for mayor of New York City). As mentioned in another review[2], though I was young at the time I have many clear memories of the Apollo programme, which jibe well with Mailer's much more detailed account. (I noticed only a couple of minor mistakes, almost certainly essentially just typos.)

Already at the time, there were suggestions that the Moon landing was fake, and Mailer debunks them. There are other prescient inklings of what was to become the future: "[c]omputers the size of a package of cigarettes"; the rather quick loss of interest in even such a substantial feat, with "[T]he horror of the Twentieth century [being] the size of each new event, and the paucity of its reverberation". Although many aspects of the book are impressive, perhaps the most impressive is the scope, from the Greek myths through the *Star Trek*-style technical optimism of the 1960s to the different ways (then) future (and now current) society would look back on such a monumental event. The book is not just historical but might prove to be historic, a rare first-hand account of history in the making where the witness understands both the nitty-gritty details and the vast sweep of human history of which it is a part. — Phillip Helbig.

References

(1) N. Mailer, *Ancient Evenings* (Little, Brown and Company), 1983.
(2) P. Helbig, *The Observatory*, **144**, 210, 2024.

ASTRONOMICAL CENTENARIES FOR 2026

Compiled by Kenelm England

The following is a list of astronomical events whose centenaries fall in 2026. Births and deaths of individual astronomers are taken from *Biographical Encyclopedia of Astronomers* (2nd ed., Springer, 2014). This was supplemented by the on-line Obituary Notes of Astronomers and Obituary Lists of RAS Fellows and other societies. For events before 1600 the main source has been Barry Hetherington's *A Chronicle of Pre-Telescopic Astronomy* (Wiley, 1996). For the 17th to 20th Centuries lists of astronomical events came from Wikipedia and other on-line sources, supplemented by astronomical texts made available through the NASA Astrophysics Data System. Discoveries of comets, asteroids, novae, and other objects for 1926 appeared in the February issue of *Monthly Notices of the Royal Astronomical Society* in the following year. There were also references from *Popular Astronomy*, *Journal of the British Astronomical Association*, and *Publications of the Astronomical Society of the Pacific*. Professional discoveries and observations were followed up in *Philosophical Transactions of the Royal Society of London*, *Astronomische Nachrichten*, *Astronomical Journal*, and *Monthly Notices of the Royal Astronomical Society*. Gary Kronk's *Cometography* Volumes 1–3 (Cambridge, 1999–2007) provided details on all the comets. Details on meteorites can be found in the Meteoritical Society's Bulletin Database. Finally, NASA's *Five Millennium Canons of Eclipses* and planetary tables were consulted for information on eclipses and planetary events.

1926

January 3: Death of John Tatlock. Born in 1860, an American astronomer at the Washburn Observatory, then Professor of Astronomy at Beloit College, Wisconsin; then entered insurance and banking; member of the American Astronomical Society; FRAS 1892.

January 9: Death of Thomas Allison. Born in 1858, a New Zealand farmer with an interest in photography and astronomy; FRAS 1920; observed the annular solar eclipse of 1925 July.

January 12: Several predictions were made for the return of Periodic Comet Tuttle in 1926. It was recovered by Wilhelm Heinrich Walter Baade (Bergedorf Observatory, Hamburg) at magnitude 15·5. The comet slowly brightened to magnitude 14 in March and was last observed by Richard Reinhard Emil Schorr (Bergedorf Observatory) as a 12th-magnitude object on April 12. It reached perihelion on April 28 ($q = 1{\cdot}0309$ AU) but was not recovered in the Southern Hemisphere [Comet 8P/Tuttle].

January 14: A total solar eclipse was visible across the East Indies, the Indian Ocean, and Central Africa, with a maximum totality of 4 minutes 11 seconds. About fifty astronomers observed the eclipse from Sumatra, Dutch East Indies (now Indonesia). The Dutch expedition in Palambang was mostly clouded out with only glimpses of the eclipsed Sun. At Bencoolen the American and British expeditions had clear weather and photographed the solar corona. Attempts to confirm Einstein's theory of General Relativity failed. An Italian expedition observed the eclipse from southern Italian Somaliland (now Somalia) [Saros 130].

January 15: Death of Arthur Butler Phillips Mee. Born in 1860, a British journalist and amateur astronomer, drawing the Moon, planets, and sunspots; FRAS 1889; founder member of the BAA and the Astronomical Society of Wales.

January 16: Theodore Ballantyne Blathwayt (Braamfontein, South Africa) discovered an 11th-magnitude comet in Hydra and reported it to the Union Observatory. It had already reached perihelion on January 2 ($q = 1{\cdot}3455$ AU) but was approaching the Earth and so brightened to magnitude 9·5 on February 10. After perigee on February 5 (0·4520 AU), the comet faded rapidly and was last seen on April 9 by Otto Struve (Yerkes Observatory) [Comet C/1926 B1 (Blathwayt)].

January 20: A bright fireball was seen across Missouri, United States. A single meteorite was recovered from a field 3 km east of Palmyra, Missouri; an L3 chondrite weighing 135g [Palmyra Meteorite].

January 23: Two very large sunspots were observed on the Sun.

January 26: A bright aurora was seen from North America. The magnetic storm affected telegraph and telephone lines.

January 28: A penumbral lunar eclipse was visible from Asia, the Middle East, Europe, Africa, and the eastern side of the Americas [Saros 142].

January 29: Birth of Mohammad Abdus Salam, Pakistani theoretical physicist, studying supersymmetry and the unification of the electromagnetic and weak nuclear forces; Nobel Prize for Physics 1979; contributed to the theoretical

study of neutron stars and black holes; promoted Pakistan's space programme; died 1996.

February 23: Another bright aurora and magnetic storm were observed from North America, affecting telephone lines.

March 5: First issue of the science fiction magazine *Amazing Stories*, which included short stories by Jules Verne, H. G. Wells, and Edgar Allan Poe.

March 15: While observing Periodic Comet Brooks 2, Richard Reinhard Emil Schorr (Bergedorf Observatory, Hamburg) reported that it was magnitude 14, considerably brighter than the last observation. It was also 10 arcminutes away from the calculated position. It may have been a completely different object, although it is possible to have been a fragment of Comet Brooks 2, undergoing a sudden outburst. The comet had undergone a major disruption by a close pass of Jupiter shortly before its discovery in 1889.

March 16: Robert Hutchins Goddard (Auburn, Massachusetts) launched the first liquid-fuelled rocket. It reached 12·5 m altitude and landed 56 m away after a 2·5-second flight [Goddard Rocket Launching Site]. Subsequently liquid-fuelled rockets would send spacecraft to the Moon and Mars.

March 26: Birth of Peter Dowling Wroath, a British engineer and amateur astronomer, taking astrophotographs; member of the BAA; died 2008.

April 7: Birth of William Henry Wehlau, an American professional astronomer, Professor of Astronomy at the University of Western Ontario, studying stellar spectra; strove for a large telescope in Canada, leading to the 3·6-m *Canada–France–Hawaii Telescope* on Hawaii; died 1995.

April 16: Death of William James Lewis. Born in 1847, a British mineralogist at the British Museum; Professor of Mineralogy at Cambridge University (1881–1926); observed solar eclipses; FRAS 1873; FRS 1909.

April 16: A stony meteorite, weighing 1·5 kg, was seen to land at Urasaki, Chugoku, Japan [Urasaki Meteorite].

April 18: A small iron meteorite was seen to fall near Tokyo, Japan. The iron octahedrite mass weighed 238 g [Komagome Meteorite].

April 28: Periodic Comet Tempel-Swift returned to perihelion ($q = 1{\cdot}3257$ AU) but was not observed, as this was a very unfavourable apparition. The comet, discovered in 1869 and observed until 1908, remained lost, until it was accidentally recovered in 2001 [Comet 11P/Tempel-Swift-LINEAR].

May 2: A meteorite was seen to land in Khairpur District, Sind, British India (now Pakistan). It is an EL 6 enstatite chondrite weighing 973 g. The Jajh deh Kot Lalu meteorite has undergone extensive scientific investigation on the unusual assemblage of minerals [Jajh deh Kot Lalu Meteorite].

May 9: Maximilian Franz Joseph Cornelius Wolf and Karl Wilhelm Reinmuth (Königstuhl Observatory, Heidelberg) discovered a supernova (mag. 14·3) in the spiral galaxy Messier 61 (NGC 4303) in the Virgo Cluster. There were insufficient observations to define the supernova type [SN 1926A].

May 14: Birth of Brian George William Manning, a British technician and amateur astronomer, telescope maker and discoverer of 19 asteroids; member of the BAA; died 2011.

May 16: Birth of David Aitken, a British physicist at University College, London, developing infrared astronomical observations; FRAS 1969; worked at the Universities of Melbourne and New South Wales, Canberra; studied supernova SN 1987A in the Large Magellanic Cloud in the infrared; died 2021.

May 16: Birth of Joseph Churms, a South African professional astronomer at the Royal Observatory, Cape Town, in charge of the astronomy of stars and comets, discovering two asteroids; FRAS 1951; co-discovered the rings of Uranus occulting the star SAO 158687 in 1977 March; member of the ASSA; President of the ASSA (1969–70); died 1994.

May 17: Birth of Pamela Helen Mary Rothwell Martelli, a professional astronomer, studying cosmic rays at Mont Blanc, Pisa University, and Imperial College London; worked on satellite observations of cosmic rays; FRAS 1964; Upper Atmosphere Research Group at Southampton University (1964–84); died 1991.

May 21: Birth of Michael William Ovenden, a British professional astronomer, Professor of Astronomy at the University of British Columbia, Canada, studying the photometry and spectroscopy of eclipsing binary stars and celestial mechanics; FRAS 1945; member of the BAA; editor of *The Observatory* (1951–2); FRSE 1964; died 1987.

June 9: Periodic Comet Swift 1 returned to perihelion ($q = 1{\cdot}3578$ AU) but was not observed. The comet, discovered in 1889, had become hopelessly lost, until it was accidentally recovered in 1973 [Comet 64P/Swift-Gehrels].

June 14: Ida Elizabeth Woods (Harvard College Observatory) discovered a nova in Sagittarius (mag. 10·5) on photographic plates taken at the College's Southern Station in Arequipa, Peru. The nova faded below magnitude 16·5 in 1928 [KY Sagittarii].

June 17: In February 1941 Adriaan van Maanen (Mount Wilson Observatory) found images of a supernova (mag. 14·8) in the spiral galaxy NGC 6181. There were insufficient observations to define the supernova type [SN 1926B].

June 18: Birth of Allan Rex Sandage, an American astronomer at the Palomar Observatory, revising the Hubble constant to 55 km/s/Mpc [currently 72·6 km/s/Mpc by *JWST* observations]; discovered jets coming from the active galaxy Messier 82; compiled two atlases of galaxies; RAS Gold Medal 1967; died 2010.

June 25: A penumbral lunar eclipse was visible from most of Asia, the Middle East, Europe, Africa, and South America [Saros 109].

June 26: Two stony meteorites fell at Lua and one at Dongria, Udaipur State, and another at Dabra, Indore State in Rajasthan, British India (now India). The largest stone 8·63 kg fell at Lua, 9·24 kg in total. It is an example of an L5 chondrite [Lua Meteorite].

June 30: Birth of John Louis Perdrix, an Australian scientist at CSIRO's Division of Minerals and Geochemistry; amateur astronomer with an interest in the history of astronomy; member of the BAA; FRAS 1959; died 2005.

July 8: Asteroid (433) Eros reached opposition. It was studied in preparation for the very favourable apparition in 1931, when it would be observed in order to measure the Astronomical Unit.

July 9: An annular solar eclipse was visible across the North Pacific. As this was only an annular eclipse visible to just a few Pacific islands, no major effort was made to observe it [Saros 135].

July 13: Predictions were made for the unfavourable return of Periodic Comet Kopff, which reached perihelion on January 26 ($q = 1{\cdot}6984$ AU). It was recovered by Max Wolf (Königstuhl Observatory, Heidelberg) near the predicted position but only magnitude 16. Observations were restricted to professional observatories, which followed the comet until November 2 [Comet 22P/Kopff].

July 23: Death of Pietro Paolo Giovanni Ernesto Baracchi. Born in 1851, an Italian astronomer, emigrated to Australia; assistant at the Melbourne Observatory; Government Astronomer of Victoria; founded Mount Stromlo Observatory in 1910.

July 25: A penumbral lunar eclipse was visible from Western Europe, Africa, and the Americas [Saros 147].

July 27: Annie Jump Cannon (Harvard College Observatory) discovered a nova in Sagittarius (mag. 8·6) on photographic plates taken at the College's Southern Station in Arequipa, Peru. She found the nova on a sequence of plates, as it faded to magnitude 11·0 on August 26 and 13·0 on September 9. No further images could be found [FM Sagittarii].

July 28: The Meteor Section of the New Zealand AS observed the δ Aquarid meteor shower and derived a radiant point for the shower.

August 3: Predictions were made for the return of Periodic Comet Finlay, and searches were begun in July. Joachim Otto Stobbe (Bergedorf Observatory, Hamburg) recovered the comet near the predicted position, when it was magnitude 11–12 with a coma 1 arcminute across. Philibert Jacques Melotte (Greenwich) later found an image taken on July 21. The comet reached perihelion on August 7 ($q = 1{\cdot}0611$ AU) and began to fade at the end of August. It was magnitude 12 in September and 14·5 in October. George van Biesbroeck (Yerkes Observatory) made the last observation on November 11 (mag. 17) [Comet 15P/ Finlay].

August 11 & 12: Harold Lee Alden (Yale Observatory Southern Station, Johannesburg, South Africa) observed an enhanced display of the Perseid meteor shower.

August 15: Birth of Roy W. Panther, British printer and amateur astronomer; member of the BAA, observing and searching for comets; discovered Comet C/1980 Y2 (Panther); died 2016.

September 1: Antoni Wilk (Cracow, Poland) was making a regular survey of the sky, when he noted a bright, oblong nebulosity of magnitude 6 in Serpens. It was 4 arcminutes long and moving 1 degree in 4 minutes. He reported it as a possible comet, but professional astronomers were unable to confirm this. It is likely to have been a meteor trail, stationary in the atmosphere but moving among the stars.

September 6: A bright fireball was seen across Britain accompanied by a loud detonation.

September 8: Viktor Aleksandrovich Albitzky (Simeis Observatory, Crimea) discovered a nova (mag. 10·5), which appeared on five photographs, the last

on September 30. Then the nova faded below the range of the telescope [EY Aquilae].

September 8: Death of Joaquin de Mendizabal-Tamborrel. Born in 1852, a Mexican astronomer; surveyed the border between Mexico and Guatemala (1878–83); astronomer at Tacubaya Observatory and the Military College of Chaputtepec; represented Mexico at international conferences; FRAS 1892.

September 14: Death of John Louis Emil Dreyer. Born in 1852, a Danish astronomer in Ireland at the Birr Castle 1874, Dunsink 1878, and Armagh Observatories 1882; FRAS 1875; completed the *New General Catalogue of Nebulae and Clusters* (*NGC*) in 1888 and the *Index Catalogues* (*IC*) in 1895 and 1910; President of the RAS (1923–4).

September 16: Birth of Henry Proctor Palmer, a British astronomer at the University of Manchester; involved in radio astronomy at Jodrell Bank (1952–79), studying radio sources (quasars); FRAS 1957; died 1990.

September 19: Birth of Masatoshi Koshiba, a Japanese physicist at the Universities of Chicago and Tokyo, Professor of Physics at the University of Tokyo (1970–89); involved in the detection of neutrinos with the *Kamiokande* and *Super-Kamiokande* detectors; Nobel Prize for Physics 2002; died 2020.

October 9: It was predicted that there could be a display of the Draconid meteor shower, associated with Comet 21P/Giacobini-Zinner. William Frederick Denning, John Philip Manning Prentice, and A. King (BAA Meteor Section) observed a number of bright meteors. One particularly bright fireball was widely seen, leaving a trail visible for 30 minutes.

October 16: Predictions were made for the first favourable return of Periodic Comet Giacobini-Zinner, discovered in 1900 and 1913. Several searches began, until Friedrich Karl Arnold Schwassmann (Bergedorf Observatory, Hamburg) recovered the comet in Ophiuchus (mag. 14). Later, he found images on photographs taken on October 6 and 8. It slowly brightened in October and November, reaching perihelion on December 11 ($q = 0{\cdot}9937$ AU). In 1927 George van Biesbroeck (Yerkes Observatory) continued observing the comet, taking the last photograph on March 4 (mag. 15·5) [Comet 21P/Giacobini-Zinner].

October 28: Death of William Joseph Hussey. Born in 1862, an American professional astronomer; worked on the *American Ephemeris and Nautical Almanac*; Professor of Astronomy at Leland Stanford Junior University Palo Alto; astronomer at Lick Observatory, observing comets and planetary satellites; observing double stars and discovering 1327 new ones; Lalande Gold Medal 1906; Professor of Astronomy at the Universities of Michigan (1905–26) and La Plata (1911–17).

November 4: Birth of John Paul Cox, an American professional astronomer at Cornell University and the Courant Institute at New York University; Professor of Physics and Astrophysics at the University of Colorado Boulder (1963–84); studied the mechanism of pulsation in variable stars; FRAS 1965; published *Principles of Stellar Structure*; died 1984.

November 5: Josep Comas Sola (Fabra Observatory, Barcelona) found a 12th-magnitude comet on photographic plates taken to record asteroids. A slightly earlier image was recorded by Grigory Nikolayevich Neujmin (Simeis

Observatory, Crimea). A number of astronomers observed it in the next few nights and at the end of November. The comet remained about magnitude 12 into 1927 February. It reached perihelion on March 22 ($q = 1{\cdot}7725$ AU) and then slowly faded until the last observation on May 31. This was a new short-period comet with an orbital period of 8·5 years [Comet 32P/1926 V1 (Comas Sola)].

November 5: Periodic Comet Neujmin 2 was discovered in 1916 but missed at its first return in 1921. Calculations for the return in 1927 led to Grigory Nikolayevich Neujmin (Simeis Observatory, Crimea) finding the comet in Leo (mag. 14·5). It slowly brightened and reached magnitude 11·6 at the beginning of 1927 February. It was at perihelion on January 16 ($q = 1{\cdot}3382$ AU). Then the comet faded and became more and more diffuse, being last photographed on March 9. Despite efforts to recover the comet in 1932, 1943, and 1948, it has never been seen again and presumably broke up at the end of the 1926–7 apparition [Comet 25D/1926 V2 (Neujmin 2)].

November 8: Death of George Morham. Born in 1845, a British engineer and amateur astronomer; observed Donati's comet in 1858; observed the total solar eclipse of August 1905 but was prevented from travelling to Riga for the eclipse in 1914 August by the outbreak of the Great War; FRAS 1921.

November 24: Birth of Lee Tsung-Dao, a Chinese-American physicist; wrote PhD thesis 'Hydrogen Content of White Dwarf Stars' (1950); Professor of Physics at Columbia University (1953–2012); Nobel Prize in Physics 1957 for work on Charge Conservation Parity violation; studied statistical mechanics, astrophysics, and black holes in the 1980s and 1990s; died 2024.

November 29: Birth of Dilhan Eryurt, a Turkish astrophysicist, studying the formation and evolution of the Sun and main-sequence stars; worked at NASA's Goddard Institute for Space Studies; returned to Turkey at the Middle East Technical University, Ankara; died 2012.

December 9: A very bright fireball was seen across Arizona, including the Lowell Observatory at Flagstaff. The meteor broke up in flight and there was a loud sound.

December 10: A meteorite was seen to land near Ojuelos Altos, Andalucia, Spain, 60 km northwest of Cordoba. It is an L6 chondrite weighing 5·85 kg [Ojuelos Altos Meteorite].

December 15: Periodic Comet de Vico-Swift, discovered in 1844 and 1894, returned to perihelion ($q = 1{\cdot}7137$ AU) but was not observed. Despite extensive searches in 1907, the comet remained lost until 1965 [Comet 54P/de Vico-Swift-NEAT].

December 17: Birth of Allan Verne Cox American geophysicist on Earth's plate tectonics and magnetic reversals; Professor of Earth Sciences at Stanford University (1967–87); died 1987.

December 19: A penumbral lunar eclipse was visible from Siberia, Europe, a large part of Africa, and the Americas [Saros 114].

December 29: Birth of Michael William Feast, a South African professional astronomer, Director of the South African Astronomical Observatory (1976–92); studied the structure of the Milky Way and the Magellanic Clouds; Professor of Astronomy at the University of Cape Town; Honorary FRAS 1980;

FRSSAf; died 2017.

Ten novae in the Andromeda Galaxy were recorded by the 100-inch telescope at the Mount Wilson Observatory during the year.

An iron meteorite was found near Okahandja, South West Africa (now Namibia), 67 km north of the capital Windhoek. It is an Iron IIAB meteorite, weighing 6·58 kg [Okahandja Meteorite].

An iron meteorite was found in Red River County, Texas, 3·1 km west of the town of Rugby. It is an Iron 1AB – sLL weighing 15 kg and heavily weathered. It was one of the first meteorites in the collection of the amateur astronomer Oscar Edwin Monnig (1902–99), founding member of the Society for Research on Meteorites (now The Meteoritical Society) [Deport Meteorite].

Two youngsters found a triangular shaped metallic mass on the surface of the ground 15 km northeast of Oakley, Cassia County, Missouri. It is an Iron IIIF meteorite weighing 111 kg. It had been heavily weathered but still had an intact fusion crust. The meteorite now resides in the U.S. National Museum, Washington [Oakley (iron) Meteorite].

Wolfgang Pauli used quantum mechanics to derive the observed spectrum of the hydrogen atom.

Albert Einstein received the RAS Gold Medal.

A 41-inch (104 cm) lens was manufactured in England for a large refractor at the Simeis Observatory, Crimea, but failed its optical tests.

Thea von Harbou's science-fiction novel *Metropolis* was published in book form (it appeared as a serial in 1925). It was made into a film by her husband, film director Fritz Lang, which was released in 1927.

1826

January 4: Death of Nicolas Fuss. Born in 1755, a Swiss mathematician, assistant to Leonhard Euler at St. Petersburg, Russia; worked on the mathematics and optics of microscopes and telescopes; Secretary to the Imperial Academy of Sciences (1800–26). His son Georg Albert Fuss (1806–54) was an astronomer at the Pulkovo and Vilnius Observatories.

February 6: Birth of Joseph Winlock, an American astronomer, 3rd Director of the Harvard College Observatory (1866–75); involved with the *American Ephemeris and Nautical Almanac*; observed the total solar eclipses of 1869 August and 1870 December, photographing the corona; father of the Harvard astronomers Anna Winlock (1857–1904) and Louisa Winlock (1860–1916); died 1875.

February 15: Birth of Emmanuel-Benjamin Liais, a French astronomer at the Paris Observatory in charge of the meteorology service and magnetic observations; observed the total solar eclipse of 1858 September in Brazil and discovered Comet C/1860 D1 (Liais); Director of the Imperial Observatory, Rio de Janeiro (1874–81); speculated that dark features on Mars were due to vegetation; died 1900.

February 15: Birth of George Johnstone Stoney, an Irish physicist; assistant to Lord Rosse at Birr Castle (1848–50); Professor of Physics at Queen's College, Galway; researched into the kinetic theory of gases, relating to planetary

atmospheres; FRAS 1860; FRS 1861; died 1911.

February 27: The Austrian military officer Wilhelm von Biela (Josephstadt, Austria) discovered a comet as a small, round nebulosity with a faint central point in Pisces. The following night it had moved one degree east. It was independently discovered by Jean Félix Adolphe Gambart (Marseilles, France) on March 9 and also recorded in Chinese texts. European astronomers followed the faint comet across Aries and Taurus during March. It reached perihelion on March 18 ($q = 0{\cdot}9024$ AU) and was closest to the Earth on April 19 (0·9599 AU). The last observation was made by Carlo Brioschi (Naples) on May 9.

Von Biela calculated the orbit for the comet and found that it was very similar to the orbits of comets seen in 1772 and 1805. The same conclusion was reached by Gambart and Heinrich Wilhelm Matthias Olbers. Periodic Comet Biela was the third periodic comet to be recovered in 1832 September [Comet 3D/1826 D1 (Biela)].

March 12: Birth of Col. Michael Foster Ward, a British military officer, interested in meteorology and astronomy; observed the Andromedid meteor storm on 1885 November 27 from Germany; FRAS 1863; died 1915.

March 29: Honoré Flaugergues (Viviers, France) was informed of the discovery of Biela's comet and observed a nebulous object in Orion. He followed the comet for most of the nights until April 6. He thought that it was a different comet and calculated a parabolic orbit. It remained on the list of comets until 1914, when Walter Hassenstein found that Flaugergues had misidentified the comparison stars and that this was indeed Biela's comet. [Comet 3D/1826 D1 (Biela)].

May 3: A bright meteor was observed over Sicily. The meteorite fell at a farm near the Sicilian town of Mineo, forming a small crater and making a loud sound. This was a rare pallasite, but only 42g of samples remain at the University of Perugia [Mineo Meteorite].

May 10: Birth of Henry Clifton Sorby, a British amateur scientist, who studied rocks in thin section, first terrestrial samples and then meteorites; died 1908.

May 19: A meteorite was seen to fall near the city of Pavlograd, Dnepropetrovsk Oblast, Russian Empire (now Ukraine). About 40 kg of a L6 chondrite was recovered [Pavlograd Meteorite].

May 19: A meteorite was seen to fall near the town of Galapian, Aquitaine, France, just twelve years after another meteorite had landed, killing an ox. This meteorite is an H6 chondrite weighing 132·7 g [Galapian Meteorite].

May 21: A total lunar eclipse was visible from Asia, the Middle East, and a large part of Africa [Saros 116].

May 21: Death of Georg Friedrich von Reichenbach. Born in 1771, a German scientific instrument maker in Munich; supplied transit circles to observatories.

May 26: Birth of Richard Christopher Carrington, British astronomer with an observatory at Redhill, Surrey; studied northern circumpolar stars; FRAS 1851; RAS Gold Medal 1859; made long-term observations of the Sun, including the major solar flare of 1859 September 1 [Carrington Event]; died 1875.

June 5: A partial solar eclipse was only visible from southern South America [Saros 144].

June 7: Death of Joseph von Fraunhofer. Born in 1787, a German glass-lens maker of exceptional skill, making some of the finest telescope objectives; discovered dark (absorption) lines in the solar spectrum in about 1814 [Fraunhofer Lines].

June 17: Birth of Rev. Joseph Chadwick Bates, a British vicar with interests in astronomy, meteorology and geology; FRAS 1863; FGS; died 1901.

June 21: Birth of Georg Balthasar von Neumayer, a German polar explorer and meteorologist; founded the Wilhelmshaven and German Maritime Observatories; co-founded the International Polar Commission 1879 and organized the (First) International Polar Year (1882–3); died 1909.

July 5: Birth of Amédée-Victor Guillemin, a French journalist and author of popular books on physics and astronomy, including large numbers of illustrations; died 1893.

July 5: Birth of James Breen, Irish computer at the Royal Observatory at Greenwich (1840–6), assistant at the Cambridge University Observatory (1846–58); observed the total solar eclipse in Spain in 1860 July; FRAS 1862; died 1866.

July 7: Birth of Sir Charles Todd, a British-Australian astronomer; assistant at the Cambridge University and Royal Observatory; Director of the Adelaide Observatory (1855–1906); FRAS 1864; FRMetS; observed the transits of Venus in December 1874 and December 1882; FRS 1889; KCMG 1893; died 1910.

July 22: Death of Giuseppe Piazzi. Born in 1746, an Italian monk, teaching mathematics and astronomy; founded the Palermo Observatory in 1789, cataloguing 6748 stars; discovered the first asteroid Ceres on 1801 January 1; discovered the 'flying star' 61 Cygni's rapid motion; reformed the standards of weights and measures for the Kingdom of the Two Sicilies.

August 7: Jean Louis Pons (Florence, Italy) discovered a faint comet in Fornax, which was also discovered by Jean Félix Adolphe Gambart (Marseilles, France) on August 15. The comet was quite well defined in September and was closest to the Earth on September 14 (0·5212 AU). It was followed in October despite interference from the Full Moon. The comet was last seen by Leopoldo Del Re (Naples) on December 11. The orbit was essentially parabolic with perihelion on October 9 ($q = 0{\cdot}8529$ AU) [Comet C/1826 P1 (Pons)].

August 7: Birth of James Bourdan, an American politician, Governor of Massachusetts (1785–7); interested in astronomy and electricity with Benjamin Franklin; supported an expedition to Newfoundland to observe the transit of Venus in 1761 June; 1st President of the American Academy of Arts & Sciences (1780–90); FRS 1788; died 1790.

August 14 & 15: J. Graziani (Rome, Italy) observed the Perseid meteor shower, describing that "there were more than 50 per hour in the two nights indicated." Observing from 10 pm to midnight, he noted that most of the meteors moved from northeast to southwest.

October 22: Jean Louis Pons (Florence, Italy) discovered another comet in Boötes, which was independently discovered by Thomas Clausen (Hamburg) on the 26th and Gambart (Marseilles, France) on the 28th. The comet became a naked-eye object at the beginning of November and transited the Sun

on November 18 when at perihelion (q = 0·0269 AU). It reappeared in the morning sky at the end of the month, when it displayed a bright tail 8 degrees long. The comet was followed until 1827 January 6 [Comet C/1826 U1 (Pons)].

October 31: A partial solar eclipse was visible only from Antarctica [Saros 111].

November 14: A total lunar eclipse was visible from North America, Asia, the Middle East, Europe, and Africa. The eclipse was widely observed [Saros 123].

November 23: Death of Johann Elert Bode. Born in 1747, a German astronomer, discovered the galaxy Messier 81 in 1774 and Comet C/1779 A1 (Bode); Director of the Royal Observatory, Berlin (1787–1825); edited the *Astronomisches Jahrbuch*; compiled the star atlas *Uranographia* (1801), including Herschel's nebulae, clusters, and double stars; noted the gap between Mars and Jupiter (Titius–Bode Law) and became involved in the search for asteroids.

November 29: A partial solar eclipse was visible from the Middle East, Europe, and North Africa [Saros 149].

December 4: Birth of Col. Arthur Swann Howard Lowe, a British army officer, interested in meteorology and astronomy; FRMetS; FRAS 1857; died 1888.

December 11: Birth of Georg August Dietrich Ritter, a German physicist, who studied the structure of stars, including the pulsation of stars, but his work was relatively ignored; died 1908.

December 16: Birth of Giovan Battista Donati, an Italian astronomer, who discovered five comets C/1855 L1 (Donati), C/1857 V1 (Donati-van Arsdale), C/1864 O1 (Donati-Toussaint), C/1864 R1 (Donati), and particularly the spectacular comet C/1858 L1 (Donati); Director of the Pisa University Observatory (1864–72), studying stellar spectra; observed the total solar eclipse of 1860 July; died 1873.

December 26: Jean Louis Pons (Florence, Italy) discovered a comet in Hercules, also found by Jean Félix Adolphe Gambart (Marseilles, France) on December 27. Bad weather and bright moonlight interrupted observations at the beginning of 1827 January and the comet was last seen by Jakob Schwarzenbrunner (Kremsmünster, Austria) on January 26. It reached perihelion on February 5 (q = 0·5062 AU) but was in conjunction with the Sun [Comet C/1826 Y1 (Pons)].

James South was awarded the Royal Society's Copley Medal for his work on double and triple stars.

John Frederick William Herschel, James South, and Friedrich Georg Wilhelm Struve received RAS Gold Medals.

Thomas Keith published *A New Treatise on the Use of the Globes*, a text on geography and astronomy.

W. H. Prior published *Lectures on Astronomy*. At this time a number of lecturers were giving popular lectures that packed out some of the largest theatres in Britain.

1726

January 25: Death of Guillaume Delisle. Born in 1675, a French cartographer; member of the Académie Royale des Sciences; observed the total solar eclipse

of 1724 May in Paris; brother of the astronomers Joseph-Nicolas Delisle (1688–1768) and Louis de L'Isle de la Croyère (1685–1741).

April 2: An annular solar eclipse was visible from Southwest Africa and the South Atlantic. The partial phase was visible from Africa and part of South America [Saros 115].

April 7: Birth of Charles Burney, an English musician, composer, and historian of music; interested in astronomy, writing 'An essay towards a history of the principal comets that have appeared since 1742' (1769); FRS 1773; died 1814.

April 16: A partial lunar eclipse was visible from the Americas, Asia, and the Middle East [Saros 127].

June 14: Birth of James Hutton, a Scottish geologist, who developed the principle of uniformitarianism in geology and the concept of Deep Time; FRSE founding member 1784; died 1797.

September 25: A total solar eclipse was visible from West Africa and northern North America. There were several observations of the partial phase from Western Europe [Saros 120].

September: Birth of Thomas Melvill, Scottish natural philosopher, interested in spectroscopy and astronomy; experimented with kites to study the atmosphere; died 1753.

October 11: A partial lunar eclipse was visible from the Middle East, Europe, Africa, and the Americas. A number of astronomers observed the eclipse [Saros 132].

October 29: Birth of Daniel Melanderhjelm, a Swedish mathematician and astronomer, Professor of Astronomy (1761–82); knighted 1778; secretary of the Royal Swedish Academy of Sciences; published books on astronomy, the motion of the Moon, the transits of Venus, and the atmospheres of the planets; died 1810.

John Harrison developed the gridiron pendulum for clocks to compensate for variations in temperature.

Sir Isaac Newton published his final version of *Philosophiae Naturalis Principia Mathematica* (*The Mathematical Principals of Natural Philosophy*).

Posthumous publication of David Gregory's *Astronomiae physicae et geometricae elementa* (*Elements of Physical and Geometrical Astronomy*)

Giuseppe Lorenzo Stecchi (Florence) published *Delle Meteore* in three volumes, describing atmospheric and celestial phenomena in verse.

1626

February 11: Death of Pietro Antonio Cataldi. Born in 1548, an Italian mathematician, who taught mathematics and astronomy at Bologna.

April 9: Death of Francis Bacon. Born in 1561, an English philosopher of science, who developed a geocentric model of the Universe in 1611, already outdated by telescopic observations of the planets.

May 8: Death of Baldassarre Capra. Born in 1580, an Italian mathematician and astronomer, observed the supernova in Ophiuchus in 1604 October;

accused by Galileo of plagiarizing his work on geometrical dividers.

October 30: Death of Willebrord Snell. Born in about 1580, a Dutch mathematician at the University of Leiden; discovered the law of the refraction of light (Snell's Law).

November: Birth of Jeremy Shakerley, an English astronomer, who promoted the work of Jeremiah Horrocks, predicted and observed the transit of Mercury on 1651 October 24 from Surat, India; died 1655.

December 10: Death of Edmund Gunter. Born in 1581, an English mathematician and astronomer; developed the Gunter's quadrant for navigation at sea; noted the change in declination of a magnetic compass with time; Gresham Professor of Astronomy (1620–26).

Birth of Pietro Mengoli, an Italian mathematician, Professor of Mathematics at the University of Bologna (1647–86); wrote on mathematics, cosmology, and music theory; died 1686.

Thomas Fale published a second revised edition of *Horologiographia*, a pamphlet on constructing sundials.

1526

March 11: Birth of Heinrich Rantzau, German writer, patron and astrologer; associate of Tycho Brahe; died 1598.

May 23: Transit of Venus

June 14: Birth of Taqi al-Din Abu Bakr Muhammad ibn Zayn al-Du Ma'ruf al-Dimashqi al-Hanafi, Arab astronomer and astrologer; director of the short-lived Constantinople Observatory (1579–85); made astronomical observations and calculations, extensive writings; died 1585.

Death of Abd al-Ali ibn Muhammad ibn Husayn al Birjandi, an Islamic astronomer at Samarkand; wrote commentaries on astronomical texts.

1326

Spring: Death of Robert of Reading, an English Benedictine monk and chronicler at Westminster Abbey; observed and recorded the bright aurora of November 1322.

1226

March 4: A conjunction between Jupiter and Saturn occurred just before dawn.

September 13: A comet appeared between Boötes and Coma Berenices.

Birth of Gregory Abu'l-Faraj Bar Hebraeus, Bishop of the Syriac Orthodox Church; polymath; wrote numerous books, including *Hewath Hekmetha* (*Butter of Wisdom*) on Aristotelian philosophy and *Suloqo Hawnonoyo* (*Ascent of the Mind*), an essay on astronomy and cosmography; died 1286.

1126

July 19: Chinese astronomers discovered a 'broom star' in the Draco–Ursa Minor–Camelopardalis region, recorded in several texts. On July 22 the

Japanese saw the comet in the north with a tail three degrees long, recorded in *Dainihonshi*.

Birth of Abu al-Walid Muhammad ibn Ahmad ibn Muhammad ibn Rushd al-Hafid [Averroes], Spanish-Arab Aristotelian philosopher and astronomer, wrote commentaries on Aristotle's works and Ptolemy's Almagest; died 1198.

1026

Birth of Wilhelm Abbot of Hirschau Abbey, Bavaria; taught mathematics and astronomy and wrote on astronomy and music; constructed astronomical instruments and a stone astrolabe; died 1091.

Adelard of Bath translated mathematical and astronomical works of Muhammad ibn Musa al-Khwarizmi into Latin.

926

March 31: Flodoard of Rheims recorded in his *Annals* that a total lunar eclipse was observed from Paris. The eclipse, dated as April 1, was visible from the Middle East, Europe, Africa, and the Americas [Saros 95].

July 22: The Chinese observed that "many stars flew, crossing each other", recorded in *Ssu-tien-k'ao*. An enhanced display of the Perseid meteor shower.

There is a report that fiery rays of light appeared in the northern sky. This was a bright display of the aurora borealis.

826

May 7: The Chinese observed that "within the Sun there was a black vapour like a cup", recorded in *Hsin T'ang Shu*.

May 24 & 26: The Chinese observed that "within the Sun there was a black spot", recorded in *Hsin T'ang Shu*. This was probably the same sunspot seen earlier in the month rotating back into view.

Birth of Al-Sabi Thabit ibn Qurrah al-Harrani, Arab doctor, mathematician, astronomer, and astrologer, court astronomer at Baghdad, wrote many astronomical works, including published solar observations in *Kitab fi Sanat al-Shams* (*Book on the Solar Year*); died 901; father of the court astronomer Sinan ibn Thabit ibn Qurra (880–943) and grandfather of the court astronomer Ibrahim ibn Sinan ibn Qurra (908–46).

726

December 13: A total lunar eclipse was observed from Ireland, recorded in the *Annals of Ulster*. The eclipse was visible from Asia, the Middle East, Europe, Africa, and the Americas [Saros 85].

Theophanes the Confessor recorded in his *Chronographia* that a very bright meteor was seen from Constantinople.

626

March 26: Chinese astronomers discovered a 'sparkling star' between Aries and the Pleiades, recorded in *Chiu T'ang HuiYao* and *Hsin T'ang Shu*. On March 31 the comet had moved to Perseus. At Constantinople "an exceedingly bright

star appeared for four days in the west after sunset" during March according to the *Chronicon Paschale* [Comet X/626 F1].

The Chinese astronomer Fu Jen-chun collected astronomical observations of the ancients during the year.

526

September 22: Elias recorded a solar eclipse. It was annular/total across Central Africa, but the partial phase was visible from South Asia, the Middle East, Southern Europe, and Africa [Saros 91].

AD 126

March 23: The Chinese observed a 'guest star' in the Virgo–Coma Berenices–Leo region, recorded in *Hou Han Shu*. This may have been a nova or a tailless comet.

275 BC

Ptolemy II Pharaoh of Egypt founded the Museum of Alexandria, including the Library.

375 BC

(about) Birth of Philippus of Medma, Southern Italy, Greek astronomer and mathematician; made observations from the Peloponnese and Locris, Southern Italy, used by later astronomers.

475 BC

(about) Death of Xenophanes of Colophon. Born in about 571 BC, an early Greek poet and philosopher in Sicily and Southern Italy; recognized the Earth's water cycle; made early speculations on the nature of the Universe.

675 BC

October: The Babylonian scribe Asaredu the Younger recorded that "if a comet becomes visible in the path of the stars of Anu (the Pleiades?): there will be a fall of Elam in battle."

975 BC

The Roman writer Pliny the Elder recorded in his *Natural History* that in this year "a comet appeared all on fire and was twisted in the form of a wreath and had a hideous aspect; it was not so much a star as a knot of fire."

1375 BC

May 3: A total solar eclipse was visible from North and Central Asia and the Middle East [Saros 16]. This may be the eclipse mentioned in a cuneiform document from the Western Palace Archive in Ugarit, Syria (KTU 1·78): "the Sun was put to shame; went down in daytime." It continued, "on the 6th. hour of the day of the new moon in the month Hiyaru the Sun went down. Its gatekeeper was Rsp." Rsp would then be Aldebaran in Taurus or an eclipse comet. The general view is that the document refers to the total solar eclipse of 1223 BC March 5 [Saros 20] with Rsp being Mars, then at superior conjunction.