



Calendar 2023

**BREAKTHROUGH SCIENCE SOCIETY**

A VOLUNTARY ORGANISATION COMMITTED TO THE CAUSE OF SCIENCE, CULTURE AND SCIENTIFIC OUTLOOK

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# BREAKTHROUGH SCIENCE SOCIETY



*"May be you who condemn me  
are in greater fear than I who  
am condemned."*  
— Giordano Bruno

## JANUARY

## 2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
 <b>1</b>	 <b>2</b>	<b>3</b>	 <b>4</b>	<b>5</b>	 <b>6</b> Full Moon	<b>7</b>
 <b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
<b>15</b>	<b>16</b>	 <b>17</b>	<b>18</b>	<b>19</b>	 <b>20</b>	 <b>21</b> New Moon
<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>
 <b>29</b>	 <b>30</b>	<b>31</b>				

**1 January: Birthday of Satyendra Nath Bose**  
Satyendra Nath Bose (1st January 1894 – 4th February 1974) developed the statistical theory for a class of particles in collaboration with Einstein. The particles which obey the Bose-Einstein statistics have been named as 'boson' in his honour.

**2 January: Foundation Day of Breakthrough Science Society**  
The BSS was founded through an All Bengal Science Conference held in Kolkata from 31 December 1994 to 2 January 1995.

**4 January: Birthday of Isaac Newton**  
Newton (4 January 1643 – 31 March 1727) was an English physicist, mathematician, astronomer and natural philosopher. His Philosophiæ Naturalis Principia Mathematica (Latin for 'Mathematical Principles of Natural Philosophy') published in 1687, is probably the most important scientific book ever written.

**8 January: Birthday of Stephen Hawking**  
Stephen Hawking (8 January 1942 – 14 March 2018) was a theoretical physicist and cosmologist who made major contributions in cosmology and General Theory of Relativity.

**17 January: Birthday of Benjamin Franklin**  
Benjamin Franklin (17 January 1706 – 17 April 1790) was a major figure in the American Enlightenment and is known for his discoveries on electricity. He played a pivotal role in American war of independence and was the representative of America in the French Court.

**20 January: Birthday of Andre Ampere**  
Andre Marie Ampere (20 January 1775 – 10 June 1836) was a French physicist and mathematician who is generally regarded as one of the main discoverers of electromagnetism. The SI unit of measurement of electric current, the Ampere, is named after him.

**29 January: Birthday of Abdus Salam**  
Mohammad Abdus Salam (29 January 1926 – 21 November 1996) was a Pakistani theoretical physicist and a Nobel laureate. He shared the 1979 Nobel Prize in Physics with Sheldon Glashow and Steven Weinberg for his contribution to the electroweak unification theory.

**30 January: Birthday of James Watt**  
James Watt (30 January 1736 – 25 August 1819) was a Scottish inventor and mechanical engineer whose steam engine was fundamental to onset of the Industrial Revolution. He is honoured by the naming of the unit of power as watt.

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"In questions of science, the authority of a thousand is not worth the humble reasoning of a single individual."

— Galileo Galilei

## FEBRUARY

## 2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
			1	2	3	4
 <b>5</b>	6	7	 8	9	10	 11
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 <b>19</b>	 <b>20</b>	21	22	23	24	25
<b>26</b>	27	 28				

### 8 February: Birthday of Dmitri Ivanovich Mendeleev

Mendeleev (8 February 1834 – 2 February 1907) was a Russian chemist and inventor. He is credited as being the creator of the periodic table of elements.

### 11 February: Birthday of Thomas Alva Edison

Thomas Alva Edison (11 February 1847 – 18 October 1931) was one of the most famous and prolific inventors of all time. He exerted a tremendous influence on modern life, contributing inventions such as the incandescent light bulb, phonograph, and motion picture camera, as well as improving the telegraph and telephone.

### 12 February: Birthday of Charles Robert Darwin

Charles Darwin (12 February 1809 – 19 April 1882) was an English naturalist. He established that all species of life have descended over time from common ancestry, and proposed the scientific theory that this branching pattern of evolution resulted from a process that he called natural selection.

### 15 February: Birthday of Galileo Galilei

Galileo Galilei (15 February 1564 – 8 January 1642) was an Italian scientist who played a major role in the Renaissance. Galileo has been called "the Father of Modern Science" because of his introduction of the objective method in scientific enquiry.

### 17 February: Science Martyrs' Day: The Martyrdom of Giordano Bruno

Giordano Bruno (1548 – 17 February 1600) was an Italian philosopher, mathematician and astronomer who supported and propagated the sun-centric picture of the solar system, and went beyond the Copernican model in proposing that the Sun was essentially a star. After the Roman Inquisition found him guilty of heresy, he was imprisoned and was burned at the stake. He is considered a martyr for free thought and modern scientific ideas.

### 19 February: Birthday of Nicolaus Copernicus

Nicolaus Copernicus (19 February 1473 – 24 May 1543) was a Renaissance astronomer and the first person to formulate a comprehensive heliocentric theory of solar system.

### 28 February: Birthday of Linus Carl Pauling

Linus Pauling (28 February 1901 – 19 August 1994) was an American chemist and peace activist. He ranks among the most important scientists of the 20th century. The only person to win unshared Nobel Prizes in two different fields (Chemistry and Peace).

### 28 February: National Science Day

National Science Day is celebrated to mark the discovery of the Raman effect by C. V. Raman on 28 February 1928.

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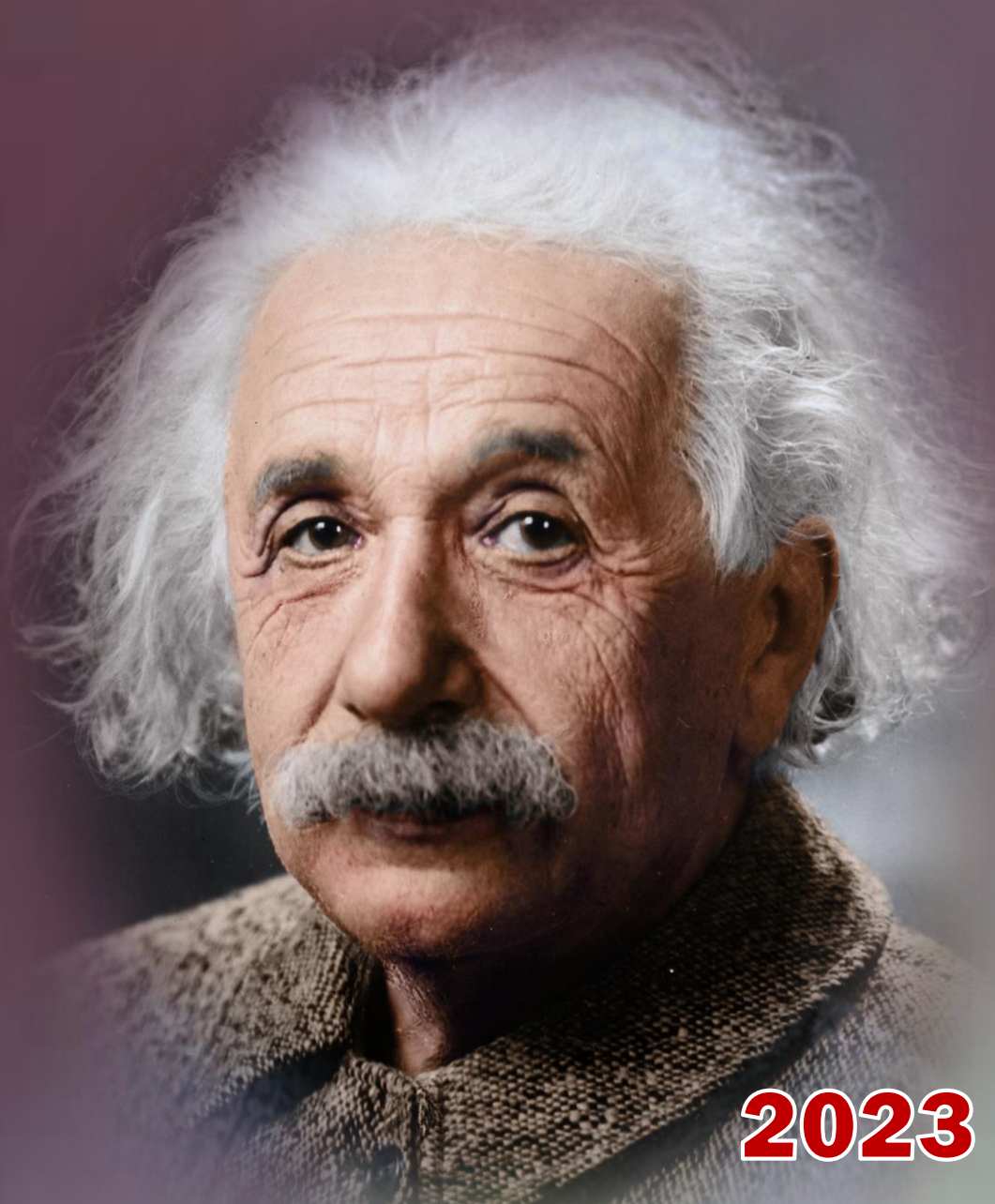
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“No amount of  
experimentation can ever  
prove me right; a single  
experiment can prove me  
wrong.”

— Albert Einstein



MARCH

2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
			1	2	 3	 4
5	6	 7 Full Moon	8	9	10	11
12	13	 14	15	 16	17	 18
19	20	 21 New Moon	22	 23	24	25
26	 27	 28	29	30	31	

**3 March: Birth day of Alexander Graham Bell**  
Alexander Graham Bell (3 March 1847 – 2 August 1922) was an eminent scientist and inventor who is credited with inventing the first practical telephone.

**4 March: Birthday of Norman Bethune**  
Norman Bethune (4 March 1890 – 12 November 1939) was a Canadian physician and medical innovator. He is best known for his service in war time medical units during the Spanish Civil War and with the Communist Eighth Route Army during the Second Sino-Japanese War. He developed the first mobile blood-transfusion service in Spain in 1936.

**14 March: Birthday of Albert Einstein**  
Albert Einstein (14 March 1879 – 18April 1955) was a German theoretical physicist who discovered the theory of relativity. He received the 1921 Nobel Prize in Physics "for his services to theoretical physics and especially for his discovery of the law of the photoelectric effect". He is considered as the foremost scientist of the twentieth century. He is also known for his anti-fascist views and humanism.

**16 March: Birthday of Georg Simon Ohm**  
Georg Simon Ohm (16 March 1789 – 6 July 1854) was a German physicist who showed that, in a resistive circuit, the current is proportional to the voltage. This relationship is now known as Ohm's law. The ohm (symbol:  $\Omega$ ) is the SI unit of electrical resistance, named after Ohm.

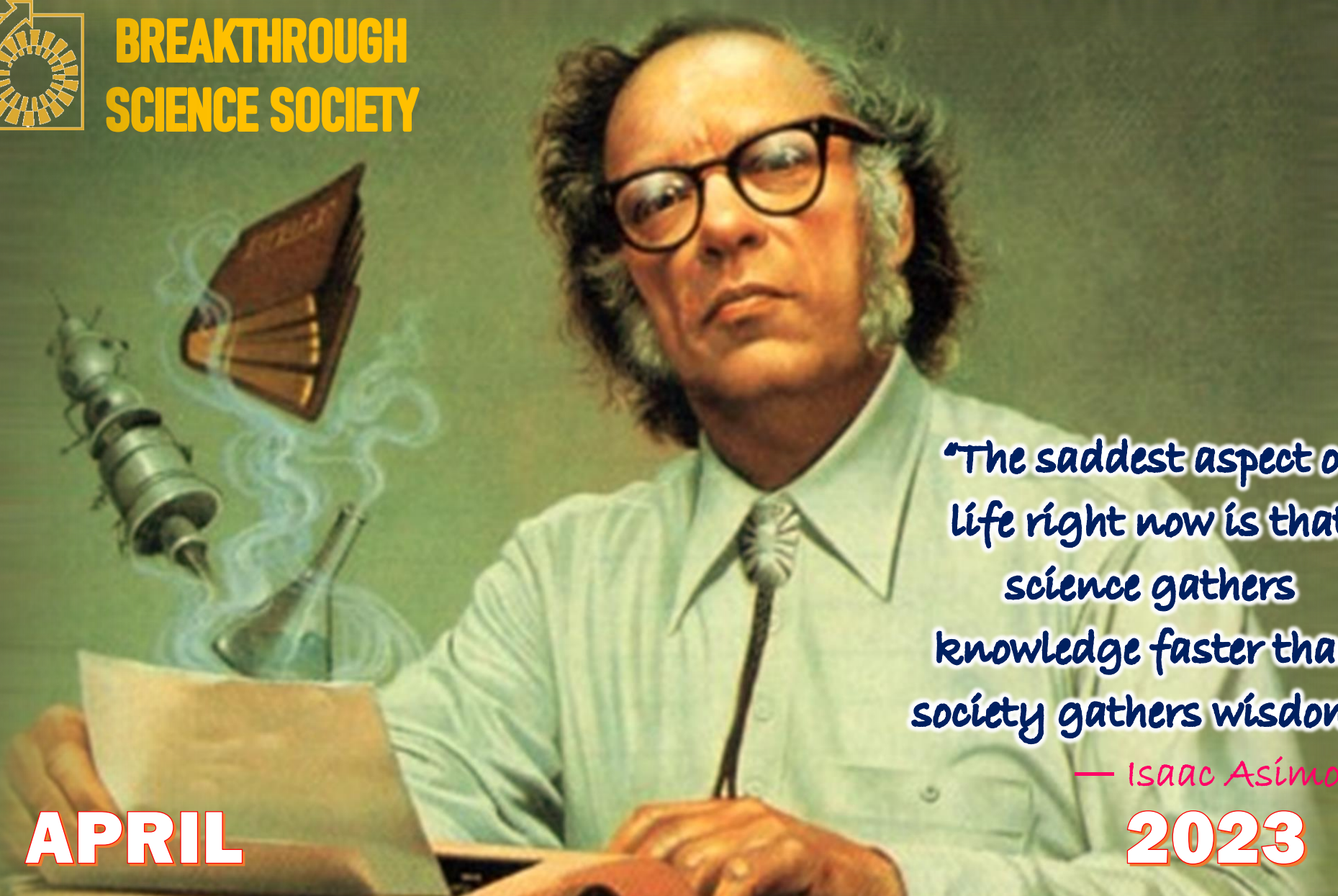
**18 March: Birth day of Rudolf Christian Karl Diesel**  
Rudolf Christian Karl Diesel (March 18, 1858 – September 29, 1913) was a German inventor and mechanical engineer, famous for the invention of the diesel engine.

**23 March: Birthday of Pierre-Simon Laplace**  
Pierre-Simon Laplace (23 March 1749 – 5 March 1827) was a prominent French mathematical physicist and astronomer of the 19<sup>th</sup> century, who made crucial contributions in the arena of planetary motion and statistics.

**27 March: Birthday of Wilhelm Conrad Röntgen**  
Wilhelm Conrad Röntgen (27 March 1845 – 10 February 1923) was a German physicist, who produced and detected electromagnetic radiation in a wavelength range today known as X-ray, an achievement that earned him the first Nobel Prize in Physics in 1901.

**28 March: Birthday of Amalie Emmy Noether**  
Amalie Emmy Noether (23 March 1882 – 14 April 1935) was a German mathematician. Noether's theorem, named after her, established the connection between symmetry and conservation laws in physics.














“The saddest aspect of  
life right now is that  
science gathers  
knowledge faster than  
society gathers wisdom.”

— Isaac Asimov

APRIL

2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
						 1
2	3	4	5	 Full Moon6	7	8
9	10	11	12	13	 14	15
16	17	18	19	 New Moon20	21	22
 23	24	 25	26	 27	28	 29
 30						

1 April: Birthday of William Harvey

William Harvey (1 April 1578 – 3 June 1657) was an English physician who made seminal contributions in anatomy and physiology. He was the first known to describe completely and in detail the systemic circulation and properties of blood being pumped to the brain and body by the heart.

14 April: Birthday of Christiaan Huygens

Christiaan Huygens (14 April 1629 – 8 July 1695) was a prominent Dutch mathematician and physicist. He discovered the nature of the rings of Saturn and its moon Titan. He also invented the pendulum clock and discovered the wave character of light.

23 April: Birthday of Max Planck

Max Planck (23 April 1858 – 4 October 1947) was a German physicist. He is considered to be the founder of the quantum theory, and thus one of the most important physicists of the twentieth century. Planck was awarded the Nobel Prize in Physics in 1918.

25 April: Birthday of Guglielmo Marconi

Marconi (25 April 1874 – 20 July 1937) was an Italian inventor. He is known for his development of Marconi's law and a radio telegraph system. He shared the 1909 Nobel Prize in Physics with Karl Ferdinand Braun in contributions to the development of wireless telegraphy.

27 April: Birthday of Samuel Morse

Samuel Morse (27 April 1791 – 2 April 1872) was an American contributor to the invention of a single-wire telegraph system based on European telegraphs, co-inventor of the Morse code, and an accomplished painter.

29 April: International Astronomy Day

Astronomy Day is an annual event intended to provide a means of interaction between the general public and astronomy enthusiasts, groups and professionals. It happens on a different date each year, on a Saturday. International Astronomy Day is celebrated twice a year, close to the first quarter moon of spring and fall.

30 April: Birthday of Carl Friedrich Gauss

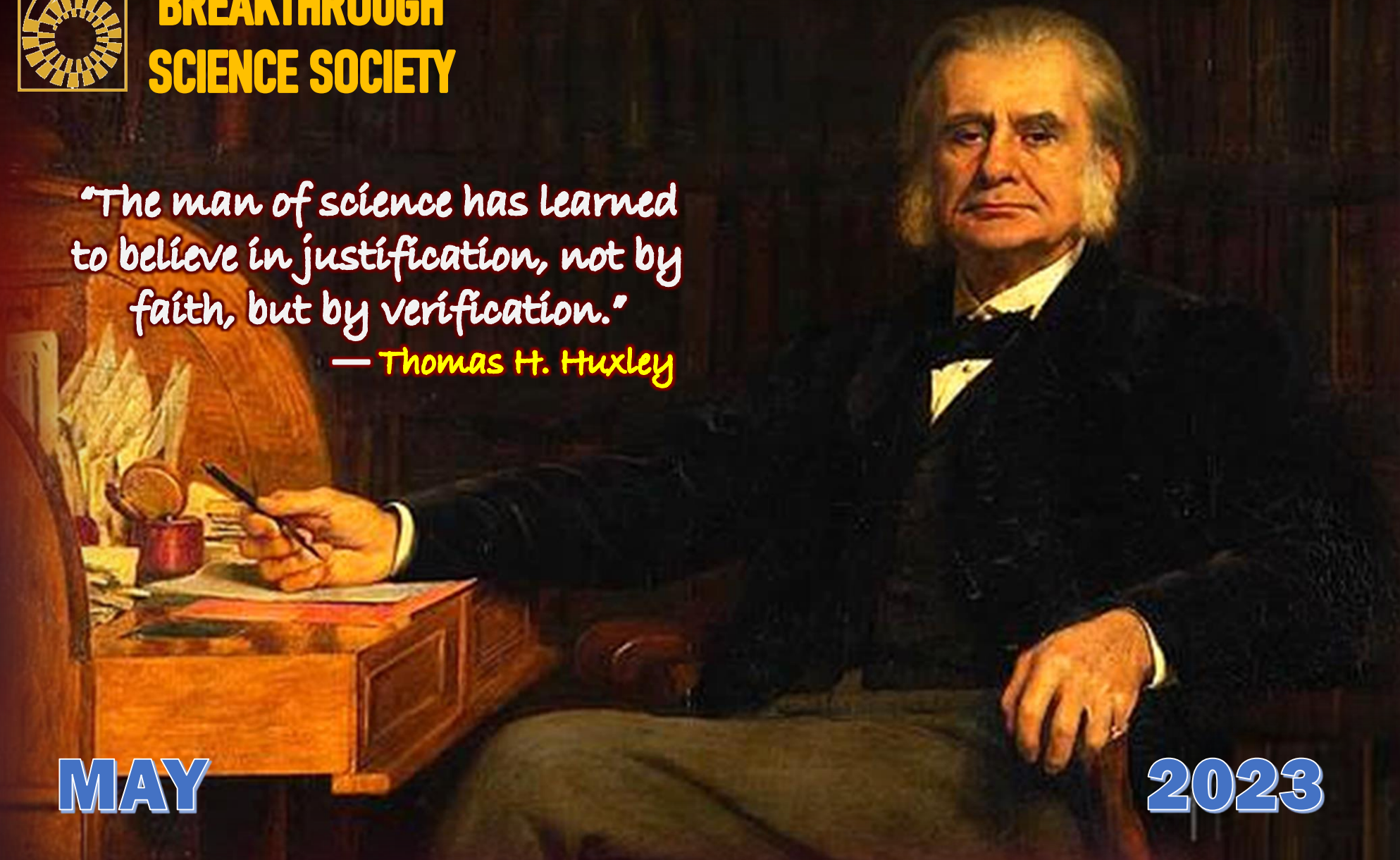
Carl Friedrich Gauss (30 April 1777 – 23 February 1855) worked in a wide variety of fields in both mathematics and physics including number theory, analysis, differential geometry, geodesy, magnetism, astronomy and optics. His work has had an immense influence in many areas.







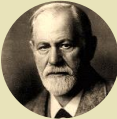





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“The man of science has learned  
to believe in justification, not by  
faith, but by verification.”  
— Thomas H. Huxley



MAY

2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
	1	2	3	 4	 Full Moon5	 6
7	8	9	 10	 11	12	13
14	15	16	 17	18	 New Moon19	20
21	22	 23	24	25	26	27
28	29	30	31			

4 May: Birthday of Thomas Huxley

Thomas Huxley (4 May 1825 – 29 June 1895) was an English biologist (anatomist), known as "Darwin's Bulldog" for his advocacy of Charles Darwin's theory of evolution.

6 May: Birthday of Sigmund Freud

Sigmund Freud (6 May, 1856 – 23 September, 1939) was an Austrian neurologist who founded the branch of psychology known as psychoanalysis.

10 May: Birthday of John Desmond Bernal

John Desmond Bernal (10 May 1901 – 15 September 1971) was one of the United Kingdom's most well-known and controversial scientists. Known as 'Sage' to friends, Bernal is considered a pioneer in X-ray crystallography in molecular biology. His monumental work, Science in History (1954) is the first treatise aimed to analyse the interaction between science and society.

11 May: Birthday of Richard Phillips Feynman

Richard Feynman (11 May 1918 – 15 February 1988) was an American theoretical physicist, known for his work in the path integral formulation of quantum mechanics, quantum electrodynamics, and many others. He was a great popularizer of science. He received the Nobel Prize in Physics in 1965 jointly with Julian Schwinger and Shinichiro Tomonaga.

17 May: Birthday of Edward Anthony Jenner

Jenner (17 May 1749 – 26 January 1823) was an English scientist who is widely credited as the inventor of small pox vaccine, and is sometimes referred to as the 'Father of Immunology'. His works have been said to have saved more lives than the work of any other man.

23 May: Birthday of Carl Linnaeus

Edward Linnaeus (23 May 1707 – 10 January 1778) was a Swedish botanist, physician, and zoologist, who laid the foundation for the modern scheme of nomenclature of biological species, known as taxonomy.

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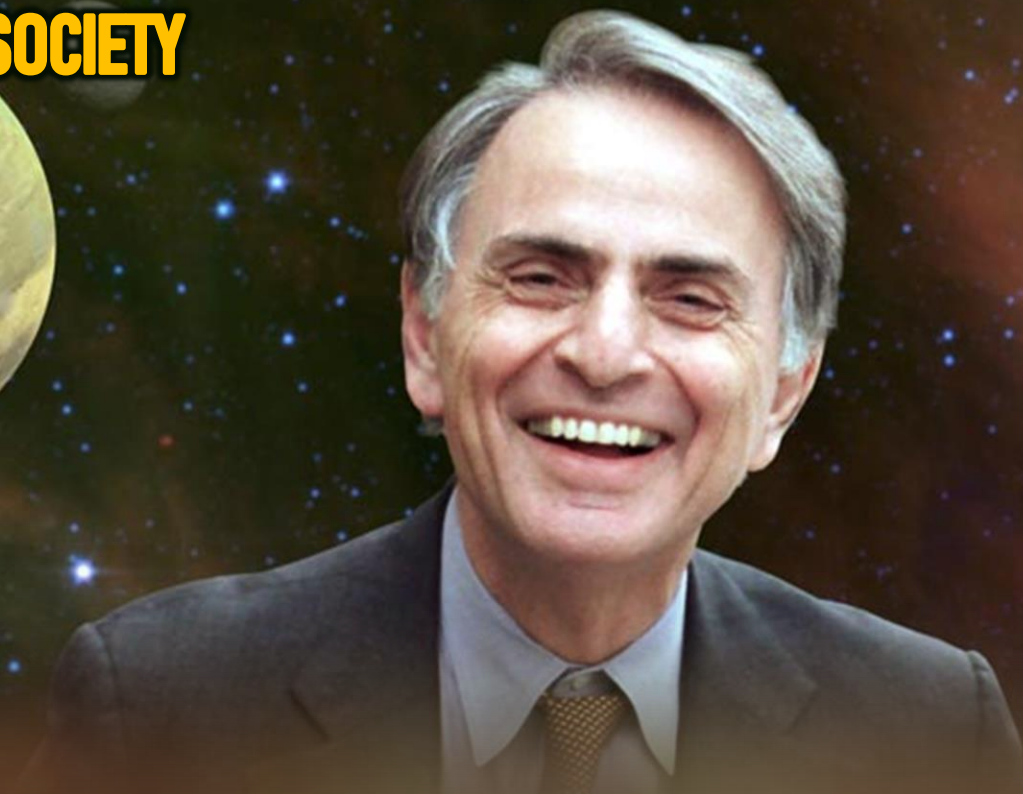
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“Science is a way of thinking much more than it is a body of knowledge.”  
— Carl Sagan

JUNE

2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
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 4	 5	6	7	 8	9	10
11	12	 13	 14	15	16	17
 18	 19	20	21	22	23	24
25	26	27	28	 29	30	

**3 June: Birthday of James Hutton**  
James Hutton (3 June 1726 – 26 March 1797) was a Scottish geologist, agriculturalist, chemical manufacturer, naturalist and physician. Often referred to as the ‘father’ of modern geology, he played a key role in establishing geology as a modern science.

**5 June: World Environment Day**  
World Environment Day is observed to stimulate awareness of the environment and public action against environmental degradation caused by unscrupulous industrial practices. It is also a time when communities are encouraged to discover more about the environment in which they live.

**8 June: Birthday of Francis Harry Compton Crick**  
Francis Crick (8 June 1916 – 28 July 2004) was an English molecular biologist and biophysicist who, together with James D. Watson, discovered the structure of the DNA molecule in 1953. He, Watson and Maurice Wilkins were jointly awarded the 1962 Nobel Prize for Physiology and Medicine.

**13 June: Birthday of James Clerk Maxwell**  
James Clerk Maxwell (13 June 1831 – 5 November 1879) was a Scottish theoretical physicist and mathematician. His most prominent achievement was formulating the classical electromagnetic theory.

**14 June: Birthday of Charles-Augustin de Coulomb**  
Charles Coulomb (14 June 1736 – 23 August 1806) was a French physicist best known for developing the Coulomb's law, the definition of the electrostatic force of attraction and repulsion. The SI unit of charge, the coulomb, was named after him.

**19 June: Birthday of Blaise Pascal**  
Blaise Pascal (June 19, 1623 – August 19, 1662) was a French mathematician and physicist of the renaissance period. He made important contributions to the study of fluids, and clarified the concepts of pressure and vacuum by generalizing the work of Evangelista Torricelli.

**29 June: Birthday of Prasanta Chandra Mahalanobis**  
P. C. Mahalanobis (29 June 1893 – 28 June 1972) was an Indian scientist and applied statistician. He founded the Indian Statistical Institute, and contributed to the design of large scale sample surveys..

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"There is a fundamental difference between religion, which is based on authority, and science, which is based on observation and reason. Science will win because it works."

— Stephen Hawking



JULY

2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
						 1
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9	 10	11	12	13	14	15
16	 17	18	19	 20	21	22
23	24	 25	26	27	 28	29
30	 31					

**1 July: Birthday of Gottfried Wilhelm Leibniz**  
Gottfried Wilhelm Leibniz (1 July 1646 – 14 November 1716) was a German mathematician and philosopher. He developed the infinitesimal calculus independently of Isaac Newton, and Leibniz's mathematical notation is now widely used.

**3 July: Birthday of Bibha Chowdhuri**  
Bibha Chowdhuri (3 July 1913 – 2 June 1991) was an Indian physicist. She worked on particle physics and cosmic rays. The International Astronomical Union has re-christened the star HD 86081 as Bibha (a yellow-white dwarf star in the constellation Sextans south of the celestial equator) after her.

**4 July: Birthday of Henrietta Swan Leavitt**  
Henrietta Swan Leavitt (July 4, 1868 – December 12, 1921) was an American astronomer, who established the relation between the luminosity and the period of Cepheid variable stars. The discovery provided a way to measure distances to galaxies, which is still the main plank of observational astronomy.

**10 July: Birthday of Nikola Tesla**  
Nikola Tesla (10 July 1856 – 7 January 1943) was a Serbian-American inventor, electrical engineer, mechanical engineer, and futurist best known for his contributions to the design of the modern alternating current (AC) electricity supply system.

**20 July: Birthday of Gregor Johann Mendel**  
Gregor Mendel (July 20 1822 – January 6 1884) was an Austrian monk and scientist. He gained posthumous fame as the figurehead of the new science of genetics for his study of the inheritance of certain traits in pea plants. Mendel showed that the inheritance of these traits follows particular laws, which were later named after him.

**25 July: Birthday of Rosalind Franklin**  
Rosalind Franklin (25 July 1920 – 16 April 1958) was a British chemist and X-ray crystallographer whose work was central to the understanding of the molecular structures of DNA, RNA, viruses, coal and graphite. However, her contributions to the discovery of the structure of DNA were largely unrecognized during her lifetime.

**28 July: World Nature Conservation Day**  
On 28 July of each year World Nature Conservation Day is celebrated.

**28 July: Birthday of Robert Hooke**  
Robert Hooke (28 July 1635 – 3 March 1703) was an English scientist who played an important role in the scientific revolution. He was best known for the Hooke's Law, and his observation of micro-organisms.

**31 July: Birthday of Damodar Dharmananda Kosambi**  
D. D. Kosambi (31 July 1907 – 29 June 1966) was an Indian mathematician, statistician, Marxist historian, and polymath who made significant contribution to genetics. He is well known for compiling critical editions of ancient Sanskrit texts. Kosambi employed the historical materialist approach in his evaluation of Indian history.

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$$F = G \frac{m_1 m_2}{d^2}$$

“Science cannot be based on assumptions and hypotheses alone. In order to arrive at the truth of a subject, one has to first find its character and come to definite conclusions about the facts with the help of experimental tests. Only after that we can proceed through hypothesis formation.”

- Isaac Newton

AUGUST

2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
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27	28	29	 30	 31		

1 August: Birthday of Jean-Baptiste Lamarck

Jean-Baptiste Lamarck (1 August 1744 – 18 December 1829) often known simply as Lamarck was a French naturalist. He was an early proponent of the idea that biological evolution occurred and proceeded in accordance with natural laws.

2 August: Birthday of Acharya Prafulla Chandra Ray

Acharya Prafulla Chandra Ray (2 August 1861 – 16 June 1944) was a Bengali academician, chemist and entrepreneur. He was the founder of Bengal Chemicals & Pharmaceuticals Ltd., India's first pharmaceutical company. He is noted for his vocal opposition to casteism, superstitions, and religious bigotry.

6 August: Birthday of Alexander Fleming

Alexander Fleming (6 August 1881 – 11 March 1955) was a Scottish scientist, best-known for his discoveries of enzyme lysozyme in 1923 and the antibiotic substance penicillin in 1928, for which he shared the Nobel Prize in Physiology or Medicine in 1945 with Howard Florey and Ernst Boris Chain.

8 August: Birthday of Paul Dirac

Paul Dirac (8 August 1902 – 20 October 1984) was a British theoretical physicist who made fundamental contributions to the development of quantum mechanics, quantum field theory and quantum electrodynamics, and is particularly known for his attempts to unify the theories of quantum mechanics and relativity theory.

9 August: Birthday of Amedeo Avogadro

Amedeo Avogadro (9 August 1776 – 9 July 1856) was an Italian savant. He is most noted for his contributions to molecular theory, including what is known as Avogadro's law.

12 August: Birthday of Erwin Schrödinger

Erwin Schrödinger (12 August 1887 – 4 January 1961), was a Nobel Prize-winning Austrian-Irish physicist who developed a number of fundamental results in quantum theory: The Schrödinger equation provides a way to calculate the wave function of a system and how it changes dynamically in time.

15 August: Birthday of Louis de Broglie

Louis De Broglie (15 August 1892 – 19 March 1987) was a French physicist and Nobel laureate, credited for showing that matter-particles have wave-like properties.

23 August: Birthday of Anna Mani

Anna Mani (23 August 1918 – 16 August 2001) was an Indian physicist and meteorologist. She served as the Deputy Director General of the Indian Meteorological Department and as a visiting Professor at the Raman Research Institute.

26 August: Birthday of Antoine Lavoisier

Lavoisier (26 August 1743 – 8 May 1794) was a French scientist, considered to be founder of modern chemistry. He discovered that, although matter may change its form, its mass always remains the same in chemical reactions.

30 August: Birthday of Ernest Rutherford

Rutherford (30 August 1871 – 19 October 1937) was a New Zealand-born British chemist and physicist who became known as the father of nuclear physics. He was awarded Nobel Prize in Chemistry in 1908 "for his investigations into the disintegration of the elements, and the chemistry of radioactive substances.

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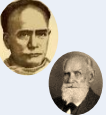


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"Without the love of  
research, mere knowledge  
and intelligence cannot  
make a scientist"  
— Irène Joliot-Curie



## SEPTEMBER

## 2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
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- 12 September: Birthday of Irène Joliot-Curie**  
Irène Joliot-Curie (12 September 1897 – 17 March 1956) was a French scientist. She was awarded the Nobel Prize in Chemistry in 1935 jointly with her husband for their discovery of artificial radioactivity.
- 15 September: Birthday of Mokshagundam Visvesvaraya**  
Mokshagundam Visvesvaraya (15 September 1860 – 14 April 1962) was a famous Indian engineer and scholar who designed and implemented many challenging projects. He was a recipient of the Indian Republic's highest honour, the Bharat Ratna, in 1955. Every year, 15 September is celebrated as Engineer's Day in India in his memory.
- 22 September: Birthday of Michael Faraday**  
Michael Faraday (22 September 1791 – 25 August 1867) was an English Chemist and Physicist. He was best known for his discoveries of electromagnetic induction and of the laws of electrolysis.
- 25 September: Birthday of Thomas Hunt Morgan**  
Thomas Morgan (25 September 1866 – 4 December 1945) was an American evolutionary biologist, geneticist and embryologist and science author who won the Nobel Prize in Physiology or Medicine in 1933 for discoveries relating the role the chromosome plays in heredity.
- 26 September: Birthday of Ishwar Chandra Vidyasagar**  
Vidyasagar (26 September 1820 – 29 July 1891) was the key figure of the Indian Renaissance. He is remembered for his efforts to modernize Indian education system by introducing the ideas of the European Renaissance, and his uncompromising struggle against obscurantist religious practices.
- 26 September: Birthday of Ivan Petrovich Pavlov**  
I P Pavlov (26 September 1849 – 27 February 1936) was a famous Russian physiologist who originated the concepts of conditioned reflex, and the first and the second signal systems. He was awarded for Nobel Prize in Physiology or Medicine (1904).
- 29 September: Birthday of Enrico Fermi**  
Enrico Fermi (29 September 1901 – 28 November 1954), Italian-born American scientist who was one of the chief architects of the nuclear age.
- 30 September: Birthday of Johannes Hans Wilhelm Geiger**  
Wilhelm Geiger (30 September 1882 – 24 September 1945) was a German physicist. He is perhaps best known as the co-inventor of the Geiger counter and for the Gaiger Marsden experiment under the direction of Rutherford, which discovered the Atomic nucleus.

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$$\frac{N_{i+1}}{N_i} = \frac{2Z_{i+1}}{n_e Z_i} \left( \frac{2\pi m_e kT}{h^2} \right)^{3/2} e^{-\frac{\chi_i}{kT}}$$












“For the past twenty years, I have searched all the Hindu scriptures like Vedas, Upanishads, Puranas etc., and the ancient texts on Hindu astrology and other sciences, but I have not been able to find that these ancient texts contain the basic tenets of modern science.”

– Meghnad Saha

## OCTOBER

## 2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
1	2	3	4	5	 6	 7
8	9	 10	11	12	13	 14
15	16	17	18	 19	 20	21
22	23	 24	25	26	27	 28
29	 30	31				

### 6 October: Birthday of Meghnad Saha

Meghnad Saha (6 October 1893 – 16 February 1956) was an Indian astrophysicist best known for his development of the Saha equation, used for describing the thermal ionization occurring in stars.

### 7 October: Birthday of Niels Bohr

Niels Bohr (7 October 1885 – 18 November 1962) was a Danish physicist who made fundamental contributions to understanding atomic structure and quantum mechanics, for which he received the Nobel Prize in Physics in 1922.

### 10 October: Birthday of Henry Cavendish

Henry Cavendish (10 October 1731 – 24 February 1810) was a British scientist noted for his discovery of hydrogen or what he called 'inflammable air'. Cavendish is also known for the Cavendish experiment, his measurement of the Earth's density, and early research into electricity.

### 19 October: Birthday of Subrahmanyan Chandra Shekhar

S Chandra Shekhar (19 October 1910 – 21 August 1995) was an Indian-born astrophysicist who discovered the critical mass of a star required for becoming a neutron star. He, along with William A. Fowler, won the Nobel Prize for Physics in 1983.

### 20 October: Birthday of James Chadwick

Chadwick (20 October 1891 – 24 July 1974) was an English physicist who was awarded the Nobel prize for his discovery of the neutron.

### 24 October: Birthday of Antonia Philips van Leeuwenhoek

Leeuwenhoek (October 24 1632 – August 26 1723) was a Dutch scientist. He is best known for his work on the improvement of the microscope and for his discovery of micro-organisms.

### 30 October: Birthday of Homi Jehangir Bhabha

Homi Jehangir Bhabha (30 October 1909 – 24 January 1966) was an Indian nuclear physicist who played a major role in the development of the Indian atomic energy program.

## BREAKTHROUGH SCIENCE SOCIETY

A VOLUNTARY ORGANISATION COMMITTED TO THE CAUSE OF SCIENCE, CULTURE AND SCIENTIFIC OUTLOOK

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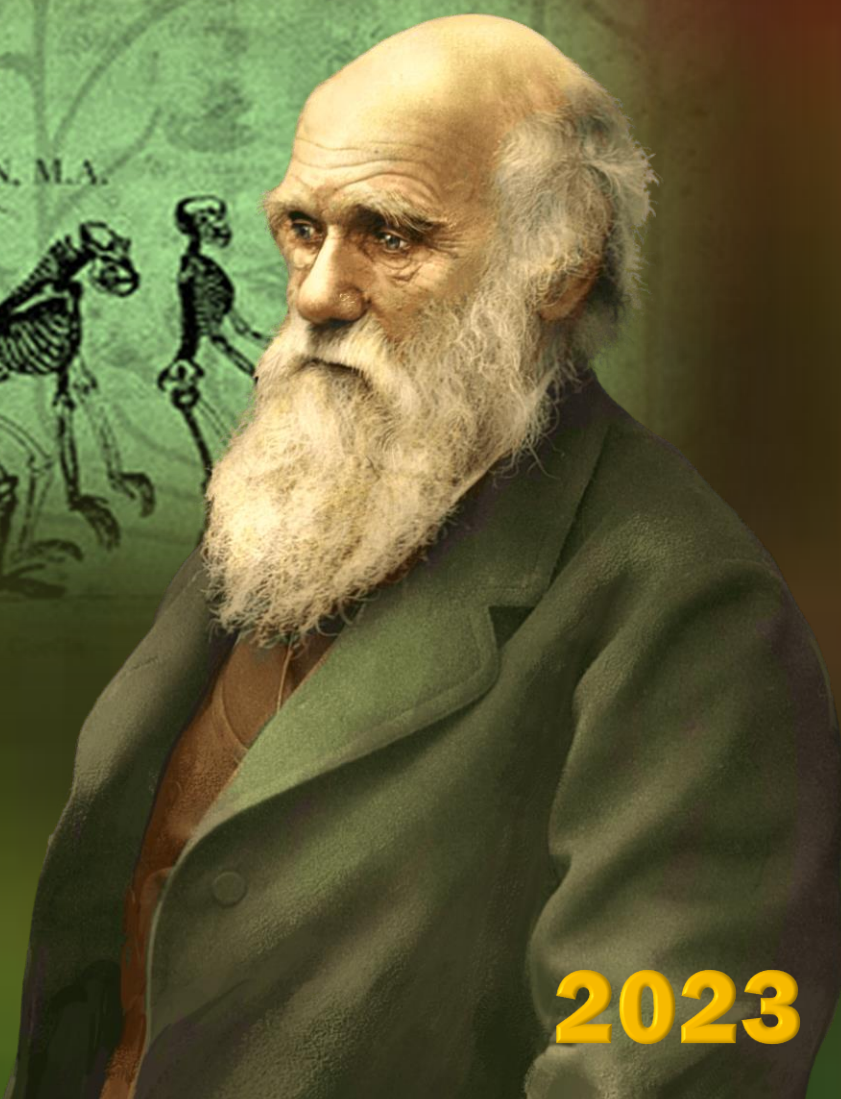


By CHARLES DARWIN, M.A.














"Ignorance more frequently begets confidence than does knowledge: it is those who know little, not those who know much, who so positively assert that this or that problem will never be solved by science."

— Charles Darwin



## NOVEMBER

## 2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
			1	 2	3	 4
 5	6	  7	8	9	10	11
12	 13	14	15	16	17	18
19	 20	 21	22	 23	24	25
26	 27	28	29	 30		

### 2 November: Birthday of Mahendralal Sarkar

Mahendralal Sarkar (2 November 1833 – 23 February 1904) was a doctor, social reformer, and propagator of scientific studies in nineteenth-century India. He was the founder of the Indian Association for the Cultivation of Science.

### 4 November: Birthday of Edavalath Kakkat Janaki Ammal

Edavalath Kakkat Janaki Ammal (4 November 1897 – 7 February 1984) was an Indian botanist who worked on plant breeding, cytogenetics and phytogeography. Her most notable work involved studies on sugarcane and the eggplant (brinjal). She was awarded Padma Shri by the then prime minister of India in 1977.

### 5 November: Birthday of John Burdon Sanderson Haldane

John Burdon Sanderson Haldane (5 November 1892 – 1 December 1964) was a British-born geneticist and evolutionary biologist. A staunch Marxist, he was one of the founders of the Darwinian theory based on modern genetics. He moved to India in 1956, became a citizen, and taught at the Indian Statistical Institute in Kolkata.

### 7 November: Birthday of Marie Curie

Madam Curie (7 November 1867 – 4 July 1934) was a Polish-born French physicist and chemist famous for her work on radioactivity. She was the first person honored with two Nobel Prizes in physics and chemistry.

### 7 November: Birthday of Chandrasakhara Vankata Raman

C V Raman (7 November 1888 – 21 November 1970) was an Indian physicist who discovered the celebrated 'Raman Effect' and was awarded Nobel Prize in 1930.

### 20 November: Birthday of Edwin Powell Hubble

Edwin Hubble (20 November 1889 – 28 September 1953) was an American astronomer who profoundly changed our understanding of the universe by demonstrating the existence of galaxies other than our own, the Milky Way. He also discovered that the degree of redshift observed in the light spectra from other galaxies increased in proportion to a particular galaxy's distance from the Earth.

### 21 November: Birthday of Lewis Henry Morgan

Lewis Morgan (21 November 1818 – 17 December 1881) was a pioneering American anthropologist and social theorist who showed that primitive human society was class-less. He is best known for his work on kinship and social structure and his theories of social evolution.

### 23 September: Birthday of Asima Chatterjee

Asima Chatterjee (23 September 1917 – 22 November 2006) was an Indian organic chemist noted for her work in the fields of organic chemistry and phytomedicine. She was the first woman to receive a Doctorate of Science from an Indian university.

### 30 November: Birthday of Acharya Jagadish Chandra Bose

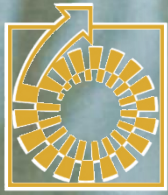
Jagadish Chandra Bose (30 November 1858 – 23 November 1937) was a biologist, physicist, botanist and an early writer of science fiction. He pioneered the investigation of radio and microwave optics, made significant contributions to plant science, and was a major force behind the expansion of experimental science on the Indian subcontinent.

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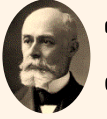






"You cannot hope to build a better world without improving the individuals. To that end, each of us must work for our own improvement and, at the same time, share a general responsibility for all humanity, our particular duty being to aid those to whom we think we can be most useful."

— Marie Curie



## DECEMBER

2023

Sun	Mon	Tues	Wed	Thu	Fri	Sat
					1	2
3	4	 5	6	7	8	9
10	11	 12	13	14	 15	16
17	 18	 19	20	21	 22	23
24	25	 26	 27	 28	29	30
31						

**5 December: Birthday of Werner Heisenberg**  
Werner Heisenberg (5 December 1901 – 1 February 1976) was a German theoretical physicist. He was best known for discovering the uncertainty principle of quantum theory. Heisenberg was awarded the Nobel Prize for Physics in 1932 for the discovery of the allotropic forms of hydrogen atom.

**15 December: Birthday of Antoine Henri Becquerel**  
Henry Becquerel (15 December 1852 – 25 August 1908) was a French physicist, Nobel laureate, and the discoverer of radioactivity along with Marie Curie and Pierre Curie, for which all three won the 1903 Nobel Prize in Physics.

**18 December: Birthday of J. J. Thomson**  
J. J. Thomson (18 December 1856 – 30 August 1940) was a British physicist and Nobel laureate. He is credited for the discovery of the electron and of isotopes, and the invention of the mass spectrometer. Thomson was awarded the 1906 Nobel Prize in Physics for the discovery of the electron.

**19 December: Birthday of Albert Abraham Michelson**  
A. A. Michelson (19 December 1852 – 9 May 1931) was an American physicist known for his work on the measurement of the speed of light and especially for the Michelson Morley experiment. In 1907 he received the Nobel Prize in Physics.

**22 December: Birthday of Srinivasa Ramanujan**  
Ramanujan (22 December 1887 – 26 April 1920) was an Indian mathematician who, with almost no formal training in pure mathematics, made substantial contributions to mathematical analysis, number theory, infinite series and continued fractions.

**27 December: Birthday of Louis Pasteur**  
Louis Pasteur (27 December 1822 – 28 September 1895) was a French chemist and microbiologist. He is remembered for his remarkable breakthroughs in the causes and preventions of diseases. He created the first vaccine for rabies and anthrax. His experiments supported the germ theory of disease.

**28 December: Birthday of John von Neumann**  
John von Neumann (28 December 1903 – 8 February 1957) was a Hungarian-American mathematician, physicist, computer scientist, engineer and polymath. Von Neumann was generally regarded as the foremost mathematician of his time.

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