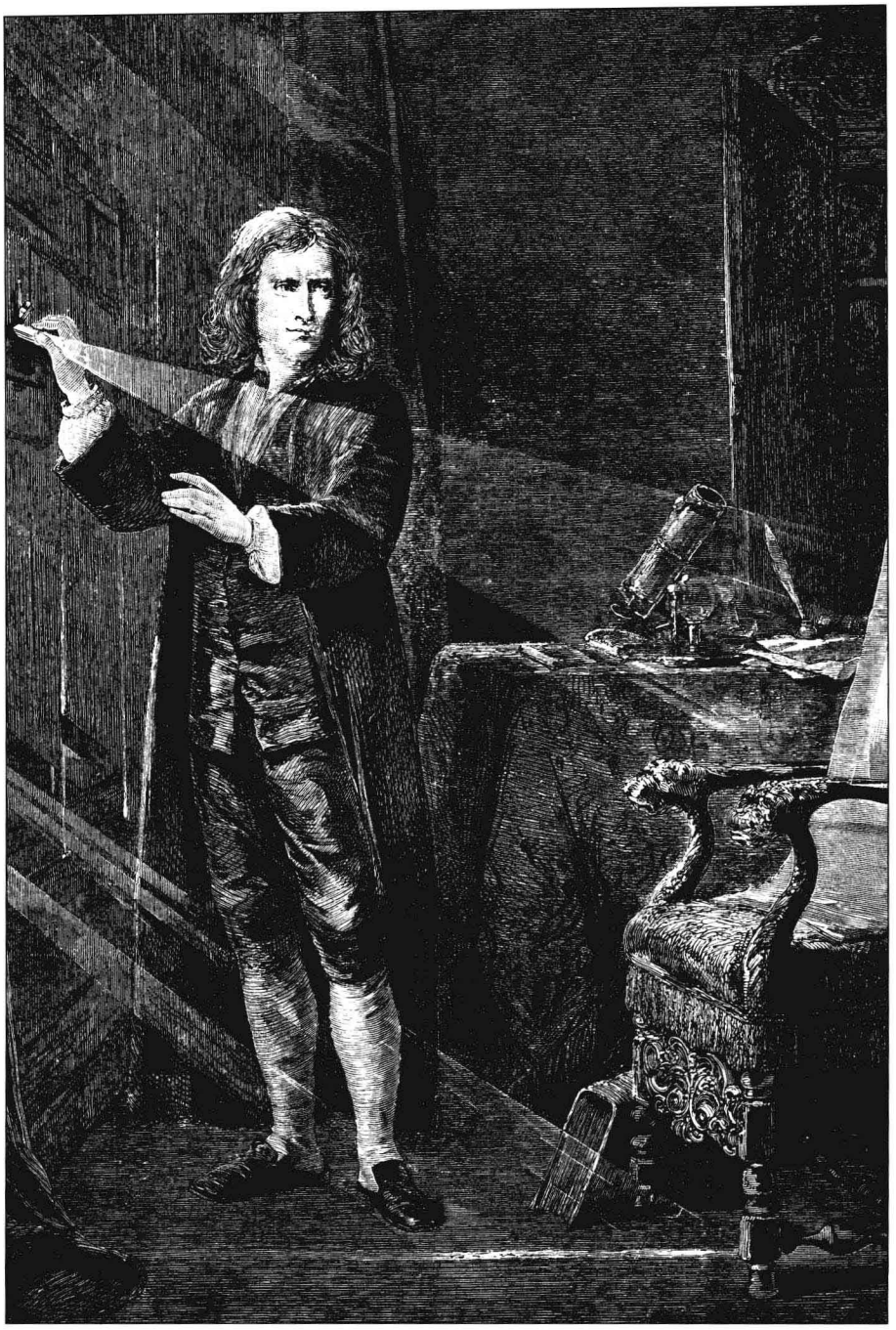

Isaac Newton conducting an experiment in optics. (*Culver Pictures, Inc.*)

EARLY MODERN EUROPE

The century and a half from the Treaty of Westphalia (1648), which ended the Thirty Years' War, to the Napoleonic Wars, at the beginning of the nineteenth century, marked a period of great changes—political, economic, religious, intellectual, social, and technological—in European history. Some of these are now referred to as "revolutions"—the Scientific Revolution, the French Revolution, the American Revolution (America being considered an extension of European civilization), and the Industrial Revolution. All of the changes were to have profound effects on Western and, later, world civilization. Over the centuries perhaps the most important and significant of these, however, was the rise of modern science, which was a feature particularly of the seventeenth century. Not only is science the highest achievement of the human mind, but the scientific outlook gave people a new, more accurate, and comprehensive way of viewing themselves and their world, and, finally, spawned the technological revolutions that have transformed life and society in the centuries that have followed.

The Thirty Years' War, which ravaged much of central Europe, generated a curious but historically important anomaly. The war had its origins in religious animosities, pitting Catholics against Protestants. But, because the Catholics were led by the Hapsburg dynasty of Austria and Spain, which was contending for political domination of Europe against France, the French political strategist, Richelieu, even though himself a cardinal of the Catholic church, brought his country into the conflict on the side of the Protestants. The demands of national power, thus, were given precedence over religious convictions. Europe was witnessing the rise of the nation-state and, with it, one of the great scourges of the modern world—nationalism. As nation-states consolidated, centralizing their power, this power increasingly became concentrated in the person of the monarch. France offers a striking example of the concept of royal sovereignty, particularly under the "Sun King," Louis XIV, the most powerful European monarch of the seventeenth century. With an arrogance whose frankness betokened innocence Louis blandly proclaimed "*L'état, c'est moi.*" But the royal right to rule was not accepted simply de facto; rather, political theorists of the time offered complex arguments to justify it. Usually these had their basis in religion. Writers like Bishop Bossuet and Sir Robert Filmer (whose arguments John Locke was to lay waste in his *First Treatise of Civil Government*), turned to the

Scriptures to establish the legitimacy of royal rule, developing the notion of the "divine right of kings." But another defender of royal absolutism, Thomas Hobbes, took a quite different line; according to him, a monarch's "right" to rule rested solely on his ability to gain and hold his power and to preserve the peace.

However the various monarchs might justify their rule, the central political fact of the period was the development of the European nation-state. Centralization of power was not narrowly political but extended into almost every area of life. Of special importance was the economic realm, which was brought under the supervision of the state, following a theory and practice known as *mercantilism*. In all its ramifications mercantilism deployed the economic activities of the country to enhance the power of the state, particularly in rivalry with the other states of Europe. One way to accomplish this end was to establish colonies that would import the manufactures of the mother country and export raw materials to it for processing and exportation to rival states, the controlling concept being the idea that the power of a state depended on its acquisition of precious metals at the expense of its rivals. This aspect of mercantilism led to a race by the European powers to acquire colonies in the "new world." Since these required large increments of cheap labor to farm the fields, the slave trade was born. In the case of North America, the taxes imposed by England on its colonies there led to increasing discontent, becoming a major factor causing the American revolution. Nevertheless, whatever its defects, mercantilism contributed to the growth of the modern nation-state, as well as to the rapid industrialization of Europe, and it was not until the late eighteenth century that economic theorists like Adam Smith, recognizing that the development of industrial technology and the bourgeoisie required a thorough revision of economic thought, replaced it with the modern concept of capitalism, with its doctrine of laissez faire, which effected a radical separation of economic affairs from political domination.

While Europe was undergoing these political and economic changes, a quiet, but eventually more important change was also going on—the rise of modern science. Begun as early as the Renaissance period by the astronomers, with Copernicus (1473–1543) leading the way, the scientific revolution, dominated by towering figures like Bacon, Kepler, Galileo, Descartes, Leibniz, and Newton, reached its zenith in the seventeenth century. Most of the major scientific advances of the time, like Newton's theory of universal gravitation, have become so much a part of our intellectual heritage that it would be superfluous to detail them here. However, something should be said of an equally important aspect of modern science—its method. Although scientific methodology was not invented in this period, earlier applications had been sporadic and only minimally articulated and put into practice. Modern scientific method is composed of two main constituents. First is the appeal to empirical evidence. If a scientific theory is to be considered seriously, its originator must be able to produce evidence in its support observable and confirmable by any qualified in-

vestigator. Considered a commonplace now, this requirement is a result mainly of the success of science itself; in the seventeenth century, it was a bold and, to some, a dangerous innovation. The second major component of scientific method is the use of mathematics. Mathematics guarantees precision, facilitates the prediction of future events, and gives scientists a powerful tool with which to develop new theories. The seventeenth century saw the birth of analytic geometry, which was the discovery of the French philosopher, René Descartes, as well as the emergence of calculus, independently developed by Newton and the German mathematician and philosopher, G. W. Leibniz.

The rise of modern science brought in its wake a reaction that was almost predictable—the opposition of the religious community. In the seventeenth century the great battle centered on the question of the place of the earth in the solar system. Beginning with Copernicus astronomers had amassed overwhelming evidence that the earth, like the rest of the planets, rotated about the sun (the heliocentric theory). But the hierarchy of the church believed it was committed to the view, based mainly on an appeal to Biblical authority, that the sun rotated about the earth (the geocentric theory). The most famous victim of the often-bitter controversy was the great Italian scientist, Galileo, who was forced by ecclesiastical authorities to make a public denial of a scientific truth that he had himself done much to establish.

But the scientific revolution of the seventeenth century had other, positive effects. Perhaps the most important was the development of modern technology, first evidenced in the Industrial Revolution that got underway in the eighteenth century. Although technology had made a few advances during the Middle Ages, these were minor and most of the energy needed to accomplish work had the same source as it had had from time immemorial—animal and human muscles. But, building on previous scientific discoveries, inventors of the eighteenth century found in steam a new and enormous source of power. Steam engines were developed that could be put to work in innumerable ways—for example, to power looms that produce cloth. In the burgeoning industrial cities, like Manchester in England, mills were constructed that processed the raw cotton and other fibers that came mainly from the colonies, turning these into clothing and other finished products. With the development of railroads and, later, of steamships, these products could be distributed quickly and economically throughout the world. The great prophet of the Industrial Revolution was the Englishman, Francis Bacon, who, even before the scientists had made their epochal discoveries, claimed that "knowledge is power." To his mind an understanding of the nature of the world, whatever its own value might be, found its primary justification in the practical fruits such an understanding would yield. If we know the laws governing nature, we can put this knowledge into effect and nature herself to work on our behalf.

In its transformation of European technology, the scientific revolution gave rise to more than the Industrial Revolution. Intellectual leaders, aware that the changes the scientists had wrought resulted from the application of human rea-

son to an understanding of nature, argued that, through a similar application of reason to all areas of life—social, economic, political, and others—humanity could resolve its problems and civilization advance to a higher level than ever before. Led by people like Voltaire and the French *philosophes*, the eighteenth century proclaimed the "Age of Reason." In place of "superstition" which, they believed, had controlled society for millennia, they would liberate it through rationality. In this they had some remarkable successes. Perhaps the most important were in politics and occurred in the North American colonies and France in the late eighteenth century. There modern democracy was born on the basis of an appeal to reason. As Thomas Jefferson put it in the Declaration of Independence, "We hold these truths to be self-evident . . ." They were, in other words, not conclusions based on an appeal to authority but rather truths which we, as rational beings, can directly recognize. Technological advance, increasing wealth, and the development of democracy in turn led to a growing spirit of optimism in European society. Progress actually being made brought into prominence the concept of "progress" itself. The world was getting better, intellectuals like the Marquis de Condorcet proclaimed, and, if reason were allowed to control the future of society, the improvement would continue into the indefinite future.

But the Age of Reason was not without its detractors. As the eighteenth century wore on the Scottish philosopher and historian David Hume questioned the ability of reason to solve any problems whatsoever and maintained that humanity would be well advised to turn its affairs over to the control of feeling. And the Swiss-French writer Jean Jacques Rousseau rose up against the sophistication and artificiality of Enlightenment society to champion a return to nature, glorifying "the noble savage" whom Europeans believed they had discovered in the original inhabitants of the "new world." Enlightenment rationalism gave way before a movement that was to sweep through Europe toward the close of the century, particularly in literature and the arts—romanticism.

Francis Bacon

Francis Bacon (1561–1626) was a prophet of the scientific revolution of the seventeenth century—a revolution that transformed the foundations of European thought and ushered in the Age of Science. Like the prophets of the Old Testament, Bacon concentrated first on the evils around him. Although for him these evils were intellectual rather than moral or religious, he couched his criticism of the science of his day in biblical terms. Like the medieval schoolmen, the leading thinkers of his age, he argued, had wandered from the path of truth into the worship of idols. In the selection that follows he lists four such idols, to which he gives the picturesque titles of Idols of the Tribe, the Cave, the Market-place, and the Theatre. To avoid falling prey to these idols, people must turn their backs on scholastic philosophy and develop a new science based on a true knowledge of the workings of nature. Such knowledge, Bacon held, was to be derived from careful and continued observation of specific natural occurrences. This observational method, which he called induction, is explained and illustrated in his major work, the *Instauratio Magna* (Great Renewal). In his opinion, this treatise represented a "total reconstruction of the sciences, arts, and all human knowledge."

Although he was a prophet of the new science, Bacon himself did not fully grasp the nature of the method that men like Galileo and Newton were to employ in their work. His concept of induction fails to take adequate account of two other basic elements of the modern scientific method—the formulation of hypotheses and the deduction and verification of their consequences.

Living at the height of the English Renaissance (which followed by a hundred years the Italian Renaissance), Bacon exemplified many of the attitudes found in previous Renaissance writers: the rejection of the medieval world-view as pernicious error, the somewhat naive optimism about his ability to take the whole of human knowledge as his sphere of activity, and the faith that he stood on the threshold of a new intellectual era. Finally, in his assertion that "knowledge is power" Bacon repeated a central concept of Machiavelli—but with a significant difference. Machiavelli was concerned with the power that a prince could wield over his subjects, but Bacon was concerned with the power, derived from scientific under-

standing, that all humans could wield over nature.

The following selection is from *Novum Organum* (The New Organon), which forms a part of *Instauratio Magna*.

Novum Organum

Aphorisms Concerning the Interpretation of Nature and the Kingdom of Man

I

Man, being the servant and interpreter of Nature, can do and understand so much and so much only as he has observed in fact or in thought in the course of nature: beyond this he neither knows anything nor can do anything.

II

Neither the naked hand nor the understanding left to itself can effect much. It is by instruments and helps that the work is done, which are as much wanted for the understanding as for the hand. And as the instruments of the hand either give motion or guide it, so the instruments of the mind supply either suggestions for the understanding or cautions.

III

Human knowledge and human power meet in one; for where the cause is not known the effect cannot be produced. Nature to be commanded must be obeyed; and that which in contemplation is as the cause is in operation as the rule.

IV

Towards the effecting of works, all that man can do is to put together or put asunder natural bodies. The rest is done by nature working within.

VI

It would be an unsound fancy and self-contradictory to expect that things which have never yet been done can be done except by means which have never yet been tried.

XI

As the sciences which we now have do not help us in finding out new works, so neither does the logic which we now have help us in finding out new sciences.

XII

The logic now in use serves rather to fix and give stability to the errors which have their foundations in commonly received notions than to help the search after truth. So it does more harm than good.

XVIII

The discoveries which have hitherto been made in the sciences are such as

"Novum Organum," in *The Works of Francis Bacon*, trans. J. Spedding.

lie close to vulgar notions, scarcely beneath the surface. In order to penetrate into the inner and further recesses of nature, it is necessary that both notions and axioms be derived from things by a more sure and guarded way; and that a method of intellectual operation be introduced altogether better and more certain.

XIX

There are and can be only two ways of searching into and discovering truth. The one flies from the senses and particulars to the most general axioms, and from these principles, the truth of which it takes for settled and immovable, proceeds to judgment and to the discovery of middle axioms. And this way is now in fashion. The other derives axioms from the senses and particulars, rising by a gradual and unbroken ascent, so that it arrives at the most general axioms last of all. This is the true way, but as yet untried.

XXII

Both ways set out from the senses and particulars, and rest in the highest generalities; but the difference between them is infinite. For the one just glances at experiment and particulars in passing, the other dwells duly and orderly among them. The one, again, begins at once by establishing certain abstract and useless generalities, the other rises by gradual steps to that which is prior and better known in the order of nature.

XXXI

It is idle to expect any great advancement in science from the superinducing and engrafting of new things upon old. We must begin anew from the very foundations, unless we would revolve forever in a circle with mean and contemptible progress.

XXXV

It was said by Borgia of the expedition of the French into Italy, that they came with chalk in their hands to mark out their lodgings, not with arms to force their way in. I in like manner would have my doctrine enter quietly into the minds that are fit and capable of receiving it; for confutations cannot be employed, when the difference is upon first principles and very notions and even upon forms of demonstration.

XXXVI

One method of delivery alone remains to us; which is simply this: we must lead men to the particulars themselves, and their series and order; while men on their side must force themselves for awhile to lay their notions by and begin to familiarize themselves with facts.

XXXVII

The doctrine of those who have denied that certainty could be attained at all, has some agreement with my way of proceeding at the first setting out; but they end in being infinitely separated and opposed. For the holders of that doctrine assert simply that nothing can be known; I also assert that not much can be known in nature by the way which is now in use. But then they go on to destroy the authority of the senses and understanding; whereas I proceed to devise and supply helps for the same.