

1979

25 YEARS AGO

-
- 2 May** The Italian chemist Giulio Natta dies. He and Karl Ziegler of Germany were awarded the Nobel Prize in chemistry in 1963 for “discoveries in the field of the chemistry and technology of high polymers,” specifically Ziegler-Natta catalysts.
- 8 July** The organic chemist Robert Burns Woodward dies. He was best known for his syntheses of complex organic substances, including vitamin B₁₂, and for his contribution (with Roald Hoffmann) to the Woodward-Hoffmann rules. Woodward was awarded the Nobel Prize in chemistry in 1965.
- 8 August** The German biochemist Feodor Lynen dies. For his research on the metabolism of cholesterol and fatty acids, he received (with Konrad Bloch) the 1964 Nobel Prize in physiology or medicine.
- 12 August.** Ernst Chain dies. Working with Howard Florey, Chain isolated and purified penicillin and performed the first clinical trials. Chain, Florey, and Alexander Fleming (who discovered penicillin in 1928) shared the 1945 Nobel Prize in physiology or medicine.
- 8 December** Herbert C. Brown and Georg Wittig are awarded the Nobel Prize in chemistry “for their development of the use of boron- and phosphorus-containing compounds, respectively, into important reagents in organic synthesis.”
- 24 December** A team led by Charles Weissmann at Biogen conclusively shows that they have produced interferon using recombinant DNA technology.

1954

50 YEARS AGO

-
- Percy Julian, the organic chemist who synthesized the glaucoma drug physostigmine, leaves Glidden to found his own company, Julian Laboratories.
- Robert Burns Woodward and coworkers synthesize strychnine.
- Dow introduces poly(vinylidene chloride), a.k.a. Saran, as a food wrap.
- 23 February** The polio vaccine developed by Jonas Salk is tested on almost two million children and found to be safe and 90% effective.
- 7 March** Otto Diels dies. In 1950 Diels and his student Kurt Alder were awarded the Nobel Prize in chemistry for their work in developing the method of preparing cyclic organic compounds known as the Diels-Alder reaction. The method proved especially important in the production of synthetic rubber and plastics.
- December** The New Products Committee at McNeil Laboratories decides to undertake clinical testing of Elixir Tylenol, a product containing acetaminophen—first discovered in the late 1800s and ignored for over 50 years.
- 10 December** Linus Pauling is awarded the Nobel Prize in chemistry “for his research into the nature of the chemical bond and its application to the elucidation of the structure of complex substances.”
- 29 December** William Merriam Burton dies. At Standard Oil, Burton developed a thermal cracking process that more than doubled the potential yield of gasoline from crude petroleum.

Edward Doisy and Alfred Butenandt independently isolate the sex hormone estrone from the urine of pregnant women, research for which Butenandt would share the 1939 Nobel Prize in chemistry with Leopold Ruzicka.

Hans Fischer synthesizes hemin, the pigment that gives blood its red color. The synthesis formed part of the work for which he was awarded the Nobel Prize in chemistry in 1930.

J. E. Lennard-Jones predicts from first principles the paramagnetism of molecular oxygen in his paper "The Electronic Structure of Some Diatomic Molecules," work that laid the foundation for the development of molecular orbital theory.

23 January John C. Polanyi is born in Berlin. He would later share the 1986 Nobel Prize in chemistry with Dudley R. Herschbach and Yuan T. Lee "for their contributions concerning the dynamics of chemical elementary processes."

28 January Edith Marie Flanigen is born in Buffalo, New York. She would later develop molecular sieves that act as catalysts to speed up chemical reactions and over 200 different synthetic substances, including several zeolites and a synthetic emerald. She received the Perkin Medal in 1992.

1 July Gerald M. Edelman is born in New York City. He would later share the 1972 Nobel Prize in physiology or medicine with Rodney R. Porter "for their discoveries concerning the chemical structure of antibodies."

27 July The Swiss chemist Raoul-Pierre Pictet dies. His original interest in refrigeration led to his producing liquid oxygen in 1877, working independently of the French scientist Louis Paul Cailletet, who announced his discovery two days later.

4 August Carl Auer von Welsbach, an Austrian chemist and physicist and inventor of the gas mantle, dies.

23 September Richard Zsigmondy dies. He received the Nobel Prize in chemistry in 1925 for research on colloids, submicroscopic particles dispersed throughout another substance.

10 December Arthur Harden and Hans von Euler-Chelpin are awarded the Nobel Prize in chemistry "for their investigations on the fermentation of sugar and fermentative enzymes."

Louis DeBroglie receives the Nobel Prize in physics "for his discovery of the wave nature of electrons."

16 December Bruce Nathan Ames is born. He would later develop the Ames test, an indicator of the carcinogenicity (cancer-causing potential) of chemicals that measures the rate of mutation in bacteria after the introduction of a test substance.

Richard Abegg, a Danish chemist, first states his "rule of eight," an early form of the octet rule and the beginning of valence theory.

Harvey Wiley studies the effects of food preservatives when eaten, using a team of volunteers named the "Poison Squad." The results lead to the banning of many harmful substances and food additives, and to the founding of the U.S. Food and Drug Administration.

- February** Vladimir Vasilyevich Markovnikov, a Russian organic chemist who contributed to structural theory, dies.
- 6 May** Alexander William Williamson, an English chemist whose research on alcohols and ethers clarified organic molecular structure, dies.
- 11 May** Donald Othmer is born in Omaha, Nebraska. He would later become an influential chemical engineer and developer of the Othmer still, cocreator of the *Kirk-Othmer Encyclopedia of Chemical Technology*, and a philanthropist.
- 27 May** John C. Bailar, Jr., is born in Golden, Colorado. He would later discover optical inversion and investigate stereospecificity in inorganic chemical reactions.
- 16 August** Wendell M. Stanley is born in Ridgeville, Indiana. In 1935 he would crystallize the tobacco mosaic virus, the first viral crystallization. He later shared the 1946 Nobel Prize in chemistry with James Batcheller Sumner and John Howard Northrop.
- 4 September** Julian Werner Hill is born in St. Louis, Missouri. Working with Wallace Carothers at DuPont, he would later discover cold drawing, a technique of strengthening polymer fibers by stretching.
- 1 October** Otto Frisch is born in Vienna, Austria. Later he would help his aunt, Lise Meitner, interpret the results of the experiments of Otto Hahn and Fritz Strassmann as nuclear fission.
- 3 October** Charles J. Pedersen is born in Pusan, Korea. He would later share the 1987 Nobel Prize in chemistry with Donald J. Cram and Jean-Marie Lehn "for their development and use of molecules with structure-specific interactions of high selectivity."
- 8 October** Clemens Alexander Winkler, the German chemist who discovered the element germanium. (the eka-silicon predicted by Dmitry I. Mendeleev) dies.
- 10 December** Sir William Ramsay is awarded the Nobel Prize in chemistry "in recognition of his services in the discovery of the inert gaseous elements in air, and his determination of their place in the periodic system."
Lord Rayleigh (John William Strutt) receives the Nobel Prize in physics "for his investigations of the densities of the most important gases and for his discovery of argon in connection with these studies."
- 25 December** Gerhard Herzberg is born in Hamburg, Germany. He would later win the 1971 Nobel Prize in chemistry "for his contributions to the knowledge of electronic structure and geometry of molecules, particularly free radicals."

Lars Nilson of Sweden discovers scandium, which he and his coworkers isolated from the minerals euxenite and gadolinite.

Per Cleve discovers the elements holmium and thulium while studying the rare earth "erbia" (erbium oxide).

Paul Emile (François) Lecoq de Boisbaudran first isolates samarium from the mineral samarskite. The element had been discovered spectroscopically in 1853 by Jean Charles Galissard de Marignac.

The ACS begins publishing the *Journal of the American Chemical Society*, including abstracts of foreign journals.

Louis Pasteur publishes a paper, "Physiological Theory of Fermentation," designed to counter the theory of spontaneous generation.

22 February Johannes N. Brønsted is born. In 1923 he and Thomas Martin Lowry would independently arrive at essentially the same theory about how acids and bases behave: acids can produce a proton; bases can take up a proton.

27 February Ira Remsen and Constantin Fahlberg discover saccharin at the Johns Hopkins University in Baltimore. After carrying out an oxidation of o-toluenesulfonamide, Fahlberg notices that his hands and arms taste sweet even though he has washed them well.

3 March Elmer V. McCollum is born in Fort Scott, Kansas. He would later isolate vitamin A and earn the nickname "Dr. Vitamin" for his promotion of vitamins as part of a healthy diet.

8 March Otto Hahn is born in Frankfurt am Main, Germany. He would later discover nuclear fission with Lise Meitner and Fritz Strassmann, for which he alone received the 1944 Nobel Prize in chemistry.

14 March Albert Einstein is born in Ulm, Germany. He would later receive the 1921 Nobel Prize in physics "for his services to Theoretical Physics, and especially for his discovery of the law of the photoelectric effect."

20 March Maud Menten is born in Port Lambton, Ontario. Along with Leonor Michaelis she would later formulate the Michaelis-Menten equation describing the kinetics of enzyme-catalyzed chemical reactions.

20 May Hans Meerwein is born in Hamburg, Germany. He would later research carbonium ion chemistry, including anionic polymerizations, and would investigate the mechanism of the Wagner-Meerwein rearrangement.

15 June Samuel C. Lind is born in McMinnville, Tennessee. He would later invent the Lind electroscope, investigate the ionizing effects of radiation, and chair the chemistry department at the University of Minnesota for over 20 years.

10 July Harry Nicholls Holmes, the chemist who crystallized vitamin A, is born.

9 October Max von Laue is born in Pfaffendorf, Germany. He would later receive the 1914 Nobel Prize in physics "for his discovery of the diffraction of X-rays by crystals."

29 December Ellen Gleditsch is born in Mandal, Norway. She would later become a radioactivity researcher known for her accurate measurements of the half-life of radium.

1854

150 YEARS AGO

- 14 March** Paul Ehrlich is born in Strehlen, Germany (later part of Poland). Ehrlich would later coin the phrase “magic bullets” to describe compounds designed to target diseased cells without harming healthy tissue, and develop Salvarsan, the first effective treatment for syphilis. He would win the 1908 Nobel Prize in physiology or medicine with Ilya Ilyich Mechnikov “in recognition of their work on immunity.”
- 23 May** Edgar Fahs Smith is born near York, Pennsylvania. Later chair of the chemistry department and provost at the University of Pennsylvania, he would be best known for his involvement with the history of chemistry and his large collection of books, images, and artifacts.
- 12 July** George Eastman is born in Waterville, New York. He would later become a pioneer in consumer photography; consequently, his company, Eastman Kodak, would become a giant of chemical industry.
- 2 September** Paul Vielle is born. He would become known for his invention of the smokeless powder Poudre B, made from gelatinized nitrocellulose mixed with ether and alcohol—and much more powerful than gunpowder.
- 24 October** Hendrik W. B. Roozeboom is born. He would become known for applying the phase rule developed by Josiah Willard Gibbs to practical problems like making metal alloys and for promoting Gibbs’s theories.
- 3 November** Jokichi Takamine is born in Kanazawa, Japan. After coming to the United States in 1890, this biochemist and industrial leader isolated the hormone adrenaline (epinephrine), the first pure hormone to be isolated from natural sources.
- 5 November** Paul Sabatier is born in Carcassonne, France. He would later share the 1912 Nobel Prize in chemistry with Victor Grignard for their work using metallic compounds in organic synthesis.

1829

175 YEARS AGO

- Robert Brown first describes his observations of what will later be called “Brownian motion” in his paper “Additional Remarks on Active Molecules.”
- Johann Wolfgang Döbereiner observes that when certain triads of elements are arranged in order of increasing atomic mass, the mass of the central member is approximately the average of the other two and intermediate in chemical properties between the other two elements.
- 29 May** Sir Humphry Davy dies. This English chemist discovered several chemical elements and compounds, invented the miner’s safety lamp, and epitomized the scientific method.
- 7 September** August Kekulé is born in Darmstadt, Germany. He would later help establish modern notions of organic structure and valence.
- 14 November** Nicolas-Louis Vauquelin, who discovered the elements chromium (1797) and beryllium (1798), dies.
- 23 December** Paul Schützenberger is born. He and Laurent Naudin would later prepare cellulose acetate in 1865 while working at the Collège de France in Paris.

1804

200 YEARS AGO

- William H. Wollaston (who discovered palladium in 1803) discovers rhodium (Rh, 45).
- 11 April** Otto Erdmann is born. He later became an eminent professor of chemical technology at the University of Leipzig and with R. F. Marchand redetermined the atomic weights of several elements, contra the weights determined by J. J. Berzelius.

1779

225 YEARS AGO

Adair Crawford of Scotland publishes *Experiments and Observations on Animal Heat*, in which he describes the method of mixtures for determining specific heats, which is soon adopted by Lavoisier for his own investigations of heat.

Jan Ingenhousz of the Netherlands shows that photosynthesis is chemically the reverse process of respiration.

8 August

Benjamin Silliman is born. He would found the *American Journal of Science* and wield a powerful influence in the development of science in the United States as Yale's first professor of chemistry and natural history.

29 December

J. J. Berzelius is born near Linköping, Sweden. He would discover a number of elements, develop our modern system of chemical symbols, and determine atomic weights for many of the then-known elements.

1754

250 YEARS AGO

26 September

Joseph-Louis Proust is born in Angers, France. He would later articulate the law of definite proportions, which holds that a compound always contains the same relative amounts of its component elements by mass. This law would become a crucial piece of evidence supporting John Dalton's theory.

1704

300 YEARS AGO

Isaac Newton publishes *Opticks*. Near the end of the book Newton makes a brief mention of atoms, which he calls "solid, massy, hard, impenetrable Particles." This passage would inspire Dalton to formulate his atomic theory 99 years later.

1679

325 YEARS AGO

October

John Mayow, an English chemist and physiologist, dies. About 100 years before Joseph Priestley and Antoine-Laurent Lavoisier, Mayow identified *spiritus nitroaereus* (oxygen) as a distinct atmospheric entity.

1604

400 YEARS AGO

Johann Rudolf Glauber, sometimes called the German Boyle, is born.

Johann Tholde publishes *The Triumphant Chariot of Antimony*, claiming it to be the work of a fictitious monk named Basil Valentine. The book is a guide for preparing antimony-containing medicines.

The Polish alchemist Michael Sendivogius performs a demonstration that he claims is a transmutation before Holy Roman Emperor Rudolph II.

1404

600 YEARS AGO

13 January

English alchemists are forbidden to use their knowledge to create precious metals.