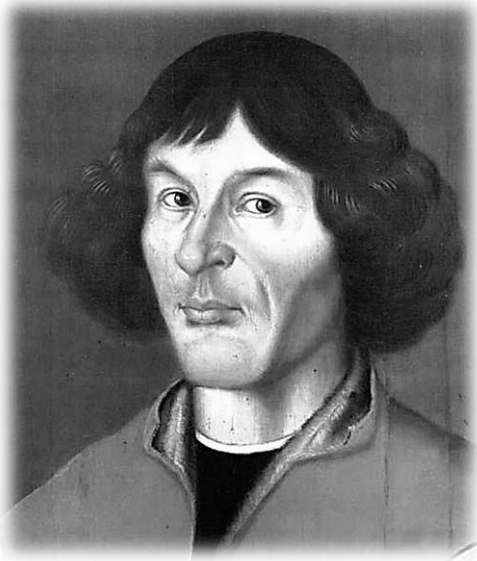


Nicolaus Copernicus



Nicolaus Copernicus was an astronomer, mathematician, translator, artist, and physicist among other things. He is best known as the first astronomer to posit the idea of a heliocentric solar system—a system in which the planets and planetary objects orbit the sun. His book, *De revolutionibus orbium coelestium*, is often thought of as the most important book ever published in the field of astronomy. The ensuing explosion of research, observation, analysis, and science that followed its publication is referred to as the Copernican Revolution.

Copernicus was born February 19, 1473, in what is now northern Poland. He was the son of wealthy and prominent parents and had two sisters and a brother. Sometime between 1483 and 1485, his father died, and he was put under the care of his paternal uncle, Lucas Watzenrode the Younger. Copernicus studied astronomy for some time in college but focused on law and medicine. While continuing his law studies in the city of Bologna, Copernicus became fascinated in astronomy after meeting the famous astronomer Domenico Maria Novara. He soon became Novara's assistant. Copernicus even began giving astronomy lectures himself. After completing his degree in canon (Christian) law in 1503, Copernicus studied the works of Plato and Cicero concerning the movements of the Earth. It was at this time that Copernicus began developing his theory that the Earth and planets orbited the sun. He was careful not to tell anyone about this theory as it could be considered heresy (ideas that undermine Christian doctrine or belief).

In the early 1500s, Copernicus served in a variety of roles for the Catholic Church, where he developed economic theories and legislation. Astronomy became little more than a hobby for Copernicus, who never worked professionally in the field. By 1514, however, Copernicus became so convinced in the theory of a heliocentric (sun-centered) solar system that he began to share his notes with friends. Nearly twenty years later, after an Italian astronomer gave a lecture outlining Copernicus's ideas, he was ready to deliver an official book about his theory. In 1542, the book was finally published. The book was called *De revolutionibus orbium coelestium* (On the Revolutions of Celestial Spheres). In the book, Copernicus explained that the Earth rotated along its axis and orbited the sun once per year. He correctly positioned all of the known planets at the time and explained why the seasons occurred. He also argued that the distance from the Earth to the sun is much less than the distance from the Earth to other stars. Copernicus died a year later, in 1543. Surprisingly, his work caused little immediate controversy (which is one reason scholars believe Copernicus was so reluctant to have his work published). It was, however, condemned by the Roman Catholic Church in 1616, which accused Galileo of heresy for supporting Copernicus's theories in 1633. Galileo was forced to stay in his house for the rest of his life. The condemnation was officially lifted in 1835.

The ideas of Nicolaus Copernicus were instrumental in the evolution of the field of astronomy. Virtually every notable astronomer who proceeded him was vastly influenced by his theories. Galileo, Johannes Kepler, and others were among the astronomers who sought to add to and improve upon his work.

Johannes Kepler



Johannes Kepler was born on December 27, 1571, in Weil, Germany. He was the son of Heinrich and Katharina Guldenmann Kepler. His father was a mercenary (a soldier serving only for money). Although a member of the Protestant faith, his father helped put down a Protestant uprising in the Low Countries (Belgium, Holland, and Luxembourg). Kepler's parents allowed him to watch the great comet of 1577 and an eclipse (passing into shadow) of the Moon. Kepler was a sickly child but an excellent student. At thirteen he entered a religious training school at Adelberg, Germany.

Following Kepler's graduation from the University of Tübingen in 1591, he became interested in astronomy, particularly the theories of Nicolaus Copernicus (1473–1543), who stated that the Earth moved around the Sun in a circle. The University of Tübingen recommended Kepler for the post of the "mathematician of the province" in Graz, Austria. He arrived there in 1594 and began composition of the almanac, in which the major events of the coming year were predicted. His first almanac was a success.

The occurrence of two events that he had predicted, an invasion by the Turks and a severe winter, established his reputation. In 1597 Kepler married Barbara Muehleck. Of their five children only one boy and one girl reached adulthood.

Kepler sought the job of assistant to Tycho Brahe (1546–1601), astrologer (one who interprets the positions of stars and planets and their effect on human affairs) and mathematician to Rudolph II (1552–1612), in Prague, Czechoslovakia. Kepler took his new position in 1600. When Brahe died the following year, Kepler was appointed to replace him. His first job was to prepare Brahe's collection of studies in astronomy for publication, which came out between 1601 and 1602.

Kepler was also left in charge of Brahe's records, which forced him to make an assumption that led to a new theory about the orbits of all the planets. A difference between his theory and Brahe's data could be explained only if the orbit of Mars was not circular but elliptical (oval-shaped). This meant that the orbits of all planets were elliptical (Kepler's first law). This helped prove another of his statements. It is known as Kepler's second law, according to which the line joining a planet to the sun sweeps over equal areas in equal times in its elliptical orbit.

Kepler published these laws in his discussion of the orbit of the planet Mars, the *Astronomia nova* (1609). The two laws were clearly spelled out in the book's table of contents. They must have been seen by any careful reader alert enough to recognize a new idea of such importance. Still, the Italian astronomer Galileo Galilei (1564–1642) failed to use the laws in his printed works—although they would have helped his defense of Copernicus's ideas.

In 1611 Rudolph II stepped down from the throne, and Kepler immediately looked for a new job. He obtained the post of province mathematician of Linz, Austria. By the time he moved there in 1612 with his two children, his wife and his favorite son, Friedrich, were dead. Kepler's fourteen years in Linz were marked by his second marriage to Susan Reuttinger, and by his repeated efforts to save his mother from being tried as a witch.

Kepler also published two important works while in Linz. In the *Harmonice mundi* (1618) his third law was announced. It stated that the average distance of a planet from the sun, raised to the third power, divided by the square of the time it takes for the planet to complete one orbit, is the same for all planets. Kepler believed that nature followed numeric relationships since God created it according to "weight, measure and number." Kepler used the same idea in describing geometry (the study of points, lines, angles, and surfaces). Kepler's second work, the *Epitome astronomiae Copernicanae* (published 1618–21), proposed a physical explanation of the motions of planets, namely, "magnetic arms" extending from the sun.

Kepler wandered over Europe in the last three years of his life. He was in Ulm, Germany, when his *Tabulae Rudolphinae* (1628) was published. It not only added the positions of over two hundred stars to those contained in Brahe's published works, but it also provided planetary tables that became the standard for the next century. Kepler died on November 15, 1630. He was a unique symbol of the change over from the old to the new spirit of science.

Galileo Galilei



Galileo was an Italian scientist, astronomer, and physicist. His works and achievements are among the most important in the history of science.

Galileo was born in Pisa, in the Tuscany region of Italy, in 1564. He was the first of six children. He was homeschooled through his early years and later attended the University of Pisa. At Pisa, Galileo first discovered the isochronism (how the time period it takes the pendulum to swing is independent of the arc of its swing) of the pendulum while observing a swinging lamp in the Cathedral of Pisa. This discovery would serve him well fifty years in the future when he developed the astronomical clock. Galileo soon became bored with his studies and eventually dropped out of the university.

Nevertheless, he was offered a position as a mathematics professor there in 1589 after lecturing about the approximate size of Lucifer (from Dante's *Inferno*) was about 2,000 arm lengths long, based on the author's comparison of the demon to the "cone" of St. Peter in Rome.

While teaching at Pisa, Galileo conducted a legendary experiment in which he challenged Aristotle's law that states that heavier objects fall at a faster rate than lighter objects. According to legend, Galileo went to the top of the Tower of Pisa and dropped various balls of different material, size, and weight from the top. When they all hit the ground at the same time, Galileo had proven Aristotle wrong. Galileo failed to publish his results, and because he was disliked by his colleagues, the University of Pisa failed to renew his contract as professor.

Galileo then joined the faculty at the University of Padua and taught geometry, mechanics, and astronomy. It was at Padua where he made many of his amazing discoveries. In 1596, Galileo invented a military compass that could be used to properly aim cannonballs. In 1609, he gained word that a Dutch spectacle-maker had invented a device called a spyglass. The spyglass (later called a telescope) made distant objects appear much closer. Before the Dutch inventor could secure a patent, Galileo quickly constructed his own 3-power telescope, and then a 10-power telescope to present to the senate in Venice. Galileo then used his telescope to document the surface of the moon, which he described as bumpy, cratered, and uneven. Galileo next created a 30-power telescope and observed Jupiter and three of its moons that seemed to rotate around the giant planet. Based on these observations, Galileo wrote a short book called *The Starry Messenger* in which he upheld the Copernican theory that the Earth and solar system rotated around the sun. The book caused quite a stir among powerful members of the Catholic Church, who believed the solar system rotated around the earth. Galileo was subsequently prohibited from teaching the Copernican theory.

Galileo soon began taking up other scientific interests. In one particular paper he published, Galileo explained theories on ocean tides by using three characters engaging in a "dialogue." One character supported Galileo's views, another character was open-minded, and the last was stubborn and foolish and represented Galileo's enemies. He then wrote a similar book about the Copernican theory. Although the "dialogues" were very popular with the Italian public, the Pope believed that he was the model for the stubborn and foolish enemy of Galileo. The Pope ordered all of the "dialogues" banned and demanded that Galileo be tried for teaching the Copernican theory. Galileo was sentenced to house arrest and forced to confess that his views were flawed. He died in Florence in 1642.

Sir Isaac Newton



Sir Isaac Newton was born in the county of Lincolnshire, England in 1643. His father died just months before he was born, and when he was three years old, his mother left him in the care of his grandmother. Isaac was always a top student, and went off to the University of Cambridge at age 19. While at Cambridge, Newton was influenced by the writings of Galileo, Nicholas Copernicus, and Johannes Kepler. By 1665, Newton began developing a mathematical theory that would lead to the development of calculus, one of the fundamental branches of mathematics. Newton would go on to discover other important math theories such as Newton's Identities, and Newton's Method.

In 1670, Newton moved on to the study of optics and developed theories relating to the composition of white light and the spectrum of colors. In one of his famous experiments, he refracted white light with a prism, resolving it into its constituent colors: red, orange, yellow, green, blue, and violet. As a result of his experiments, he developed Newton's Theory of Color, which claimed that objects appear certain colors because they absorb and reflect different amounts of light. Newton was the first scientist to maintain that color was determined solely by light, and his findings created much controversy. Most scientists thought that prisms colored light. Nevertheless, Newton then created the world's first color wheel, which arranged different colors around the circumference of a circle. He is also credited as the first scientist to explain the formation of a rainbow – from water droplets dispersed in the atmosphere. In 1679, Newton continued his work on gravitation and its effects on the planets.

In 1687, he published *Philosophiae Naturalis Principia Mathematica*. In this landmark work, Newton explained his three laws of motion, which included his theory on gravity. According to Newton, gravity is the reason that objects fall to the ground when dropped. Moreover, gravity is the reason why planets orbit the sun, while moons orbit planets, and why ocean tides exist. Newton's theories remain among the most important concepts in the history of science. There is some evidence that Newton's ideas concerning gravity were inspired by apples falling from trees. There is no evidence to suggest, however, that any of the apples hit him in the head (as cartoons and fables suggest). Below are Newton's three laws of motion: Newton's First Law (Law of Inertia) states that an object at rest tends to stay at rest and that an object in uniform motion tends to stay in uniform motion unless acted upon by an external force. Newton's Second Law states that an applied force on an object equals the time rate of change of its momentum. Newton's Third Law states that for every action there is an equal and opposite reaction.

Following the publication of his work, Newton became instantly famous throughout Europe. In the later years of his life he wrote several articles on interpretation of the bible. He was also appointed a member of the British Parliament and spent many years reforming the Royal Mint (coin making agency of Parliament). He died on March 20, 1727.

Francis Bacon



Francis Bacon was born into a prominent wealthy family in London, England, on January 2, 1561. He was the family's youngest son. Bacon's father was Sir Nicholas Bacon, who held the powerful government position of Lord Keeper of the Great Seal. His mother was Anne Cooke, a scholar, translator, and holder of strong Puritan beliefs. She tried hard to ensure that her children were as well-educated and as puritanical as she was. Anne Cooke's father had been tutor to King Henry the Eighth's son, who became King Edward the Sixth of England.

Bacon's education reflected his upper-class background. He was tutored at home until, aged 12, he entered the University of Cambridge, where he was again tutored privately. His lessons were conducted entirely in Latin, focusing on arithmetic, astronomy, geometry, grammar, music theory, logic, and rhetoric. Grammar, logic, and rhetoric were considered the most important subjects. Bacon earned a reputation as a serious boy who worked hard.

At Cambridge and other European universities the sciences, then known as natural philosophy, were dominated by the ancient works of Aristotle. Bacon began to think that, although Aristotle's intellect might have been formidable, his ideas and methods led nowhere. The unquestioning way scholars treated Aristotle's work had elevated him into the role of a dictator in all but name; a dictator who was now blocking the development of science.

Bacon produced a large body of scientific work. His science produced no world-changing results, but his guidelines for how science should be carried out did.

It was obvious to Bacon that Europe in the early 1600s enjoyed significantly better technology than the classical world had. For example, the printing press had democratized knowledge; gunpowder had made armies much more powerful; and the magnetic compass had facilitated better navigation and the discovery of the Americas.

He found it monumentally frustrating that people's intellectual understanding of the world had not progressed beyond that of the Ancient Greeks'. The attitude of most scholars in the early 1600s was, in short, that after you had mastered what Aristotle had to say about Nature, you knew everything. You could then go off and do something else.

Bacon's objective was to replace Aristotle and Plato's works, which were based on logical and philosophical arguments, with a new body of scientific knowledge secured by experiments and observations. He also objected to the tendency of Aristotle, Plato, and others including Pythagoras to mix scientific ideas with religious ideas. Bacon believed that the two should be kept separate. He was highly suspicious of people who said the laws of nature were there as part of a greater purpose. He thought they were there to be discovered and, if possible, exploited.

Bacon's most significant work, *Novum Organum (The New Tool)*, described what came to be called the Baconian Method of science. Published in 1620, it was part of his *Instauratio Magna* series of books.

Bacon married rather late in life, on May 10, 1606, at the age of 45. His bride was Alice Barnham. The marriage took place four days before her fourteenth birthday. Alice Barnham came from a wealthy family. Alice Barnham appears to have been a greedy woman, and for a time, her appetite for the frills of wealth was thoroughly satisfied. When Bacon was disgraced in 1621 she stuck with him at first, but in 1625 they broke up. The marriage had produced no children. Bacon died in the year after their separation.

He died because he spent too long working in low temperatures. This was the time of the "Little Ice Age" when winters in Europe were colder and longer than today. At the beginning of April 1626 snow still lay on the ground, and Bacon became inspired to carry out some experiments on food preservation by freezing a chicken. Unfortunately he became chilled by the cold conditions. He got a bad cough and his health then deteriorated rapidly.

Francis Bacon died of pneumonia, aged 65, on April 9, 1626, in Highgate, near London. He was buried at St Michael's Church in the town of St Albans, where his father had built a mansion and 2,000 acre estate.

Rene Descartes



René Descartes, also known as Cartesius, was a philosopher and mathematician; perhaps most notable for the Cartesian coordinate system, which was influential upon the development of calculus. He is considered as one of the most important and influential thinkers in human history and is sometimes called the founder of modern philosophy and the Father of Modern Mathematics. He also inspired his contemporaries and following generations of philosophers, leading them to form what we know today as Continental Rationalism, a philosophical position in the 17th and 18th centuries Europe.

He was born in France on March 31, 1596. At the age of eight he entered the Jesuit College at La Fleche and after graduation studied law at the University of Poitiers, graduating in 1616. He never practiced law, however; in 1618 he entered the service of Prince Maurice of Nassau, leader of the United Provinces of the Netherlands, with the intention of following a military career. He lived in Holland for 20 years where he wrote his first books starting from a short treatise on metaphysics which

was not published.

Often regarded as the first "modern" thinker for providing a philosophical framework for the natural sciences[?] as these began to develop, in his *Meditations on First Philosophy*, Descartes attempts to arrive at a fundamental set of principles that can be known as true without any doubt. To achieve this, he employs a method called Methodological Skepticism: he supposes that any idea which can be doubted is false.

He gives the example of dreaming: in a dream, one's senses perceive things that seem to be real, but do not actually exist. Thus, the data of the senses cannot be relied upon to be necessarily true. Or, perhaps there is an "evil genius": a supremely powerful and cunning being who sets out to try to deceive Descartes from knowing the true nature of reality. Given these possibilities, what is it that one can know for certain? Initially, Descartes arrives at only a single principle: if I am being deceived, then surely "I" must exist. Most famously, this is known as *cogito ergo sum*, ("I think, therefore I am") --- although these words do not appear in the *Meditations*. Therefore, Descartes concludes that he can be certain that he exists. But in what form? You perceive your body through the use of the senses; however, these have previously been shown to be unreliable. So Descartes concludes that at this point, he can only say that he is a thinking thing.

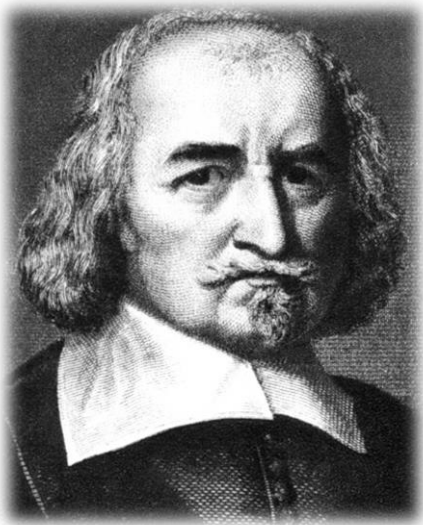
Descartes proceeds to construct a system of knowledge, discarding perception as unreliable and instead admitting only reasoning as a method. Halfway through the *Meditations* he also claims to prove the existence of a benevolent God, who, being benevolent, has provided him with a working mind and sensory system, and who cannot desire to deceive him, and thus, finally, he establishes the possibility of acquiring knowledge about the world based on reasoning and perception.

In Mathematics, Descartes is considered of utmost importance for his discovery of analytic geometry. Up to Descartes's times, geometry, dealing with lines and shapes, and algebra, dealing with numbers, were regarded as completely different subsets of mathematics. Descartes showed how (almost) all problems in geometry could be translated into problems in algebra, by regarding them as questions asking for the length of a line segment, and using a coordinate system to describe the problem.

Descartes's theory provided the basis for the Calculus of Newton and Leibniz, and thus for much of modern mathematics. This is even more astounding when one keeps in mind that the work was just meant as an example to his *Discourse on the Method to Rightly Conduct the Reason and Search for the Truth in Sciences*, known better under the shortened *Discourse on the Method*.

Accustomed to working in bed till noon, the demands of early morning study may have had a detrimental effect on his health. Descartes died of pneumonia on February 11, 1650 in Stockholm, Sweden, where he had been invited as a teacher for Queen Christina of Sweden. Later, his remains were taken to France from Sweden and buried in the Church of St. Genevieve-du-Mont in Paris. In 1667, after his death, the Roman Catholic Church placed his works on the Index of Prohibited Books. During the French Revolution, his remains were unearthed for burial in The Pantheon, among the great French thinkers.

Thomas Hobbes



Thomas Hobbes was born in 1588 in Wiltshire, England. His father worked as a fairly unaccomplished vicar. When Hobbes was only four his father was in a fight outside of his own church, and eventually fled in fear, abandoning his three children and leaving them to be raised by his brother.

When Hobbes was fifteen he began his study at Oxford, where he focused mainly on travel and cartography. Five years after graduating from Oxford he gained a job tutoring the son of the Earl of Devonshire and began an intense study of the Greek and Roman Classics; particularly poetry, history, and philosophy. During his time as a tutor the world of upper class society was opened to him, and he was able to travel abroad with his pupil and his family. It was probably during his first trip to France and Italy in 1610 that Hobbes was exposed to the radical new ideas of Galileo and Kepler, the first of many signs that the old philosophical order was changing.

While the seeds of Hobbes' philosophy were laid during this first trip abroad, upon his return he directed his energies to Classical studies. In 1629 he published his first work, a translation of Thucydides' History of the Peloponnesian War. Hobbes revealed much later in his autobiography that Thucydides appealed to him because of the historian's exposure of the crumbling of democracy.

During this same year Hobbes traveled abroad again to Paris, becoming enamored with Euclid's Elements. In this geometry Hobbes saw a methodology that he would later apply to his philosophy, whereby one could go through arguments step-by-step, and arrive at logically sound conclusions. After being recalled to England one year later to teach the son of his late pupil, he published his first philosophical work, ***A Short Tract on First Principles***, in which he applied this geometric methodology to the question, "What is sense?"

In a third trip abroad he met Galileo and became inspired by the idea that motion was the underlying force in all of reality. He then planned an ambitious three part project of explaining nature, man, and citizenship based around this idea of motion. Yet when he came back to England in 1637 unrest gripped the country as the parliament and monarchists struggled for power. Rather than publish the part on nature first in 1640 he published ***The Elements of Law, Natural and Politic***, which dealt first with man and second with citizenship. In this work he argued in favor of the royalists, and when the situation became particularly unruly, he fled to Paris.

In Paris, Hobbes worked on and expanded his work on man and citizenship (***De Cive***, 1647), and eventually became a mathematics instructor to the Prince of Wales (later Charles II). Then in 1651 he published his most important work, ***Leviathan***, which drew upon his previous political philosophy and added his additional philosophy concerning religion. Hobbes' argument that the subjects of a commonwealth could choose a new form of government when theirs no longer protected them offended royalists in exile following the death of Charles I. They believed Hobbes was trying to curry favor with the new government. Yet Hobbes found little favor in France: his lengthy and at times strong attack on the papacy made him powerful enemies in Catholic France, and Hobbes eventually returned to England at the end of that year.

His return to England did not mark the end of controversy for Hobbes. In *Leviathan* and elsewhere Hobbes attacked the philosophy of Aristotle and the university system that perpetuated what he believed were false (and dangerous) doctrines. He became involved in a series of spats with professors concerning the place of motion in natural and political philosophy, as well as problems of geometry and physiology.

Following the Restoration of 1660, Charles II, Hobbes' former employer, invited Hobbes into the King's court and even paid him a monthly stipend. While Hobbes was still a controversial figure amongst members of the court, the King enjoyed Hobbes' intellect and sense of humor, and even had a portrait of Hobbes hung in the royal closet.

He worked until his last days, promising his publisher another work in English shortly before he died in 1679.

John Locke



John Locke was an English philosopher and physician. His writings influenced Voltaire and Rousseau, a lot of Scottish Enlightenment thinkers, as well as the American revolutionaries. He is mentioned in the American Declaration of Independence. Locke's theories were usually about identity and the self. Locke thought that we are born without thoughts, and that knowledge is instead determined only by experience.

Locke's father, who was also named John Locke, was a country lawyer. He had served as a captain in the early part of the English Civil War. His mother, Agnes Keene, was a tanner's daughter and was thought to be very beautiful. Both mother and father were Puritans. Locke was born on 29 August 1632, in a cottage by the church in Wrington, Somerset, about twelve miles from Bristol. He was baptized when he was born. After that, his family soon moved to Pensford.

In 1647, Locke was sent to Westminster School in London. During this time he was being sponsored by Alexander Popham, a member of the Parliament. After finishing his studies there, he went into the Christ Church. Although Locke was a good student, he did not like the schedule of the time spent there. He did not like the classical subjects taught at the university, and wanted to learn more about modern philosophy. Through his friend Richard Lower, whom he had met at the school, Locke learned about medicine.

Locke was awarded a bachelor's degree in 1656 and a master's degree in 1658. In 1666, he met Lord Anthony Ashley Cooper, who had come to Oxford seeking treatment for his liver disease. Cooper was impressed with Locke and asked him to come.

Locke had been looking for a job and in 1667 moved into Shaftesbury's home at Exeter House in London, to serve as Lord Ashley's personal physician. In London, Locke continued his studies on medicine.

Locke's medical knowledge was put to the test when Shaftesbury's liver disease became worse until Shaftesbury was about to die. Locke used the advice of several physicians and persuaded Shaftesbury to go to an operation. Shaftesbury lived through the operation and thanked Locke for saving his life.

Shaftesbury, as a member of the Whig movement, was a big influence on Locke's political ideas. However, after Shaftesbury began to fall from favor in 1675, Locke decided to travel across France. He came back to England in 1679. At this time, due to Shaftesbury's insists, Locke wrote the ***Two Treatises of Government***. While it was once thought that Locke wrote the Treatises to defend the Glorious Revolution of 1688, recent scholarship has shown that the work was composed before this even started.

However, Locke ran away to the Netherlands in 1683. This is because people became suspicious of him being involved in the Rye House Plot. In the Netherlands, Locke had time to return to his writing, spending a great deal of time re-working the Essay. Locke did not return home until after the Glorious Revolution. Locke came with William of Orange's wife back to England in 1688.

Locke's close friend Lady Masham invited him to join her at the Mashams' country house in Essex. Although his time there was marked by variable health from asthma attacks, he nevertheless became an intellectual hero of the Whigs. During this period he discussed matters with such figures as John Dryden and Isaac Newton.

He died in 28 October 1704, and is buried in the churchyard of the village of High Laver, east of Harlow in Essex, where he had lived in the household of Sir Francis Masham since 1691. Locke never married nor had children.

Montesquieu



Charles Louis de Secondat, Baron de Montesquieu was born on January 18, 1689, at the castle of La Brède near Bordeaux. His father, Jacques de Secondat, was a soldier with a long noble ancestry, and his mother, Marie Françoise de Pesnel, who died when Charles Louis was seven, was an heiress (a woman with a large monetary inheritance) who eventually brought the barony (title of baron) of La Brède to the Secondat family. As was customary the young Montesquieu spent the early years of his life among the peasants (poor working class) in the village of La Brède. The influence of this period remained with Charles Louis, showing itself in his deep attachment to the soil. Montesquieu was also born into a climate of discontent in France. King Louis XIV's (1638–1715) long reign was uncomfortable for the citizens of France. His unsuccessful wars and attempts to dictate religion and culture had a bad effect on France. Knowledge of this situation helps to explain some of Montesquieu's curiosity and his interest in societal rules and laws.

In 1700 Montesquieu was sent to the Oratorian Collège de Juilly, at Meaux, where he received a modern education. Returning to Bordeaux in 1705 to study law, he was admitted to practice before the Bordeaux Parlement (parliament) in 1708. The next five years were spent in Paris, France, continuing his studies. During this period he developed an intense dislike for the style of life in the capital, which he later expressed in his *Persian Letters*.

In 1715 Montesquieu married Jeanne de Lartigue, a Protestant (a member of the church that had left the rule of Roman Catholicism), who brought him a large dowry (sum of money given in marriage). He was also elected to the Academy of Bordeaux. The following year, on the death of his uncle Jean Baptiste, he inherited the barony of Montesquieu and the presidency of the Bordeaux Parlement.

Montesquieu had no great enthusiasm for law as a profession. He was much more interested in the spirit that lay behind law. It is from this interest that his greatest work, *The Spirit of the Laws*, developed. To free himself in order to continue his scholarly interests, he sold his office as president of the Bordeaux Parlement in 1721. With his newly freed time he wrote *the Persian Letters*.

The Persian Letters was a fierce and biting critical view of European civilization and manners. The work takes the form of letters that three Persians (people from what is now Iran) traveling in Europe send to families and friends at home. Their letters are notes on what they see in the West. Montesquieu gave his travelers the foreign, commonsense understanding necessary to effectively criticize European (French) customs and institutions. Yet he also gave his Persians the weaknesses necessary to make his readers recognize in them their own weaknesses. All sides of European life were criticized. The message is that society lasts only on the basis of virtue and justice, which is rooted in the need of human cooperation and acceptance.

Although the Letters was published without his name, it was quickly recognized as the work of Montesquieu and won him the approval of the public and the displeasure of the governor, Cardinal André Fleury, who held up Montesquieu's introduction into the French Academy until 1728.

Montesquieu brought his search for the general laws active in society and history to its completion in his greatest work. Published in 1748, *The Spirit of the Laws* was an investigation of the environmental and social relationships that lie behind the laws of civilized society. Combining the traditions of customary law with those of the modern theories of natural law, Montesquieu redefined law as "the necessary relationships that derive [come] from the nature of things." Laws "must be adapted to each peoples."

The Spirit of the Laws helped to lay the basis of the eighteenth-century movement for constitutionalism (government run by established law), which ended in the Revolution of 1789 (1789–93; rise and revolt of the middle class against the failures of King Louis XVI and his royals, many of whom were killed by the guillotine, or chopping block). In this sense Montesquieu's most basic belief may be viewed as an attempt to state the necessity of law review. *The Spirit of the Laws* was immediately celebrated as one of the great works of French literature.

Following the completion of his work, Montesquieu, who was going blind, went into semiretirement at La Brède. He died on February 10, 1755, during a trip to Paris.

Voltaire



Voltaire was born as François Marie Arouet, on November 21, 1694, in Paris, France. He was the youngest of the three surviving children of François Arouet and Marie Marguerite Daumand. Voltaire's mother died when he was seven years old, and he developed a close relationship with his godfather, a free-thinker. His family belonged to the upper-middle-class, and young Voltaire was able to receive an excellent education. A clever child, Voltaire studied under the Jesuits at the Collège Louis-le-Grand from 1704 to 1711. He displayed an astonishing talent for poetry and developed a love of the theater and literature.

When Voltaire was drawn into the circle of the seventy-two-year-old poet Abbé de Chaulieu, his father packed him off to Caen, France. Hoping to stop his son's literary ambitions and to turn his mind to pursuing law, Arouet placed the youth as secretary to the French ambassador at The Hague, the seat of government in the Netherlands. Voltaire fell in love with a French refugee, Catherine Dunoyer, who was

pretty but barely educated. Their marriage was stopped. Under the threat of arrest, Voltaire returned to Paris in 1713 and was contracted to a lawyer as he continued to write. In 1717 Voltaire was at first exiled and then imprisoned in the Bastille, an enormous French prison, for writings that were offensive to powerful people.

While Voltaire stayed in England he was greatly honored; his works earned him one thousand pounds. Voltaire learned English by attending the theater daily, script in hand. He also absorbed English thought, especially that of John Locke and Sir Isaac Newton, and he saw the relationship between free government and creative business developments. More importantly, England suggested the relationship of wealth to freedom. The only protection, even for a brilliant poet, was wealth.

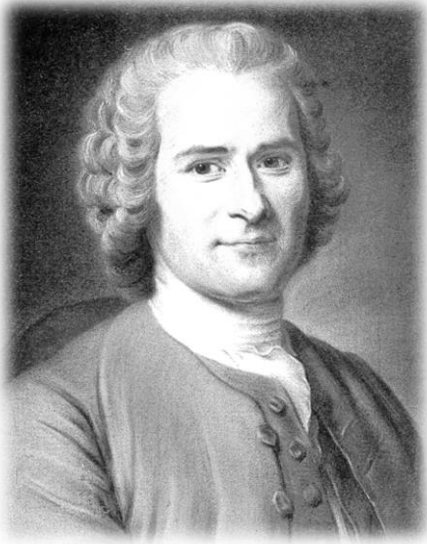
Voltaire returned to France in 1729. One product of his English stay was the *Lettres Anglaises* (1734), which have been called "the first bomb dropped on the Old Regime." They included remarks as, "It has taken centuries to do justice to humanity, to feel it was horrible that the many should sow and the few should reap." Written in the style of letters to a friend in France, the twenty-four "letters" were a clever call for political, religious, and philosophic freedom; for the betterment of earthly life; for employing the method of Sir Francis Bacon, Locke, and Newton; and generally for striving toward social progress.

Honored by a respectful correspondence with Frederick II of Prussia (1712–1786), Voltaire was then sent on diplomatic missions to Prussia. Voltaire accepted Frederick's repeated invitation to live at court. He arrived at Potsdam in July 1750. First flattered by Frederick's hospitality, Voltaire then gradually became anxious, quarrelsome, and finally bored. He left, angry, in March 1753, having written in December 1752: "I am going to write for my instruction a little dictionary used by Kings. 'My friend' means 'my slave.'" Frederick took revenge by delaying permission for Voltaire's return to France, by putting him under a week's house arrest at the German border, and by seizing all his money.

Always the champion of liberty, Voltaire in his later years became actively involved in securing justice for victims of persecution, or intense harassment. He became the "conscience of Europe." An unsuccessful and depressed young man had hanged himself in his Protestant father's home in Roman Catholic city of Toulouse, France. For two hundred years Toulouse had celebrated the massacre of four thousand of its French Protestant inhabitants. When the rumor spread that the dead man had been about to abandon Protestantism, the family was seized and tried for murder. The father was tortured; a son was exiled (forced to leave); and the daughters were forcefully held in a convent (a house for nuns). Investigation assured Voltaire of their innocence, and from 1762 to 1765 he worked in their behalf. He employed "his friends, his purse, his pen, his credit" to move public opinion to the support of the family. In 1765, Parliament declared the Calas family innocent.

Voltaire's influence continued to be felt after his death in Paris on May 30, 1778.

Rousseau



Jean-Jacques Rousseau was born to Suzanne Bernard and Isaac Rousseau on June 28, 1712, in Geneva, Switzerland. Nine days later his mother died. At the age of three, he was reading French novels with his father, and Jean-Jacques acquired his passion for music from his aunt. His father fled Geneva to avoid imprisonment when Jean-Jacques was ten. By the time he was thirteen, his formal education had ended and he was sent to work for a notary public (someone legally empowered to certify documents), but he was soon dismissed as fit only for watchmaking. Afterwards Rousseau spent three miserable years serving as a watchmaker, which he abandoned when he found himself unexpectedly locked out of the city by its closed gates. He faced the world with no money or belongings and no obvious talents.

Rousseau found himself on Palm Sunday, 1728, in Annecy, France, at the house of Louise Eleonore, Baronne de Warens. Rousseau lived under her roof off and on for thirteen years. Charming and clever, a natural businesswoman, Madame de Warens was a woman who lived by her wits.

She supported him and found him jobs, most of which he disliked. A friend, after examining the lad, informed her that he might aspire to become a village priest but nothing more. Still Rousseau read, studied, and thought. He pursued music and gave lessons, and for a time he worked as a tutor.

From September 1743 until August 1744 Rousseau served as secretary to the French ambassador to Venice, Italy. He experienced at firsthand the stupidity and corruption involved in these offices. Rousseau spent the remaining years before his success with his first Discourse in Paris, where he lived the poor lifestyle of a struggling intellectual.

In March 1745 Rousseau fell in love with Thérèse Le Vasseur. She was twenty-four years old, a maid at Rousseau's lodgings. She remained with him for the rest of his life—as mistress, housekeeper, mother of his children, and finally, in 1768, as his wife. They had five children, though Rousseau had no means to educate them, and he reasoned that they would be better raised as workers and peasants by the state.

By 1749 Rousseau had befriended the French philosopher Diderot. The publication of Diderot's *Lettre sur les aveugles* had resulted in his imprisonment at Vincennes, France. While walking to Vincennes to visit Diderot, Rousseau read an announcement of a prize being offered by the Dijon Academy for the best essay on the question, "Has progress of the arts and sciences contributed more to the corruption or to the purification of morals?" Rousseau won the prize of the Dijon Academy with his *Discours sur les sciences et les arts*. His famous "attack" on civilization called for sixty-eight articles defending the arts and sciences. Though he himself regarded this essay as "the weakest in argument and the poorest in harmony and proportion" of all his works, he nonetheless believed that it sounded one of his essential themes: the arts and sciences, instead of freeing men and increasing their happiness, had for the most part imprisoned men further.

Rousseau's novel *La Nouvelle Héloïse* (1761) attempted to portray in fiction the sufferings and tragedy that foolish education and restrictive social customs had among sensitive creatures. Rousseau's two other major writings— *Emile, or Treatise On Education* (1762) and *The Social Contract* (1762)—undertook the more difficult task of constructing an education and a social order that would enable men to be natural and free; that is, to enable men to recognize no bondage except the bondage of natural necessity. To be free in this sense, said Rousseau, was to be happy.

The reputation of *La Nouvelle Héloïse* was nothing compared to the storm produced by *Emile, or Treatise On Education* and *The Social Contract*. Even today the ideas set forth in these works are revolutionary. Their expression in a style both readable and alluring made them dangerous. *Emile, or Treatise On Education* was banned by the Paris Parliament and heavily criticized by the archbishop of Paris. Both of the books were burned by the authorities in Geneva, Switzerland.

His last work, *Les Rêveries du promeneur solitaire*, begun in 1776 and unfinished at his death, records how Rousseau, an outcast from society, recaptured "serenity, tranquility, peace, even happiness." In May 1778 Rousseau moved to Paris. There, with Thérèse at his bedside, he died on July 2, 1778, from severe kidney disease. In October 1794 his remains were transferred to the Pantheon in Paris.

Mary Wollstonecraft



Mary Wollstonecraft (27 April 1759 – 10 September 1797) was a British writer. She was born in London, a daughter of a rich farmer who inherited his fortune. Her father was known to have become violent towards her, her four siblings, and their mother when his farms failed. Mary was the second oldest in her family as well as the oldest female child. She left home at the age of nineteen to work and become independent.

Working in the English city of Bath, Somerset, she developed a disliking for the upper class and their social lives. In 1784, she experienced the near death of her sister Eliza who was also the victim of abuse at the hands of her husband. She escaped with her sister to London to preserve her life. Soon after, her good friend Fanny Blood, died of complications in childbirth. Wollstonecraft suffered depression following this and being in financial trouble, she

began to write her first book ***Thoughts on the Educators of Daughters then Mary: A Fiction***.

Wollstonecraft was not only a writer, she was an early feminist and social campaigner. She wrote a children's book as well as her two most famous books ***A Vindication of the Rights of Man*** (1790), a response to the French Revolution, and ***A Vindication of the Rights of Woman*** (1792) which argued that women should have the same rights and education as men. She called for equal education for boys and girls, believing that education gives the tools necessary to compete with men in public and economic life.

She followed writers such as Catherine Macaulay who wrote *Letters on Education* in 1790, Thomas Paine, and John Locke. One of her most well-known books was ***An Historical and Moral View of the Origin and Progress of the French Revolution*** (1794). She also wrote ***The Wrongs of Women***, a novel telling of the confines and illusion of marriage and child rearing as the only happiness for women. She was revolutionary in arguing for education and the need for autonomy for women.

Wollstonecraft travelled to Paris in 1792 to take notes on the Revolution. While in Paris, she fell in love with Gilbert Imlay, an American who she later followed to London. She tried to commit suicide when their relationship ended but was rescued from the Thames. She wrote a book titled ***Letter Written during a Short Residence in Sweden, Norway, and Denmark*** (1796) from a series of letters written to Imlay, to support their daughter Fanny Imlay, born in 1794. In the same year, Wollstonecraft met up with an old acquaintance and philosopher named William Godwin, whom she later married. They had a daughter in 1797, whom they named Mary Wollstonecraft Godwin, who later became wife of Percy Shelley. Mary Wollstonecraft Godwin became Mary Shelley, the author of *Frankenstein*. Ironically, her mother Mary Wollstonecraft died in London after her birth and suffered a similar fate as her best friend Fanny Blood whose death inspired her fight for women's rights and her first book. Her husband William Godwin published *Memoirs of the Author of "A vindication of the Rights of Women"* in memory of her in 1798.