

A Chronology of Significant Events in the History of Science and Technology

- c. 2540 B.C. – Pyramids of Egypt constructed
- c. 2000 B.C. – Chinese discovered magnetic attraction
- c. 700 B.C. – Greeks discovered electric attraction produced by rubbing amber
- c. 530 B.C. – Pythagoras developed mathematical theory
- c. 450 B.C. – Anaxagoras proposed the first clearly materialist philosophy – the universe is made entirely of matter in motion
- c. 370 B.C. – Leucippus and Democritus proposed that matter is made of small, indestructible particles
- c. 300 B.C. – Aristarchus proposed that the earth revolves around the sun; calculated diameter of the earth
- c. 220 B.C. – Archimedes made discoveries in mathematics and mechanics
- 190 – Chinese mathematicians calculated pi to five decimal places
- 271 – Chinese mathematicians invented the magnetic compass
- 1232 – Rockets invented in China to defend city of Kaifeng against Mongol invaders
- 1269 – Maricourt used compass to discover that a magnet is encircled by lines which terminate on two poles
- 1390 – The first paper mill began operating in Germany
- 1455 – The Gutenberg Bible became the first book printed with movable metal type
- 1600 – Gilbert discovered that electricity occurs in things other than amber; wrote a book on magnetism
- 1608 – Lippershey invented the telescope
- 1609–1619 – Kepler announced his 1st, 2nd, and 3rd laws
- 1614 – Napier discovered logarithms
- 1621 – Snell discovered the law of refraction

1638 – Galileo published "Discourses Concerning Two New Sciences", summarizing the principles of mechanics

1642 – Pascal invented the mechanical adding machine

1652 – Pascal discovered laws of fluid pressure

1654 – Guericke invented the vacuum pump

1666 – 1675 – Newton and Leibniz independently invented calculus

1666 – Newton discovered glass prism separates white light into spectrum

1687 – Newton published "Principia", describing the laws of motion

1738 – Bernoulli proposed laws of fluid mechanics

1764 – Hargreaves invented the spinning jenny

1769 – Watt invented the modern steam engine

1777 – Lavoisier proposed idea of chemical compounds made of elements

1783 – Michel and Montgolfier invented the hot air balloon; the first people to fly, altitude 1800 m

1785 – Coulomb confirmed the inverse square law for electric force

1785 – Cartwright invented the power loom for producing cloth

1787 – Berthollet proposed system of chemical nomenclature

1793 – Whitney invented the cotton gin

1800 – Volta invented the battery

1800 – Ampere discovered properties of magnetic field produced by electric current

1803 – Dalton composed the law of definite proportions in chemistry

1807 – Fulton invented the steamboat

1808 – Dalton published a periodic table based on atomic weights

1811 – Avogadro introduced the concept of the mole

1814 – Stephenson invented the locomotive engine

1820 – Oersted discovered that an electric current causes the deflection of compass needle

1825 – discovery of Ampere's Force Law

1827 – Brown discovered Brownian motion

1830 – The first railroad (between Liverpool and Manchester, England)

1831 – Faraday (England) and Henry (U.S.) independently discovered that a current is produced in a wire when it is moved near a magnet

1839 – Goodyear invented "vulcanized" rubber by heating rubber latex with sulfur

1842 – The first underwater tunnel was constructed under the Thames River

1844 – Morse sent the first telegraph message

1849 – Fizeau measured the velocity of light

c. 1850 – One of the first modern sewage systems was built in Hamburg, Germany

1853 – Bessemer in Britain and Kelly in U.S. invented the Bessemer steel process

1854 – Boole invented Boolean algebra

1859 – The first elevator was developed. It used a steam-powered screw to raise passengers as high as six stories, making skyscrapers possible

1869 – Mendeleev used a periodic table of known elements to correctly predict the properties then undiscovered elements

1877 – Edison invented the phonograph

1878 – First all-steel bridge was constructed in the United States

1879 – First commercial electric railway was constructed in Berlin

1879 – Edison invented the electric light bulb

1882 – Edison created the first large power station in NYC

1883 – Wroblewski and Olszewski first produced liquid oxygen.

1884 – The first American skyscraper (10 stories) was erected in Chicago

1885 – Benz invented the gasoline-powered automobile

- 1885 – Eastman invented the box camera
- 1885 – Hertz discovered the photoelectric effect
- 1885 – Balmer discovered spectral lines of hydrogen
- 1888 – Hertz discovered radio waves, verifying Maxwell's prediction of electromagnetic waves
- 1888 – Edison invented the kinetoscope
- 1889 – Hollerith invented the first calculating machine, used punch cards
- 1891 – "Java Man" discovered in Indonesia
- 1892 – Dewar discovered that a double-walled bottle with a vacuum layer insulates the contents from heat flow
- 1895 – The first large-scale U.S. water power project was completed near Niagara Falls
- 1895 – Roentgen discovered x-rays
- 1895 – Marconi invented antenna and wireless telegraph (short distance); 1896 increased range to 1.6 km; 1897 increased range to 29 km with first ship-to-shore message; 1901 first transatlantic wireless telegraph
- 1898 – Curie and Curie announced their discovery of radium and polonium
- 1900 – Planck proposed that energy can only be absorbed or emitted by matter in discrete amounts (quanta)
- 1902 – Kennelly (U.S.) and Heaviside (England) independently discovered the ionosphere
- 1903 – The botanist De Vries discovered mutations in plants
- 1903 – Wright brothers' airplane remained in flight for 12 seconds
- 1904 – Fleming invented vacuum tube diode
- 1904 – New York Subway opened
- 1905 – Einstein published papers on Brownian motion, the photoelectric effect, and the special theory of relativity
- 1906 – De Forest invented the triode vacuum tube

1906 – Thomson discovered the electron

1908 – Ford produced the Model T automobile

1910 – Bakelite plastic became a commercial product, replacing wood, glass, and rubber in many products

1911 – Rutherford discovered that the positive charge in an atom is concentrated in a small nucleus; proposed a planetary model of the atom

1912 – Pickard invented the crystal diode and crystal detector

1913 – Edison invented motion pictures with sound

1913 – Ford added the assembly line to his automobile plant

1913 – Bohr published his model of the atom, based on energy states described by one quantum number

1915 – X-rays first used for medical imaging

1916 – Lewis proposed the idea of covalent bonds

1916 – Einstein published the general theory of relativity

1917 – Germany – the first major military use of airplanes to drop bombs on cities

1919 – Eddington recorded data on the sun's gravitational deflection of starlight during a solar eclipse, confirming Einstein's general theory of relativity

1923 – Production of insulin to treat diabetes

1924 – De Broglie proposed that all matter has wave properties

1925 – Pauli proposed the Exclusion Principle (no two electrons in an atom can have the same set of quantum numbers)

1925 – Electric-powered home refrigerators that used chlorofluorocarbon ("Freon") refrigerants were commercially available

1925 – Bush constructed the "Differential Analyzer", the first analog computer that mechanically solved sets of differential equations

1926 – Schrodinger developed the wave equation

1926 – Born proposed the statistical interpretation of the wave equation

1926 – Goddard launched the first liquid–fueled rocket

1927 – Heisenberg proposed the Uncertainty Principle (we cannot simultaneously determine the position and momentum of a subatomic particle)

1927 – Experiment by Davisson and Germer, and simultaneous experiment by G. P. Thompson, proved the wave behavior of electrons

1927 – the first television transmission (England)

1928 – Dirac developed the relativistic quantum theory

1930 – Empire State Building(102 stories) was completed

1931 – Lawrence invented the cyclotron

1931 – Anderson discovered the positron

1932 – Chadwick discovered the neutron

1934 – Carothers invented “Nylon 66”

1937 – Golden Gate Bridge was completed

1938 – Hahn, Strassmann, Meitner and Frisch discovered nuclear fission

1938 – Bethe hypothesized that nuclear fusion is the source of energy in stars

1939 – Discovery of Kirlian photography -- electrical "auras" surrounding living specimens

1942 – Fermi produced the first nuclear chain reaction in an experiment

1942 – Establishment of the Manhattan Project to develop an atomic bomb

1946 – The University of Pennsylvania developed the ENIAC computer, containing 18,000 vacuum tubes

1947 – Researchers at Bell Labs invented the transistor

1947 – Discovery of the pion (predicted by Yukawa in 1935)

1951 – Franklin discovered nucleic acids (RNA and DNA), helical shape

1953 – Watson and Crick discovered DNA has double helix, composed of ATCG bases occurring in pairs (A with T, and C with G)

1953 – First clinical use of the heart–lung machine

1953 – Miller produced amino acids from inorganic compounds and sparks

1956 – Discovery of the neutrino (predicted by Pauli in 1930)

1956 – The first full–scale nuclear power plant was completed at Calder Hall, England

1957 – The first artificial satellite, Sputnik, put into earth orbit

1959 – First unmanned spacecraft hit the moon (Soviet Union)

1960 – Maiman invented the ruby laser

1960 – Greatbatch developed the implantable heart pacemaker

1960 – Javan invented the helium–neon laser

1961 – A person orbited the earth for the first time (Yuri Gagarin)

1963 – Gell–Mann proposed protons and neutrons are made of smaller particles (quarks)

1964 – Discovery of a quasar

1964 – Unmanned U.S. spacecraft transmitted television pictures of the moon before hitting the surface

1964 – Wilson and Penzias discovered the background microwave radiation of the universe

1965 – The first "space walk" (Soviet Union)

1966 – The first unmanned soft landing on the moon (Soviet Union)

1967 – Salam and Weinberg developed a model to unite electromagnetism and the weak nuclear force.

1967 – Bell and Hewish discover pulsars

1968 – Human beings orbited the moon for the first time (Apollo 8)

1969 – People walked on the moon for the first time (Apollo 11)

1971 – Apollo 15 used the lunar rover

1971 – First space station, Salyut 1, and first space docking (Soviet Union)

1973 – U.S. launched Skylab space station

1975 – The first U.S.–Soviet space docking (Apollo and Soyuz)

1975 – Invention of the CAT scanner (computerized axial tomography)

1976 – Cosmic string theory was introduced

1977 – Submarine "Alvin" explored midoceanic ridge, discovered chemosynthetic life

1979 – First "test tube baby" from artificial insemination

1979 – Voyager 1 and 2 photographed Jupiter

1980 – Introduction of the the communication protocol that led to the Internet

1981 – Binnig and Rohrer invented the scanning tunneling microscope

1981 – U.S. launched the first space shuttle, Columbia

1981 – IBM introduced its first personal computer

1982 – Compact discs were first used to store music

1982 – First launch of communications satellites into orbit by space shuttle

1984 – First retrieval of malfunctioning satellites, repair and relaunch by space shuttle

1984 – Discovery of ozone hole over Antarctica

1986 – Development of the first high temperature superconductors

1986 – Soviet Union launched Mir space station

1990 – Hubble Space Telescope launched; optical defect discovered

1993 – Wiles proved Fermat's Last Theorem, which had been first proposed in 1637

1994 – The "Chunnel" was completed linking England with France by tunneling under the English Channel

1995 – Discovery of the top quark at Fermilab

1997 – Microscopic analysis of meteorite led to belief in ancient life on Mars

1997 – Pathfinder vehicle studied and photographed Mars

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