

September

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b. 1873 B. Smith Hopkins, researcher on rare earths; with Leonard Yntema and J. Allen Harris discovered the long sought element 61, which they named "illinium." (now known as technetium).



b. 1877 Francis W. Aston introduced the mass spectrograph, 1919; measured mass of several isotopes to accuracy of 1/1000; Nobel Prize in Chemistry (1922) for his discovery, by means of his mass spectrograph, of isotopes, in a large number of non-radioactive elements, and for his enunciation of the whole-number rule

• Rohm & Hass Co. founded 1909.

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b. 1853 Wilhelm Ostwald, researcher on affinity, mass action, theories of solutions, & conductivity (Ostwald's Law of dilution & conductivity); Nobel Prize in Chemistry (1909) in recognition of his work on catalysis and for his investigations into the fundamental principles governing chemical equilibria and rates of reaction.



b. 1877 Frederick Soddy, researcher in radioactivity & isotopes; displacement law of radioactive change; Nobel Prize in Chemistry (1921) in recognition of his work on catalysis and for his investigations into the fundamental principles governing chemical equilibria and rates of reaction.

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b. 1869 Fritz Pregl, researcher in microchemical analyses; [Nobel Prize in Chemistry](#) (1923) for his invention of the method of micro-analysis of organic substances.



b. 1938 Ryoh Noyori, research in asymmetric hydrogenation; Nobel Prize in Chemistry (2001) with William S. Knowles for their work on chirally catalysed hydrogenation reactions and K. Barry Sharpless for his work on chirally catalyzed oxidation reactions.

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b. 1848 Lewis Latimer invented a process for making durable carbon filaments for incandescent light bulbs (US patent [252,386](#))



b. 1913 Stanford Moore [Nobel Prize in Chemistry](#) (1972) with William H. Stein for their contribution to the understanding of the connection between chemical structure and catalytic activity of the active centre of the ribonuclease molecule and Christian B. Anfinsen for his work on ribonuclease, especially concerning the connection between the amino acid sequence and the biologically active conformation.

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- Opening day of the Karlsruhe Congress, 1860, during which the status of chemistry and chemical nomenclature were discussed.
- Jacobus H. van't Hoff completes famous 11 page treatise on the tetrahedral carbon atom, marking the birth of stereochemistry, 1869.
- Coca Cola Co. incorporated, 1892.

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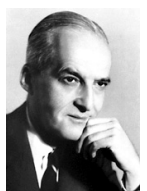
b. 1766 John Dalton proposed atomic theory; discovered law of multiple proportions, 'Dalton's law of partial pressures', 1801; discovered that pressures of saturated vapors of all liquids have the same value at their boiling point.



b. 1870 Frederick G. Donnan, researcher in theory of membrane equilibria (Donnan Equilibrium); research in chemical kinetics.



b. 1876 John J. R. Macleod discovered insulin with Frederick G. Banting & Charles H. Best; Nobel Prize in Physiology or Medicine (1923) with Frederick G. Banting for the discovery of insulin.

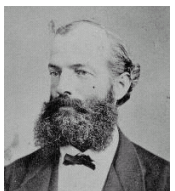


b. 1906 Luis J. Leloir isolated glucose 1,6-diphosphate and uridine diphosphate glucose; synthesized trehalose with E. Cabib (1953) and sucrose with C. Cardini and J. Chiriboga (1955); isolated uridine diphosphate acetylglucosamine and guanosine diphosphate mannose; [Nobel Prize in Chemistry](#) (1970) for discovery of these sugar nucleotides and study of their role in biosynthesis of carbohydrates.

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b. 1828 Alexandre M. Butlerov, researcher on the structural theory of organic chemistry; first used term chemical structure; synthesized polymer of formaldehyde.



b. 1829 F. August Kekulé conceived the ring structure of benzene, 1865; described the quadrivalence of carbon & structural theory of organic chemistry, 1858; synthesized acetylene, 1864.



b. 1854 Paul Vieille, invented smokeless powder, Poudre B, from gelatinized nitrocellulose mixed with alcohol and ether.



b. 1917 John W. Cornforth, researcher on stereochemistry of enzyme catalyzed reactions; Nobel Prize in Chemistry (1975) for his work on the stereochemistry of enzyme-catalyzed reactions and Vladimir Prelog for his research into the stereochemistry of organic molecules and reactions.

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b. 1848 Viktor Meyer discovered thiophene, oximes, & vapor density method.



b. 1918 Derek H. R. Barton researcher in conformational analysis and free radical reactions; Nobel Prize in Chemistry (1969) with Odd Hassel for their contributions to the development of the concept of conformation and its application in chemistry.

• First "Star Trek" telecast, 1966.

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b. 1737 Luigi Galvani, discovered that [muscle](#) and [nerve cells](#) produce [electricity](#); twitching frog.



b. 1858 Carl Auer von Welsbach, researcher on rare earths; invented incandescent mantle (Welsbach Mantle or Auerlicht); discovered neodymium (Nd, 60), 1885, praseodymium (Pr, 59), 1885, & lutetium, with Georges Urbain (Lu, 71), 1907.



b. 1877 Aleksandr E. Arbuzov studied organophosphorous compounds & rearrangement of phosphite esters (Michaelis-Arbuzov reaction).

- Discovery of Konel, a cobalt-nickel alloy, announced by Westinghouse Laboratories, 1929.
- Albert Ghiorso and Glenn T. Seaborg announced the discovery of element 106 at the University of California, Berkeley, 1974.

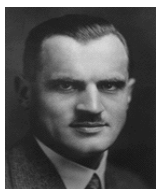
10



b. 1775 John Kidd discovered naphthalene in coal tar, 1819.



b. 1797 Carl G. Mosander discovered lanthanum (La, 57) 1839, erbium (Er, 68) 1843, terbium (Tb, 65) 1843, & didymium, 1842, later found to be mixture of Nd & Pr.



b. 1892 Arthur H. Compton, researcher in cosmic & x-rays; Nobel Prize in Physics (1927) for his discovery of the effect named after him; discovered electromagnetic radiation behaves like a stream of particles, with C. T. R. Wilson (Wilson cloud chamber).

- Weighing of a pure compound of synthetic element (Pu, 94) by B. B. Cunningham & L. B. Werner at wartime Metallurgical Laboratory, University of Chicago, 1942.
- Gillette founded as Gillette Safety Razor Co., 1917.

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b. 1877 Aleksandr E. Arbuzov studied organophosphorous compounds & rearrangement of phosphite esters (Michaelis-Arbuzov reaction).



b. 1894 Carl S. Marvel, researcher in organic chemistry & polymer synthesis; investigated the structure of vinyl polymers prepared from polyvinylchloride proving the polymers formed with chlorine atoms on alternate carbon atoms (head-to-tail); President of ACS, 1945.

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b. 1897 Irène Joliot-Curie, produced artificial radioisotopes, 1933; Nobel Prize in Chemistry (1935) with husband, Frédéric Joliot-Curie in recognition of their synthesis of new radioactive elements.

b. 1930 Akira Suzuki, palladium-catalyzed cross couplings in organic synthesis; Nobel Prize in Chemistry (2010) with Richard F. Heck and Ei-ichi Negishi for palladium-catalyzed cross couplings in organic synthesis.

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b. 1886 Robert Robinson, researcher in plant pigments, alkaloids & phenanthrene derivatives; [Nobel Prize in Chemistry](#) (1947) for his investigations on plant products of biological importance, especially the alkaloids.



b. 1887 Leopold W. G. Ruzicka, researcher on cyclic polymethylenes, terpenes, & synthesis of sex hormones; Nobel Prize in Chemistry (1939) for his work on polymethylenes and higher terpenes with Adolf Butenandt for his work on sex hormones.

- Polaroid Corporation incorporated, 1937.
- B. B. Cunningham and L. B. Werner isolated first microscopic amount of compound of americium (Am, 95) at wartime Metallurgical Laboratory, University of Chicago, 1945.

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b. 1698 Charles F. de Cisternay DuFay discovered + & - electricity & repulsion between like charges and named them "vitreous" and "resinous"; research in phosphorescence & double refraction.



b. 1936 Ferid Murad, researcher in role of NO and cyclic GMP; shared Nobel Prize in Physiology or Medicine in 1998 for their discoveries concerning nitric oxide as a signalling molecule in the cardiovascular system with Robert F. Furchgott and Louis J. Ignarro.

- Analtech, inc., manufacturer of products for thin layer chromatography, founded as Custom Service Chemicals, 1961. Name changed in January 8, 1965 to Analtech, Inc.

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b. 1932 Neil Bartlett, prepared first noble gas compound, xenon hexafluoroplatinate (1962); made XeF_2 , XeF_4 , & XeF_6 .

- AMP incorporated as Aircraft Marine Products, 1941.

- Michael B. McElroy & Thomas M. Donahue presented a detailed chemical dynamic model for a moist Martian atmosphere, 1972.

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b. 1853 Albrecht Kossel, researcher in chemistry of cells & proteins; Nobel Prize in Physiology or Medicine (1910) in recognition of the contributions to our knowledge of cell chemistry made through his work on proteins, including the nucleic substances.



b. 1893 Albert Szent-Györgyi isolated ascorbic acid (Vitamin C); researcher on bioenergetics, carbohydrate metabolism & cellular oxidation; Nobel Prize in Physiology or Medicine [Nobel Prize in Physiology or Medicine](#) (1937) for his discoveries in connection with the biological combustion processes, with special reference to vitamin C and the catalysis of fumaric acid.

- Great Lakes Chemical Co. incorporated, 1970

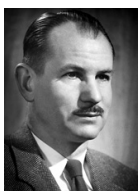
17

b. 1677 Stephen Hales, studied the role of air and water in the maintenance of both plant and animal life; developed pneumatic trough; discovered 'air' released in decomposition of plant and animal substances.



- Peter Cooper Hewitt obtained patent for mercury vapor lamp, 1901, U. Patent 682,695..

18



b. 1907 Edwin M. McMillan made discoveries in the chemistry of the transuranium elements; codiscovered neptunium (Np, 93) with P. H. Abelson, 1940, & plutonium (Pu, 94), with Glenn T. Seaborg, J. W. Kennedy, & A.C. Wahl, 1940; Nobel Prize in Chemistry (1951) with Glenn T. Seaborg for their discoveries in the chemistry of the transuranium elements.

19

- Alexandre M. Butlerov presented first definition & use of term, chemical structure, before Speyer Congress, 1861.

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b. 1842 James Dewar, first to liquefy hydrogen, 1899; invented vacuum flask (Dewar flask), 1892; showed many common substances phosphoresce at liquid air temperature; discovered cordite with Frederick A. Abel.

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b. 1832 Louis P. Cailletet, researcher on liquefaction of gases, hydrogen, nitrogen, oxygen, & air.
• Louis Pasteur sampled pure air of French Alps, 1860. His experiments comparing this air to city air contribute to germ theory of disease and demise of the theory of spontaneous generation.

22



b. 1791 Michael Faraday discovered electromagnetic induction & specific inductive capacity; Faraday's Laws on electrolysis; discovered rotation of plane polarized light in a magnetic field; liquefied chlorine & other gases.
• First liquid chlorine shipped in US by Electro-Bleaching Gas Co., Niagara Falls, NY, 1909.

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b. 1915 John Sheehan synthesized penicillin-V, 1957.



b. 1915 Clifford Shull, researcher in using neutrons to study atomic structure of materials; Nobel Prize in Physics (1994) for the development of the neutron diffraction technique.

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b. 1874 Alexander Findlay, authority on phase rule.



b. 1895 André Frédéric Cournand, first clinical cardiac catheterization; Nobel Prize in Physiology or Medicine (1956) with Werner Forssmann and Dickenson W. Richards for their discoveries concerning heart catheterization and pathological changes in the circulatory system.

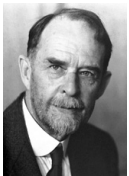


b. 1898 Howard Walter Florey, research on lysozyme and antibiotics; Nobel Prize in Physiology or Medicine (1945) with Alexander Fleming and Ernst B. Chain for the discovery of penicillin and its curative effect in various infectious diseases.



b. 1905 Severo Ochoa, research with enzymatic processes in biological oxidation and synthesis and the transfer of energy; The Nobel Prize in Physiology or Medicine (1959) with Arthur Kornberg for their discovery of the mechanisms in the biological synthesis of ribonucleic acid and deoxyribonucleic acid.

25



b. 1866 Thomas H. Morgan, one of the founders of modern genetics; Nobel Prize in Physiology or Medicine (1933) for his discoveries concerning the role played by the chromosome in heredity.

- Charles Hatchett published method for separating iron from manganese, 1813.
- Motorola incorporated as Galvin Mfg. Corp., 1928.

26



b. 1754 Joseph-Louis Proust, articulated the Law of Definite Proportions.



b. 1886 Archibald V. Hill, researcher on oxygen consumption of muscular action; Nobel Prize in Physiology or Medicine (1922) for his discovery relating to the production of heat in the muscle and Otto F. Warburg for his discovery of the fixed relationship between the consumption of oxygen and the metabolism of lactic acid in the muscle.

- Henkel founded in 1876.

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b. 1818 A. W. Herman Kolbe, first to use the word synthesis; synthesized acetic acid, & salicylic acid; proposed theory of radicals & suggested the existence of secondary & tertiary alcohols.

- Announcement of discovery of synthetic abrasive to replace diamond, 1934.

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b. 1852 Henri Moissan discovered fluorine (F, 9), 1886; invented electric furnace in which he prepared metal carbides & silicon carbides; Nobel Prize in Chemistry (1906) in recognition of the great services rendered by him in his investigation and isolation of the element fluorine, and for the adoption in the service of science of the electric furnace called after him.

- Solvay Process Co. incorporated 1881.

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b. 1901 Enrico Fermi, researcher on neutron-induced nuclear reactions; Nobel Prize in Physics (1938) for his demonstrations of the existence of new radioactive elements produced by neutron irradiation, and for his related discovery of nuclear reactions brought about by slow neutrons.



b. 1920 Peter D. Mitchell researcher on chemiosmotic reactions and reaction systems; Nobel Prize in Chemistry (1978) for his contribution to the understanding of biological energy transfer through the formulation of the chemiosmotic theory.
• Gencorp incorporated as General Rubber Mfg., 1915.

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b. 1802 Antoine J. Balard discovered bromine (Br, 35) 1826, in seawater, hypochlorous acid, & chlorine monoxide.



b. 1870 Jean Baptiste Perrin, research of Brownian movement in colloids; Nobel Prize in Physics 1926, for his work on the discontinuous structure of matter, and especially for his discovery of sedimentation equilibrium.



b. 1923 Morris Kates, Biochemist-Composer; research in lipids and lipids of Archaeobacteria.



b. 1939 Jean-Marie P. Lehn, researcher on 3-dimensional stacked-layer polycyclic compounds; Nobel Prize in Chemistry (1987) with Donald J. Cram and Charles J. Pedersen for their development and use of molecules with structure-specific interactions of high selectivity.



b. 1943 Johann Disenhofer, researcher on 3-dimensional structure of proteins related to photosynthesis; Nobel Prize in Chemistry (1988) with Robert Huber & Hartmut Michel for the determination of the three-dimensional structure of a photosynthetic reaction centre.

• L. B. Werner and I. Perlman reported isolation of first microscopic amount of compound of curium (Cm, 96) at University of California, Berkeley, 1947.