CHAPTER 26

Nineteenth-Century European Civilization

TIME LINE

1830-1842	Auguste Comte publishes *The Course of Positive Philosophy*
1838	Charles Dickens publishes *Oliver Twist*
1848	William Makepeace Thackeray publishes Vanity Fair
1853-1855	Count Arthur de Gobineau publishes the *Essay on the Inequality of the Human Races*
1857	Gustave Flaubert publishes *Madame Bovary*
1859	Charles Darwin publishes *On the Origin of Species*
1860-1896	Herbert Spencer publishes *Synthetic Philosophy*
1861	Ivan Turgenev publishes *Fathers and Sons*
1864	Pope Pius IX issues the *Syllabus of* Errors
1865-1869	Leo Tolstoy publishes *War and Peace*
1866	Feodor Dostoyevsky publishes *Crime and Punishment*
1872	Friedrich Nietzsche publishes *The Birth of Tragedy*
1874	The Impressionists hold their first group exhibition in Paris
1879	Henrik Ibsen publishes *A Doll's House*
1895	Wilhelm von Roentgen discovers X rays
1898	Marie Curie discovers radium
1900	Max Planck sets forth the quantum theory
1904	Anton Chekhov publishes *The Cherry Orchard*
1905	Albert Einstein proposes the theory of relativity

The nineteenth century was a productive period in European civilization. In science, Charles Darwin introduced the theory of evolution in the study of biology, while a new physics emerged to challenge the conclusions of the great seventeenth-century scientists. The idea of evolution proved particularly controversial, and an intense debate developed between the advocates of the evolutionary theory and

the defenders of traditional religious doctrines. Philosophy took on a more pessimistic quality, while psychology developed as a serious field of study.

In literature, the movements of Realism and Naturalism emerged, while Impressionism and its successors produced a revolution in art.

Science and Religion

Darwin and the Theory of Evolution

During the nineteenth century, developments in biology had a powerful impact on Western thought. Charles Darwin (1809-1882), a British scientist who was fascinated by the world of plants and animals, advanced his theory of biological evolution.

In *On the Origin of Species* (1859), Darwin repudiated the theory of the special creation of each species, contending instead that all existing forms of life had evolved out of earlier forms. He also argued that life involves a constant struggle for existence, in which, as a result of a process of natural selection, the fittest survive. The organisms that survive because of their favorable characteristics then pass these characteristics on to subsequent generations. In time, an entirely new organism evolves. In *The Descent of Man* (1871), Darwin applied the concept of evolution to human beings.

Scientists accepted the fundamental validity of the theory of evolution, although some of Darwin's particular conclusions were subsequently disproved.

The Cult of Science

Huxley

Thomas Huxley (1825-1895), a British biologist, became a fervent advocate of the theory of evolution. His attacks on religious leaders who rejected the theory won him the nickname of "Darwin's bulldog."

For Huxley and those who thought as he did, science appeared to be revealing all the secrets of the universe. Through their understanding and application of science, human beings could continue their march of progress.

Comte

The cult of science was reflected in the doctrine of positivism, developed by the French thinker Auguste Comte (1798-1857). In *The Course of Positive Philosophy* (1830-42), Comte set forth his view that humanity had passed through two earlier stages in its history, the religious and metaphysical phases, and had now entered the third stage, the scientific or positive stage. In this third phase, humanity would be concerned with the scientific collection of information rather than with fruitless speculation about first causes, what had once been called God. In particular, Comte believed, the methods of science should be applied to the study of society. He introduced the term "sociology" to describe this study.

Religion

Scientific ideas, especially the theory of evolution, and the cult of science, the belief that science held the answers to all of humanity's questions, promoted the growth of a spirit of skepticism in religion. In addition, scholars brought the methods of scholarship to the study of the Bible and the early development of Christianity. This movement of the higher criticism, as it was known, challenged many traditionally accepted beliefs.

Strauss and Renan

David Friedrich Strauss (1808-1874), a German Lutheran scholar, in his *Life of Jesus* (2 vols., 1835-36), rejected the divinity of Jesus Christ, while later in the century, Ernest Renan (1823-1892), the French author of a *Life of Jesus* (1863), rejected the belief that Jesus had performed miracles or had been raised from the dead.

Protestant Reactions

Protestant Christians offered varying reactions to the new ideas. Some, known as Fundamentalists, continued to insist on the literal truth of the Bible and rejected any scientific or scholarly ideas that were inconsistent with biblical teaching. More liberal Protestants, the Modernists, accepted the teachings of science and the higher criticism and modified their religious ideas accordingly.

Still others sought a compromise between science and religion, interpreting the Bible in figurative terms where it conflicted directly with the teachings of science.

Jewish Reactions

Science and scholarship had a similar impact on Judaism. While Orthodox Jews maintained their traditional religious beliefs and practices, the movement of Reform Judaism emerged as the Jewish equivalent of Modernism. A third movement, Conservative Judaism, sought to maintain what it regarded as the essentials of the Jewish tradition, while acknowledging the validity of modem learning.

Roman Catholic Reactions

The Roman Catholic Church reacted at first with hostility to the new political, economic, scientific, and religious ideas. Pope Pius IX (r. 1846-1878) presented the *Syllabus of Errors* in his encyclical letter *Quanta Cura* (1864). The pontiff condemned materialism, liberalism, freedom of speech, the separation of church and state, religious toleration, secular education, and civil marriage. In 1870, the First Vatican Council acted to strengthen the position of the pope as the head of the Roman Catholic Church by proclaiming the dogma of papal infallibility. According to this dogma, papal statements are free of error when the pope speaks *ex cathedra* (officially) on issues of faith and morals.

Pope Leo XI11 (r. 1878-1903) proved more moderate than his predecessor. In addition to advocating economic and social reform (see Chapter 21), Leo XI11 acknowledged the validity of much of the teaching of modem science and scholarship. In particular, he held that the theory of evolution was not inconsistent with the Catholic faith, and therefore the Genesis account of creation could be understood figuratively. Nevertheless, the pope did reaffirm traditional Catholic doctrine and promoted, in particular, the study of the thought of the medieval theologian St. Thomas Aquinas.

Social Darwinism

In his *Synthetic Philosophy* (10 vols., 1860-1896), the British thinker Herbert Spencer (1820-1903) sought to apply Darwin's theory of evolution to virtually every aspect of human society. He contended that in human society, just as in nature, life involves a struggle for existence as a result of which the fittest survive. The doctrine of Social Darwinism provided support for the economic practice of *laissez-faire*, which emphasized free competition and an absence of state intervention in the economy.

Racist Views

The theory of evolution was also used to defend doctrines of racial superiority. The white race dominated the world, the racists argued, because it was the fittest of the races and had triumphed in the struggle for survival.

In his *Essay on the Inequality of the Human Races* (1853-55), Count Arthur de Gobineau (1816-1882), a French writer, asserted the superiority of the white race and contended that within the white race, the Germanic "Aryans" were superior to Slavs and Jews.

Similar racist views were expressed by Houston Stuart Chamberlain (1855-1927), an English-born German writer. In his *Foundations of the Nineteenth Century* (1899), Chamberlain extolled the virtues of the Germanic race and denounced what he considered the racial inferiority of the Jews.

The New Physics

During the late nineteenth century, physicists began to question the mechanistic view of the universe that Sir Isaac Newton had set forth in the late seventeenth century (see Chapter 11). In Newton's view, the universe was a perfect and harmonious machine that operated in accordance with natural laws.

Atomic Theory

Nineteenth-century science promoted a revival of the atomic theory, the theory that all matter is composed of atoms. John Dalton (1766-1844), a British scientist, concluded that chemical

elements were distinguished by the weight of the atoms that composed each element. About 1870, Dmitri I. Mendeleyev (1834-1907), a Russian chemist, devised the periodic chart showing the atomic weights of all known elements. Mendeleyev predicted the existence of three unknown elements. By 1886, all three had been identified.

Discovery of Electrons

During the 1890s, Joseph Thomson (1856-1940), a British physicist, and Hendrik Lorentz (1 853-1928), a Dutch physicist, working independently of one another, demonstrated that atoms are composed of particles that Lorentz called electrons.

Discoveries in Radiation

In 1895, Wilhelm von Roentgen (1845-1923), a German physicist, discovered X rays. Marie Curie (1867-1939, the Polish-born wife of the French physicist Pierre Curie (1859-1906), discovered radium in 1898, and the Curies conducted important research into radioactivity.

Rutherford's Atomic Research

The atomic theory made further advances as a result of the work of Sir Ernest Rutherford (1871-1937), a British scientist who did basic research in radioactivity. Early in the twentieth century, Rutherford presented the view that each atom resembled a miniature solar system where the electrons revolved around the nucleus.

Planck's Quantum Theory

The idea also emerged that neutrons and electrons were not matter but positive and negative charges of electricity. In 1900,the German physicist Max Planck (1858-1947) set forth the quantum theory. Planck asserted that atoms absorb and emit energy in a series of discrete units, which he called quanta (singular quantum), rather than in a continuous flow, as traditional physics taught. The quanta were so small and were moving so rapidly that it was impossible to determine their exact position. One could state only the probability of their being in a specific place. The implication of

the quantum theory was that objective scientific observation could not, in fact, reveal with certainty the ultimate secrets of nature.

Einstein's Theory of Relativity

In 1905, the German physicist Albert Einstein (1879-1955) proposed his theory of relativity. Einstein rejected Newton's belief that space, time, and motion are absolute. Instead, he argued, they are relative to one another and to the observer. Objects thus have not only the three dimensions of length, width, and depth, but also the fourth dimension of time. Einstein spoke of the space-time continuum.

Equivalence of Mass and Energy

Einstein also contended that mass is a variable, with the mass of a body depending on its rate of motion. A body's mass increases as its speed increases, with the speed of light providing a theoretical limit. In addition, Einstein proposed the idea of the equivalence of mass and energy, which he expressed in his famous formula $E=mc^2$. In this formula, E represents energy, while m is mass and c is the speed of light. According to this formula, if matter could suddenly be transformed into energy, only a small quantity of matter would be required to produce a great quantity of energy. This concept received a practical expression in the first atomic explosion in 1945.

Implications of the New Physics

The new physics did much to undermine the cult of science. Scientists were compelled to acknowledge the fact that they did not possess, nor could they hope to possess, absolute knowledge. They could speak of probability but not of certainty. This realization had implications that extended far beyond the realm of natural science. Summing up the implications of the discoveries of modem physics, Jacob Bronowski, a historian of science, remarked in *The Ascent of Man* (1973):

"One aim of the physical sciences has been to give an exact picture of the material world. One achievement of physics in the twentieth century has been to prove that that aim is unattainable.... There is no absolute knowledge. And those who claim it, whether

they are scientists or dogmatists, open the door to tragedy. All information is imperfect. We have to treat it with humility. That is the human condition; and that is what quantum physics says. I mean that literally."

Philosophy and Psychology

Philosophy

While the nineteenth-century cult of science expressed an almost unbounded faith in human progress, philosophy sounded a more pessimistic note.

Schopenhauer

In *The World as Will and Idea* (1818), the German philosopher Arthur Schopenhauer (1788-1860) expressed the view that the dominant force in human existence, as in all animal life, is the will to survive, rather than reason, as the Enlightenment had believed. The world is the scene of strife and conflict where the strong devour the weak. The path to human happiness, Schopenhauer believed, involves an ascetic withdrawal from worldly concerns in order to escape this cruel competition.

Nietzsche

In works such as *The Birth of Tragedy* (1872), *Thus Spake Zarathustra* (1883-91), and *Beyond Good and Evil* (1886), the German philosopher Friedrich Nietzsche (1844-1900) exalted the will, believing that the assertion of the will provides life with a meaning. Nietzsche was vehement in his denunciation of Christianity and its "slave morality," which promoted such ideas as humility, pity, and altruism. Instead, he stressed the idea of the heroic leader, the superman, who was free of rules and restrictions, who desired to live at a more intense level of experience than ordinary humans, and who possessed a passion to dominate. Nietzsche presented an outspoken challenge to the fundamental values of Western civilization, but he offered little that was positive in their place. Clearly, European philosophy had moved far away from the optimistic, rationalist thought of the Enlightenment.

Psychology

In the late nineteenth century, the new science of psychology emerged to deal with the human mind.

Pavlov and Behaviorism

Ivan Pavlov (1849-1936), a Russian physiologist and psychologist, undertook research with dogs that led to his discovery of the conditioned reflex, which suggested that many responses are mechanical reflexes produced by subconscious stimuli. Pavlov and his followers established a school of psychological thought known as behaviorism, which emphasized the study of the human being as a physiological organism.

Freud and Psychoanalysis

In contrast to the behaviorists, Sigmund Freud (1856-1939), a Viennese physician, emphasized the importance of the unconscious mind in determining human behavior. Freud believed that human behavior is not fundamentally rational but is instead controlled by unconscious drives, especially the sex drive. In early childhood, he maintained, these drives were often suppressed, resulting in frustration and anger. In turn, this frustration and anger could cause neuroses. In an effort to cure his patients, Freud developed the system known as psychoanalysis, which enabled the patient to delve into his or her unconscious and discover the causes of neurotic behavior.

Literature, Art, and Music

Literature

The nineteenth century was the great age of the novel as a literary form. Many novelists strove, in particular, to present realistic portraits of society, giving rise to a movement known as Realism.

English Novelists

Major English novelists included William Makepeace Thackeray (1811-1863), Charles Dickens (1812-1870), and Thomas Hardy (1840-1928). In *Vanity Fair* (1848), Thackeray

presented a fascinating portrayal of upper-middle-class London society at the beginning of the nineteenth century. In novels such as *Oliver Twist* (1838), *David Copperfield* (1850), and *Hard Times* (1854), Dickens demonstrated elements of both Romanticism and Realism. Dickens was critical of the bourgeoisie, whose influence was increasing in British life, and he also revealed the hardships endured by the urban workers during the first generations of the industrial revolution. Hardy's powerful realistic novels showed none of the sentimentality of Dickens. In such works as The Return of the Native (1878), *The Mayor of Casterbridge* (1886), *Tess of the D'Urbervilles* (1891), and *Jude the Obscure* (1895), Hardy expressed the view that human beings are ultimately the victims of fate.

French Novelists

Gustave Flaubert (1821-1880) and Anatole France (1844-1924) emerged as major French novelists. Flaubert's masterpiece, *Madame Bovary* (1857), is often described as the first great achievement of literary realism. Regarded in its time as a scandalous novel, *Madame Bovary* portrayed the despair leading to adultery of the wife of a small-town physician. Anatole France satirized both Christianity and bourgeois society in novels such as *Penguin Island* (1908) and *The Revolt of the Angels*, (1914).

Russian Novelists

For Russian literature, the nineteenth century was a time of particular genius. Leo Tolstoy (1828-1910) is best known for *War and Peace* (1865-69), an epic novel set in the time of Napoleon's invasion of Russia. In *Anna Karenina* (1875-77), Tolstoy presented a realistic portrayal of life in the Russian capital of St. Petersburg.

Other major Russian writers included Ivan Turgenev (1818-1883), Feodor Dostoyevsky (1821-1881), and Anton Chekhov (1860-1904). In *Fathers and Sons* (1861), Turgenev portrayed the conflict between the conservative older generation of Russians and the younger generation who had embraced the radical philosophy of nihilism. Dostoyevsky, a fervent Russian nationalist and a master

of psychological analysis, set forth his mystical belief that humanity could be purified only through suffering in such powerful novels as *Crime and Punishment* (1866), *The Idiot* (1868), and *The Brothers Karamazov* (1879-80). Chekhov wrote realistic plays about the life of the provincial gentry in the years before World War I. Chekhov's better-known plays include *The Sea Gull* (1896), *Uncle Vanya* (1899), *The Three Sisters* (1901), and especially *The Cherry Orchard* (1904). Chekhov's plays were produced on the stage of the Moscow Art Theatre under the direction of Konstantin Stanislavsky (1863-1938).

Naturalism

The final years of the nineteenth century produced the literary movement known as Naturalism. Naturalistic writers focused their attention on social evils, often describing the seamy side of life in considerable detail. In France, Émile Zola (1840-1902) wrote about the social problems of an industrial society in such novels as *Nana* (1 880), which dealt with prostitution, and *Germinal* (1885), which concerned the miserable lives of coal miners.

The Norwegian playwright Henrik Ibsen (1828-1906) attacked the values of bourgeois society. In *A Doll's House* (1879), Ibsen offered a powerful statement in support of women's rights, while *An Enemy of the People* (1882) told the story of a town rising up against a physician who revealed that the spa on whose waters the town depended for its prosperity were contaminated.

Art

Impressionism

In the late nineteenth century, a revolution in art was begun by the Impressionists, who held their first group exhibition in Paris in 1874. The Impressionists sought to reveal in their paintings immediate sense impressions of reality. Impressionism flourished especially in France in the work of such painters as Édouard Manet (1832-1883), Camille Pissarro (1830-1903), Edgar Degas (1834-1917), Alfred Sisley (1839-1899), Claude Monet (1840-1926), and Auguste Renoir (1841-1919).

Post-Impressionism

The freedom of artistic expression pioneered by the Impressionists encouraged the development of Post-Impressionism. Some Post-Impressionists, such as Paul Cézanne (1839-1906), emphasized formal structure, while others, such as Paul Gauguin (1848-1903) and Vincent van Gogh (1853-1890), experimented with the expressive possibilities of form and color.

Fauvism and Cubism

On the eve of World War I, the revolutionary developments in art continued in the work of Henri Matisse (1869-1954), a French artist, and the Spaniard Pablo Picasso (1881-1973). Matisse was the founder of a movement known as Fauvism, which was characterized by the use of bold and often discordant colors, while Picasso pioneered in the development of Cubism, which applied a geometric approach to the portrayal of the human figure.

Sculpture

In sculpture, Auguste Rodin (1840-1917), was the dominant figure of the late nineteenth century, introducing impressionistic elements into sculpture. His major works include *The Thinker*, *The Burghers of Calais*, and statues of the novelists Honoré de Balzac and Victor Hugo.

Music

Romanticism

The romantic tradition in music continued in the late nineteenth century in the work of several major composers, including the French composer Camille Saint-Saens (1835-1921) and the Russian Peter Tchaikovsky (1840-1893), who presented both romantic and national themes in his work.

Nationalism

Other composers were heavily influenced by national traditions of folk music, including the Czechs Frederick Smetana (1824-1884) and Anton Dvorak (1841-1904), the Russian Nicholas Rimsky-Korsakov (1844-1908), the Norwegian Edvard Grieg (1843-1907), and the Finn Jan Sibelius (1865-1957).

Innovations

The late nineteenth century produced a series of important musical innovators. The French composer Claude Debussy (1862-1918) wrote sensitive music inspired by the Impressionist painters, while the German operatic composer Richard Strauss (1864-1949) was regarded as the chief heir of Richard Wagner. Igor Stravinsky (1882-1971), a pupil of Rimsky-Korsakov at the St. Petersburg conservatory, experimented with dissonance. Three of Stravinsky 's ballets – *The Firebird* (1910), *Petrushka* (191l), and *The Rite of Spring* (1913) – received their first performances before the outbreak of World War I. Arnold Schoenberg (1874-1951), an Austrian composer, began the development of atonal music.

The late nineteenth century brought increasing diversity and uncertainty to European civilization. Science continued to reveal the secrets of the physical universe and in so doing, undermined faith in traditional religious beliefs. Yet science also revealed that it could not produce the ultimate answers to humanity's questions. In their repudiation of the view that humans are fundamentally rational beings, philosophy and psychology contributed further to the growing atmosphere of uncertainty.

Realism and Naturalism in literature, for their part, also emphasized the irrational elements in human nature, while innovative movements in art and music challenged and often defied traditional standards.

To describe European civilization in the late nineteenth century as a disintegrating civilization may be an exaggeration, but clearly its integrating elements were being eroded.