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# February

| FEBRUARY | SCIENTIST |
|---|---|
| 1 | **Hatchett, Charles** (1 February 1765–3 October 1847), British scientist. In 1801, he discovered and named niobium metal (Nb), in honor of Niobe, the daughter of Tantalus (son of Zeus).<br><br>**Segrè, Emilio Gino** (1 February 1905–22 April 1989), Italian scientist. He was a co-winner, with O. Chamberlain, of the Nobel Prize in physics in 1959 for the discovery of the antiproton.<br><br>**Tsien, Y. Roger** (1 February 1952), American scientist. He discovered the green fluorescent protein. He was a co-winner of the Nobel Prize in chemistry in 2008, with O. Shimomura and M. Chalfie. |
| 2 | **Lanczos, Cornelius** (2 February1893–25 June 1974), Hungarian scientist. He is known for his seminal works in the field of physics. He developed methods of calculation including the conjugate gradient method, the Lanczos approximation of the Gamma function, the Lanczos algorithm, and the approximation of potentials using the Lanczos sigma factor. |
| 3 | **Gaston Maurice, Julia** (3 February1893–19 March 1978), French mathematician. He is well known for his research in the field of mathematics, which has various applications in theoretical chemistry. He specialized in functions of complex variables.<br><br>**Blackwell, Elizabeth** (3 February 1821–31 May 1910), American scientist. She was the first female graduate in medicine in the United States and the first female member of the Association of Physicians of Great Britain. |
| 4 | **Böttger, Johann Friedrich** (4 February 1682–13 March 1719), German scientist. He (with E.W. von Ehrenfried Tschirnhaus) discovered the composition of Chinese porcelain and improved the manufacturing process for porcelain in Europe.<br>(*However, it should be noted that in 1751, the discovery of the kaolin deposit at Saint-Yrieux-la-Perche was responsible for the emergence of porcelain factories in Limoges. In 1698, Baron Schnorr discovered the first European kaolin deposit, in Saxony).*<br><br>**Hund, Friedrich** (4 February 1896–31 March 1997), German scientist. He is known as a specialist in the field of quantum mechanics. He discovered quantum tunneling. He formulated Hund's rule, a common rule of thumb in the field of atomic physics.<br><br>**Prandtl, Ludwig** (4 February 1875–15 August 1953), German scientist. He is known for his seminal works in the field of fluid mechanics. He is the author of boundary-layer theory and of the theory of the strength of solids. He established the empirical formula for the calculation of linear pressure losses, in terms of a quantity called the Prandtl number (*Pr*). |

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1631-0748/

**5** **Becquerel, Jean** (5 February 1878–4 July 1953), French scientist. He earned recognition in the scientific community for his work regarding the optical and magnetic properties of crystals, including paramagnetic rotatory polarization.

**Hofstadter, Robert** (5 February 1915–17 November 1990), American scientist. In recognition of his pioneering research work regarding the diffraction of electrons in the atomic nucleus and the discoveries that resulted, he was a co-winner of the Nobel Prize in physics in 1961.

**6** **Zelinsky, Nikolay Dimitrievich** (6 February 1861–31 July 1953), Russian scientist. He is regarded as one of the pioneers of catalysis in organic chemistry. He studied the catalytic dehydrogenation of cycloalkanes and developed methods of preparing the aromatic hydrocarbons used as raw materials in the rubber, dyes and plastics industries.

**7** **Maskawa, Toshihide** (7 February 1940), Japanese scientist. He was a co-winner of the Nobel Prize in physics in 2008 for his work on the violation of CP symmetry (invariance).

**8** **Mendeleev, Dmitri Ivanovich** (8 February 1834–2 February 1907), Russian scientist. He is known for his publication, in 1869, of the first accurate version of the periodic table of elements. His research focused on the periodic table of the chemical elements based on atomic weight and valence. In 1955, a newly discovered element (number 101) was named mendelevium (Md) in his honor.

**Gomberg, Moses** (8 February 1866–12 February 1947), American scientist of Russian origin. He was the first to synthesize tetraphenylmethane and triphenylmethyl. He developed the first antifreeze formula for automobile radiators.

**9** **Bernoulli, Daniel** (9 February 1700–17 March 1782), Swiss scientist. In 1738, he published a book on hydrodynamics in which it was proven that as the flow velocity of a fluid increases, its pressure decreases. This principle is often used in laboratories to produce vacuum.

**Maybach, Wilhelm** (9 February 1846–29 December 1929), German engineer. He is known as the inventor of the carburetor (an essential unit in any gasoline engine). He was also the creator of the Maybach brand of German luxury cars.

**10** **Cleve, Per Teodor** (10 February 1840–18 June 1905), Swedish scientist. He is known for his research in the field of rare-earth chemistry. He definitively established that didymium (Greek for twin elements) is a mixture of praseodymium and neodymium. He discovered holmium (Ho) and thulium (Tm). The radioactive mineral cleveite was named in his honor.

**Brattain, Walter Houser** (10 February 1902–13 October 1987), American scientist of Chinese origin. He contributed to the invention of the transistor and was a co-winner of the Nobel Prize in physics in 1956.

**11** **Gibbs, Josiah Willard** (11 February 1839–28 April 1903), American scientist. He is best known for his redoubtable work in the fields of chemical thermodynamics and statistical physics. He developed the notions of chemical potential and variance as well as the definition of free enthalpy. He is also known as the father of vector analysis.

**Edison, Thomas** (11 February 1847–18 October 1931), American inventor. He was the inventor of the phone, cinema, and sound recording and is considered to have been a forerunner in research in the field of electricity. He invented a stock ticker and developed the first alkaline battery.

**12** **Schwinger, Julian Seymour** (12 February 1918–16 July 1994), American scientist. He is the author of the renormalization theory, and he was also the first to describe the phenomenon of electron–positron pair (the Schwinger effect). He was a co-winner of the Nobel Prize in physics in 1965 for discoveries in quantum electrodynamics.

**Brunauer, Stephen** (12 February 1903–6 July 1986), American scientist of Hungarian origin. He is best known for his contributions to the BET theory, the most preeminent research in the field of surface science in the modern era.

**13** **Dulong, Pierre Louis** (13 February 1785–19 July 1838), French scientist. He is known for the discovery of nitrogen chloride and his outstanding basic research on the specific heat and refractive index of this gas.

**Shockley, William Bradford** (13 February 1910–12 August 1989), American scientist. Co-winner of the Nobel Prize in physics in 1956, with W.H. Brattain and J. Bardeen, for their work on semiconductors and the discovery of the transistor effect.

**14** **Wilson, Charles Thomson Rees** (14 February 1869–15 November 1959), Scottish scientist. He is known for his research on the first particle detector. His research on the condensation chamber known as the "Wilson chamber", which permits the visualization of the trajectory of an electron, was rewarded in 1927 with the Nobel Prize in physics. This method uses the condensation of steam to visualize the paths traveled by electrically charged particles.

**Nieuwland, Julius Arthur** (14 February1878–11 June 1936), Belgian scientist. He is known for the discovery of neoprene, one of the first synthetic rubbers.

**Hauptman, Herbert Aaron** (14 February 1917–23 October 2011), American mathematician. He was a co-winner of the Nobel Prize in chemistry in 1985, with J. Karle, for their development of revolutionary mathematical methods for the determination of crystal structures.

**15** **Galilei, Galileo** (15 February 1564–8 January 1642), Italian scientist. He is known as one of the pioneers of modern physics and astronomy. He improved the telescope and studied the fields of dynamics and kinematics. His bold interventions in favor of heliocentrism made him famous.

**Stoney, George Johnstone** (15 February 1826–5 July 1911), Irish scientist. He is best known for his important contributions to the study of spectra. He gave the electron its name and invented a novel type of heliostat.

**Guillaume, Charles Édouard** (15 February 1861–13 June 1938), Swiss scientist. He discovered alloys with low coefficients of expansion. His discoveries played a crucial role in the development of metrology. He was awarded the Nobel Prize in physics in 1920.

**Euler-Chelpin, Hans Karl August Simon** (15 February 1873–6 November 1964), Swedish scientist of German origin. His findings regarding the fermentation of sugar and fermentation enzymes earned him the Nobel Prize in chemistry in 1929, in combination with A. Harden.

**Garin, G. François** (15 February 1947), French scientist. He was the first to achieve the experimental isomerization of alkanes on single crystals of platinum, or vicinal faces, using molecules labeled with carbon-13. Based on these experiments, it was demonstrated that particular orientations favored displacement reactions at binding sites with B5 orientation, (311) or (110). Subsequently, he developed a research topic related to the substitution of noble metals by non-noble oxides and applied to catalytic reactions.

**16** **Thomsen, Hans Peter Jörgen Julius** (16 February 1826–13 February 1909), Danish scientist. His research focused on the field of thermochemistry. He was the first to measure the relative strengths of different acids, and he predicted the existence of a group of inert noble gases. He developed a method for the preparation of sodium carbonate from the mineral cryolite.

**17** **Stern, Otto** (17 February 1888–17 August 1969), American scientist of German origin. He is known for the discovery of the magnetic properties of atoms. He was awarded the Nobel Prize in physics in 1943 in recognition of his contribution to the development of molecular beams and the discovery of the magnetic moment of the proton.

**18** **Volta, Alessandro Giuseppe Antonio Anastasio** (18 February 1745–5 March 1827), Italian scientist. In 1778, he became the first to isolate the compound methane, a major constituent of natural gas. He invented the eudiometer instrument for the volumetric analysis of gas mixtures, with which he performed the first water synthesis. In 1800, Volta built the first electric battery. He discovered that electricity is not merely static but can also move, constituting an electrical current.

**Mach, Ernst** (18 February 1838–19 February 1916), Austrian physicist and philosopher. He is best known for his research in the field of physics, namely, the phenomena of the diffraction, polarization, and refraction of light, which contributed to the founding of the field of supersonic research. He was the first to demonstrate the role of speed in aerodynamic flows.

**19** **Copernicus, Nicolaus** (19 February 1473–24 May 1543), Polish astronomer. He is known for his tenacious espousal of heliocentric theory – the Sun is the center of the universe.
*However, it should be noted that there was a predecessor to Copernicus, the Greek Aristarchus of Samos (ca. 310–ca. 230 BCE). He, in fact, was the first to develop a representation of the heliocentric universe.*

**Kirchhoff, Gottlieb Sigismund** (19 February 1764–14 February 1833), Russian scientist. He was an early practitioner of catalysis; in 1814, he treated starch with sulfuric acid, which caused the hydrolysis of the large molecules into smaller units of glucose. The sulfuric acid was not consumed in the hydrolysis of the starch; thus, the production of glucose as controlled by the sulfuric acid was the first example of a catalytic reaction process.

**Reich, Ferdinand** (19 February 1799–27 April 1882), German scientist. He is known for his discovery, in 1863, of the chemical element indium (In), which was named for the indigo line of the atomic spectrum.

**Arrhenius, Svante August** (19 February 1859–2 October 1927), Swedish chemist. He was responsible for developing the theory of ionic dissociation, one of the cornerstones of physical chemistry and modern electrochemistry. This discovery earned him the Nobel Prize in chemistry in 1903. He suggested the existence of activation energy. This is the concept that underlies the theory of catalysis.

**Gross, David Jonathan** (19 February 1941), American scientist. He is known for his ingenious work on string theory, heterotic string theory, and the theory of strong interactions, particularly the discovery of asymptotic freedom. He shared the 2004 Nobel Prize in physics with his two former students, F. Wilczek and D. Politzer, for their discovery of asymptotic freedom in the framework of quantum chromodynamics.

**MacKinnon, Roderick** (19 February 1956), American scientist. He received the Nobel Prize in chemistry in 2003 for his discovery of aquaporins (a class of membrane proteins that form pores that are permeable to water molecules) in biological membranes.

**Belousov, Boris Pavlovich** (19 February 1893–12 June 1970), Soviet scientist. He is known for his work in the field of nonlinear chemical dynamics. He developed the Belousov–Zhabotinsky reaction model, describing the most widely studied type of complex dynamic behavior in homogeneous catalysis.

**20** **Boltzmann, Ludwig** (20 February 1844–5 September 1906), Austrian scientist. His research was devoted to the field of fluid mechanics. He is known for his kinetic equation, the Boltzmann equation.

**Eyring, Henry** (20 February 1901–26 December 1981), American theoretical chemist. He was the first to apply theories of quantum mechanics and statistical mechanics to chemistry. He made significant contributions in the field of chemical reaction kinetics and developed the theory of optical activity in organic compounds.

**Huber, Robert** (20 February 1937), German scientist. For his work in determining the three-dimensional structure of photosynthetic reactive centers, he received the Nobel Prize in chemistry in 1988.

**21** **Dam, Henrik** (21 February 1895–17 April 1976), Danish scientist. He became known in 1920 for the discovery of vitamin K. For this discovery, he became a co-winner of the Nobel Prize in physiology or medicine in 1943.
**On February 21, 1632**: Galileo published his *Dialogue Concerning the Two Chief World Systems.*

**22** **Hertz, Heinrich Rudolf** (22 February 1857–1 January 1894), German scientist. During his career, he proved the existence of electromagnetic waves using an oscillator (the Hertz oscillator). His main contribution to science was the development of radio and wireless telegraphy. The unit of measurement of frequency was named the hertz (Hz) in his honor.

**Brønsted, Johannes Nicolaus** (22 February 1879–17 December 1947), Danish scientist. His research was devoted to studies of chemical reactions. He established the definitions of acids and bases. He studied how acids and bases catalyze chemical reactions. He formulated the Brønsted–Lowry theory, an extension of the Arrhenius theory of acids.

**Strassman, Friedrich Wilhelm** (22 February 1902–22 April 1980), German scientist. In 1938, in collaboration with O. Hahn, he demonstrated that the bombardment of uranium with neutrons leads to fission, thereby discovering the nuclear fission of uranium.

**23** **Funk, Kazimierz** (23 February 1884–19 November 1967), Polish scientist. He coined the term "vitamin" (from "vital" and "amine"). He isolated and identified vitamin B. He clarified the nature of vitamins and their role in the body.

**Michael Dell** (23 February 1965) founded the Dell Company in 1984.
**On February 23, 1893**: Rudolf Diesel received the patent for the diesel engine.

**24** **Schmidt, P. Brian** (24 February 1967), American scientist. He described the phenomenon of the accelerated expansion of the universe. He received the Nobel Prize in physics in 2011.

**Wineland, David** (24 February 1944), American scientist. He developed the revolutionary experimental methods that enabled the measurement and manipulation of individual quantum systems. He received the Nobel Prize in physics in 2012.

**25** **Levene, Phoebus Aaron Theodore** (25 February 1869–6 September 1940), American biochemist. He isolated the carbohydrate portion of the nucleic acid molecule and identified the components of DNA and RNA. In 1909, he discovered ribose, and in 1929, he proved the existence of deoxyribose.

**Noddack, Ida** (25 February1896–24 September 1978), German scientist. She was the first to propose the idea of nuclear fission. She discovered the chemical element rhenium ($Z = 75$).

**Astbury, William Thomas** (25 February 1898–4 June 1961), English scientist. Through X-ray diffraction studies, he characterized the basic structure of the $\alpha$ helix, which led to the discovery of the three-dimensional structure of proteins and that of the double helix of DNA, the molecule that serves as the basis of heredity.

**26** **Arago, Dominique François Jean** (26 February 1786–2 October 1853), French scientist. He actively contributed to determining the tension of water vapor at high relative pressures as well as studying the polarization of light and magnetism.

**Clapeyron, Benoît Paul Émile** (26 February 1799–28 January 1864), French physicist and engineer. His research work was focused on the field of thermodynamics. His name is associated with the Clapeyron equation. He was the first to formulate the notion of the ideal gas.

**Natta, Giulio** (26 February 1903–2 May 1979), Italian scientist. He and K. Ziegler were co-winners of the Nobel Prize in chemistry in 1963 for their research in the field of polymers. He contributed to the development of stereospecific polymerization catalysts for olefins, the Ziegler–Natta catalysts.

**Zewail, Ahmed Hassan** (26 February 1946), Egyptian scientist. He developed a method of probing the formation of chemical bonds at the level of a few femtoseconds, or one millionth of a billionth of a second. He became the winner of the Nobel Prize in chemistry in 1999 for his studies of the transitional states of chemical reactions using femtosecond spectroscopy.

**27** **Grubbs, H. Robert** (27 February 1942), American scientist. In his research, he focuses on the development of the metathesis method for organic synthesis. For this work, he received the Nobel Prize in chemistry in 2005.

**28** **Ferchault de Réaumur, René-Antoine** (28 February 1683–17 October 1757), French scientist. He was the first researcher to demonstrate that steel contains carbon.

**Pauling, Linus Carl** (28 February 1901–19 August 1994), American scientist. He developed the concept of the hybridization of atomic orbitals. It was he who defined the concept of resonance. He synthesized hemoglobin S, and his discoveries include the structure of the alpha helix. He was awarded the Nobel Prize in chemistry in 1954 for his work in describing the nature of chemical bonds. He received the Nobel Peace Prize in 1962 for his activism against nuclear testing.

**Cooper, Leon Neil** (28 February 1930), American physicist. He won the Nobel Prize in physics in 1972, along with J. Bardeen and J.R. Schrieffer, for their research on superconductivity.

**Tsui, Daniel Chee** (28 February 1939), Chinese-American scientist. Most of his research in the field of physics has been devoted to the electrical properties of thin layers, solid-state physics, and the study of the microstructure of semiconductors. For his contributions to the discovery of the fractional quantum Hall effect, he received the Nobel Prize in physics in 1998.

**Chu, Steven** (28 February 1948), American scientist. With C. Cohen-Tannoudji and W.D. Phillips, he was a co-winner of the Nobel Prize in physics in 1997. Their research concerned the development of various methods of cooling and trapping atoms using laser light.

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