



ELSEVIER

Contents lists available at ScienceDirect

Comptes Rendus Chimie

www.sciencedirect.com



Block calendar/Éphéméride

January – Joseph Achille Le Bel, *lux aeterna* of stereochemistry

Le Bel was an eminent French chemist of unequalled brilliance and intellectual prowess. He is known as the co-founder (with Van't Hoff) of stereochemistry and the founder of petrochemistry in France. Over the course of his career, Le Bel was acknowledged not only as a leading researcher in the field of stereochemistry and the chemistry of petroleum, but also an expert in crystallography, fermentation, biology, cosmology, and prehistory; he was also an outstanding pedagogue. Le Bel was brilliant, enthusiastic, creative, a visionary scholar and, of equal importance, a good friend.

The great respect expressed in these words not only pays tribute to a visionary scholar who has earned an honorable place in the history of science *ad vitam æternam* (for eternal life), but also honors the man who loved his work and forged his star, which will continue to shine for centuries.

“There are many wonderful things, and nothing is more wonderful than man”, *Sophocles*

One human was born... the birth of the man, the birth of Le Bel

Le Bel was born on 21 January 1847 in Péchelbronn (near Strasbourg), Alsace, the youngest of the four children of Louis-Frédéric-Achille Le Bel and Madelaine Le Bel (Martin). Le Bel spent his younger years, from kindergarten to college, and part of his adult life in Péchelbronn. Le Bel began his high-school studies at the “Collège Haguenau” (near Péchelbronn and Strasbourg) and continued them in High School Charlemagne in Paris. In 1865, he decided to participate in the competitive entrance examinations for the prestigious “École polytechnique” of Paris, where he began studying at the age of eighteen. He graduated after two years, in 1867. His interest in chemistry continued. He obtained a “préparateur” position at the General Chemistry chair held by Liés Bodart at the University of Strasbourg, and later held a similar position under Antoine-Jérôme Balard (the discoverer of bromine) at the Collège de France. In 1873, he moved to Paris to work in the laboratory of Charles-Adolphe Würtz at the “École de médecine”. After Würtz' death, his successor Armand Gautier continued to

employ Le Bel as an assistant. While working with Würtz, Le Bel took an active role in the management of the family business at Péchelbronn, conducting research in the area of petroleum chemistry. Nevertheless, in 1889, Le Bel, who had no direct heirs to continue his scientific work, decided to turn the business into a stock company, thereby ensuring that it would remain in the hands of the Alsatian investors at Péchelbronner Oelbergwerke. During this time, the whole family moved to Paris, and around 1904, Le Bel moved to 250, rue Saint-Jacques, in a house in which he built a small staff apartment and laboratories where staff members could work freely.

Le Bel was appointed as a member of the “Société chimique de France” in 1869. He became its vice-president in 1890 and was made president in 1892. He was the Commander of the Legion of Honour and a member of the “Académie des sciences” (Paris), which had awarded him the Jecker prize in 1881. He was elected as an honorary fellow of the Chemical Society in 1908 and a foreign member of the Royal Society in 1913. In 1893, both he and Van't Hoff became Davy medalists of the Royal Society. In 1924, on the occasion of the 50th anniversary of the asymmetric carbon theory, the society awarded him a gold medal bearing Lavoisier's effigy. In 1911, he was appointed member of the Prehistoric Society of France, and in 1923, he was appointed honorary president. Notably, on Le Bel's 80th birthday, a medal was struck in his honor.

Research activities

Le Bel published several original papers and communications on different subjects, such as stereochemistry, chemistry of petroleum, crystallography, biology, and prehistory.

Stereochemistry, or *labor omnia vincit improbus* (steady work conquers all things)

It has been known for more than 150 years that asymmetric crystals of certain minerals, such as tourmaline (a borosilicate mineral of complex and variable composition)

and quartz, rotate the plane of polarized light and that the rotatory power of these minerals is lost if the crystals are melted or dissolved. This asymmetry is retained only in the crystalline form of the minerals. Certain carbon compounds, however, rotate the plane of polarized light in solution (for example, cane sugar solutions) or even in the gaseous state (turpentine, for example). In these cases, optical activity is a property of the molecules themselves. Francois Arago reported (in 1811) the rotation of polarized light in quartz, followed by the conclusion of René Just Haüy and John Herschel regarding the sense of rotation in quartz and certain facets of the crystal. Jean-Baptiste Biot demonstrated (in 1815) the rotatory power of certain natural organic substances such as sugar, gum, dextrin, camphor, and turpentine, and showed that these substances were optically active along the same direction. Apollinaire Bouchardat reported (in 1843) that the same phenomenon occurred in alkaloids and glucosides. The real cause of this optical phenomenon remained unknown until Pasteur's pioneering research. Louis Pasteur discovered (in 1848) that crystals of a sodium ammonium salt of tartaric acid, a dextrorotatory optically active substance, exhibited hemihedral facets, that is, one half of all the faces developed unequally. The observation of many other crystal forms of tartaric acid led Pasteur to believe that the phenomenon of hemihedry and optical rotation were related. Pasteur found further evidence that the crystals of paratartrate (racemic tartaric acid) also exhibited hemihedral facets, but that the hemihedry sometimes faced to the right and sometimes to the left, that is, the racemate crystals were specimens of two asymmetric types, one being the mirror image of the other. The question arose immediately about the arrangements of the atoms in the molecules of these substances. Pasteur was chiefly interested in the separation of optical isomers and in the study of bacteria and other microorganisms, which often produced such substances, and left the theoretical explanation of the molecular structure to others. Pasteur's ideas were not extended to molecular structures even after Kekulé had explained the structures of organic compounds in terms of the tetravalence of carbon.

The theory of the asymmetric carbon atom and stereochemistry was put forward independently and practically simultaneously by Van't Hoff and Le Bel in 1874. Le Bel, based on the views of Pasteur, and Van't Hoff, based on the ideas of Kekulé, arrived independently at the theory that when the four substituents around a carbon atom are different, i.e. the carbon compound is asymmetric, mirror-image pairs of molecules must exist and they must show opposite optical activities.

Le Bel loved intellectual challenges and was the first to separate an optically active component from the synthetic mixture of two mirror-image components of a compound containing an asymmetric carbon atom. He was also the first to show that when the asymmetric carbon atom of an optically active substance of the type CWXYZ becomes symmetric by conversion into the allied compound CX₂YZ, the optical activity disappears. Le Bel discussed the mode in which the four univalent radicals attached to a quadrivalent carbon should arrange themselves as purely a matter of equilibrium and hence arrived at the tetrahedral

environment of the central carbon atom with the same consequences, regarding asymmetry, as those of Van't Hoff. Van't Hoff arrived at the theory in a somewhat different manner. Van't Hoff proceeded from the assumption that, in a molecule such as methane, the four valence directions of the carbon atom are directed outward from a center, representing the carbon atom, towards the vertices of a regular circumscribing tetrahedron, with four hydrogen atoms centered on those vertices. In the substitution derivatives of methane of the types CX₃Y and CX₂YZ, where X, Y, and Z are radicals, no isomerism should exist if the four radicals lie at the vertices of the tetrahedron. When all four radicals attached to the central carbon are different, as in molecules of the type CWXYZ, two isomers should exist, the spatial configuration of one being the mirror image of that of the other. A carbon atom so attached to four different radicals is termed asymmetric, and, in accordance with the conclusion of Van't Hoff and Le Bel, all substances that contain one asymmetric carbon atom have been found to exist as two mirror-image molecules, or enantiomorphically related configurations of arithmetically equal but algebraically opposite rotatory powers. Notably, Van't Hoff and Le Bel announced the same theory almost simultaneously. Van't Hoff's paper appeared in Dutch in September 1874, and Le Bel's was published in French in November of the same year.

Le Bel was famously generous with his time because he extended his stereochemical conception to quinquivalent nitrogen compounds and announced in 1891 that he was able to obtain optically active methylethylpropylisobutylammonium salts. His findings represented a significant advancement in stereochemistry by showing that nitrogen could certainly be a pivot for an asymmetry reflected in the existence of rotatory power.

The chemistry of petroleum at Pêchebron, or the ties that bind...

Le Bel was interested in the origin of petrol and the chemistry of petroleum at Pêchebron. His publications revealed how petroleum was derived, specifically through reactions between water and the Earth's molten core (theory maintained by Mendeleev) and the decomposition of soft coal under the simultaneous action of heat from the earth's core and the pressure of the surrounding layers; the resulting products are petroleum and anthracite. He refuted the fermentation of animal or vegetable matter, as illustrated by the gas produced in marshes, as a possible source of petroleum because it implied that the petroleum formed was capable of stopping the fermentation process and killing the microorganism responsible. Le Bel, as a proponent of Mendeleev's theory, suggested that the presence of natural fuels was not required because the formation of petroleum was based on the reaction between water and metals present in the ferrisphere. In the first scientific publication (1872) concerning the characteristics of the bitumen present in the fields located in Schwabwiler, Pêchebron, and Lobsann (Lower Rhine) underlined the role of amyl alcohol. The most volatile fraction of these bitumens contained pentane, hexane, and unsaturated components. The latter were easily converted into their

chlorides and iodides, particularly amyl iodide, and then to an amyl alcohol mixture. Le Bel studied the procedure for separating the volatile components of petroleum and the preparation of several derivatives, for example, isoamyl and isohexyl alcohols, and the identification of two isomers of the those derivatives. He showed that the amount of volatiles decreased if the oil was kept in contact with water for a long period. He developed a procedure for separating olefins. Le Bel and his collaborators studied the reaction of several alcohols according to the method proposed by Étard. In 1873, Le Bel studied why the halo derivatives of amyl alcohol presented opposite optical activities; amyl chloride was slightly *levo*, whereas amyl bromide and iodide were strongly *dextro*. He also studied and found that the optical activity of active amyl alcohol disappeared if two of its radicals were made identical or one of them was transformed into the unsaturated form. Le Bel used the results of his work on amyl alcohol to justify the main consequences of his theory about carbon asymmetry: racemization, resolution by yeasts, disappearance of the required asymmetry, etc. In particular, Le Bel showed that the resolution of inactive amyl alcohol demonstrated that its structure necessarily contained four different groups and that it should be considered a mixture of the *dextro* and *levo* forms. Le Bel did extensive work on the crystals formed by the chloroplatinates of a large number of amines with the goal of understanding the effect of their composition on the crystalline form. Le Bel also prepared a large number of double salts formed by the chloroplatinate of ammonium bases. Some of the salts were unable to combine with others, but pairs such as the chloroplatinates of tripropyl and triethylamine, dimethyl and methylpropylamine, and dimethyl and dipropylamine were able to do so at a one-to-one mole ratio. The chloroplatinate of dimethylamine was particularly interesting because of the large number of double salts it formed. Its double salts with another amine, which contained two identical radical groups (for example, dipropylamine), were remarkably crystallized. Dimethylamine also presented the phenomenon of dimorphism.

Le Bel is known for his intellectual pragmatism in conducting other research experiments. Le Bel investigated the *fermentation of several substances*, gelatin among them, as part of his work on the production of alcohols and fatty acids. He discussed the origin of the alcohols and fatty acids produced. Based on his results, Le Bel concluded that the bacillus thus cultivated was capable of attacking the walls of the intestine and should certainly be considered one of the causes of acute enteritis, which at the time was treated with *Bacillus bifidus* or the lactic ferment. Le Bel analyzed the products of the fermentation of gelatin and found that they contained ammonium carbonate and several low fatty acids up to and including valeric acid. On the other hand, the fermentation of a sugar produced higher alcohols (up to C5), and their quantity increased if the substrate contained nitrogenous components. Based on this result, Le Bel deduced that these alcohols were derived from the nitrogenous substance. Fermentation of the nitrogenous substance alone yielded a series of low fatty acids up to and including valeric acid.

Le Bel was interested in *philosophical subjects* as well, particularly those related to the creation of the universe. In a lengthy memoir published in the *Journal de chimie physique*, Le Bel presented his theories regarding the origin of the universe. He assumed that the forces present in the cosmos had been able to maintain its existence in the past, that they do so in the present, and that they would continue to do so in the future. It was necessary to find the causes able to maintain an indefinite cycle. He indicated that his discussion did not include supernatural phenomena, without negating the existence of a superior intelligent force. Le Bel dedicated time to investigating what he called catathermic radiation, that is, a radiation that originated in the interior of a non-uniformly heated body and that reflected, on a smaller scale, the radiation that Tissot claimed was emitted by the ether. According to Le Bel, ether did not have mass; nevertheless, his reasoning implied that it was able to create energy without leaving traces. His catathermic radiation had the same characteristics.

His interest in *prehistory* is underlined in two communications to the “Société de chimie”. Le Bel reported that he had found in Les Eyzies, Dordogne, a cave where the stalactites presented interesting mineralogical characteristics. The stalactites in Les Eyzies also had the characteristic of being generally inclined and taking bush-like shapes called coral bushes. In any case, the most curious formations were the ones called stag horns, which were very slim with branches forming perfect half-circles. According to Le Bel, these formations were extremely rare because the air in the caves was normally very dry. Le Bel attributed the phenomenon to triboluminescence.

Le Bel, who carried out pioneering studies on stereochemistry, which demonstrates the tetrahedral structure of carbon and explains the phenomenon of chirality, passed away in Paris on 6 August 1930. Le Bel was buried at the Bagneux Cemetery (Paris). Although erudite, Le Bel's intellectual spirit did not affect his humanity, and as a testament to his generosity, Le Bel donated all his fortune (approximately 4 million francs) to the “Société chimique de France” (SCF).

The “great architect of the universe” has decided to place Le Bel next to those who put their mark on the world, and Le Bel can confidently say *Veni, vidi, vici...*

References

- [1] J.A. Le Bel, *Bull. Soc. Hist. Nat. de Colmar*, Imprimerie Decker, Colmar, 1885, p. 15.
- [2] M. Delépine, *Vie et œuvres de Joseph-Achille Le Bel*, Masson Éditeurs, Paris, 1949.
- [3] J.-C. Streicher, *Joseph Achille Le Bel, Pechelbronn et la chimie en 3D*, Bentzinger, Colmar, France, 2015.
- [4] L. Lestel, *Itinéraires de chimistes*, EDP Science, Paris, 2008, pp. 1857–2007.
- [5] W.J. Pope, *Nature* 3175 (1930) 374–375.
- [6] W.J. Pope, *J. Chem. Soc.* (1930) 2789.
- [7] E. Wedekind, *Angew. Chem.* 43 (1930) 45.
- [8] J. Wisniak, *Rev. CENIC Cienc. Quím* 33 (2002) 35.
- [9] J.A. Le Bel, *C.R. Hebd. Séances Acad. Sci. Paris* 73 (1871) 499.
- [10] J.A. Le Bel, *Bull. Soc. Chim. Fr.* 18 (1872) 164.
- [11] J.A. Le Bel, *C.R. Hebd. Séances Acad. Sci. Paris* 77 (1873) 1021.
- [12] J.A. Le Bel, *Bull. Soc. Chim. Fr.* 21 (1874) 542.
- [13] J.A. Le Bel, *Bull. Soc. Chim. Fr.* 22 (1874) 337.
- [14] J.A. Le Bel, *Bull. Soc. Chim. Fr.* 25 (1876) 545.
- [15] J.A. Le Bel, *Bull. Soc. Chim. Fr.* 28 (1877) 460.

- [16] J.A. Le Bel, *Bull. Soc. Chim.* 2 (1889) 642.
 [17] J.A. Le Bel, *Bull. Soc. Chim.* Fr. 3 (1890) 788.
 [18] J.A. Le Bel, *C.R. Hebd, Séances Acad. Sci. Paris* 110 (1890) 144.
 [19] J.A. Le Bel, *C.R. Hebd, Séances Acad. Sci. Paris* 112 (1891) 724.
 [20] J.A. Le Bel, *C.R. Hebd, Séances Acad. Sci. Paris* 125 (1897) 350.
 [21] J.A. Le Bel, *J. Chim. Phys.* 9 (1911) 559.
 [22] J.A. Le Bel, *C.R. Hebd, Séances Acad. Sci. Paris* 157 (1913) 201.
 [23] J.A. Le Bel, *C.R. Hebd, Séances Acad. Sci. Paris* 166 (1918) 1047.
 [24] J.A. Le Bel, *C.R. Hebd, Séances Acad. Sci. Paris* 186 (1928) 1306.
 [25] J.A. Le Bel, *Bull. Soc. Chim.* 43 (1928) 653.
 [26] J.A. Le Bel, *C.R. Hebd, Séances Acad. Sci. Paris* 189 (1929) 890.
 [27] J.A. Le Bel, *Bull. Soc. Chim.* Fr. 47 (1930) 380.
 [28] L. Pasteur, *Recherches sur la dissymétrie moléculaire des produits organique naturels*, Librairie Hachette, Paris, 1860.
 [29] J.H. Van't Hoff, J. Greven (1874).
 [30] R.B. Grossman, *J. Chem. Educ.* 66 (1989) 30.
 [31] W.J. Pope, J. Read, *J. Chem. Soc.* 101 (1912) 519.

Ioana Fechete

Institut de chimie et procédés pour l'énergie, l'environnement et la santé (ICPEES), UMR 7515 CNRS, Université de Strasbourg, 25, rue Becquerel, 67087 Strasbourg cedex 2, France

E-mail addresses: ifechete@unistra.fr, i_fechete@yahoo.com (I. Fechete)

Available online 4 March 2016

C. R. Hebd.

January

JANUARY	MEMBERS OF THE FRENCH ACADEMY OF SCIENCES
1	<p>Duméril, André Marie Constant (1 January 1774–14 August 1860), French zoologist. Libri, Guglielmo Brutus Icilius Timeleone Carucci dalla Sommaja (1 January 1803–28 September 1869), Italian mathematician. Moussu, Auguste Léopold (1 January 1864–16 October 1945), French veterinary. Brachet, Albert Toussaint Joseph (1 January 1869–27 December 1930), Belgian doctor. Laffitte, Paul Frédéric (1 January 1898–24 December 1981), French chemist. Heim de Balsac, Henri Frédéric Jules Victor (1 January 1899–27 November 1979), French zoologist.</p>
2	<p>Hallé, Jean Noël (2 January 1754–11 February 1822), French doctor and physicist. Hatchett, Charles (2 January 1765–10 March 1847), English chemist. Clausius, Julius Emmanuel Rudolph (2 January 1822–24 August 1888), German physicist and mathematician. Amagat, Émile Hilaire (2 January 1841–15 February 1915), French physicist. Bertrand, Charles Eugène (2 January 1851–10 August 1917), French botanist and geologist. De-Toni, Giovanni Battista (2 January 1864–31 July 1924), Italian botanist and psychologist. Schmidt, Ernest Johannes (2 January 1877–21 February 1933), Danish biologist. Dhar, Nil Ratan (2 January 1892–5 December 1986), Indian chemist. Gallien, Louis Eugène (2 January 1908–6 September 1976), French biologist. Barriol, Jean (2 January 1909–3 December 1989), French chemist.</p>
3	<p>Hombert, Guillaume (3 January 1652–24 September 1715), Dutch chemist. Du Verney, Christophe, dit Jacques-François-Marie (3 January 1661–16 October 1748), French doctor and anatomist. Trudaine, Daniel-Charles (3 January 1703–19 January 1769), French administrator. Poinsot, Louis (3 January 1777–5 December 1859), French mathematician. Carus, Carl Gustav (3 January 1789–23 July 1869), German physiologist and painter. d'Arrast, Antoine Thomson d'Abbadie (3 January 1810–19 March 1897), French explorer, astronomer, geographer, ethnologist and linguist. Arloing, Saturnin (3 January 1846–21 March 1911), French veterinary. Matignon, Camille Arthème (3 January 1867–18 March 1934), French chemist. Hoff, Nicholas John (3 January 1906–4 August 1997), American engineer of Hungarian origin. Karp, Richard Manning (3 January 1935), American computer scientist. Turing Award in 1985. Sanchez-Palencia, Evariste (3 January 1941), French mathematician.</p>
4	<p>Plukenet, Leonard (4 January 1642–6 July 1706), English botanist. Guyton de Morveau, Louis-Bernard (4 January 1737–2 January 1816), French chemist and politician. Ramond, Louis François Élisabeth (4 January 1755–14 May 1827), French botanist and geologist.</p>
5	<p>de Luynes, Paul d'Albert (5 January 1703–21 January 1788), French prelate. Juan y Santacilia alias George Juan (5 January 1713–21 June 1773), Spanish mathematician. Sigaud de Lafond, Joseph, Aignan (5 January 1730–26 January 1810), French physicist. Portal, Antoine (5 January 1742–23 July 1832), French doctor and botanist. Marianini, Stefano Giovanni (5 January 1790–9 June 1866), Italian physicist. Vulpian, Edme Félix Alfred (5 January 1826–18 May 1887), French doctor. Jordan, Marie, Ennemond, Camille (5 January 1838–21 January 1922) Jouguet, Jacques Charles Émile (5 January 1871–2 April 1943), French engineer. Denjoy, Arnaud (5 January 1884–21 January 1974), French mathematician.</p>
6	<p>Mery, Jean (6 January 1645–3 November 1722), French anatomist. Zanotti, Francesco Maria (6 January 1692–24 December 1777), Italian philosopher. Chabert, Philibert (6 January 1737–8 September 1814), French veterinary. La Fosse, Philippe-Étienne (6 January 1738–1820), French veterinary. Montgolfier, Jacques-Étienne (6 January 1745–2 August 1799), French inventor.</p>

Payen, Anselme (6 January 1795–12 May 1871), French chemist.
Lovén, Sven, Ludvig (6 January 1809–3 September 1895), Swedish marine zoologist.
Boudier, Jean Louis Émile (6 January 1828–4 February 1920), French pharmacist.
Lechartier, Georges Vital (6 January 1837–5 February 1903), French chemist.
Grunberg-Manago, Marianne (6 January 1921–3 January 2013), French biologist.

-
- 7** **Montgolfier, Jacques-Etienne de** (7 January 1745–2 August 1799), French inventor.
Mitscherlich, Eilhard (7 January 1794–28 August 1863), German chemist.
Chazallon, Antoine Marie Rémi (7 January 1802–2 December 1872), French physicist.
Roscoe, Sir Henry Enfield (7 January 1833–18 December 1915), English chemist.
Humbert, Marie Georges (7 January 1859–22 January 1921), French mathematician.
Borel, Félix Édouard Justin Émile (7 January 1871–3 February 1956), French mathematician.
Melchers, Johann Georg Friedrich (7 January 1906–22 November 1997), German biologist.
-
- 8** **Hombert, Wilhelm** (8 January 1652–24 September 1715), French chemist.
Genet, Edmond Charles (8 January 1763–14 July 1834), French ambassador to the United States.
Carlini, Francesco (8 January 1783–29 August 1862), Italian astronomer.
Trécul, Auguste Adolphe Lucien (8 January 1818–15 October 1896), French botanist.
Battandier, Jules Aimé (8 January 1848–18 September 1922), French botanist.
Lecomte, Paul Henri (8 January 1856–12 June 1934), French botanist.
Dyson, Frank Watson (8 January 1868–25 May 1939), English astronomer.
Timmermans, Jean-Émile-Charles (8 January 1882–26 August 1971), Belgian chemist.
Kuhnholz-Lordat, Marie Ernest Frédéric Georges (8 January 1888–5 March 1965), French agronomist.
Solomon, Ionel (8 January 1929–29 June 2015), French physicist of Romanian origin.
-
- 9** **Arthus, Nicolas Maurice** (9 January 1862–24 February 1945), French immunologist.
Gorini, Costantino (9 January 1865–3 September 1950), Italian doctor.
Ribaud, Gustave Marcel (9 January 1884–8 October 1963), French physicist.
Binet, Jean-Paul (9 January 1924–31 May 2008), French doctor.
-
- 10** **Tuillier, Adrien** (10 January 1674–2 June 1702), French doctor.
Cossigny, Jean-François Charpentier de (10 January 1690–26 January 1780), French engineer.
Breguet, Abraham-Louis (10 January 1747–17 September 1823), French physicist.
Jacobson, Ludwig Lewin (10 January 1783–29 August 1843), Danish surgeon.
Sirodot, Simon (10 January 1825–11 January 1903), French archaeologist.
Janet, Paul André Marie (10 January 1863–21 February 1937), French physicist.
Delporte, Eugène Joseph (10 January 1882–19 October 1955), Belgian astronomer.
Bergström, Sune (10 January 1916–15 August 2004), Swedish biochemist.
Knuth, Donald Ervin (10 January 1938), American mathematician.
-
- 11** **Bouvard, Michel-Philippe** (11 January 1717–19 January 1787), French anatomist.
Dionis du Séjour, Achille Pierre (11 January 1734–22 August 1794), French mathematician.
La Rochefoucauld-Liancourt (11 January 1747–27 March 1827), French scientist and politician.
Paget, James (11 January 1814–30 December 1899), English surgeon and pathologist.
Spottiswoode, William (11 January 1825–27 June 1883), English mathematician and physicist.
Prillieux, Édouard Ernest (11 January 1829–7 October 1915), French botanist and politician.
Telegdi, Valentine (11 January 1922–8 April 2006), American physicist of Hungarian origin.
-
- 12** **Ulloa, Antonio de** (12 January 1716–5 July 1795), Spanish general, colonial administrator and astronomer.
Le Roy, Charles (12 January 1726–10 December 1779), French doctor.
Spallanzani, Lazzaro (12 January 1729–11 February 1799), Italian biologist.
Barailon, Jean-François (12 January 1743–14 March 1816), French politician.
Daru, Pierre-Antoine-Noël-Mathieu Bruno (1 January–5 September 1829), French poet and historian.
Arfvedson, Johann August (12 January 1792–28 October 1841), Swedish chemist.
Schimper, Wilhelm-Philippe (12 January 1808–20 March 1880), French botanist.
Bouty, Edmond Marie Léopold (12 January 1846–5 November 1922), French physicist.
Sabrazès, Jean Émile (12 January 1867–30 January 1743), French doctor.
Lambert, Walter Davis (12 January 1879–3 November 1968), American mathematician.
Mayor, Michel (12 January 1942), Swiss astrophysicist.
-
- 13** **Maloet, Pierre** (13 January 1684–14 January 1742), French doctor.
Nieuport, Charles François Ferdinand Florent Antoine de Preud'homme d'Hailly, (13 January 1746–20 August 1827), French mathematician.
Robiquet, Pierre-Jean (13 January 1780–29 April 1840), French chemist.
Richards, George Henry (13 January 1820–14 November 1896), British hydrographer.
Bienaymé, Arthur François Alphonse (13 January 1834–25 January 1906), French engineer.
Tisserand, François Félix (13 January 1845–20 October 1896), French astronomer.
Lecornu, Léon François Alfred (13 January 1854–13 November 1940), French engineer and physicist.
Lehmann, Otto (13 January 1855–17 June 1922), German physicist.
Harrison, Ross Granville (13 January 1870–30 September 1959), American biologist.
Sshmidt, Erhard (13 January 1876–6 December 1959), Baltic German mathematician.
Langmuir, Irving (13 January 1881–16 August 1957), American chemist and physicist. Nobel Prize for Chemistry in 1932.
Backer, Hilmar Johannes (13 January 1882–29 April 1959), Dutch chemist.
Dassault, Darius Paul (13 January 1882–30 May 1969), French general.
Brenner, Sydney (13 January 1927), South African biologist. Nobel Prize in Physiology or Medicine in 2002.
Milner, Robin (13 January 1934–20 March 2010), British computer scientist.
-
- 14** **Robiquet, Pierre Jean** (14 January 1780–29 April 1840), French chemist.
Brongiart, Adolphe Théodore (14 January 1801–18 February 1876), French botanist.

Broch, Ole Jacob (14 January 1818–5 February 1889), Norwegian physicist, mathematician, economist and politician.
Zeiller, René Charles (14 January 1847–27 November 1847), French paleobotanist.
Lebeuf, Auguste Victor (14 January 1859–13 July 1929), French physicist and mathematician.
Baillaud, Jules (14 January 1876–28 November 1960), French astronomer.
Holmès, Artur (14 January 1890–20 September 1965), British geologist.
Roche, Jean Casimir Henri Hilaire (14 January 1901 – 25 May 1992), French biochemist.

-
- 15** **La Peyronie, François Gigot de** (15 January 1678–24 April 1747), French surgeon.
Bacheley, Charles (15 January 1716–10 July 1795), French mineralogist.
Yvon Villarceau, Antoine Joseph François (15 January 1813–23 December 1883), French astronomer and engineer.
Waddell, John Alexander Low (15 January 1854–3 March 1938), American civil engineer.
Vanssay de Blavous Pierre Marie Joseph Félix Antoine de (15 January 1869–19 August 1947), French engineer.
Policard, Albert (15 January 1881–1 March 1972), French doctor.
Lapeyronie, François Gigot de (15 January 1678–25 April 1747), French doctor.
Combes, Raoul Pierre Émile (15 January 1883–27 February 1964), French botanist.
Faurre, Pierre Lucien Marie (15 January 1942–6 February 2001), French engineer.
-
- 16** **Bochat de Saron, Jean-Baptiste-Gaspard** (16 January 1730–20 April 1794), French astronomer and mathematician.
Eudes-Deslonchamps, Jacques Amand (16 January 1794–18 January 1867), French doctor.
Gosselin, Léon Athanase (16 January 1815–30 April 1887), French doctor.
Lemoine, Clément Georges (16 January 1841–13 November 1822), French chemist.
Balland, Joseph Antoine Félix (16 January 1845–6 January 1927), French pharmacist.
Garnier, Edouard Louis Marie René (16 January 1887–8 October 1984), French mathematician.
-
- 17** **Franklin, Benjamin** (17 January 1706–17 April 1790), American scientist.
Koenigs, Gabriel Xavier Paul (17 January – 29 October 1931), French mathematician.
-
- 18** **Silvabelle, Saint-Jacques Guillaume de** (18 January 1722–10 February 1801), French astronomer and mathematician.
De la Rue, Warren (18 January 1815–19 April 1889), British astronomer and chemist.
Marès, Henri Pierre Louis (18 January 1820–9 May 1901), French engineer.
Chancel, Gustave Charles Bonaventure (18 January 1822–5 August 1890), French chemist.
Frankland, Edward (18 January 1825–9 August 1899), British chemist.
Bianchi, Luigi (18 January 1856–6 June 1928), Italian mathematician.
Fichot, Lazare Eugène (18 January 1867–17 July 1939), French hydrographer.
Hedvall, Arvid Johan (18 January 1888–24 December 1974), Swedish chemist.
Froment, Roger (18 January 1907–17 February 1984), French Catholic bishop.
Jacquinet, Pierre (18 January 1910–22 September 2002), French physicist.
Balian, Jean Roger (18 January 1933), French physicist.
-
- 19** **Fourcroy, Charles-René de** (19 January 1715–12 January 1791), French engineer.
Trudaine de Montigny, Jean-Charles-Philibert (19 January 1733–5 August 1777), French administrator.
Watt, James (19 January 1736–25 August 1819), Scottish inventor.
Olivier, Guillaume-Antoine (19 January 1756–1 October 1814), French entomologist.
Broussonnet, Pierre Marie Auguste (19 January 1761–27 July 1807), French doctor.
Kapteyn, Jacobus Cornelius (19 January 1851–18 June 1922), Dutch astronomer.
Gregory, Bernard-P (19 January 1919–25 December 1977), French physicist.
Greenwood, Norman Neill (19 January 1925–14 November 2012), Australian-British chemist.
-
- 20** **Berger, Claude** (20 January 1679–22 May 1712), French doctor.
Charles-Gilbert, vicomte Morel de Vindé (20 January 1759–19 December 1842), French agronomist and politician.
Ampère, André-Marie (20 January 1775–10 June 1836), French chemist, physicist and mathematician.
Souillart, Cyrille-Joseph (20 January 1828–10 May 1898), French astronomer.
Wiesner, Julius (20 January 1838–12 October 1916), Austrian botanist.
Porcher, Charles Casimir Toussaint (20 January 1872–24 December 1933), French veterinary.
Gosset, Antonin Louis Charles Sébastien (20 January 1872–24 October 1944), French doctor.
Mandelbrojt, Szolem (20 January 1899–23 September 1983), French mathematician of Polish origin.
-
- 21** **Poli, Martino** (21 January 1662–30 July 1714), Italian chemist.
Montaudoin, Daniel-René (21 January 1715–11 September 1754), French writer.
Crell, Lorenz Florenz Friedrich von (21 January 1744–7 June 1816), German chemist.
Smyth, William Henry (21 January 1788–9 September 1865), English astronomer.
Le Bel, Joseph Achille (21 January 1847–6 August 1930), French chemist.
Baire, René Louis (21 January 1874–5 July 1932), French mathematician.
Strömgen, Bengt – Georg-Daniel (21 January 1908–4 July 1987), Danish astronomer and astrophysicist.
Capdecombe, Laurent Léon (21 January 1909–9 July 1998), French mineralogist.
Lichnerowicz, André Léon Jean Maurice (21 January 1915–11 December 1998), French mathematician.
Cabannes, Henri (21 January 1923), French mathematician.
Prost, Jacques (21 January 1946), French physicist.
-
- 22** **Radau, Jean Charles Rodolphe** (22 January 1835–21 December 1911), French astronomer of German origin.
Lagrange, Pierre Félix (22 January 1857–22 April 1928), French doctor.
Houard, Clodomir Antony Vincent (22 January 1873–10 August 1943), French botanist.
Dickson, Leonard, Eugène (22 January 1874–17 January 1954), American mathematician.
Riesz, Frédéric (22 January 1880–28 February 1956), Hungarian mathematician.
Weinblum, Georg Paul (22 January 1897–4 April 1974), German engineer.
-
- 23** **Rozier, François** (23 January 1734–29 September 1793), French botanist.
Delile, Alire Raffeneau (23 January 1778–5 July 1850), French botanist.
Leymerie, Alexandre Félix Gustave Achille (23 January 1801–5 October 1878), French mineralogist.

Hilbert, David (23 January 1862–14 February 1943), German mathematician.

Langevin, Paul (23 January 1872–19 December 1946), French physicist.

Lighthill, James (23 January 1924–17 July 1998), British mathematician.

Pouchard, Michel (23 January 1938), French chemist.

24	<p>Wolff, Christian (24 January 1679–9 April 1754), German philosopher and mathematician.</p> <p>Bedos de Celles, François de (24 January 1709–25 November 1779), French Benedictine monk.</p> <p>Angiviller, Charles-Claude, de Flahault de la Billarderie (24 January 1730–11 December 1809), French administrator.</p> <p>Cohn, Ferdinand (24 January 1828–26 June 1898), German biologist.</p> <p>Humbert, Henri Jean (24 January 1887–20 October 1967), French botanist.</p> <p>Paul, Raymond Étienne (24 January 1907–21 July 1997), French chemist and administrator.</p>
25	<p>Lémery, Louis (25 January 1677–9 June 1743), French chemist.</p> <p>Louis Joseph, comte de Lagrange (25 January 1736–10 April 1813), Italian astronomer and mathematician.</p> <p>Schwarz, Hermann Amandus (25 January 1843–1 July 1895), German mathematician.</p> <p>Ebel, Jean-Pierre (25 January 1920–20 June 1992), French biologist.</p> <p>Cavalli-Sforza, Luigi Luca (25 January 1922), Italian scientist.</p>
26	<p>Schweitzer, Claude-Adrien-Helvétius (26 January 1715–26 December 1771), French philosopher.</p> <p>Jars, Antoine Gabriel (26 January 1732–23 August 1769), French chemist.</p> <p>Lallemand, Claude François (26 January 1790–23 July 1854), French physicist.</p> <p>Clapeyron, Benoît Paul Émile (26 January 1799–28 January 1864), French engineer and physicist.</p> <p>Goffeau, André (26 January 1935), Belgian engineer.</p> <p>Lhoste, Jean-Marc (26 January 1936–8 February 2012), French biophysicist.</p>
27	<p>La Condamine, Charles Marie de (27 January 1701–4 February 1774), French scientist.</p> <p>Duc de Lachapelle, Anne Jean Pascal Chrysostome (27 January 1765–8 October 1814), French astronomer.</p> <p>Résal, Henri Aimé (27 January 1828–22 August 1896), French engineer.</p> <p>Carnot, Marie-Adolphe (27 January 1839–21 June 1920), French chemist and politician.</p> <p>Zaboudski, Nicolas Alexandrovitch (27 January 1853–27 February 1917), Russian engineer.</p> <p>Senderens, Jean-Baptiste (27 January 1856–27 September 1937), French chemist.</p> <p>Joubin, Louis Marie Adolphe Olivier Édouard (27 January 1861–24 April 1935), French zoologist.</p> <p>Cassinis, Gino (27 January 1885–13 January 1964), Italian engineer.</p> <p>Van der Pol, Balthasar (27 January 1889–6 October 1959), Dutch physicist.</p>
28	<p>Auzout, Adrien (28 January 1622–23 May 1691), French astronomer and physicist.</p> <p>Cousin, Jacques Antoine Joseph (28 January 1739–29 December 1800), French mathematician.</p> <p>Soemmering, Samuel Thomas von (28 January 1755–2 March 1830), German physicist, inventor, paleontologist, and anatomist.</p> <p>Wallich, Nathanael (28 January 1786–3 May 1854), Danish botanist.</p> <p>Laugier, Stanislas (28 January 1799–15 February 1872), French surgeon and doctor.</p> <p>Denis, Prosper Sylvain (28 January 1799–3 July 1863), French doctor.</p> <p>Dausse, Marie François Benjamin (28 January 1801–16 January 1890), French engineer.</p> <p>Chaffiote, Pierre Philippe (28 January 1917–24 December 1998), French engineer and administrator.</p>
29	<p>Bernoulli, Daniel (29 January 1700–17 March 1782), Swiss mathematician and physicist.</p> <p>Cotugno, Domenico (29 January 1736–6 October 1822), Italian physicist.</p> <p>Bosc, Louis Augustin Guillaume (29 January 1759–10 July 1828), French naturalist.</p> <p>Santini, Giovanni (29 January 1787–26 June 1877), Italian astronomer and mathematician.</p> <p>Kummer, Ernst (29 January 1810–14 May 1893), German mathematician.</p> <p>Hélène, Claude (29 January 1938–11 February 2003), French biologist.</p>
30	<p>Vassali-Eandi, Antonio, Maria (30 January 1761–5 July 1825), Italian mathematician.</p> <p>Corvo, Joao de Andrade (30 January 1824–15 February 1890), Portugal scientist.</p> <p>Terquem, Alfred (30 January 1831–16 July 1887), French physicist.</p> <p>Hippolyte Sebert (30 January 1839–23 January 1930), French scientist.</p> <p>Recoura, Albert (30 January 1862–21 December 1945), French scientist.</p> <p>Aron, Max Raymond (30 January 1892–10 November 1974), French doctor.</p> <p>Krajina, Vladimír J (30 January 1905–1 June 1993), Slovak botanist.</p> <p>Schwartz, Daniel (30 January 1917–6 September 2009), French doctor.</p> <p>Ebbesen, Thomas (30 January 1954), French scientist of Norwegian origin.</p>
31	<p>Terrasson, Jean Baptiste (31 January 1670–15 September 1750), French Hellenist and Latin scholar.</p> <p>Crèvecoeur, Michel Guillaume (31 January 1735–12 November 1813), French-American writer.</p> <p>Richards, Theodore William (31 January 1868–3 April 1928), American scientist. Nobel Prize for Chemistry in 1914.</p> <p>Laval, Jean Baptiste (31 January 1900–4 March 1980), French physicist.</p> <p>Gougenheim, André (31 January 1902–21 March 1975), French engineer.</p> <p>Boureau, Édouard Léon François (31 January 1913–2 October 1999), French paleobotanist.</p> <p>Rohmer, Michel (31 January 1948), French chemist.</p>