

Volume 7, Issue 9
SOLAR ECLIPSE NEWSLETTER

September 2002

SOLAR ECLIPSE NEWSLETTER

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The Solar Eclipse Mailing List

The Solar Eclipse Mailing List (SEML) is an electronic newsgroup dedicated to Solar Eclipses. Published by eclipse chaser Patrick Poitevin (patrick_poitevin@hotmail.com), it is a forum for discussing anything and everything about eclipses.

Thanks to the voluntary efforts of Jan Van Gestel of Geel, Belgium, the Solar Eclipse Mailing List (listserv) has been in operation since 10 December 1997. This is the first mailing list devoted solely to topic of solar eclipses on the internet.

You can send an e-mail message to the list server solareclipses@Aula.com, which will then forward your e-mail to all the subscribers on the list. Likewise, you'll receive email messages that other subscribers send to the listserv. Only subscribers can send messages.

The sole Newsletter dedicated to Solar Eclipses

Dear Friends,

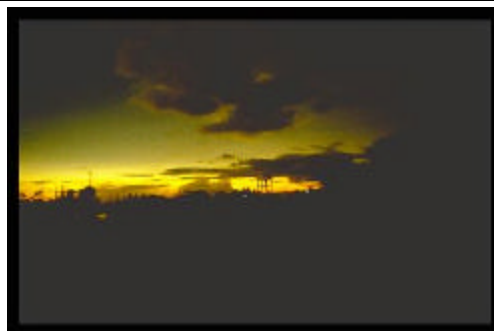
The SENL September 2002 issue is ready. Much smaller in size than the previous issue. Many people were on holiday. Unsubscribed for a few weeks and the SEML traffic was calm.

The topics are nevertheless still interesting as you will see in this SENL issue.

In the meanwhile, we have traced back our solar eclipse pictures and updated the Solar Eclipse WebPages (SEWP). We only have to retrieve a few eclipse reports and all observed solar eclipse webpages are updated. Have a look in our webpages and let us know our thoughts.

Some pictures have been printed in this front page. Below the total solar eclipse of 31 July 1981 in Tsortandy, Kazakhstan. Right above during totality of 11 July 1991 in San Blas, Mexico and below right (again 10 years later) 11 June 2001 in Boets farm, Zambia.

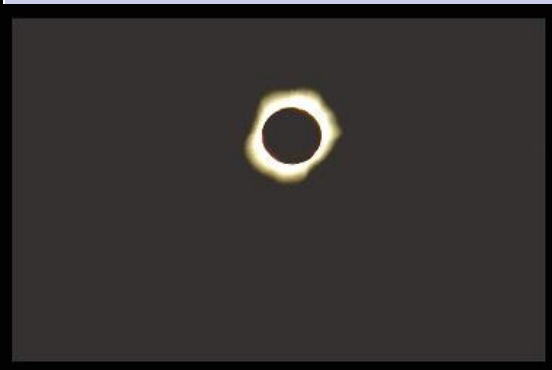
In the meanwhile, after all, we have booked our flights to South Africa. We have to look into the details and make some arrangements for accommodation and some touristic visits.



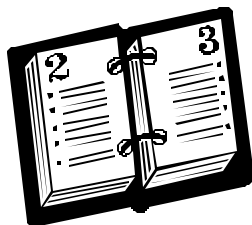
The preparation for Totality Day 2003 started as well. We are still looking for contributions and lectures. A few announcements will be made soon and we hope to meet you all on 8 February 2003 in the Open University of Milton Keynes in England.

That's it for now. We meet you all soon, on the SEML, the next SENL, TD2003. The next TSE, SEC2004, or where ever!

Cheers, Patrick and Joanne

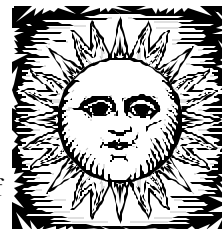


SECalendar



Dear All,

Please find herewith the solar eclipse calendar (SECalendar) for September. If you have any additional information, queries or remarks, please drop me a mail.



For the whole Solar Eclipse Calendar, see <http://www.j.w.edmonds.btinternet.co.uk>

September 01, 1859 In 1859, the first solar flare ever to be recorded by humankind. An intense aurora followed the next day. Two independent observers, Richard C. Carrington and R. Hodson (UK), described their experiences in volume twenty of the Monthly Notices of the Royal Astronomical Society. They are the first to observe a flare on the Sun and they both note that a magnetic storm in progress on earth intensifies soon afterwards, but they refrain from connecting the two events.

September 02, 2817 Next total solar eclipse in Amsterdam at sun altitude of 14 degrees. Annular eclipses in Amsterdam will be on October 2, 2350, March 26, 2639 and May 23, 2878 (the same century as the total solar eclipse).

September 03, 0118 "... about this time while he was pursuing his studies in Greece, such an omen was observable in the heavens. A crown resembling Iris surrounded the disc of the Sun and darkened its rays." Refers to solar eclipse of 3 September AD 118, or possibly AD 96. From: Philostratus, Greek (died between AD 224 and 229). Quoted in UK Solar Eclipses from Year 1 by Sheridan Williams.

September 03, 1885 Bettina 250: Minor planet discovered 1885 September 3 by Johann Palisa at Vienna. Named for Baroness Bettina von Rothschild of the Austrian plutocratic family. In *Observator*, Vol 8 p 63 (1885) the following info was published: "Herr Palisa, being desirous to raise funds for his intended expedition to observe the Total Solar Eclipse of August 29, 1886 will sell the right naming the minor planet N°244 for 50 £" (Ref. VK)

September 03, 1998 SOHO recharged his batteries after months of inactivity. (Ref DD 09/99)

September 03, 2081 Next large partial solar eclipse in the Netherlands. It is not that large as the one of 1999. Magnitude in Utrecht is 0.902 and 0.939 in Maastricht.

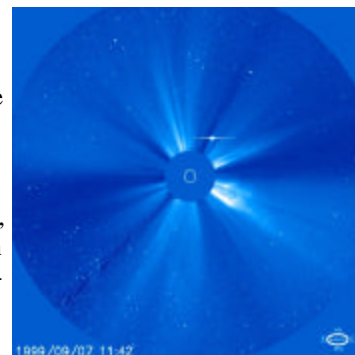
September 03, 2081 Next Total Solar Eclipse in France, Germany, etc. Next Total Solar Eclipses in Europe: August 12, 2026 total in North of Spain shortly after sunset. The year after, August 2, 2027 total in extreme South of Spain and September 12, 2053 total in extreme South of Spain, September 3, 2081 total in France, South in Germany, Switzerland, Austria, etc., September 23, 2090 total in northern France and the southwestern Belgium at sunset.

September 04, 0501 <The sun was red and dim; within it there was a single black spot.> Ref BAA 6/00

September 05, 1923 Minor planet (1005) Arago Discovered 1923 September 5 by S. I. Belyavskij at Simeis. Named in honor of François Arago (1786-1853), since 1843 director of the Paris Observatory, the secretary of the Academy of Sciences, politician and author of the four volume *Astronomie Populaire* (1854-1857). (H 96) Arago is also honored by craters on Mars and the Moon. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 05, 1984 Landing of STS-41D Discovery: 6 astronauts, of whom 1 paid passenger. 3 satellites launched. Big solar panel folded open and shots made with IMAX-camera. 1st flight for Discovery, 12 for all shuttles together (Ref DD 9/99)

September 06, 1892 Birth of E. V. Appleton, British physicist. Studied relation between solar and earth atmosphere. Got Nobel price in 1947 for physics. (ref. DD 9/98)



Lasco and Mercury passage
in 1999

(Continued on page 3)

SECalendar

September 07, -0246 (247 BC) "[D]iary for year 65 (SE), king Antiochus . . . [month V]. The 28th, 74 deg after sunrise, solar eclipse (at) 5 months' distance; when I watched I did not see it." Refers to a solar eclipse of 7 September 247 BC, predicted to take place in Babylon, but which was actually far north of Babylon. Babylonian tablet in the British Museum. Quoted in Historical Eclipses and Earth's Rotation, by F. Richard Stephenson, Cambridge University Press, 1997, page 122.

September 07, 1820 Partial eclipse in England but annular over the Isles of Shetland. The trial of Queen Caroline was going on in the House of Lords, and the House suspended its sitting for a short time for the sake of the eclipse. (ref. Chambers, The Story of Eclipses, 1899)

September 07, 1858 Neither at Olmos nor Piura, did any enceinte woman leave her room during the eclipse, whilst some from curiosity, but more through fear, were in the streets, yet not daring to look upon the sun, lest malady befall them. The somber green light gave them the appearance of corpses, and they apprehended that a plague might be visited upon them. Afterwards, the muleteers told us that their animals stopped eating, and huddled together in evident alarm." Lieut. J M Gillis An Account of the Total Eclipse of the Sun on September 7, 1858, as Observed Near Olmos, Peru in Smithsonian Contributions to Knowledge, vol. 11, April 1859, Smithsonian Institution.

September 07, 1956 Minor Planet (2165) Young 1956 RJ. Discovered 1956 September 7 at the Goethe Link Observatory at Brooklyn, Indiana. Named in memory of Charles Augustus Young (1834-1908), known affectionately as "Twinkle" Young by the Princeton students. He accepted the professorship of astronomy at Princeton in 1877, the year that his most famous student, Henry Norris Russell {see planet (1762)}, was born. Earlier he was a professor at Dartmouth, as his father and grandfather had been. He discovered the green line ($\lambda 5304$) in the solar corona in 1869, and the following year he was the first both to observe the "flash spectrum" and to photograph a prominence. In 1876 he made the first use of the grating spectroscope in astronomy for the determination of the Sun's rotation period. The last of his three successful textbooks, Manual of astronomy, was updated by Russell, Dugan {see planet (2772)} and Stewart in 1926. (M 8798) Name proposed by F. K. Edmondson. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 07, 1962 (2624) Samitchell 1962 RE. Discovered 1962 September 7 at the Goethe Link Observatory at Brooklyn, Indiana. Named in memory of Samuel Alfred Mitchell (1874-1960), a faculty member of Columbia University from 1899 to 1913 and then director of the Leander McCormick Observatory until 1945, known for his work on solar eclipses and stellar parallaxes. His measurements of the flash spectrum at the eclipses in 1900, 1901 and 1905 referred to nearly 3,000 lines. His book Eclipses of the Sun went through five editions. His photographic parallax work with the McCormick refractor resulted in the publication of 2,001 parallaxes by 1950. Subsequent work by van de Kamp {see planet (1965)} and Vyssotsky {see planet (1600)}, encouraged and supported by Mitchell, yielded absolute proper motions of 29,000 stars between magnitudes 8 and 12. (M 10844) Name proposed by F. K. Edmondson. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 09, 1934 Minor Planet (1670) Minnaert 1934 RZ. Discovered 1934 September 9 by H. van Gent at Johannesburg. Named in honor of the late Prof. Marcel G. J. Minnaert {1893-1970}, who was Director of the Utrecht Observatory from 1937 until 1963. He made major contributions to solar research and prepared (with Mulders and Houtgast) the Photometric Atlas of the Solar Spectrum. He was an extraordinarily effective lecturer and writer in the popularization of astronomy. (M 3185) Minnaert is also honored by a lunar crater. Obituaries published in Astron. Nachr., Vol. 292, p. 192 (1970); Orion, 28. Jahrg., p. 195 (1970); Hemel en Dampkring, Vol. 68, p. 289-292 (1970); l'Astronomie, Vol. 84, p. 525 (1970); Observatory, Vol. 90, p. 272 (1970); Sky Telesc., Vol. 40, p. 344 (1970); Nature, Vol. 229, p. 214 (1971); Astrophys. Space Sci., Vol. 10, p. 183-185 (1971); Solar Phys., Vol. 17, p. 3-5 (1971); Astron. Tidsskr., Vol. 3, p. 199-200 (1970); Icarus, Vol. 15, p. 147-148 (1971); Q.J.R. Astron. Soc., Vol. 12, p. 338-341 (1971); Irish Astron. J., Vol. 11, p. 161 (1973). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 09, 1991 Minor planet (7127) Stifter 1991 RD3. Discovered 1991 September 9 by F. Börngen and L. D. Schmadel at Tautenburg. Named for the most famous Austrian narrator Adalbert Stifter (1805-1868). After formative years spent in the Bohemian Forest, he studied near the Benedictine Abbey in Kremsmünster, later living in Vienna and Linz {see planets (397) and (1469)}. In his brilliant novels and epics (The Timber Forest, Rock Crystal, Indian Summer and Witiko) landscapes were described in a superb manner. Stifter described the correlation of man and nature in a subtle manner, full of feeling. He dealt with questions of education, love and piety, and he was also engaged in painting and science. He gave full details of the total solar eclipse of 1842

(Continued on page 4)

SECalendar

July 8 as observed in Vienna. (M 29149) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 09, 1994 Launch of STS-64 Discovery with 6 astronauts for nearly 11 days. Experiments with Spartan (solar wind and corona) and atmosphere research with Lite. (ref. DD 9/98)

September 10, 1919 Robert B. Leighton, was born on 10 Sep 1919. OK, during the only total eclipse he tried to observe (Hawaii 1991), he was clouded out. But, using the 60-ft. solar tower at Mt. Wilson (California) more than 30 years earlier, he had discovered the 5-min. and 15-min. oscillations of the Sun, thereby creating the field of helioseismology, which occupies several dozen scientists around the world today. (GONG, etc.) (Ref. AL 9/99)

September 10, 1923 Hildago 944: Minor planet discovered October 31, 1920 by W. Baade at Bergedorf. German astronomers observed the Total Solar Eclipse 1923 September 10 in Mexico. After the Eclipse they had an audience with the president of Mexico and asked permission to call this planet after Miguel Hidalgo y Costilla (1753-1811) who proclaimed the Mexican independence in 1810. AN 221, 159 (1924). Ref VK 6/97

September 10, 1967 Surveyor 5 (US) makes a soft landing on the moon. Made more than 19,000 pictures and landed 25 km from the later landing place of Apollo 11. (ref. DD 9/98)

September 10, 1978 Minor Planet (2100) Ra-Shalom 1978 RA. Discovered 1978 September 10 by E. F. Helin at Palomar. Named by the discoverer for the Egyptian sun-god Ra, who symbolizes enlightenment and life, and for Shalom, the traditional Hebrew greeting meaning peace. This name is chosen to commemorate the Camp David mid-east peace conference, at which time this unusual body was found. May it stand as a symbol for the universal hope for peace. (M 4548) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 11, 1972 Minor planet 2238) Steshenko 1972 RQ1. Discovered 1972 September 11 by N. S. Chernykh at Nauchnyj. Named in honor of Nikolaj Vladimirovich Steshenko {1927- }, deputy director of the Crimean Astrophysical Observatory, whose comprehensive support has contributed to the success of the program for the discovery and observation of minor planets. Well-known for his work in solar physics, he is in charge of the program of solar observations from space, and he is the author of the design for the Soviet 25-m-diameter mosaic optical telescope. (M 5850) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 12, 1838 Birth of Arthur J. G. F. von Auwers, German astronomer. He reviewed the distance of the sun several times, using transits of Venus and a close encounter of a minor planet. Ref DD 9/99.

September 12, 1851 Birth of Sir Arthur Schuster (1851-1934). A comet is discovered and photographed by Sir Arthur Schuster (1851-1934), Germany/UK, during an eclipse in Egypt: first time a comet discovered in this way has been photographed. The Total Solar Eclipse had been observed by Sir Joseph Norman Lockyer (1836-1920), Ranard and Schuster from England, Tacchini from Italy, Trépied, Thollon and Puiseux from France. Observation from Sohag at the Nile. (Ref. Rc 1999)

September 13, 1178 Vigeois, France ..., on a clear day, about the 5th hour, the Sun suffered an eclipse,... (Ex Chronico Gaufredi Vosiensis, Bouquet, 1781, p447) Ref PG 9/99.

September 13, 1912 Birth of H. W. Babcock, American astronomer. Studied magnetic fields of the sun. (ref. DD 9/98)

September 13, 1955 Minor Planet (3167) Babcock 1955 RS. Discovered 1955 September 13 at the Goethe Link Observatory at Brooklyn, Indiana. Named in memory of Harold D. Babcock (1882-1968) and in honor of his son Horace W.



Lockyer and the India eclipse 1872

SECalendar

Babcock, astronomers at Mount Wilson Observatory, the latter also serving as director of Palomar Observatory. The elder Babcock's precise laboratory studies of atomic spectra allowed others to identify the first "forbidden" lines in the laboratory and to discover the rare isotopes of oxygen. With C. E. St. John and others, he extended Rowland's tables of the solar spectrum into the ultraviolet and infrared. The Babcocks ruled excellent large gratings, including those used in the coude spectrographs of the 2.5-m and 5-m telescopes, and they measured the distribution of magnetic fields over the solar surface to unprecedented precision. The younger Babcock invented and built many astronomical instruments, including the solar magnetograph, microphotometers and automatic guiders. By combining his polarization analyzer with the spectrograph he discovered magnetic fields in other stars, and he developed important models of sunspots and their magnetism. (M 15089) Name proposed by F. K. Edmondson. Citation prepared by J. Tenn. Obituary published in Q.J.R. Astron. Soc., Vol. 10, p. 68-72 (1969). Harold Babcock is also honored by a lunar crater. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 14, 1923 Minor planet (1073) Gellivara Discovered 1923 September 14 by J. Palisa at Vienna. Named for the small town Gällivare in Swedish Lapland where in the year 1927 astronomers from several countries observed the total solar eclipse of 1927 June 29. (H 101) Named by the Austrian astronomer J. Rheden and endorsed by Anna Palisa. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 14, 1994 Ulysses (ESA) reached the south pole of the sun (-80,22 degrees). (ref. DD 9/98)

September 16, 1950 Minor planet (1613) Smiley 1950 SD. Discovered 1950 September 16 by S. Arend at Uccle. Named in honor of Charles Hugh Smiley {1903-1977}, interested mainly in orbit computations by Leuschner's method, director of the Ladd Observatory and professor at Brown University, Providence, R.I. (M 3931) Smiley not only worked on the field of minor planet dynamics. He led 14 solar eclipse expeditions, in Peru, Canada, Brazil, Thailand, Pakistan, and the U.S.A., and did much work on the study of the Mayan calendar. Obituaries are published in J.R. Astron. Soc. Canada, Vol. 72, p. 46-47 (1978); Q.J.R. Astron. Soc., Vol. 19, p. 510-511 (1978). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 17, 1354 " In this year on 17 September that novelty appeared. The Sun became dark on a Wednesday at about the third hour and it lasted for the space of two hours. Above the Sun and Moon, which were joined together - that is, the Moon was covering the Sun - there appeared a very large star with fiery rays like a torch . . . Many people viewed the rays of the small Sun by reflection in a mirror or in clear water. And the rays of the Sun were so small and so dark, on account of the Moon covering the Sun, that there did not remain un-obscured as much as 3 fingers of the Sun. . . Everyone appeared deathly pale." Refers to a total solar eclipse in Perugia, Italy, of 17 September 1354. From: Memorie di Perugia dall'anno 1351 al 1438 Quoted in Historical Eclipses and Earth's Rotation, by F. Richard Stephenson, Cambridge University Press, 1997, page 421.

September 17, 1354 Perugia, Italy In this year on 17 september that novelty appeared. The Sun became dark on a Wednesday at about the third hour and it lasted for the space of two hours... (Memorie di Perugia dall'anno 1351 al 1438) Ref PG 9/99

September 17, 1982 Minor planet (4567) Becvár 1982 SO1. Discovered 1982 September 17 by M. Mahrová at Klet. Named in memory of the Czech astronomer Antonín Becvár (1901-1965), founder and first director of the Skalnaté Pleso {see planet (2619)} Observatory in Slovakia. Becvár made observations of comets, meteors and the solar photosphere, but he is best known as the author of Atlas Coeli and the more detailed Atlases Eclipticalis, Borealis and Australis. (M 21956) Becvár is also honored by a lunar crater. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 18, 1783 Death of Leonhard Euler (1707-1783), Swiss mathematician and astronomer. Observed transit of Venus in 1769 and determined herewith the distance to the sun being 151.225.000 km. (ref. DD 9/98, Rc 1999)

September 18, 1819 Birth of Jean Bernard Leon Foucault (1819-1868), French physicist. Photographed the sun and measured the speed of light together with (Armand) Hippolyte Louis Fizeau (1819-1896). The Royal Society gives 18 or 19 September 1819. (ref. DD 9/98, Rc 1999)

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September 18, 1896 Death of (Armand) Hippolyte Louis Fizeau (1819-1896), French physicist. Known for his measurements of the speed of light and he made a daguerreotype (picture) of the sun together with Jean Bernard Leon Foucault (1819-1868). (ref. DD 9/98, Rc 1999)

September 18, 1919 Minor planet (922) Schlutia Discovered 1919 September 18 by K. Reinmuth at Heidelberg. Named in honor of the important businessmen Edgar Schlubach (Hamburg) and Mr. Tiarks (London) who together supported the Dutch-German solar eclipse expedition to Christmas Island in 1922. (H 89) Named (AN 218, 253 (1923)) by Schlubach and Tiarks. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 18, 1959 Launch of Vanguard 3 (US). Studied the sun in roentgen. Weight only 50 kg and is still in orbit around the earth. (ref. DD 9/98)

September 18, 2620 Next total solar eclipse on the Portuguese island Madeira. It is since 4 May 292 (23 centuries) that there was a total solar eclipse on that island. Though, in 292 the sun's altitude at maximum was only 1 degree. But before that, on 15 May 291, only 12 months from the previous, there is another total solar eclipse. There was a near-miss in 540 with a magnitude of more than 99%, and in 1781 a total solar eclipse just before sunrise. (ref. JM 7/99)

September 19, 1710 Death of Ole Romer, Danish astronomer, in Copenhagen. From his observations of the moons of Jupiter in 1676, he determined the speed of light.

September 19, 1950 Minor planet 2513 Baetsle 1950SH. Minor planet discovered September 19, 1950 by S. Arend at Uccle. Named in memory of Paul-Louis Baetsle (1909-1983). See Ciel et Terre Vol 100, No 1, p11-12 (1984). Baetslé was a professional eclipse chaser.

September 20, -0600 (0601 BC) "Duke Hsuan, 8th year, 7th month, day chia-tzu. The Sun was eclipsed and it was total." Refers to a total solar eclipse of 20 September 601 BC. From: Ch'un-ch'iu, book VII (Chinese). Quoted in Historical Eclipses and Earth's Rotation, by F. Richard Stephenson, Cambridge University Press, 1997, page 226.

September 20, 1984 Minor planet (3490) Solc 1984 SV. Discovered 1984 September 20 by A. Mrkos at Klet. Named in honor of Ivan Solc, well-known Czech inventor of birefringent polarizing filters for research on solar prominences and surface activity. (M 25976) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 20, 1995 Minor planet (7442) Inouehideo 1995 SC5. Discovered 1995 September 20 by K. Endate and K. Watanabe at Kitami. Named in honor of Hideo Inoue (1917-), Japanese astronomer. An astronomy enthusiast while still a child, he studied at the Tokyo College of Physics and at the Institute of Cosmical Physics in Kyoto. While participating in Kyoto University's expedition to the solar eclipse on 1941 Sept. 21 he obtained color photographs of the solar corona, the first in Japan. He later worked at the Peking Observatory, where he calculated the national ephemeris. After the war he taught at technical high schools in Japan. For the International Geophysical Year he led the Higasimatuyama Moonwatch Team. He is also an enthusiastic ham radio operator. (M 34343) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 21, 1922 Chant 3315 (1984 CZ): Minor planet discovered February 08, 1984 by E. Bowell at Anderson Mesa. Named in memory of Clarence Augustus Chant (1865-1956), generally referred to as the "father of Canadian astronomy". He participated in five Solar Eclipse expedition, the most important being the one he led to Australia in 1922 to test Einstein's prediction of the deflection of starlight by a massive body. MPC 12210.

September 21, 1922 Malabar 754 : Minor planet discovered 1906 August 22 by A. Kopff at Heidelberg. Named in remembrance of the Dutch-German Solar Eclipse expedition to Christmas Island in 1922. Malabar is a city on Java. (I. van Houten-Groeneveld) AN 218, 253 (1923) - Ref VK 6/97

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September 21, 1922 Schlutia 922: Minor planet discovered September 18, 1919 by Karl Reinmuth at Heidelberg. Named in honor of the important businessmen Edgar Schlubag (Hamburg) and Mr. Tiarks (London) who together supported the Dutch-German Solar Eclipse expedition to Christmas Island in 1922. Named by Schlubach and Tiarks AN 218, 253 (1923). - Ref. VK 6/97

September 21, 1922 William Wallace Campbell (1862-1938) and Robert J. Trumler (US) reconfirm Einstein's relativistic bending of starlight during an eclipse in Wallal, Australia.

September 22, 1968 This Eclipse has been successfully observed in Western Siberia. A number of outstanding Eclipse observers have attended the site of observation (Yurgamysh, Siberia): M.Waldmeier, J.Houtgast, M.Laffineur, G.M. Nikolsky, M.N.Gnevyshev, S.K.Vsekhsvjatsky. Younger scientists also made observations there in; among those Serge Koutchmy and Rudolf Gulyaev. (ref. personal mail RG-9/97)

September 22, 1973 Minor Planet (2721) Vsekhsvyatskij 1973 SP2. Discovered 1973 September 22 by N. S. Chernykh at Nauchnyj. Named in honor of Sergej Konstantinovich Vsekhsvyatskij {1905-1984}, professor at Kiev University, a prominent researcher on comets, the Sun and solar activity. (M 7785) Obituaries published in *Rise hvezd*, Vol. 66, No. 5, p. 88 (1985); *Zemlya Vseleennaya*, No. 2, p. 60-63 (1985); *Vesmír*, Vol. 64, No. 9, p. 538 (1985). - This planet and the following ones are named on the occasion of the fiftieth anniversary of the All-Union Astronomical Geodetical Organization. The initial letters of the four names spell out the Russian abbreviation VAGO (Vsesoyuznoe Astronomo-Geodezicheskoe Obshchestvo) for this body. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 22, 1977 Launch Prognoz 6 (USSR), for study the effect of sunshine on magnetosphere. (ref. DD 9/98)

September 22, 1982 2816 Pien 1982 SO. Minor Planet discovered 1982, September 22 by E. Bowell at Anderson Mesa. Named in honor of Armand Pien, of the Royal Meteorological Institute, Uccle. Well known for his popularization of meteorology and astronomy. He has presented the livised weather forecast in Belgium for more than 30 years. He also popularized solar eclipse pictures on TV.

September 22, 1982 Minor Planet (3077) Henderson 1982 SK. Discovered 1982 September 22 by E. Bowell at Anderson Mesa. Named for Thomas Henderson (1798-1844), Scottish astronomer and noted computer. He was appointed Royal Astronomer at the Cape of Good Hope and later Astronomer Royal for Scotland. Henderson computed an improved value for the solar parallax and was the first to measure the distance to a star, Alpha Centauri, in 1839. (M 10846) Name proposed by the discoverer following a suggestion by B. Hetherington. Henderson is also honored by a lunar crater. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 23, 1791 Birth of Johann Franz Encke (1791-1865), German astronomer. Studied comet which has the same name (predicted return in 1822). Determined an accurate value of the sun parallax. (ref. DD 9/98, Rc 1999)

September 23, 1819 Birth of (Armand) Hippolyte Louis Fizeau (1819-1896)., French physicist. Known for his measurements on light velocity and made daguerreotype (photo) of the sun both together with Jean Bernard Leon Foucault (1819-1868). The Royal Society mentioned 23 or 24 September 1819. (ref. DD 9/98, Rc 1999)

September 23, 1877 Death of Urbain Jean Joseph Le Verrier (1811-1877), French astronomer. Believer of the existence of planet Vulcan. (ref. Rc 1999)

September 23, 1950 In the paper, *Monthly Notices of the Royal Astronomical Society*, vol 111, p 477, published in 1951, R. Wilson reported a <blue sun> which was observed over Edinburgh on the afternoon of 26 September 1950. The sun <was observed to be a deep blue indigo blue> from 3 pm, when it was first noticed, until sunset. The following day, the sun's colour had returned to normal. Wilson, who worked on the Royal Observatory, had the presence of mind to take a spectrogram of the blue sun. This shows a marked extinction of the red part of the solar spectrum when compared to a spectrogram of the <normal sun>, so the effect was not a product of the observer's imagination. Wilson noted

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that extensive forest fires had been burning in Alberta, Canada, on 23 September. The smoke clouds had reached eastern Canada on 24 September, when they were thick enough to blot out the sun. When the sun did become visible again, it was purple or blue. Ref. New Scientist 11/3/00

September 23, 1981 Brian Marsden did send an IAU circular of the discovery with the coronagraph Solwind (Satellite P78-1). A comet collision on the sun was detected. The comet was already photographed in August 1979 but due to the change of the magnet band pictures, it was discovered one year later. The comet is called Howard-Koomen-Michiels. Many other sungrazers have been detected and reported later (also SOHO)

September 23, 2090 Next total solar eclipse in Paris, France.

September 24, 1898 Birth of Charlotte E.M. Sitterly, American astronomer. End 20s she worked at Mount Wilson Observatory with Charles E. St. John and Harold Babcock on a study of the solar spectrum. They analyzed lines in the spectra of sunspots. She published books about solar spectra and multiple spectra lines. Ref DD 9/99.

September 24, 1935 Minor Planet 2213 Meeus 1935 SO. Minor Planet discovered 1935 September 24 by Eugène J. Delporte at Uccle. Named in honor of the Belgian amateur astronomer and professional meteorologist Jean Meeus. ... and improved and updated versions of Oppolzer's canon of eclipses. Meeus also attended eclipse expeditions.

September 24, 1960 Minor Planet (2471) Ultrajectum 6545 P-L. Discovered 1960 September 24 by C. J. van Houten and I. van Houten-Groeneveld at Palomar. Named in honor of the University Observatory at Utrecht, best known for its work on solar physics. Ultrajectum was the Roman name for Utrecht. (M 8799) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 24, 1960 Minor planet (4180) Anaxagoras 6092 P-L. Discovered 1960 September 24 by C. J. van Houten and I. van Houten-Groeneveld at Palomar. Named after the Greek philosopher Anaxagoras (c. 500-428 B.C.). He lived in Asia minor and in Athens, where he became friend of Pericles. He taught that solar and lunar eclipses originated in a scientific way and not as an act of the gods. This was an asebic (outrage against the gods) and Anaxagoras had to flee; he died in exile. (M 22501) Anaxagoras is also honored by a lunar crater. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 24, 1960 Minor planet (7147) Feijth 4015 P-L. Discovered 1960 September 24 by C. J. van Houten and I. van Houten-Groeneveld at Palomar. Named in honor of Hendrik (Henk) Feijth (1944-1997), a devoted and true amateur astronomer: making variable star observations is his passion. Since the early 1960s he has been an observer in the variable star observing group Nederlandse Vereniging voor Weer en Sterrenkunde, Werkgroep Veranderlijke Sterren. Since 1981 he has been this group's representative to the American Association of Variable Star Observers. Feijth has made nearly 100,000 observations of variable stars and has lectured and written articles for journals and books. (M 29672) Name proposed and citation prepared by T. Jurriens. Obituaries published in Radiant, Jaarg. 19, Nr. 3, p. 49-50 (1997); Zenit, Jaarg. 24, Nr. 7/8 (1997); Int. Comet Q., Vol. 20, No. 2, p. 53 (1993). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. Henk also observed several solar eclipses.

September 24, 1979 Minor Planet (4687) Brunsandrej 1979 SJ11. Discovered 1979 September 24 by N. S. Chernykh at Nauchnyj. Named in honor of Andrej Vladimirovich Bruns (1931-), staff member of the Crimean Astrophysical Observatory, an authority on space astrophysics who has originated several unique instruments for ultraviolet observations of the sun, stars and galaxies from satellites and spacecraft. He designed the large Orbiting Solar Telescope controlled by cosmonauts on Salyut 4 in 1975. A relative of Ernst Heinrich Bruns {see planet (901)}, director of the Leipzig Observatory at the beginning of this century, he is related on his mother's side to Euler {see planet (2002)}. (M 26762; M 27749) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 25, 1644 Birth of Ole Romer in Aarhus. From his observations of the moons of Jupiter in 1676, he determined the speed of light.

(Continued on page 9)

SECalendar

September 26, 0702 Ch'ang-an reign period, 2nd year, 9th month, day i-ch'ou. The sun was eclipsed, it was almost completes. It was in Chueh (Hsin-t'ang-shu, chap 32) Ref PG 9/99.

September 28, 1791 Captain George Vancouver observed this Wednesday morning a partial solar eclipse. He went on the name the barren rocky cluster of isles, by the name of Eclipse Islands. The actual date was September 27, 1791 at 22h39m (local time Sep. 28, 6h39m) with a mag. of 0.936. Patrick Poitevin observed at about the same place the partial eclipse of September 2, 1997 (mag. 0.551) between the clouds.

September 28, 1971 Launch of Luna 19 (USSR). Studied magnetic field of the moon and prominences. (ref. DD 9/98)

September 29, 1956 Minor planet (3447) Burckhalter 1956 SC. Discovered 1956 September 29 at the Goethe Link Observatory at Brooklyn, Indiana. Named in memory of Charles Burckhalter (1849-1923), well known for his research in solar-eclipse photography, a founder of the Astronomical Society of the Pacific and its first vice president. He became the first full-time director of the two-year-old Chabot Observatory in downtown Oakland, California, in 1885 and built it into an important popular-science institution. Under his direction it was moved to a new building at a darker hill site in 1913 and featured a 50-cm refractor. (M 17028) Name proposed by N. Sperling with the concurrence of F. K. Edmondson. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

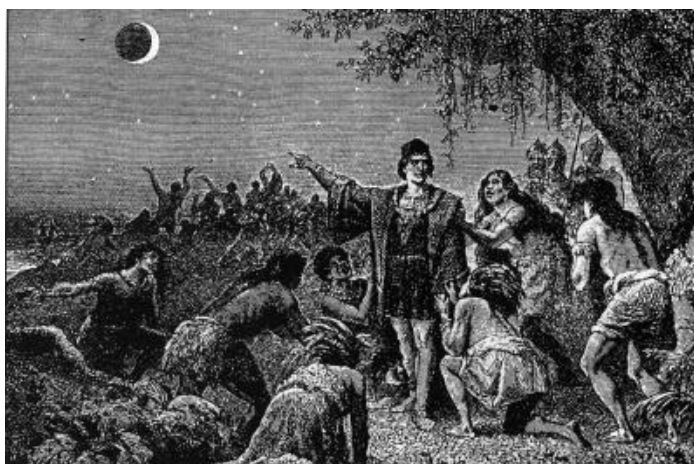
September 29, 1971 Launch of Orbiting Solar Observatory 7 (VS). Got in a wrong orbit. Observed sun in UV, XUV and roentgen. (ref. DD 9/98)

September 29, 1973 Minor planet (5791) Co mello 4053 T-2. Discovered 1973 September 29 by C. J. van Houten and I. van Houten-Groeneveld at Palomar. Named in honor of Georg Comello (1942-), Dutch amateur astronomer. His interests in astronomy include variable stars, comets and traveling around the world to observe solar eclipses. Since 1960 he has been employed at the Kapteyn Institute of the University of Groningen, currently as a librarian. He assisted L. Plaut {see planet (1986)} in measuring and analyzing his plates of variable stars and is still on the board of the Working Group for Variable Star Observers. For several years he has been the draftsman of the Sterrengids (the Dutch yearbook on astronomical events), for which he prepares in particular finding charts for minor planets. He has written articles for Hemel en Dampkring and Zenit and contributes to newspapers, radio and television. (M 24918) Name proposed and citation prepared by T. Jurriens. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

September 30, 1995 Ulysses (ESA) finished its first phase of Solar research. (ref. DD 9/98)

and ... keep those solar eclipse related messages coming ... Best regards, Patrick

Columbus moon
eclipse



SEDates

History of Astronomy Working Groups

Item 1 ENHA No. 50, August 30, 2002

By F. Richard Stephenson and Wayne Orchiston

Introduction

Currently Commission 41 "History of Astronomy" of the International Astronomical Union (IAU) has four active Working Groups (WGs), on archives, astronomical chronology, historical astronomical instruments and transits of Venus. The aim of each WG is to foster the exchange of information and ideas between colleagues with similar research interests, and in some instances to organise collaborative research projects. Although the WGs were set up by the IAU, membership is open to the entire international history of astronomy community.

Information about the four WGs follows. If you are involved in researching any of these areas and would like to join a particular WG simply contact the relevant Committee chair person (e-mail addresses are given below). WG membership is free, and you can join immediately - there is no need to wait until the next IAU General Assembly.

The Archives WG

At the 1991 General Assembly in Buenos Aires the following C14 Resolution was adopted:

"that the Union supports the initiatives taken by them [Commissions 41 and 5]

1. to establish a register of the whereabouts of all extant astronomical archives of historical interest;
2. to impress on observatories and other institutions their responsibility for the preservation, conservation, and where possible, cataloguing of such archives;
3. to search for an institution that will allocate space and funds for maintaining such a register and publishing it." (Proceedings of the Twenty-First General Assembly, p. 77).

Commission 41 then formed an Archives WG to further the objectives of this Resolution, and in the course of the next three years some progress was made in compiling national inventories of astronomical archives.

Two archival Resolutions proposed by C41 were adopted at the 1994 General Assembly in The Hague, and a number of members presented papers on their archival researches, and there were also discussions regarding the IAU archives.

A further archival Resolution was adopted at the C41 Business Meeting at the 1997 General Assembly in Kyoto, and at the 2000 General Assembly in Manchester a half-day Special Session on "Inventory and Preservation of Astronomical Archives, Records and Artifacts" was held. Hopefully a WG Meeting will be held at the 2003 General Assembly in Sydney where colleagues will be able to report on their work during the triennium.

The Committee members of the Archives Working Group are: Dr Suzanne Débarbat (France - Chair, e-mail: Suzanne.Debarbat@obspm.fr), Dr Dan Green (USA), and Mr Peter Hingley (UK).

The Astronomical Chronology WG

This WG was formed at the 2000 Manchester General Assembly specifically in order to compile a wide-ranging internationally-approved master list of the major milestones in the history of astronomy (including key instruments, astronomical phenomena, discoveries and ideas) that profoundly influenced its development. A meeting to review progress made in addressing these objectives is planned for the 2003 Sydney General Assembly.

The Committee members of this WG are: Professor Alex Gurshtein (Russia - Chair, e-mail: agurshtein@hotmail.com), Professor Adriaan Blaauw (Netherlands), Dr Teije de Jong (Netherlands) and Professor Brian Warner (South Africa).

The Historical Instruments WG

(Continued on page 11)

SEDates

When the Archives WG was set up in 1991 there was discussion about whether to include historical instruments within the gambut of an enlarged WG, but it was decided at that time to defer such a move until progress had been made with the archives initiative.

Subsequently, a Resolution urging preservation of surviving instruments associated with the measurement of the arc of the meridian made by F.G.W. Struve was adopted at the C41 Business Meeting at the 1997 General Assembly in Kyoto.

At the 2000 Manchester General Assembly members of C41 felt the time was right to form an Historical Instruments WG as a complement to the Archives WG. The objectives of this new WG are: to draw up an inventory of all internationally-significant astronomical instruments; to assemble a bibliography of existing publications relating to such instruments; and to encourage colleagues to carry out research and publish their results. A WEB Site has already been set up (www://my.dreamwiz.com/snha), and a start has been made on the listing of historically-significant astronomical instruments. Meanwhile, this WG also plans to hold a meeting at the 2003 General Assembly where colleagues can report on their research work during the triennium.

Committee members of the Historical Instruments WG are: Professor Il-Seong Nha (Korea - Chair, e-mail: SLIS-NHA@chollan.net), Dr Wayne Orchiston (Australia) and Mr John Briggs (USA).

The Transits of Venus WG

At the 2000 General Assembly of the IAU in Manchester, the following Resolution was adopted at the C41 Business Meeting:

"Recognizing the historical importance of previous transits of Venus and the numerous transit of Venus expeditions mounted by various countries, and Noting the rarity of the upcoming transits in 2004 and 2012 Commission 41 Recommends that the sites of previous transit of Venus expeditions be inventoried, marked and preserved, as well as instrumentation and documents associated with these expeditions."

In order to take this Resolution forward, a Transits of Venus WG was formed, with the additional aims of assembling a bibliography of existing publications relating to all transits of Venus, and encouraging colleagues to carry out further research and to publish their results. A WG Meeting is planned for the 2003 General Assembly in Sydney so that colleagues can report on their work.

The Committee members of this WG are: Dr Wayne Orchiston (Australia - Chair, e-mail: wo@aoepp.aao.gov.au), Dr Steven Dick (USA), Professor Alex Gurshtein (Russia) and Professor Rajesh Kochhar (India).

Source: The ICHA Newsletter, No. 1, June 2001, p. 19-21.



Bessel

SEScannings

SENL August 2002 NOW ONLINE!

From: FRED ESPENAK To: SOLARECLIPSES@AULA.COM eclipse@hydra.carleton.ca Date: Mon, 19 Aug 2002

Joanne Poitevin has prepared a new issue of the SENL (Solar Eclipse Newsletter) for the month of August 2002. It is so big that she had to split it into three parts: Parts A, B and C!

All issues are online in pdf format and can be accessed via the SENL index page of MrEclipse.com:

<http://www.mreclipse.com/SENL/SENLinde.htm>

Other recent issues currently linked from the above page include:

SENL - January 2002 - Part A (0.7 MB pdf file*)
SENL - January 2002 - Part B (1.3 MB pdf file*)
SENL - February 2002 (1.2 MB pdf file*)
SENL - March 2002 - Part A (0.7 MB pdf file*)
SENL - March 2002 - Part B (0.8 MB pdf file*)
SENL - April 2002 (1.1 MB pdf file*)
SENL - May 2002 - Part A (1.1 MB pdf file*)
SENL - May 2002 - Part B (0.6 MB pdf file*)
SENL - June 2002 - Part A (0.5 MB pdf file*)
SENL - June 2002 - Part B (0.8 MB pdf file*)
SENL - July 2002 - Part A (0.8 MB pdf file*)
SENL - July 2002 - Part B (1.0 MB pdf file*)

SENL - August 2002 - Part A (1.2 MB pdf file*)
SENL - August 2002 - Part B (1.3 MB pdf file*)
SENL - August 2002 - Part C (0.9 MB pdf file*)

Note that all these files are in Adobe pdf format and can only be read with Adobe Acrobat Reader. This software is free and can be downloaded from Adobe's web site (<http://www.adobe.com/>).

As always, thanks for the hard work Joanne! - Fred Espenak



SENL Index for August 2002

Please find herewith the Index of the August 2002 issue of the Solar Eclipse Newsletter (SENL). As you will notice a big issue of 120 pages and gathered from the Solar Eclipse Mailing List (SEML) and many other sources. Beside the topic, the page number is listed. Part A .../... Part B .../... Part C .../...

See the latest SENL and also the complete SENL Index since November 1996 at <http://www.j.w.edmonds.btinternet.co.uk>

The SENL will be soon on the WebPages of Fred Espenak/NASA. See <http://sunearth.gsfc.nasa.gov/eclipse/SENL/> and the index at <http://www.mreclipse.com/SENL/SENLinde.htm> with example: SENL0011.pdf at <http://sunearth.gsfc.nasa.gov/eclipse/SENL/SENL0011.pdf>

Comments and contributions are welcome at patric_k_poitevin@hotmail.com And ... keep those solar eclipse related messages coming ... Best Regards, Patrick and Joanne

SETalk

1972, 1973, 1979

From: KCStarguy@aol.com To: SOLARECLIPSES@AULA.COM Date: Tue, 13 Aug 2002 17:40:57

I've been wanting to get this stuff posted for a long time.

In celebration of my first total eclipse (please still post your eclipse virgin experiences to the listserve as I think first times are interesting to say the least.)

I reformatted my web pages and with the help of used Nikon coolscan scanner I bought and silverfast software (great software), I have made a webpage of our site and eclipse pics in Nova Scotia in 1972. I have included pics of the site that R.Slobin and I were at. It was perfect. There is my account there too.

My scanned shot of the great prominence we saw then came out much better in the scan. Some people called I think the anteater prominence but I think it looked more like a rainbow. I have also put up 1973 stuff from aboard the Canberra and 1979 from Canada.

When you get into main page click on journals/accounts or trips.

Still a few bugs to work out so if you find something does not show let me know by private email if you want.

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When you get into main page click on journals/accounts

or trips.

Still a few bugs to work out so if you find something does not show let me know by private email if you want.

I have a baileys beads pic on the homepage from 1972. This is the diamond ring coming out just after the bailey's beads I would say or else it is one of the beads before the diamond ring. Over on the right is a big bead and the diamond or another bead is to the left? If anyone has comments on this, let me know.

Shadow bands

From: Dave Schmahl To: SOLARECLIPSES@AULA.COM Date: Thu, 15 Aug 2002 07:48:42

Do the Fresnel zones mentioned by Glenn have anything to do with Shadow Bands?

From: Barrie W. Jones

Fresnel diffraction at the lunar limb is not the cause of shadow bands. The observations are well explained as an interference effect resulting from point-to-point density differences in the Earth's atmosphere. Rays from a source of light beyond the atmosphere can then get to a point on the ground by slightly different atmospheric paths, and so the rays interfere, giving enhanced brightness in some places, reduced brightness in others. A star produces an effect, but this is a *very* faint mottled pattern - it is the crescent Sun that elongates the mottling into bands.

Updated SEWP with accounts

From: Patrick Poitevin To: SOLARECLIPSES@AULA.COM Date: Mon, 05 Aug 2002

Hi, Although still missing some solar eclipse pictures and some reports, please have a look at our solar eclipse webpages: <http://www.j.w.edmonds.btinternet.co.uk>

Our solar eclipse accounts are available. As soon as all reports and pictures are recovered, they will be posted on the SEWP. Have a look as well in the SE Links of all future solar eclipse related events, or the latest reports of the past annular solar eclipse. Comments are welcome. Best regards, Patrick

SETalk

Confusion over Baily's Beads

From: Geoff To: SOLARECLIPSES@AULA.COM Date: Mon, 12 Aug 2002 02:07:09

Hi all, Have a quick question - do Baily's Beads occur during the very start of totality, or just before totality. I'm a bit confused as to whether you would see Baily's Beads within the given time for totality of an eclipse, or if you'd only see them just before/after. OR perhaps you see them both before during and after the exact start (or end) of totality.

Also a question regarding the diamond ring - how long (in seconds?) is the diamond ring usually visible for. I would suspect it depends also on the duration of the eclipse and hence the Moon's apparent motion across the face of the sun. But not only how long is it visible for, I'm also a bit confused as to when this occurs. Everywhere usually says "in the seconds before totality there is a diamond ring and then Baily's beads". But how long before totality does it occur? Looking at Espenak's latest photo scans on the 91 eclipse, it shows a diamond ring 20 seconds before totality. I assume this is because of the long nature of this eclipse. Any info would be great! Thanks, Geoff.

From: 76630,2206

When the moon has covered enough of the sun so that the mountains break up the solar crescent and the only sunlight (photospheric) seen is through the valleys, the several spots of this sunlight are called Baily's Beads. The diamond ring is the last bead before totality and the first bead after totality.

To determine the duration and location of Baily's Beads and the diamond ring, use the lunar limb profile diagram found in Espenak and Anderson's technical publication or on the NASA eclipse web site. For 2002, I do not see much of a pronounced diamond ring for second contact, just numerous small beads for 1-2 seconds, but perhaps a double diamond ring for about 3-4 seconds at third contact. This will decrease totality by 1-2 seconds net.

The duration and locations of the beads depends on the moon's orientation to us at totality.

It may be worthwhile to do precise timings of these contacts. The publications give predictions, but no one I know of verifies them. Most eclipse chasers do not care about precise timing, but my work does. Regards, Robert B Slobins

From: Gerard M Foley

Fred Espenak and Jan Meeus are much better qualified than I to answer these questions. but let me take a try.

The diamond rings, Baily's beads and totality are phenomena which are visible in clear weather in locations along the path of a total eclipse of the sun. They occur at the place of observation when they are seen. Totality is period during which an on server can see the outer corona of the sun.

For convenience the times of second and third contact are predicted on the basis of certain approximations about the size and shape of the photosphere, the moon, the earth, and the distances between these three bodies. These predictions have been remarkably accurate for thousands of years past, and are currently completely satisfactory for the purpose of planning observations of eclipses. They are also useful for observers to compare the phenomena with each other.

I do not see any reason to relate the concept of totality and the wonderful images we see during total eclipses to the questions Geoff asks.

The diamond rings can be thought of as extreme examples of a Baily's bead. The duration and brightness of them will vary depending on the depth of the particular valley on the moon which lets the light through. The moon does not present the same face and profile to the earth all the time - the parts of its surface which define its limb vary continuously. The same is true of the number, brightness and duration of Baily's beads. I have not studied pictures of the beads during a particular eclipse, but I will be surprised if their appearance does not differ along the eclipse path and at locations perpendicular to the path. Gerry K8EF <http://home.columbus.rr.com> <http://www.fortunecity.com/victorian/pollock/263/egypt/egypt.html>

From: 76630,2206

Gerry: It is my understanding that totality is defined as that period when the solar photosphere is completely hidden by the moon. Thus, when one sees the diamond ring effect, either on the edge of the eclipse path or just before or after second or third contact, he is not seeing a total solar eclipse.

Defining totality does not detract from anyone's mission to a solar eclipse. It depends on what one intends to do with the eclipse.

If one has a specific project in mind to obtain certain types of images or data, then knowing what totality is and when it is supposed to happen is critical to obtaining the wonderful images and other results. The better the planning and organisation, the better the chances for success (except in Information Technology <smirk>).

(Continued on page 15)

SETalk

I was in Chatham, Massachusetts in March 1970 and claim one second of totality and lots more in Baily's Beads. I got a prolonged diamond ring effect from being on the edge. (I could not get on the Nantucket ferry; there were too many people there.) I had no idea as to what the corona really looked like, and knew nothing about the flash spectrum. (My location would have been ideal for flash spectrum photography.) It was an impressive educational experience none the less.

From: Gerard M Foley

I was in Chatham, Massachusetts in March 1970 and claim one second of totality and lots more in Baily's Beads. I got a prolonged diamond ring effect from being on the edge. (I could not get on the Nantucket ferry; there were too many people there.) I had no idea as to what the corona really looked like, and knew nothing about the flash spectrum. (My location would have been ideal for flash spectrum photography.) It was an impressive educational experience none the less.

Thanks for your comments. As you may have seen from my web pages, I was near the centerline of the 1970 eclipse, with perfect weather. If I make it to the December eclipse it will be my ninth trip to an eclipse path.

Gerry <http://home.columbus.rr.com> <http://www.fortunecity.com/victorian/pollock/263/egypt/egypt.html>

From: Dale Ireland

The definition of the start of totality depends on who you are, a mathematician or an observer. Dale Ireland

From: FRED ESPENAK

"Totality" and "Baily's beads" are very specific and well defined phenomena.

Totality (the total phase of a solar eclipse) is defined to begin when the Sun's photospheric disk is completely occulted by the Moon. Similarly, totality ends when any portion of the Sun's photosphere first becomes visible.

"Baily's beads" immediately precedes the start of totality. The Sun's thin crescent breaks up into a series of short arcs and smaller beads of photospheric sunlight due to topographic features along the advancing limb of the Moon (i.e. - lunar mountains and valleys).

The appearance of the beads changes quite rapidly and they rarely last more than a few seconds for observers near the

central line. However, "Baily's beads" may last tens of seconds before totality begins for observers near the edges of the path due to the grazing geometry of the Moon's limb with respect to the Sun.

Totality ends with the reappearance of "Baily's beads" along the trailing edge of the Moon's limb. Obviously, their appearance will be quite different compared to the beads seen before totality begins since they are formed along different portions of the Moon's limb.

"Baily's beads" are primarily a telescopic phenomena, meaning that they require some magnification in order to be observed and resolved into discrete and separate features.

It is important to note that the solar corona is quite visible during "Baily's beads." In fact, it has been observed for several minutes before totality begins and after it ends. However, the dangerously bright photospheric crescent must be artificially occulted in order to make these observations outside of totality.

The "diamond ring" effect is often described as the appearance of the last Baily's bead along with the Solar corona (pre-totally). A similar "diamond ring" is seen when the first Baily's bead appears at the end of totality.

Unfortunately, this definition is much too confining for the "diamond ring" phenomenon. Bob Morris has found that the earliest published reference to the effect appeared in a French newspaper account of the eclipse of 1912 April 17. In the news article, an anonymous girl called it "an engagement ring" (a ring usually composed of a gold band and solitaire diamond). There were many more accounts of the "diamond ring" after the 1925 New York City eclipse. None of these observers were using optical instruments other than their own eyes.

What they saw were undoubtedly several unresolved crescent arcs and Baily's beads which appeared as one amorphous and extremely bright "diamond" both before and after totality. Many modern day eclipse chasers witness the same dramatic phenomenon and it is often seen for 10 to 20 seconds before and after totality. Clearly this is not caused by one Baily's bead which would only last a second or two, but rather by a very narrow solar crescent (or several crescent arcs) as they rapidly shrink down into Baily's beads. The structure of these features is lost in the overwhelming glare of the photosphere, or the modest resolution of their observing instruments or a combination of both.

I have videotaped seven total eclipses since 1990, and I

(Continued on page 16)

SETalk

usually remove my solar filters 30 seconds before totality begins. At that time, the "diamond ring" effect is already visible in the videocamera. Again, the phenomenon is then caused by a very thin crescent (or several crescent arcs) which shrink down to become Bailey's beads. They are grossly overexposed and appear as one grand diamond whose brightness drops to the point where they are then resolved into Bailey's beads for several seconds before (and after) totality.

My point is that the appearance and definition of the "diamond ring" effect is much broader and general than "Totality" and "Bailey's beads." It depends to a large extent of exactly how you are observing the eclipse. I have even photographed the "diamond ring" effect as much as 55 seconds after totality ends, so it is quite difficult to say exactly when or for how long this effect lasts.

The appearance and duration of the "diamond ring" effect depends on the observer and his equipment as well as the local meteorological conditions. Atmospheric haze and thin clouds lower the overall contrast and make the corona harder to see outside of totality. However, I would say that the "diamond ring" effect is typically visible 10 to 20 seconds outside of totality. Naturally, observers should exercise extreme caution since part of Sun's photosphere is directly exposed at this time. - Fred Espenak

Thanks, Fred for a reasonably simple explanation of Bailey's Beads/ Diamond Ring.

I was in Turkey for the 1999 eclipse, and had a pair of binoculars set on a tripod. Usually, I hold them, but they are a bit large (Meade 11x80's), and I wanted to view the sun pre and post totality. I used a mylar filter from Rainbow Symphony (are there any others) in the front of the binos, as well as direct viewing. In fact, what looked like the diamond ring to the unaided eye seconds before totality was in fact no less than 4 individual BBs. It was at that time that I removed the mylar from the binos to view totality. By then, totality had begun.

Perhaps I will experiment in Zimbabwe this December. As my group will be very close to the centerline, it may be a bit difficult, but I will try to observe the last instance of the diamond ring, and simultaneously see how many "beads" are really required to make the appearance of the actual Diamond Ring.

Is there any significance to this?????..... Perhaps it can turn into another topic of discussion!!! Rick Brown www.eclipsesafaris.com 4 spots remaining!!!!

From: Dale Ireland

Hello Does this mean that the times of 2nd and 3rd contact in the tables describing the eclipse are not really to be called

"Totality" since they don't match the visual description of totality. Dale

From: KCStarguy@aol.com

on my newly formatted website, on the main page, I have a picture of the diamond ring from 1972 . I think this is the diamond ring coming out just after the bailey's beads. Over on the right is a big bead and the diamond or another bead is to the left, If anyone has comments on this, let me know.

From: FRED ESPENAK

>Does this mean that the times of 2nd and 3rd contact in the tables describing the eclipse are not really to be called "Totality" since they don't match the visual description of totality.

First, some definitions in order to avoid any misunderstandings. Note that these definitions pertain to total eclipses (the definitions with respect to annular eclipses are different).

second contact - Instant of first internal tangency between the leading (or advancing) edge of the Moon with the Sun. It marks the beginning of totality. Second contact is sometimes abbreviated "C2."

third contact - Instant of last internal tangency between the trailing (or following) edge of the Moon with the Sun. It marks the end of totality. Third contact is sometimes abbreviated "C3."

Now we can continue.

For simplicity, most solar eclipse predictions assume that the Sun and Moon are perfectly symmetric spheres. This is a very good approximation for most applications.

The exact position of second contact along the Moon's limb is highly dependant on the observer's geographic coordinates. However, it may be generally described as occurring at some point along the Moon's eastern limb. If a hypothetical observer travels from the southern limit to the central line and continue to the northern limit, he/she would find that the position angle of second contact would rotate 180 degrees clockwise around the eastern limb. (C2 would occur near the Moon's southern limb at the path's southern limit; similarly C2 would occur near the Moon's northern limb at the path's northern limit).

Third contact occurs generally at some point along the Moon's western limb. It is subject to a similar (but counter-

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clockwise) variation in exact position angle as a function of an observer's geographic position (from southern limit, to central line and continuing on to the northern limit).

This all sounds quite straight forward and (hopefully) clear. Unfortunately, the real world is more complicated. The Moon's limb is not smooth but has surface relief seen in profile (i.e. - mountains and valleys). When you add this surface relief data to the smooth limb predictions for second and third contacts, you find that the exact times may differ (from the smooth limb times) by several seconds for observers near the central line. The effects are more drastic for observers near the northern and southern limits where the time differences can be much larger. Furthermore, high mountains and deep valleys can shift the exact position angles of second and third contacts by ten degrees or more.

Now to get on to Dale's question (and you thought I'd forgotten!). The NASA eclipse bulletins and my web site all use a smooth limb for the Moon in the local circumstances tables for cities. The times for second and third contacts are indeed the predicted times when totality begins and ends. However, they are theoretical approximations because they do not take into account the Moon's limb profile which is a much more difficult and time consuming calculation. For most observers, it doesn't matter if the actual times of C2 and C3 differ from the theoretical times by a few seconds. For them the theoretical times are close enough. This probably includes more than 99% of everyone who uses the eclipse bulletins. For that remaining 1% who need higher precision contact times, they can use the limb profile diagrams which include a contact time correction curve. These figures are published in each eclipse bulletin (e.g. - page 50 of the 2002 eclipse bulletin) along with instructions on how to use them to correct the contact times in the local circumstances tables. Does that answer your question? - Fred Espenak

From: Geoff

Hey, Thanks everyone for your all your very detailed info - it has cleared up a lot for me. --Geoff

From: 76630,2206

How many people have verified the published predictions of second and third contacts, including the limb corrections?

I designed this experiment for 2001, although I tried this in 1999 in Bucharest:

Take a camcorder and place a diffraction grating filter in front of the lens so that the grating lines are parallel to the solar crescent. You can determine this by turning the filter to render the widest spectrum. Zoom to frame the eclipse and spectrum together. Of course, use mylar filtration to save your camcorder and eyes until 30 seconds before totality.

The exposure should be the equivalent to render the spectrum of the moon; this can be pre-determined.

Ensure that the camcorder battery is fully charged before beginning the recording 20-30 minutes before second contact.

Feed a radio time signal to the tape audio. (We can live without the carryings-on of the eclipse chasers.) If the signal can not be well received, calibrate the time by using a watch set to the radio signal and make an audible time-mark before second contact.

Use a GPS to determine the geographical coordinates and altitude of the site.

Use the highest quality recording medium available.

You now have a tape of the flash spectrum. Note that one second contains 29.95 frames. Download the tape to a computer and run a movie program. Count the frames from when the last piece of continuum appears second contact to the first appearance of the continuum at third contact. Then go back to the time mark and record at which frame this occurs. Now you have determined the contact times for your location.

Last year, we had for our site a predicted duration of totality of 3:37. I am in the process of reducing my data, but my prelimi-

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nary information indicated a duration of about 3:31 or 3:32. The six second delay of totality nearly ruined my second contact film, as I start running my camera at a time so that totality begins at mid-roll. Totality began at frame 29 with six flash spectra images following. (whew!) Third contact was on time.

Perhaps we can run similar experiments this December. Any thoughts? cheers/Robert B Slobins

From: Dale Ireland

Robert You can predict those discrepancies using the limb profiles in the NASA eclipse publication. People who do occultation timings are quite familiar with them. Also, the Eclipse Edge expeditions try to measure changes in solar diameter and other things that might make the contact predictions and umbral width values change from the published numbers. I am not sure if they are still in business. They were led by Thomas Van Flandern. If you like beads, he is your man. Dale

From: FRED ESPENAK

I've tested them myself near the central line form most of the eclipses I've observed over the last decade and I have had good agreement to 1/2 second or better. Richard Bareford used the predicted NASA limb profile and compared it to video he shot of Baily's beads near the southern path limit last year (2001 Jun 21). His results and a discussion can be found at: <http://www.geocities.com/bareford/subsun5.html>

Of course, the limb profile corrections are much more sensitive (and difficult to predict) at the limits. Using the NASA limb corrections, Bareford finds agreement with the observed contact times to within about 2 seconds. Without the limb corrections, the time of second contact is off by 13 seconds.

I would certainly like to encourage everyone to make contact timings like the ones Robert Slobins suggests. If your camcorder has a powerful enough zoom lens, you can image Baily's beads directly (like Bareford does) without the need of a diffraction grating. A cheaper, lower tech method is to time the contacts visually but this is tricky and potentially dangerous.

Naturally, you will also need to record your geographic coordinates and you will also need an accurate source of time signals. Please email any observations you make of contact timings to me for analysis. I'll make the results known to everyone on the list. - Fred Espenak

From: 76630,2206

Dale: When I set up my program, I have already calculated the contact times with these limb corrections. My last report indicates a discrepancy from the corrected predictions.

I am aware of expeditions to the path limits. I prefer deep totality myself. However, it may be useful to obtain results from all locations within totality paths. I believe that this verification exercise has scientific value.

This discussion should show that every total eclipse, regardless of duration of totality, has value. This includes the 2005 and 2013 hybrid events. 2013 should produce one impressive flash spectrum what with 17 seconds of totality in the drier parts of Eastern Africa. cheers/Robert B Slobins

From: 76630,2206

One can get inexpensive diffraction grating filters from camera stores. Many times the store would be absolutely delighted to see the filters move. Then buy the step-down rings so that the filter would fit on the camcorder. Also, get a used UV glass filter to place in front of the lens, remove the glass and make a mylar sun filter mounted in cardboard to replace the glass. The filter can be screwed in front of the diffraction grating for more security and safety.

The Cokin filter system also has an appropriate grating filter. You can make a mylar filter to fit the Cokin filter mount as

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well.

The reason why I prefer the flash spectrum method is that when one no longer sees the continuum, he is in totality. There is less of a chance of exposure errors with a spectrum than with the sun. There is also the wow! factor when one shows the video to the folks back home. cheers/Robert B Slobins

From: Dale Ireland

Is there a difference between the NASA limb profiles for eclipses and the WATTS limb profiles used in grazing occultation predictions? Dale

From: FRED ESPENAK

The NASA eclipse predictions use the same Watts limb profiles that IOTA uses for grazing occultation predictions. - Fred Espenak

From: FRED ESPENAK

>Is there a difference between the NASA limb profiles for eclipses and the WATTS limb profiles used in grazing occultation predictions? Dale

The NASA eclipse predictions use the same Watts limb profiles that IOTA uses for grazing occultation predictions. - Fred Espenak

From: 76630,2206

Glenn-- Would Fresnel diffraction cause a 'delay' of six seconds to second contact and an 'advance' of third? How much time are we talking about? cheers/Robert B Slobins

From: Glenn Schneider

No, not at all. And also, no this is unrelated to shadow bands...

Briefly, the monochromatic luminous intensity, L , from a point source of intrinsic intensity I , as seen by an observer a distance D along the line-of-sight (LOS) to the straight-edge of an occulting aperture (an approximation to the point of tangency on the lunar limb) a distance D from the observer (topocentric distance to lunar limb), where the edge of the geometrical shadow cast is a distance X from the observer (in a plane normal to the line-of-site containing the observer is:

$$L(U) = I * 0.5 * \{ [0.5 + S(U)]^2 + [0.5 + C(U)]^2 \}$$

where $S(U)$ and $C(U)$ are dimensionless Fresnel numbers evaluated from the classical Fresnel integrals:

$$S(U) = [\text{INTEGRAL}] \sin(0.5 * \pi * t^2) dt \text{ and } C(U) = [\text{INTEGRAL}] \cos(0.5 * \pi * t^2) dt$$

where the integrals are evaluated from zero to U , U being the dimensionless Fresnel number:

$$U = X * \text{SQRT}(2/WD) \text{ where } W \text{ is the wavelength.}$$

$L(U)$ defines the fixed intensity pattern w.r.t. the geometrical shadow in a plane perpendicular to the LOS. Given a canonical wavelength of appx. 5000 Angstroms for visible light (or, Bob, your favorite 6563 Angstroms), and a typical lunar distance of appx. 400,000 km, the distance from the geometrical shadow edge (where the intensity is 0.25 of the unocculted intensity) and the first Fresnel maximum (with a value of 1.37 of the unocculted intensity) is 10 meters. (I.e., if the observer moves so his/her line-of-site is 10 meters away from the geometrical shadow (perpendicular to the shadow edge) into the unocculted region the source appears brighter by 37% then when there is no diffracting edge. If the source is collinear with the diffracting aperture then it is at 25% intensity. Outside of the shadow the source intensity variations decline with damped quadri-sinusoidal oscillations of increasing spatial frequency with distance. The spacing between Fresnel zones (successive intensity maxima) declines from 10 meters to on the order of a meter over several tens of zones. Moving INTERIOR, into the shadow the source intensity drops asymptotically (unmodulated). At a distance of appx. only *20 METERS* into the geometrical shadow, the source intensity has declined to appx 1% of its unocculted value.

But, this is why I said (a bit tounge-in-cheek) that to be rigorously correct one has to say GEOMETRICAL shadow - because the philosophical question is, if not, where do you draw the line? Some have said COMPLETE photospheric extinction, but when you have an asymptotic decay of photospheric photons arriving at the observer, at what level can one declare completeness? Indeed there is no hard "quantum limit". One CAN do photometry pretty easily at the 1% level, and even millimagnitude (0.1%) in the absence of other non temporally varying signals, so this is observable. But, y can see this is getting into hair splitting.

How the hairs split depends upon how this pattern moves relative to the observer. That depends upon its topocentric projection, which itself depends upon the relative motion AND projection of the geometrical shadow edge onto the geoid. "Typical" rates are a few hundred meters per second (corresponding to angular "closure" velocities of a few

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tenths of an arc-second per second of time). However, just as the duration of bead phenomena (and diamond ring) increases as one approaches grazing incidence (basically as a cosine function around the limb) so does the spacing and timescale for the Fresnel fringes passing over the observer. This also depends, of course, on the shadow velocity relative to the observer. Still, for "most" geometries the timescale for edge diffractive fringing is on the order of 0.1 seconds, as is the folding time for the exponential decay inside the shadow.

All of this is further modified by the non-smoothness of the lunar limb (more complex diffracting aperture), the spatially extended nature of the source (i.e., the photospheric edge rather than a point source) and other effects (limb darkening {very strong when very close to the limb, for example see Figure on limb darkening in <http://nicmosis.as.arizona.edu:8000/POSTERS/TOM1999.jpg> }, etc.

Still, this really is more of a philosophical question than a practical one for probably 99.9% of eclipse observers - but I don't know where to draw that line either.

Next time I'll be sure to add a ;-) when I make such a suggestion in passing! Cheers, Glenn Schneider

From: 76630,2206

Glenn: OK, so we get that the 2001 eclipse was late/early by a total of 5 seconds has nothing to do with Fresnel scattering. What you are saying is that someone 10 meters from me may see a different diamond ring effect than I at a given exact moment in time.

My bare bones flash spectrum imaging is very dependent on time. I am sure that soon we will have very good digital recording and taping devices that will allow for more images than a roll of 35mm film.

This should also give us an idea as to just how difficult getting those flash spectrum plates were a hundred years ago.

By the way, I want to apologize to whomever on this letter is getting upset with my attempt at removing seconds of totality from their records. ;-) But I am still curious as to why we were to expect 3:37 at our site and ended up with 3:32. cheers/rbs

From: FRED ESPENAK

Robert - Send me your exact geographic coordinates (at the 2001 eclipse) and I'll run a prediction including limb profile corrections. - Fred Espenak

From: 76630,2206

Fred: Our site-- -15 deg 00' 34.8"; +28 deg 13' 32.8"; +1281 meters (Kamilonga Farm, Zambia). --Robert B Slobins

From: FRED ESPENAK

Using a smooth lunar limb, I predict the following local circumstances for Robert's position:

Total Solar Eclipse of 2001 Jun 21

Local Circumstances for Kamilonga Farm (Slobins)

Lat.= 15°00.6'S
Long.=028°13.6'E
Elev.= 1281 m Delta T= 64.2 s

Ecl.Dur.=02h45m35 Ecl.Mag.= 1.0213
Umb.Dur.= 03m35.2s Ratio = 1.0445

Universal Sun Sun Sun --Position Angles--
Contact Time Alt Azimuth HA P V Q
h m s ° ° h ° ° °

1 11:41:32.9 45.4 329.1 1.55 270.2 123.0 147.2
2 13:09:13.3 31.5 310.3 3.01 90.2 323.6 126.6
Max 13:11:01.3 31.2 310.1 3.04 182.5 56.3 126.2
3 13:12:48.5 30.9 309.8 3.07 274.9 149.0 125.9
4 14:27:07.8 16.2 300.4 4.30 93.8 339.1 114.7

A separate prediction which corrects for the lunar limb profile reveals the following:

limb corrected C2 = 13:09:09.9 UT (3.5s earlier than smooth limb)
limb corrected C3 = 13:12:43.1 UT (5.4s earlier than smooth limb)

Corrected Duration of Totality = 03m33.3s (1.9s shorter than smooth limb)

Note that C2 actually occurred 3.5s earlier than the smooth limb prediction. If you look at the limb profile diagram (http://umbra.nascom.nasa.gov/eclipse/010621/figures/figure_8.gif) you will see that there is a high mountainous area at position angles 70 to 105. C2 had a predicted position angle (from table above) of 90.2 so these mountains caused C2 to occur early.

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The position angle of C3 is 274.9 but there is a very deep valley from 264 to 277. This caused C3 to occur early and it shortened the duration of totality by a couple of seconds.

I purposely did not ask Robert for his observed contact times so that it would not influence my analysis. So what are the contact times that Robert measured? - Fred Espenak

Eclipse Sequence Photography

From: Geert Vandenbulcke To: SOLARECLIP-SES@AULA.COM Date: Tue, 06 Aug 2002 09:32:19

Hi All, I'm going to SA to view the 4 Dec eclipse (well, not only that...). This eclipse is a short one, so I plan to only try an eclipse sequence photograph on one piece of film and enjoy the event visually. I know that medium format would be best, but this will have to be on 24x36 film. Any hints and tips for this kind of eclipse photography are welcome! Thanks, Geert Vandenbulcke Belgium

From: Geoff

Geert, I'll be doing the same type of exposure too. Before you do anything plan the sequence - what focal length will you use? And also what time intervals will you take shots? Will you leave a double gap before and after totality to allow for the corona?

I suggest to work out the partial phase exposures now! First step would be to set lens at focal length and aperture of desired system, along with the solar filter. Next would be to shoot a range of exposures on a clear day and see which one turns out the nicest (optimally you'll want a nice clear circle). I think it would be around 1/1000s at f/5.6 on 100 ASA as a rough guess.

Once you have the optimal exposure, I'd then try some more exposures on other days when there is light and heavy cloud, and work out the optimal exposures then. That way you can adjust for clouds on the day of the eclipse. Also remember to shoot around the same time of the eclipse (or when the Sun is at similar altitudes - between 0-20 degrees above the horizon).

Once you have some good exposures written down, test out the whole sequence from 2 hours before sunset on day. Shoot an extra exposure on the end after the sun has set to bring out the landscape for your photo (this will be the equivalent of the totality shot in the middle of the sequence).

As for the totality shot, I am not yet sure how to determine the correct exposure - any help would be great! I'm thinking

around 3-4 seconds. --Geoff

From: Geert Vandenbulcke

Thanks Geoff, I am thinking about similar lines, I still have to find or make a cable release for the camera that I will be using (Ricoh KR-10M (same as XR-10M) which allows any number of double exposures on one negative). I will off course make test exposures, thanks for the "gap before and after totality" note, did not think about that! I'm thinking of one image every 10 minutes centered on totality. Although the sun surface brightness stays the same, I've heard advice to slightly increase exposure times for the crescent images before and after totality but don't know how much. The total duration of the eclipse is about 2,5 hours, meaning that about 40% of field of view is needed for the sequence. This would just fit in the FOV of a standard 50 mm lens, but I think I'll use a 28 or 35 mm FL. As the solar images and corona will be small, I think a totality exposure of 3-5 seconds would be fine. Best regards, Geert Vandenbulcke

From: Geoff

Geert, I'll be using a 35mm lens, and exposures every 5 minutes, except for totality which will have a 10 minute gap on either side. Good luck with the cable release.. --Geoff

From: Geert Vandenbulcke

I found every info I needed on the Internet. The camera uses a simple 2.5 mm x 11.5 mm 2-contact plug, I made two versions of cable release : one with a simple push button for short exposures, and one to use in the "bulb" setting. The buttons are mounted in 35 mm film canisters. They work like a charm! Clear skies, Geert Vandenbulcke



FRANCIS BAILEY

SETalk



TSE1991 web gallery

From: MrEclipses@aol.com To: SOLARECLIPSES@AULA.COM Date: Wed, 07 Aug 2002 11:12:43

With the recent passing of the eleventh anniversary of the great total eclipse of 1991 July 11, I decided to re-scan my 35mm slides of the event and to apply some of the image processing techniques I've learned in recent years. The results can be seen in a pair of new web galleries of photographs located at:

<http://www.MrEclipse.com/SEphoto/TSE91galleryA.html>
<http://www.MrEclipse.com/SEphoto/TSE91galleryB.html>

Enjoy! - Fred Espenak

Website update

From: Dave Schmahl To: SOLARECLIPSES@AULA.COM Date: Tue, 06 Aug 2002 09:53:22

Hello All. I have added a first attempt at a composite image of the 1998 TSE made from 4 different exposures. Please have a look... <http://www.schmahlconsulting.com/AstroStopEtc/Thumbnails.html#1998> There shouldn't be any broken links this time.;) Clear skies, Dave Schmahl

From: Dale Ireland

great job Dave, nice web site too I like your detailed stats for each image Dale

From: Dave Schmahl

Thanks, Dale. I hope to add images of the TSE from Ceduna. Keep your fingers crossed for clear skies. Dave.

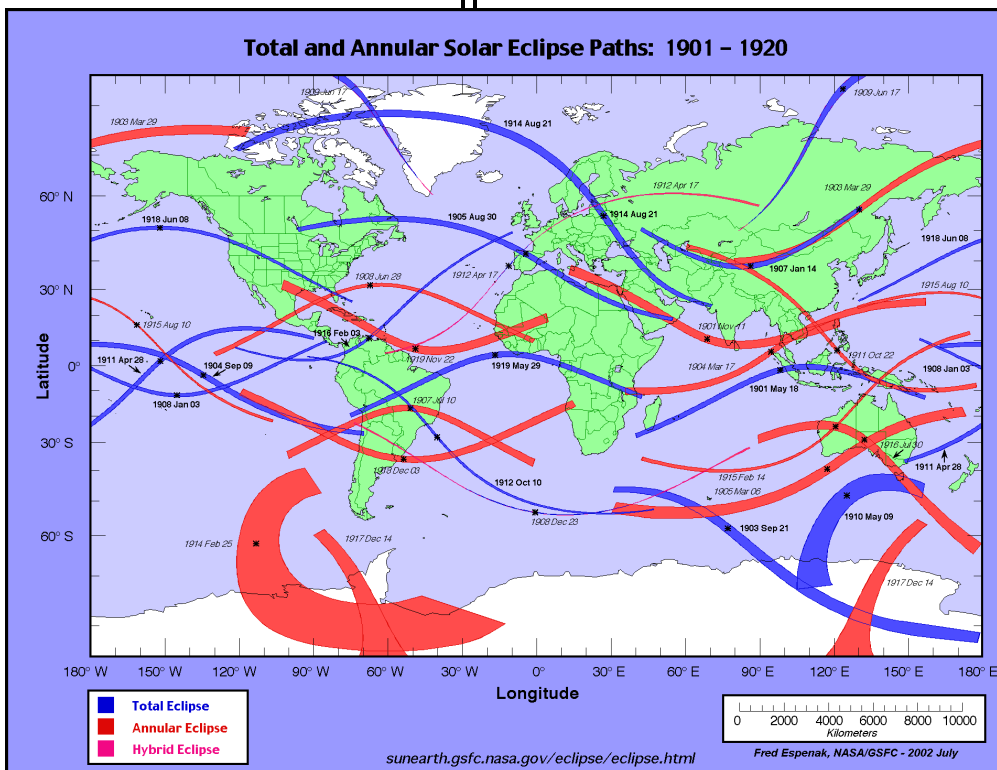
World Atlas - accuracy

From: Marc Weihrauch To: Finsternisliste <solareclipses@aula.com> Date: Mon, 05 Aug 2002

Dear friends, needless to say that the World Atlas of Solar Eclipses is a great piece of work. It offers a different access to the data and thus has already lead to interesting discussions here. Thank you, Fred!

But when I look at the "later" pages I start to wonder about its accuracy, or reliability. The inevitable uncertainty about the

value of delta T in the future will lead to an East-West-shift between the predicted and the observed shadow path. My question is: How big do you expect that error to be maximally? Is the effect negligible at the chosen resolution, even three hundred years from now? Best regards Marc



SETalk

Occulting Opportunities

From: Rybrks1@cs.com To: SOLARECLIPSES@AULA.COM Date: Sat, 24 Aug 2002 16:16:03

For those with Hydrogen-alpha scopes, here is a list of potential chances to witness occultations of any fortuitous-placed prominences by the Moon, Venus or Mercury. These are inferior conjunction approaches and new moons less than 2 apparent solar diameters away.

The approximate separation distances from the Sun's limb are for northern latitude sites (latitude can grossly affect lunar apparent approaches to the Sun's limb.)

Obviously, other opportunities are partial eclipses and partial phases of annulars and totals. (I listed the Oct 2004 Partial only because it is the first partial solar in the future) August 2007 new moon is quite a close pass. On the Arctic Circle in Greenland this pass would only be about 0.2 solar diameters separation limb to limb.

Dates are MM/DD/YY

To year 2010

05/07/03 Mercury transit

10/25/03 New Moon 2 diameters away from limb

05/19/04 New Moon 0.7 diameters away from limb

06/08/04 Venus transit

10/14/04 Partial Solar Eclipse

05/08/05 New Moon 2 diameters away from limb

11/24/05 Mercury inferior conjunction, 1 diameter from sun's limb

11/08/06 Mercury transit

08/12/07 New Moon 0.3 diameters away from limb

10/23/07 Mercury inferior conjunction, 1.8 diameter from sun's limb

03/07/08 New Moon 1.2 diameters away from limb

05/18/09 Mercury inferior conjunction, 1.6 diameter from sun's limb

04/28/10 Mercury inferior conjunction, 1.2 diameter from sun's limb

06/12/10 New Moon 1.2 diameters away from limb

Venus events to 2030

06/05/12 Venus transit

06/03/20 Venus inferior conjunction, less than 0.5 diameter from limb

06/01/28 Venus inferior conjunction, 1.1 diameter from limb

Clear Skies Ray Brooks

Slide request

From: Dale Ireland To: Solar Eclipse List <SOLARECLIPSES@AULA.COM> Date: Fri, 23 Aug 2002

I am forwarding this notice from the AstroMart board, You can contact the poster via the link. Dale

View this ad at <http://www.astromart.com/viewad.asp?cid=140673> Wanted: Tersch Eclipse Slides

I am looking for solar eclipse slides that were sold by Tersch Enterprises in Colorado until a few years ago. Specifically, I am looking for a set of slides for the July 20, 1963 solar eclipse over Alaska, Canada, and Maine. If anyone knows what the status of Tersch enterprises is, please let me know. If it is defunct, I will be happy to pay you to make copies of your set of 7-20-1963 eclipse slides. Thanks for looking, Bob.

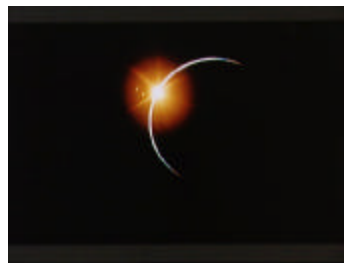
Predictions and data files for Occult (Windows version)

From: Peter Tiedt To: Solar Eclipse Mailing List <SOLARECLIPSES@AULA.COM> Date: Sun, 25 Aug 2002 14:26:15

Has anyone experience in creating new/custom location data files for use with the Windows version of Occult?

The program comes with default location files for Australia, Europe and the US. I have been trying to create an African file, using the supplied format as default, but am having a problem in saving to the correct format as required by Occult. (I am using Excel to import and export my data) and am saving as text delimited.

Is there a better way, or am I missing something really simple? Peter Tiedt rigel@stars.co.za Visit my website at <http://www.eclipse.za.net>



Apollo 12 diamond

SETalk

1932 eclipse sighting

From: KCStarguy@aol.com To: SOLARECLIPSES@AULA.COM Date: Sat, 24 Aug 2002 17:42:01

I saw this notice on another listserve and thought I would share it with you all. The account is passed on with their permission along with the additional websites and information that I found.

Initial request for information whether an eclipse occurred in 1932 and whether it was total. Here is more. Dr.Eric Flescher (kcstarguy@aol.com) webmaster Eric's Black Sun Eclipse website - <ericsblacksuneclipse.com>webmaster, Satori Astronomy website <<http://members.aol.com/kcstarguy/blacksun/satoriastromy.htm>>

communications with James R. Griggs Chicago, IL (home of the Melon skies) >>

I wrote to my Dad and asked to recall more details of his 1932 Eclipse experience.

He's 86, so the little things then are more vivid in his memory than the big things of today, but here's what he wrote:

Dear Jim and those concerned:

Life is full of surprises and this story I wish to tell is especially about a day in my life that I had no idea I would be asked to recall.

I had graduated from Washington, (IA) High School, the spring of 1932 and took my sister to Luton, Iowa to start her teaching position in the Consolidated school there, a short while before the start of school.

Our Uncle Virgil Weaver was instrumental in finding the available teaching position. He was also instrumental in my being an apiarist (beekeeper) for forty years. As a graduation gift he gave me a 1920 edition of ABC & XYZ Of Bee Culture, published by A. I. Root.

Uncle Virgil had a bottom-land farm about 20 miles south of Moville, IA, where he lived. This farm is close to Hornick, IA, and closer still to Owego. Neither Owego, nor Luton, where Oneita, my sister taught, are on the map that I am using. There was nothing at Owego except a railroad siding and a grain elevator. Moville (Iowa is the only state of the Union with a town by that name) is located about 18 miles east of Sioux City, Iowa.

Uncle Virgil put me to work plowing and seeding the 160 acre farm to wheat.

Oneita had not been teaching long when I decided that I needed our car, a 1928 Ford Roadster, which she had at Luton.

After a rainy night, I thought it was too wet to continue plowing and decided to walk the 5 to 8 miles up the track to Luton, to get the car.

The railroad crossed the country road about 1/4 mile north of the farm where I was working. A train could be seen 30 or 40 minutes before it's arrival.

I walked a mile or more and considered taking a crossroad to a windmill to see if I could get a drink. As I could see a building on up the railroad track, I decided to give up getting a drink at the windmill. It happened that the building I saw, from a few miles, was the Depot at the town of Luton, my destination.

As I continued on my journey, a train came from behind me. I got off the track, giving the train room to go by, but when it came by me, it was so big, and I was so little, the wind it made, nearly scared me to death.

(Continued on page 25)

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When the next train came, I walked down to the edge of the grade, and laid down, being still scared from the first train.

When I got into town, the only person I remember seeing was this lady looking at the sun. I had no idea that she was using a smoked glass to cut the glare of the sun while watching the solar eclipse of the sun. She loaned me her 'looking glass' so that I could see 'the sight.' I would guess, after 70 years, that about 1/3 of the sun was covered. I did not tarry, so I have no idea how long the eclipse lasted.

I remember the shine being dimmed some, probably something like if the time had been 30 minutes before sundown. I couldn't have guessed the date, but records substantiate that it was Sept. 1, and that would coincide with the approximate start of school.

It would be nice if I had paid more attention to the event, but other things were on my mind. Sincerely, Russell L. Griggs
rgriggs@fmctc.com Hancock, IA

James By doing a search I found that the date was Sept 1, 1932.

We'll have a look at these set of websites and related resources I found.

<http://sunearth.gsfc.nasa.gov/eclipse/SEhistory/SEpath/SE1932Aug31T.html> It was on August 31, 1932.

more info here Then, on August 31, 1932, a total solar eclipse swept south and east from Monreal and Magog, Quebec, across central New England (including Lake Winnipausaukee), before heading out to sea at Cape Cod. Ask your mom if she remembers what the weather was like on the day of the eclipse. In 1925 it was a brilliantly clear with temperatures hovering near 0 degrees F. on eclipse morning; in 1932 it a hazy, warm and sultry afternoon with an ongoing threat of thunderstorms <http://www.mreclipse.com/SENL/SENL9904/SENL904ap.htm>

The map does not show but it seems that it was partial where your Dad was and only a partial eclipse. I think that they were looking at the maximum there.

<< Here is the cover of national geographic about the eclipse

http://www.mreclipse.com/SENL/SE_NGS/NG193211.htm

In fact, it can be bought at (NOvember issue) <http://www.abong.com/1932.htm>

Old newsletter announcing the eclipse <http://www.sciencenews.org/20020803/timeline.asp>

eclipse viewers used for the eclipse http://www.goantiques.com/taxis,eclipse_viewer,3c9500721c.html

interesting note that this person had to go to the bathroom during totality!!!! http://www.stg.brown.edu/~lav/eclipse_apathy.html

(Dr, Smiley whom I knew through Brown University and who was on the Canberra with me in 1973 eclipse trip sponsored an eclipse expedition <http://www.theskyscrapers.org/astro/skyscrapers/about/history/25book/smiley.ht>

ml

other eclipse sightings to note

Unrelated but eclipse of the monarchy in Thailand 1910-1932 <http://www.aseanfocus.com/gateway/thailand/eclipseP3.asp>

Interestingly I found info on eclipse cemetery named after eclipse post office located in a home <http://www.rootsweb.com/~nemcpher/eclipse.html>

eclipses information from 1986 with 1932 with many pictures of the times as well a real nice pictures of the baileys baead and inner corona with also pictures from 1896, 1900, 1905, 1911 and 1932. <http://www.merchantnavyofficers.com/eclipse.html>

about Heber D. Curtis a U of Michigan astronomy prof who studied the eclipse of 1932 and others http://antwrp.gsfc.nasa.gov/htmltest/gifcity/curtis_obit.html

eclipse accounts etc 1932 and 1999 and etc <http://home.columbus.rr.com/gfoley/>

Like the singer and her characters, her listeners too had stood in the crowds watching King George VI, the R-100 dirigible, and the solar eclipse, and they had shared in the excitement depicted in the lyrics. <http://www2.nlc-bnc.ca/gramophone/src/m2-1035-e.htm>

From: Crocker, Tony (FSA)

See correspondence below (from bottom to top). My great-aunt Maxine died last year at the age of 91. Perhaps as a teacher she had friends who convinced her it was worth the effort to travel to the totality zone, even if she didn't have a car.

(Continued on page 26)

SETalk

There is no doubt from your comment that Maxine saw the eclipse of Aug. 31, 1932. She would have had to travel from Northfield, and St. Johnsbury was in totality. There were no other total eclipses in Vermont in the 20th century, although there was an annular eclipse May 10, 1994. Next closest totals were Jan. 25, 1925 (Connecticut and southern New York) and 1963 (Maine and Quebec). You'll get another chance Apr. 8, 2024. Totality follows the US-Canada border from Cleveland through northern New England.

From: brydges@attglobal.net [mailto:brydges@attglobal.net] Sent: Thursday, June 29, 2000 8:31 AM To: Crocker Subject: Maxine

Hi, Tony, I've just returned from three gorgeous days in Vermont. My sister, Pat, and I opened up Maxine's home and the nursing home brought her home for time on her porch.

- She recalls going to an eclipse with her sister near St. Johnsbury by car. I don't think they had a car in 1931 so it may have been something else. She was fuzzy as to when.

From: brydges@attglobal.net [mailto:brydges@attglobal.net] Sent: Tuesday, June 13, 2000 11:18 AM To: Crocker, Tony (FSA) Subject: Re: Maxine McNamara

Tony, I'll ask her if she saw it - if she did she'll surely remember it. Tom and I drove to Dexter, Maine in the summer of 1963 (I believe) to experience totality and it was amazing. Ellen

Crocker, Tony (FSA) wrote: Thanks. I forgot to mention when I e-mailed our reference to our 1999 total solar eclipse viewing in Europe that Maxine may have seen one on Aug. 31, 1932. Northfield was only a few miles out of totality and Montpelier was on the edge. Northeast Vermont and most of New Hampshire were in totality. Did people make the effort to travel the short distance to the totality area?

Eclipse Film Database

From: Jean Marc Larivière To: EclipseListServer <solareclipses@aula.com> Date: Wed, 28 Aug 2002 16:38:13

I would like to thank everyone who sent me information about eclipse films following my call for assistance a month ago. Much useful information was received and a number of films I had not catalogued previously were added to the list, which should appear in the near future -- I will advise everyone through the list.

In the meantime, I hope a list member can supply some information about a potential eclipse film that would have come out of an expedition (African Odyssey) to Zambia by truck, in June 2001, by Gernot Meiser and Pascale Demy. I remember hearing about it at the time and I have found a reference to a photo exhibit in the SEML but I seem to remember this team was also doing a documentary for TV. I have been able to use automatic translation software provided by Google to translate part of their site and others which are in German but could not find any mention of a film. Can anyone help me? Jean Marc Larivière

From: Mike Simmons

Gernot and Pascale are list members so maybe you'll hear directly from them. They're very busy now, though, with their many projects (along with renovating their home themselves!). I have seen some of the multimedia show they have put together with multiple slide projectors and music from their adventure in Africa when we traveled with them in Iran in May 2002. I don't think they've released a film based on the eclipse and their travels but if/when they do it will be first-rate! You can contact them at odyssee@intersaar.de. Mike Simmons

How's THAT for the 2005 Pacific hybrid?!

From: Daniel Fischer To: SOLARECLIPSES@AULA.COM Date: Fri, 30 Aug 2002 20:43:49

Cunard's new "Queen Mary 2" will feature "the world's first shipboard planetarium" as <http://www.cunard.com/news/default.asp?View=ViewArticle&Mode=News&ContentID=2176> (and also a recent Newsweek article) report - now wouldn't that be the perfect venue for cruising to the Willcox or whatever point of the 2005 hybrid eclipse? Just an idea ... Daniel

From: Crocker, Tony (FSA)

(Continued on page 27)

SETalk

"The highly anticipated, \$800-million ship is the largest, longest, tallest, widest and most luxurious ocean liner ever constructed." This makes me suspect it will not fit in the Panama Canal. Note that it's first season itinerary is confined to the Atlantic and Caribbean.

Most cruise ships do fit, and many of them make an annual repositioning voyage in April

From : Michael Gill <eclipsechaser@yahoo.com>

When completed the QM2 will be 345 x 40 metres.

Currently, the Panama Canal can only take ships that have a beam of 32.2 metres or less (ships with this beam are called 'Panamax' vessels). Until such time that the Panama Canal is enlarged (certainly not before April 8th 2005) it will definitely be off limits to the QM2.

Since the QM2 will be spending much of its time in the Caribbean and the North Atlantic, I feel a smaller vessel will be needed to chase the 2005 hybrid eclipse in the Pacific. Michael Gill

The quickest "first TSE" for a country

From: Fraser Farrell To: SOLARECLIPSES@AULA.COM Date: Sat, 24 Aug 2002 17:46:18

To all, This follows on from the recent discussion about lists of eclipses for specific countries, and the associated problems of changing borders and national names.

There are a few countries which began their existence on known dates; and whose borders are unaltered since then. So in principle you could compile a complete list of all eclipses for such a country.

And you could also answer a related question. What is the shortest elapsed time between a country's founding and the first TSE on its territory?

Two examples to begin this topic:

- Australia began on 1901 Jan 1; and its first TSE was on 1922 Sep 21. This was preceded by annular eclipses in 1905 and 1916.

- East Timor began only a few months ago; and it will get the TSE part of a hybrid eclipse on 2023 Apr 20. This will be the first non-partial solar eclipse there.

I'm sure there are shorter "national waiting times" for the first TSE (although I think East Timor is a strong contender among the little countries). But which country wins this particular contest?

And conversely, which country endures/endured the longest wait for its first TSE?

It would also be interesting to discover which cities win/lose this contest. I've already mentioned Adelaide's 770-year wait for its _first_ TSE on 2606 Jan 1... cheers, Fraser Farrell

From: Peter Tiedt

Just to pick up on this.

Some would say that South Africa only came into being on 10 May 1994 (inauguration). (or 27 April 1994 - voting) TSE on 4 December 2002 - 8.5 years.

From: Peter Tiedt

SETalk

And further If the US came into existence on 4 Jul 1776 there was a TSE on 24 June 1778 - under 2 years! Peter Tiedt
rigel@stars.co.za Visit my website at <http://www.eclipse.za.net>

From: Pierre Arpin

For Canada : A nation since July 1st 1867 a total solar eclipse on Aug 7 th 1869

From: Fraser Farrell

At the moment our contenders are:

Canada, a 769 day wait from 1867 Jul 1 to 1869 Aug 7 (1868 was a leap year).

USA, a 730 day wait from 1776 Jul 4 to 1778 Jun 24.

Any others? We can't let the Americans win this by default... ; -) cheers, Fraser Farrell

From: 76630,2206

The 1869 eclipse was in the west. I am unsure that the political entity we know as Canada extended that far. The Western provinces may have organised themselves beginning in 1870 or 1873 (Manitoba, etc.)

Are there any accounts of anyone seeing the 1778 eclipse? It was a pretty nasty time, what with the war going on. I do recall that it was clouded out. What good is a clouded-out eclipse?

From Emapwin, these cities were in the path: New Orleans, LA ; Mobile, AL, Charlotte, Raleigh, Greensboro, Salem (as in Winston-Salem), NC; Williamsburg and Norfolk, VA. States included were GA, SC, NC, VA, and MD. New Orleans was not American until 1803. Atlanta and others did not exist then. The rest were villages except for the Virginia capital at Williamsburg and the North Carolina capital of whatever tavern could house the legislature at the time in the area. (New Bern was the colonial capital.) It may be that there are no news accounts of a total eclipse except for the occasional letter.

The eclipse's at maximun was nearly 6 minutes. In this day and age, this would definitely have been a major event as many large cities and hundreds of large telescopes would have been available for the task. --Robert B Slobins



Gernot Meiser and
Pascale Demy in
Siberia in 1997

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Accuracy of computer programs

From : Victor Reijs <geniet@IOL.IE> To : HASTRO-L@LISTSERV.WVU.EDU Date : Wed, 7 Aug 2002 20:57:40

Hello all of you, Sometimes we already discussed this and I think that with the help of some people I have now a better idea how I perhaps could determine the accuracy of eclipses in former times. See my 'test plan' on the following URL: <http://www.iol.ie/~geniet/eng/skyprog.htm#Ideas>

Please provide your feedback, so that I can enhance the test plan and start testing it. I will keep this list informed on the progress. Thanks for your help, All the best, Victor

From: Jay.M.Pasachoff@williams.edu

Given the discussion in this Mailing List in recent days, I thought I would quote my own paper in the journal Solar Physics based on my observations at the Papua New Guinea list in 1984. My student Brant Nelson worked with me on the data reduction. Jay Pasachoff

P.S. The paper itself can be seen in PDF at http://adsbit.harvard.edu/cgi-bin/article_queryform?bibcode=1987SoPh..108..191P&letter=&db_key=AST&page=191&plate=&cover=&pagetype=.

If that long URL doesn't work, go to <http://adswwww.harvard.edu>, which is a collection of astronomical papers. Click on the button for "Search References" and click on the link to "Astronomy and Astrophysics." Then you can search in 1987 with "Pasachoff" on one line and "Nelson" on the next. Change the Boolean choice to "and" from "or," and click on "Search." The choice "F" at the right will give you the full paper.

You will see the primitive video method in occasional use then. The observations were in the context of papers that claimed to find a change over time in the size of the sun, something that would have major consequences for life on Earth. I think it is fair to say that those papers have been discredited, or at least are not widely accepted. I have not seen more recent papers on the size of the Sun from eclipse methods, in spite of bead observations being collected for many years.

Here are the papers and references:

Labonte, B.J.; Howard, R. Measurement of solar radius changes 1981 Sci...214..907 Measurement of solar radius changes "...no change in the radius over the last 7 years"

Sofia, S.; Dunham, D.W.; Dunham, J.B.; Fiala, A.D. 1983 Nature.304..522 Solar radius change between 1925 and 1979

" Abstract From an analysis of numerous reports from different locations on the duration of totality of the solar eclipses on January 24, 1925, and February 26, 1979, it is found that the solar radius at the earlier date was 0.5 arcsec (or 375 km) larger than at the later date. The correction to the standard solar radius found for each eclipse is different when different subsets of the observations are used (for example, edge of path of totality timings compared with central timings). This is seen as suggesting the existence of systematic inaccuracies in our knowledge of the lunar figure. The differences between the corrections for both eclipses, however, are very similar for all subsets considered, indicating that changes of the solar size may be reliably inferred despite the existence of the lunar figure errors so long as there is proper consideration of the distribution of the observations. These results are regarded as strong evidence in support of the occurrence of solar radius changes on shorter than evolutionary time scales."

Timing of the 1984 Solar Eclipse and the Size of the Sun Jay M. Pasachoff and Brant O. Nelson from the journal "Solar Physics," vol. 108 (1987), pp. 191-194. copyright 1987 by D. Reidel Publishing Co.

Abstract. We report accurate timing of second and third contacts made from videotape of the total solar eclipse of 23 November, 1984, observed in Papua New Guinea. The magnitude of the discrepancies between predicted and observed times indicates that the secular change in the size of the Sun reported by some observers is within the uncertainty.

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1. Observations

We observed the 1984 total solar eclipse on 23 Nov from Hula, Papua New Guinea.... We recorded the phenomena surrounding totality with a Saticon camera affixed with a 48-mm lens, and recorded the images on VHS-E (Australian standard). WWVH time signals are recorded on the tape.

Second contact, defined as the disappearance of the last Bailey's bead/diamond ring, was recorded through a metal-deposited filter and appeared to occur at 21h21m50.9s \pm 0.2 s. The filter was removed 1.8 s later, at which time we can confirm that no trace of photosphere was visible. Third contact was determined by the first visibility of the post-totality diamond ring, recorded without any filter, and occurred at 21h 22m 44.9s \pm 0.2 s, making the duration of totality 54.0 \pm 0.3 s. The central time was thus 21h22m17.9s \pm 0.3s. Repeated independent timings of the duration from the tape gave 53.9 \pm 0.2 s. Stopwatch timings of the interval between succeeding minutes gave 1 min 00.01 s \pm 0.05 s. Times given were measured with a stopwatch with respect to the tones marking the nearest minutes. Errors given are one standard deviation of repeated measurements with a stopwatch. Systematic errors could make these times slightly longer, though apparently by less than 0.5 s. At second contact, there conceivably could have been continued fading of the diamond ring after the signal dropped below the level detectable through the ND 5 chromium-deposited filter; accordingly we report second contact as occurring at 21h21m51.8 \pm 0.9 s. At third contact, no filter was used, and the diamond appears to brighten abruptly, but could conceivably been growing in the brightening chromosphere.

The predictions in the table of Fiala and Lukac (1984) showing local circumstances for Hula (+147deg44.0' -10deg0.5.0'), without corrections for the shape of the limb, were 55.6 s with maximum eclipse occurring at 21h22m16.8s. Calculations in the same Circular by David Herald indicate that the limb corrections for Hula would be +2 s at second contact and -2 s at third contact, leaving the predicted central time unchanged but shortening the predicted duration to 51.6 s. The actual central time of totality occurred 1.1 s later than this published prediction and totality lasted 2.4 s longer. Though no estimate of errors were made for the limb corrections, they were given to 1 s, so we assign an error of 0.5 s. With this assumption, the measured duration and central time were both outside the range of this prediction.

2. Calculations

... [predictions] see Table 1 as published in Solar Physics. Several sets of predictions for second and third contacts are given and my observations are given for comparison.

""The predictions from Espenak (1986, private communication) are based on the Besselian elements in the 1984 Astronomical Almanac, which are slightly different from the elements in the [Naval Observatory] Circular [the predecessor to Fred's NASA Reference Publications]....

3. Discussion

The magnitude of the discrepancy between predicted and observed results should be taken into account in interpreting the reports of Dunham et al. (1980) that the Sun had contracted by 0.34 \pm 0.2 arc sec in the 264 yr between 1715 and 1979. Fiala et al. (1982) reported a 'significant decrease of at least 0.5 arc sec from 1925 to 1979,' but no significant change during 1976-1980. Sofia et al. (1983) report that 'these results are strong evidence in support of the occurrence of solar radius changes on shorter than evolutionary time scales.'... [The Sun] advances 0.5 arc sec during each second of time. The magnitude of the possible deviations between measured and predicted values supports the conclusion that no variation in the size of the Sun has been established, reported from study of transits of Mercury (Shapiro, 1980); from Greenwich observations of the Sun, Mercury transits, and eclipses (Parkinson et al., 1980); and from Mt. Wilson observations of the Sun (LaBonte and Howard, 1981).

From : Victor Reijjs <geniet@IOL.IE>

Hello all of you, After some weeks of work on the subject of planetarium computer accuracy, I want to ask your feedback on my web-page. I have tried to give insight in the specification of computer that will be used in archaeoastronomy work.

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Then an overview of theories with their accuracy's. Using this, I tried to get an idea on accuracy's of occultations (like solar eclipse). I have extended the benchmark with more info on computer programs (still growing) and mapping them on the specification. <http://www.iol.ie/~geniet/eng/skyprog.htm> Any feedback is welcome!!! All the best, Victor

World Maps of Solar Eclipse Paths: 2nd and 3rd Millennia

From: FRED ESPENAK To: SOLARECLIPSES@AULA.COM
eclipse@hydra.carleton.ca
Date: Mon, 19 Aug 2002 16:20:58

My summer student Holly Schurter finished her internship with me two weeks ago. She worked very hard and diligently on the "World Maps of Solar Eclipse Paths" project and I am please to present the final instalment of our collaboration.

The primary URL for the "World Atlas of Solar Eclipse Paths" is:

<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas.html>

Here you will find links to world maps of every central solar eclipse during the 20th and 21st centuries. Each of these maps covers a 20 year period and includes the paths of all total, annular and hybrid solar eclipses.

If you are interested in eclipse paths outside of this period, you will find links to two other web pages as follows.

World Atlas of Solar Eclipses: 1001 - 2000
<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas2.html>

World Atlas of Solar Eclipses: 2001 - 3000
<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas3.html>

The "World Atlas of Solar Eclipse Paths" now covers the Second and Third Millennia in their entirety. A series of 100 world maps (20 years per map) depict the path of every central solar eclipse during a two thousand year period centered on the present.

I thank Holly for all her careful (and often tedious) work to complete this massive project. I am sure that

many of use will be using these maps for years to come.

Next summer, I hope to work with another student and to expand the "World Atlas" to cover the period 0000-1000 CE and before.

Please take a look at the above atlas and contact me with any comments or corrections. Fred Espenak

From: Govert Schilling

Fred: What a wonderful initiative and what a magnificent resource! Congratulations to Holly and yourself with this result!

One other thing that has been discussed on this list before, is something that many astronomers and lay people might be interested in: lists (maybe together with accompanying maps) of solar eclipses in past and future *per country*, so that it's easy to look up when total and partial eclipses occurred and will occur in one's home country (for instance). Who knows what your next summer student will be able to do... --Govert <http://www.govertschilling.nl>

From: 76630,2206

Program emapwin would provide that information, or at least come close to indicating which eclipses would occur close to a given area. That may be better than finding which eclipses will cross a large country.

For example, a St Louis resident would have less of a problem getting to the paths of the 2017 and 2024 totalities, but 2044, 2045, and 2052 would be expeditions for him. And as history shows, political borders are not constant.

Perhaps a program could be written to indicate central eclipse tracks occurring within a given radius from a selected point and plot them accordingly.

With this in mind, maybe from all of these efforts we can all give up chasing copies of hard-cover eclipse canons. ;-) -- Robert B Slobins

From: Francis Graham

Dear List, BRAVO! to Holly Schurter and Fred Espenak for a GREAT JOB in putting together this marvelous database! It will be very useful in a great number of ways. One tiny thing I found disconcerting. In looking at the eclipses for the 30th century I saw national boundaries that almost certainly won't be the ones in existence then. While nothing can be done about that, I once considered that it might be useful to redo the national boundaries of the charts of past eclipses to

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reflect the boundaries of the past. Of course this would require a great deal of historical editing. Yet, having maps with blank landforms, like Oppolzer's 1888 maps, would limit its usefulness more,. Hmmmm. What to do? It might work to not do national boundaries at all, but plot cities, which tend to outlast national boundaries. Three-letter abbreviations might be used for them. This would also be useful for quick scanning for historical eclipses, since cities are where records are generated, and historical information can be sought. For example, I see that there was an annular eclipse and a total eclipse during the time and in the area of operations of the Third Crusade. Did it pass over Aleppo? Of course, I could go to Emapwin and plug in Aleppo's long & lat. But that takes time. London, York, Rome, Athens, Alexandria have all been around for a while, and probably will be for some time to come, although national boundaries change (e.g. Athens was its own country, part of Alexander's Empire, then part of the Roman-Byzantine Empire, then part of the Ottoman empire, before finally becoming part of modern Greece.) While some long-lived cities die (Babylon and Persepolis come to mind) and some are new (Chicago, Omaha, Columbus Ohio, Seattle come to mind) and some reborn under new cultures (Mexico City, St Louis=Cahokia) it seems a plot of cities would solve the problem that plotting national boundaries pose and would be more useful. And some cities are very long lived: Jericho, the oldest city was occupied with some battles, since 7750 BC. I don't mean to be too nit-picky for a WONDERFUL, excellent Atlas that will be useful for years and will be hailed for years. I just mean to drop a suggestion for improvement still in its usefulness : eliminate national boundaries and add cities. Thanks! Francis Graham

From: Fraser Farrell

> BRAVO! to Holly Schurter and Fred Espenak for a GREAT JOB in putting together this marvelous database!

I second that!

> It might work to not do national boundaries at all, but plot cities, which tend to outlast national boundaries. Three-letter abbreviations might be used for them.

Most if not all cities would have their own airport nowadays. And the airline industry has already compiled a list of three-letter abbreviations for all of them.

> it seems a plot of cities would solve the problem that plotting national boundaries pose and would be more useful.

It would also sidestep the problems of disputed national boundaries, colonies, protectorates, dependencies...and some interesting definitions of national boundaries.

For example, did you know that the December 4 TSE passes near France? This is because the French government considers Kerguelen Island (about halfway between South Africa and Australia) to be part of France itself; and not merely a colony or separate territory.

And don't even mention Antarctica; and all its overlapping territorial claims...! cheers,

From: Govert Schilling

Robert: Program emapwin would provide that information, or at least come close to indicating which eclipses would occur close to a given area. That may be better than finding which eclipses will cross a large country.

>From the point of view of an eclipse chaser, you're absolutely right. But it doesn't work like this for the general public. As an astronomy writer, I'm all too aware of the fact that people really want to know when the last total solar eclipse occurred in their country, and when the next one will be. Call it chauvinism, but the interest is there. --Govert

From: 76630,2206

Govert: That people are interested in when a total eclipse will occur in one's country is fine, but it all depends on the country. In the case of the USA or Brazil, such information may communicate the rarity of total solar eclipses. The USA is in a gap from 1979-2017--38 years. Brazil sees totality again in 2006, but it will be sunrise in Natal and for most of the country

SETalk

it will be night.

I gather that you are in Europe. European countries are small, so that, say, a 200 km radius can enclose large parts of them. If one comes from a large country that covers a significant portion of a continent, then that is different. In this case, it may be best to refer to a state or group of them.

Another factor is accessibility. An American can easily drive across the country to see a totality at this time. For some Americans, driving 250 km is not a big deal. Bolivia in 1994 or Cameroon in 2013 was and will be different stories; for these people, traveling 250 km is an expedition.

I would have to say that it is an easier problem to list eclipses within a certain distance of a point than to list paths occurring within an irregularly defined space like a political territory.

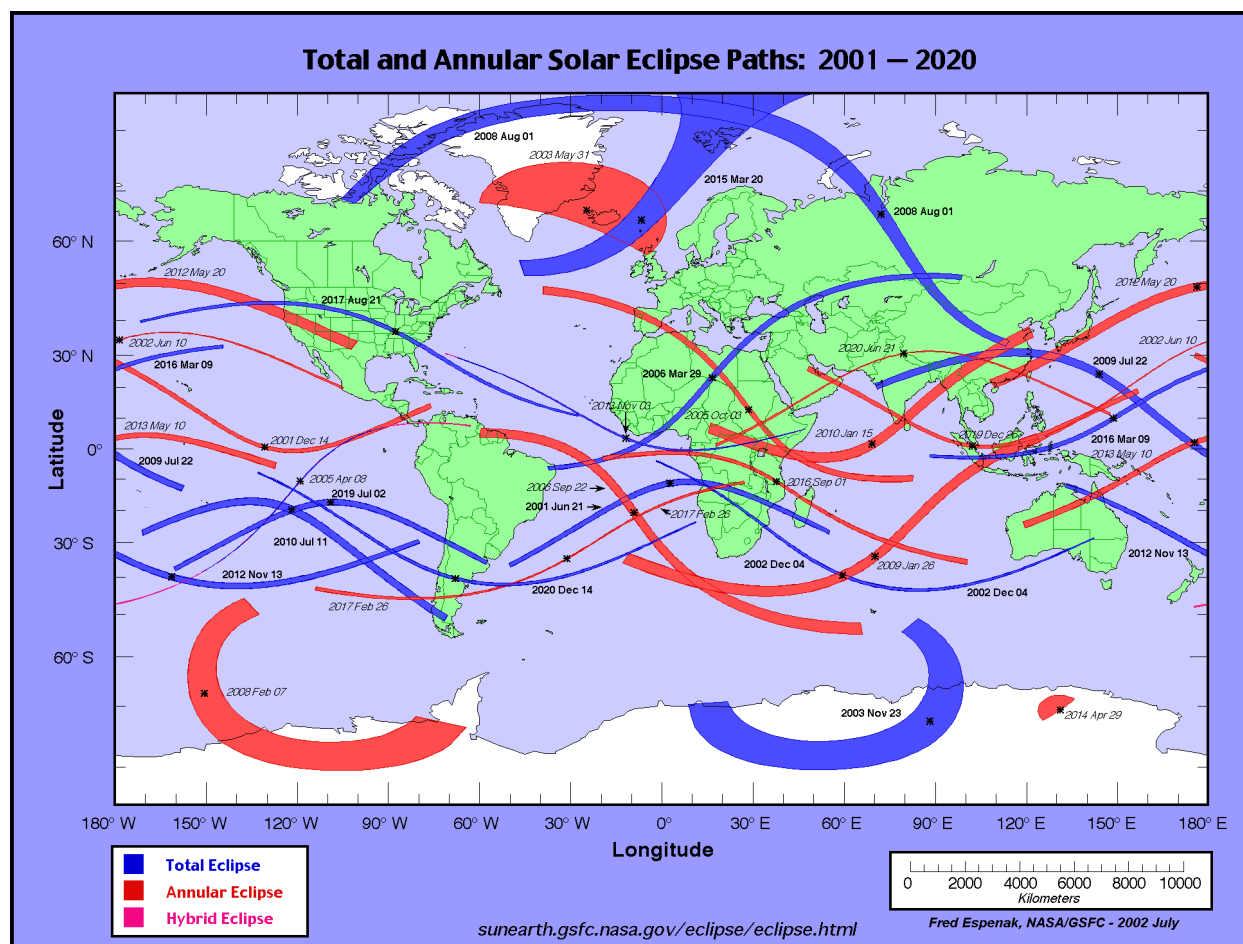
From Glenn Schneider

We did get 1990 from the Alaska (Aleutian Islands) , and Hawaii in 1991. -GS-

From: 76630,2206

OK, Glenn--I should have said 'continental' USA. Any further political discussions would constitute thread-creep and be inappropriate.

Now...has anyone taken continental drift into account? ;-) --rbs



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2**Austalian TSE**

From: Dave Schmahl To: SOLARECLIPSES@AULA.COM Date: Sun, 11 Aug 2002 06:28:25

Hello All, If anyone is planning to see the TSE from anywhere along the Australian path, I'm looking for a traveling companion for the time period between Nov. 28 and Dec. 6. Please send all replies to dlschmahl@cox.net. Thank you, Dave Schmahl

Mongolia reminisces

From: Stephen Russell To: solareclipses@Aula.com Cc: emily williams <clear_sound@hotmail.com>
Date: Sun, 11 Aug 2002 04:04:34

Hi everyone. I've been contacted by an independent radio journalist, Emily Williams, who's currently visiting Australia. She's interested in "talking" to people like us who chase eclipses, particularly the difficult ones like Mongolia and Antartica. If you're willing to answer some of her questions, please contact her at clear_sound@hotmail.com. Many thanks. Cheers, Steve.

Solar Eclipse 2002 Australia

From: M&M To: SOLARECLIPSES@AULA.COM Date: Sun, 11 Aug 2002 09:49:36

There are some vacancies for B&B in a private house in Roxby Downs for 2 - 4th December. Email Maxine <oliri@ozemail.com.au>

Near-live report from Australia

From: Olivier "Klipsi" Staiger To: SOLARECLIPSES@AULA.COM Date: Mon, 12 Aug 2002 19:06:41

Dear friends, Soon, in late november, I will fly to South Australia to see the next total eclipse.

Most likely I will NOT do a LIVE webcast this time, but still a near-live report with images, daily updates, and I hope to upload images and videoclips of the eclipse just a few hours after the event. Maybe still even live, as I realize that GSM cellphones have a little bit of coverage in the target area, so maybe I can upload an image right then and there. We'll see. Anyway, images should be uploaded within a few hours of the event.

the starting point for my report this time is <http://eclipse.span.ch/eclipse.htm> .

Of course I hope that each and everyone on this list will be in Africa or Australia, watching the REAL thing ! ;-) Hastalav-ista ! Klipsi Paparazzo del Cielo

From: Fraser Farrell

Good luck...Ceduna's mobile phone capacity is quite limited; although I'm told that Telstra will be installing extra capacity before the eclipse. Don't hold your breath. Telstra have also been promising to upgrade my local phone exchange "in the near future" since 1991....

Vodafone are also expanding their mobile phone network in rural SA later this year. I do not know if this will include Ceduna or anywhere else in the eclipse path.

The CSIRO will be doing a live webcast of the eclipse from Ceduna. Readers unfamiliar with CSIRO can read all about them at www.csiro.au.

I'm told that Japanese and UK television teams will be broadcasting from the eclipse viewing site in the Woomera Prohibited Area. I think our own Channel Nine will be doing a live TV broadcast as well (from Ceduna?).

(Continued on page 35)

T S E 2 0 0 2

I also note that the Coondambo Fibre Optic Repeater Station is on the Stuart Highway about 2 km south of centreline. Bandwidth won't be a problem here - the Repeater handles most of Australia's telecommunications traffic to Asia & Europe - but plugging in a webcam may be difficult. Ask Telstra (www.telstra.com.au) or Optus (www.optus.com.au). cheers,

From: Olivier "Klipsi" Staiger

howdy again,

> I'm told that Japanese and UK television teams will be broadcasting from the eclipse viewing site in the Woomera Prohibited Area.

as usual, www.live-eclipse.org will certainly do a multi-webcast, from Africa and Australia.

> I also note that the Coondambo Fibre Optic Repeater Station is on the Stuart Highway about 2 km south of centreline. Bandwidth won't be a problem here - the Repeater handles most of Australia's telecommunications traffic to Asia & Europe - but plugging in a webcam may be difficult. Ask Telstra (www.telstra.com.au) or Optus (www.optus.com.au).

my current , ultra-portable, equipment is the following:

- a Sony digital8 camera with x25 zoom (equivalent to about 1100mm focal length), on which I can even add a x2 teleconverter
- connected via DV firewire port to a tiny Sony Vaio laptop PC
- the laptop is loaded with software to ftp-upload a still image to my website (Webcam32)
- wireless connection to the web: via Nokia data card and GSM , to the GSM roaming network. Condition: roaming receiving signal, and also under the condition that it allows data communication, not just phone conversation.

Thus, provided I am in an area where GSM works, and provided that local GSM network allows data transfer, I can webcast fully mobile, without having to stick to a land phone line. This gives me ultra-mobility. I will not be in Ceduna, but somewhere northwest of Woomera, in a car (campingvan). Telstra website http://www.telstra.com.au/mobilenet/network/data.cfm?type=d&state=5&loc=woomera/roxby_downs indicates roaming coverage in Woomera and in Roxby Downs (both slightly outside totality) AND in Koolymilka (almost on centerline !). So I will check out the Koolymilka area (clouds, low W horizon, etc.,) . But viewing the eclipse, if needed outside GSM receiving area, is number one priority, even if it means no live webcast.

disadvantage also: GSM data transmission is usually limited to 9.6k speed . streaming is not possible, but it is possible to upload a still image in jpeg with a bit of compression. Klipsi

From: Fraser Farrell

Olivier \"Klipsi\" Staiger wrote: http://www.telstra.com.au/mobilenet/network/data.cfm?type=d&state=5&loc=woomera/roxby_downs indicates roaming coverage in Woomera and in Roxby Downs (both slightly > outside totality) AND in Koolymilka (almost on centerline !).

Warning : Telstra's marketing department tends to emit large quantities of BS whenever they discuss mobile phones or Internet services. I note the same website also claims coverage of several well-known "mobile-dead zones" in my own district. Such as the one at our local observatory.

Telstra's mobile network at Roxby Downs wasn't working on the afternoon of 2002 June 9, which is when I was last there. I can recall many similar loss-of-service incidents (some lasting for days) when I worked at Roxby in the early-mid 1990s. Incidentally the Roxby cell's coverage only reaches about 10 km south of the town for a handheld phone - or about 1 km inside North Limit for this eclipse. This is because the cell antennae at Roxby aren't far above the ground to begin with; and the hematite/limonite in the local sand dunes tends to absorb GSM signals. A mobile phone car kit with its own antenna & amplifier will do slightly better.

Woomera's cell does not reach the eclipse path at all.

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Koolymilka's cell has extremely limited capacity because nobody actually lives there. It's just a launching area used by several companies and organisations. So Telstra, as usual, installed the smallest cell station they could get away with....

> So I will check out the Koolymilka area (clouds, low W horizon, etc.,) .

Koolymilka definitely has a low W horizon - ~550 million years of almost continuous erosion doesn't leave much topography. There are also no sand dunes there; just a regolith covered in countless stones. The only trees there are the few that have been planted around buildings.

As for access to Koolymilka, see: <http://astronomy.trilobytes.com.au/2002/wpa.htm>

> disadvantage also: GSM data transmission is usually limited to 9.6k speed .

Or less. Telstra make no speed guarantees at all for GSM data transmission. I note when testing my customers' laptops that I can only get 4.8k in my workroom; and no signal at all in my living room - and I'm less than one km from the local cell's antennae.

You may be better off just recording the entire totality direct to your laptop as a video sequence. And uploading it later through a real phone line. cheers,

From: Olivier "Klipsi" Staiger

Hi Fraser, thanks for the info

>So Telstra, as usual, installed the smallest cell station they could get away with....

but as far as I understand there is no other choice, right ? the competition is simply absent from that area, right ? or does anybody (except Iridium, of course) cover that area ?

> Koolymilka definitely has a low W horizon - ~550 million years of almost continuous erosion doesn't leave much topography.

hehehe... very nicely said ;-)

> Or less. Telstra make no speed guarantees at all for GSM data transmission. I note when testing my customers' laptops that I can only get 4.8k in my workroom; and no signal at all in my living room - and I'm less than one km from the local cell's antennae.

here in Switzerland I get 43k over the GSM line. For once, we're not THAT slow in Switzerland ;-) Klipsi

Next total solar eclipse

From: K. Wiersema To: SOLARECLIPSES@AULA.COM Date: Sat, 10 Aug 2002 13:55:23

Hello everyone, With august well on its way, the next total solar eclipse is approaching rapidly. We (Patrick Weltevrede and yours truly) have finished preparing our itinerary. We will be in Kasane, north-Botswana, from the first of december. We are thinking about viewing the eclipse (our third totality) either in Chobe NP or in a place nearby, such as Kachikau. We were wondering if there are more people who are going to (the close vicinity of) Chobe NP to watch the eclipse, and if so, where exactly are you planning to observe? There are of course some "logistical difficulties" to overcome (bad roads?). Since we will be in Kasane real early (3 days before eclipse-day) we will probably have enough time to do some scouting for a terrain suitable for eclipse-watching, that we can reach in the little time from sun-rise to first contact.

If anyone is going to the same region to view the eclipse and has suggestions or tips, I would really appreciate an (off-list) email, my email-address is kwrsema@astro.uva.nl Klaas Wiersema Astronomical Institute "Anton Pannekoek" Amsterdam The Netherlands

Short eclipse trips

From: Frank To: SEMML <Solareclipses@aula.com> Date: Fri, 16 Aug 2002 13:44:42

Dear list, I repeatedly have people asking if there are some short (just a few days or one week at most) trips to the december 04 eclipse in the southern part of Africa or Australia. I already checked Eric Brown's page, but are there other sites where I can find eclipse travel information ? Thanks Frank Frakke.smits@pandora.be

From: Gary Spears

Frank, We have trips going to both Africa and Australia but both are scheduled for longer than one week. However, we are selling the Africa trip so you can purchase only the Kruger Park part of the itinerary. You would leave the US on November 29th and return to the US on December 6th. You can check out the itinerary at www.spearstravel.com/africa_2002_itinerary.htm or contact Jim Pritchett at jpritchett@spearstravel.com for more details. This shorter trip is available at a reduced rate. Space is limited so act quick. Gary Spears

From: Shivapuja@aol.com

www.astronomicaltours.net susan anschutz agency has an 8-day cruise option...

From: Kidinvs@aol.com

As long there are people still looking, feel free to look at www.eclipsesafaris.com 5 spots remain. Depart US Nov 29th, Depart London Nov 30th Arrive home in London/US Dec 9th. Rick Brown www.eclipsesafaris.com

From: OwDLRU@aol.com

I looked at that Eric Brown page (is he the same as Rick Brown??) at www.eclipsesafaris.com Actually, that is the one that I decided to join, as long as I find a bit more money. I actually met a group that was on 2 other trips he had, and his trips got wonderful reviews. Barry

From: Jay.M.Pasachoff@williams.edu

My travel agent, Mark Sood, also has trips of various lengths and, presumably, flexibility: www.solareclipssetours.com

From: Kidinvs@aol.com

Yes Barry... Rick Brown and Eric Brown are one in the same... that would be me.

Rick (Eric) Brown www.eclipsesafaris.com

From: Peter Tiedt

There are numerous trips listed on the Africlipse Tour pages. Some are as short as three days (the train trip ex Joburg)

See the following pages

Botswana & Namibia http://www.eclipse.za.net/html/2002_tours_bots.html

South Africa http://www.eclipse.za.net/html/2002_tours_rsa.html

Zimbabwe and Zambia http://www.eclipse.za.net/html/2002_tours_zim.html

Mozambique http://www.eclipse.za.net/html/2002_tours_moz.html

Peter Tiedt

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From: Odille Esmonde-Morgan & Warwick Lawson

Frank, I did put this trip up on solareclipses earlier this year, but due to lack of interest it is about to be canned. If you know anyone who might be interested please register your interest with tours@arhsact.org.au ASAP. Link here <http://analog6.members.easyspace.com/eclipses.htm> Regards Odille Esmonde-Morgan Canberra, Australia

From PP

See our webpages with following links for the 2002 total solar eclipse:

Total Solar Eclipse 4 December 2002 (alphabetical)

Accommodation Northern Province: http://www.getawaytoafrica.com/adsscript.asp?WhereAml=Region&XREGION_ID=33

Africa Eclipse map: http://www.getawaytoafrica.com/content/news/features/eclipse_dec2002.asp

Africa Tours: http://www.eclipse.za.net/html/2002_tours.html

African SANParks: <http://www.parks-sa.co.za>

Africlipse site: http://www.eclipse.za.net/html/2002_w2s.html

Airline bookings: http://www.ansett.com/faq_frame.htm

Airstrips South Africa: http://164.214.2.59/gns/html/cntry_files.html

ARID ZONE FIELD ENVIRONMENTAL HANDBOOK: <http://www.santos.com.au/environment/data/aridzone.pdf>

ASA eclipse pages: http://www.atnf.csiro.au/asa_www/info_sheets/eclipse2002.html

Astronomical Society of South Australia's website: <http://www.assa.org.au/>

Astronomical Tours: <http://www.astronomicaltours.net/>

Australia Eyre Peninsula Tourism Association website: <http://www.epta.com.au/>

Australia Flinders & Outback Tourism Association: <http://www.flinders.outback.on.net/>

Australia SA Tourism Commission website: <http://www.outback2002-southaustralia.com/events/eclipse.html>

Australia SA tourist accommodation & info (by Travel Australia): http://www.travelaustralia.com.au/states/state_sa.html

Australian Aviation sites: <http://www.airportsaustralia.com/>

Australian National Mapping: <http://umbra.nascom.nasa.gov/eclipse/20021204/rp.html>

Australian Outback Eclipse Tour: <http://www.holeinthesky.com/>

Australia news: http://www.abc.net.au/news/scitech/2002/06/item20020613073745_1.htm

Australia's Aborigines Still Dream Upon the Stars: <http://www.space.com/>

SpaceReportersNetworkAstronomyDiscoveries/Carter_aboriginies_022502.html

Australian time zones: <http://www.dstc.qut.edu.au/DST/marg/daylight.html>

BBC news Africa: <http://news6.thdo.bbc.co.uk/low/english/world/africa/default.stm>

Camps close to central line Africa: <http://www.parks-sa.co.za/knp/times.htm>

Canberra Astronomical Society: <http://www.arhs.org.au/>

Caprivi Region: http://www.auswaertiges-amt.de/www/de/laenderinfos/laender/laender_ausgabe_html?land_id=118&type_id=4

Caravan Parks Southern Australia: <http://www.holidayoz.com.au/sacp.htm>

Ceduna webpage: <http://www.ceduna.net/>

Centerline Circumstances: http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_02/ECLIPSE_2002.html

David & Caroline accommodations: <http://www.angorichinavillage.com.au/accommodation.htm>

Detailed map South Australia by Martin George of Launceston Planetarium: http://www.atnf.csiro.au/asa_www/info_sheets/eclipse2002.html

Eclipse 2002 Maps: http://www.eclipse.za.net/html/2002_maps.html

Eclipse 2002 Tours: http://www.eclipse.za.net/html/2002_tours.html

Eclipse Odyssey 2002: <http://www.koolspacescience.com>

Fraser's WebPage: <http://www.trilobytes.com.au>

Fred Espenak: <http://sunearth.gsfc.nasa.gov/eclipse/TSE2002/TSE2002.html>

Getaway Magazine (South Africa's leading travel and leisure magazine): <http://www.getawaytoday.com>

Glenn Schneider: http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_02/E2002_MAPS.html

(Continued on page 39)

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Holiday Inn Zimbabwe: http://www.sixcontinentshotels.com/hiexpress?_franchisee=BEZIM
 Jay Anderson weather prediction: <http://home.cc.umanitoba.ca/~jander/>
 Jerry Levy webpage's: <http://eclipse98@earthlink.net>
 Kruger National Park: <http://www.parks-sa.co.za/knp/>
 Kruger park CAMPS: <http://www.parks-sa.co.za/knp/accommodation.htm>
 Kruger park Malaria info: <http://www.parks-sa.co.za/malariainfopage.htm>
 Kruger park MAP: <http://www.parks-sa.co.za/knp/map.htm>
 Kruger park RATES: <http://www.parks-sa.co.za/Tariffs/oldtariffs/generalinfotariffs04013110.htm>
 Links to Australia weather: <http://www.sydneystormchasers.com/links/index.htm>
 Local circumstances by Peter Tiedt: <http://www.eclipse.za.net/html/knp.html>
 Long-distance trips: <http://www.arhsact.org.au/tours.html#longdist>
 Main Page Peter Tiedt South Africa: <http://www.eclipse.za.net>
 Map Glenn Schneider: http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_02/TICKALARA_TOPO.gif
 Maxime and Michael's homepage: <http://ching.apana.org.au/~oliri>
 Mayhugh Travel: <http://astronomyvacations.com>
 Name changes South Africa: <http://www.gov.za/>
 Namibian town maps: http://www.supertravelnet.com/welcome.cgi?country=220_5007_7&systeemi=3
 NASA Eclipse Bulletin 2002: <http://umbra.nascom.nasa.gov/eclipse/20021204/rp.html>
 Odille Esmonde-Morgan, Canberra Australia: <http://analog6.members.easyspace.com/eclipses.htm>
 Outer Edge Expeditions: <http://www.outer-edge.com>
 Royal Cruise Adventures: <http://www.cruisepros.com/>
 Sirius Travel: <http://eclipse2002@siriustravel.com>
 South Australia map: <http://www.trilobytes.com.au/astronomy/2002/eclipse.htm>
 South Australian tour operator: <http://www.waywardbus.com.au/eclipse.html>
 Southern Africa newspapers: <http://www.misanet.org/links/news.html>
 Spears Travel Africa: http://www.spearstravel.com/africa_2002.htm
 Spears Travel Australia: http://www.spearstravel.com/australia_2002.htm
 Speciality Tours: <http://a1specialitytours.com>
 Street lighting in Ceduna: <http://www.trilobytes.com.au/astronomy/pollution/lpadel.htm>
 Tourism Commision Australia: <http://www.outback2002-southaustralia.com/events/eclipse.html>
 Travel Quest: <http://www.tq-international.com>
 Travel Wizard: <http://www.travelwizardtravel.com>
 Tusker Trail Co: <http://www.eclipse2002.com>
 Twilight Tours: <http://www.sciencecenter.net/twilighttours>
 United Nations Integrated Regional Information Network - Southern Africa: http://www.irinnews.org/frontpage.asp?SelectRegion=Southern_Africa
 Vic and Jen Winter's WebPages: <http://www.ICSTARS.com>
 Walking with Elephants: http://www.eclipse.za.net/html/2002_w2s.html
 WebPages Eric Brown: <http://www.eclipsesafaris.com>
 WebPages Joe Cali: <http://joecali.members.easyspace.com>
 Wildlife in Africa: <http://wildnetafrica.com/africa/africa.html> and <http://wildnetafrica.org>
 Winco Eclipse Tours: <http://www.eclipsetrips.com>

Patrick Poitevin

E-mail: patrick_poitevin@hotmail.com <http://www.j.w.edmonds.btinternet.co.uk>

Solar Eclipse Newsletter: SENL: <http://sunearth.gsfc.nasa.gov/eclipse/SENL/> Index: <http://www.mreclipse.com/SENL/SENLInde.htm>

Solar Eclipse Mailing List: To subscribe send E-mail to listserv@Aula.com with in the body SUBSCRIBE SOLARECLIPSES name, country

From: Bryan Brewer

(Continued on page 40)

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Patrick -- Please add the following link for my Australia eclipse trip, which still has a few spaces left. Thanks. -- Bryan

Bryan Brewer Australia Eclipse Trip <http://www.earthview.com/travel/eclipse2002tour.htm>

From: Fraser Farrell

A few corrections to Patrick's list:

> Airline bookings: http://www.ansett.com/faq_frame.htm

Ansett Airlines are bankrupt and inoperative. Their subsidiary Kendell Airlines escaped the corporate wreckage, and merged recently with Hazelton Air to form a new airline - Regional Express ("rex"). Now flying Adelaide to Ceduna, Broken Hill, Whyalla, Coober Pedy and Olympic Dam (Roxby Downs).

"rex" website: <http://www.regionalexpress.com.au>

> Canberra Astronomical Society: <http://www.arhs.org.au/>

Should be: <http://msowww.anu.edu.au/cas/>

> Detailed map South Australia by Martin George of Launceston Planetarium: http://www.atnf.csiro.au/asa_www/info_sheets/eclipse2002.html

Much better maps are available at: <http://astronomy.trilobytes.com.au/2002/eclipse.htm>

> Links to Australia weather: <http://www.sydneystormchasers.com/links/index.htm>

Or the official Bureau of Meteorology website: <http://www.bom.gov.au>

> South Australia map: <http://www.trilobytes.com.au/astronomy/2002/eclipse.htm>

New URL: <http://astronomy.trilobytes.com.au/2002/eclipse.htm>

> Street lighting in Ceduna: <http://www.trilobytes.com.au/astronomy/pollution/lpadel.htm>

Ahem.... that's street lighting in _Adelaide_ <http://astronomy.trilobytes.com.au/pollution/lpadel.htm>

Additional roadmaps and tourist info for South Australia: <http://www.raa.net>

From: Frank

To all, Thanks for the reply's. They made a lot of people very happy. Some of them probably have already signed in on some of the eclips travels... Frank Frakke.smits@pandora.be



SEC2000 Tavern Elzenveld Antwerp

Airport x-ray test

From: Dale Ireland To: Solar Eclipse List <SOLARECLIPSES@AULA.COM> Date: Wed, 21 Aug 2002 06:27:15

Hello I have posted the "results" of our little experiment to test the effects of X-ray machines at airports between the US and Australia prior to the upcoming eclipse. The results unfortunately are inconclusive <http://www.drdaile.com/eclipses/xray/>

I gave three undeveloped rolls of Kodak Royal Gold 200 to Jay Pasachoff to carry on his trip to Adelaide, and one that remained home as a control. None of the rolls, carried in different fashions described on my web page, showed any significant exposure. However, they were all slightly more dense than the control but statistically identical to each other. The most likely explanation is that the control was from a different batch to begin with, possibly the new Kodak formulation for RG200 which can't be identified by any mark on the film or packaging. Of course it is possible that all the carried rolls received some slight exposure but it is extremely unlikely that they would have all received exactly identical exposure. The good news is that no roll, even the one check through the machine loose in the carry-on, showed significant exposure. Any comments are welcome. Jay could answer any questions about which and how many airports the rolls went through. Dale

From: Fraser Farrell

I've not noticed any effects from Australian airport x-rays on films up to ASA 400 speed. IMO your film is much more likely to suffer heat damage while it's here.

Of course purchasing your film while in Australia will eliminate a few trips through x-ray scanners. General purpose print films from Agfa, Fuji and Kodak are widely available, in speeds up to ASA 400. Slide films or specialty films can be got from camera shops in the major cities. cheers, Fraser Farrell

From: Evan Zucker

I realize this may be obvious to most people, but my primary concern with respect to flying with undeveloped film is the effect of cumulative exposure to X-rays. I assume the test rolls Jay carried were X-rayed more than once, but Dale did not say how many times.

I just returned from a 2-week trip to Alaska, which consisted of a 1-week cruise and 1 week on land. My family shot a total of 30 rolls of film. I wasn't too concerned about the film being X-rayed twice in my carry-on luggage, once at the San Diego airport when we departed and once at the Fairbanks airport when we returned.

However, due to the new security concerns, every time I got off and returned to the ship at a port (which I sometimes did 3 to 5 times per port), everything I was carrying was X-rayed. That caused me real concern because of the cumulative effect of X-rays. (As it turns out, the security was very sloppy, and so I ended up carrying the film in my pocket. Even though it set off the alarm each time, nobody stopped me.)

I played it safe at the Fairbanks airport and put all 30 rolls in a plastic bag and requested a hand inspection. The guard was reluctant but finally said that since they weren't busy -- we were literally the only people in the security line -- they would allow it. I just got the first 15 rolls developed (all slides), and they looked fine. Evan H. Zucker San Diego, California

From: FRED ESPENAK

This is quite anecdotal, but during my 1999 eclipse trip to Turkey, I inadvertently left a point-and-shoot 35mm camera in the bottom of my carry-on bag for the entire trip. It was loaded with ISO200 print film and it went through x-rays at various airports a total of 18 times. When I got the film developed, I could see no evidence of fogging due to x-rays or anything else.

Normally, I carry all my film inside lead-lined bags in my carry-on luggage. Airport security usually wants to inspect the lead bags, but I haven't had any other problems. - Fred Espenak

(Continued on page 42)

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From: Odille Esmonde-Morgan & Warwick Lawson

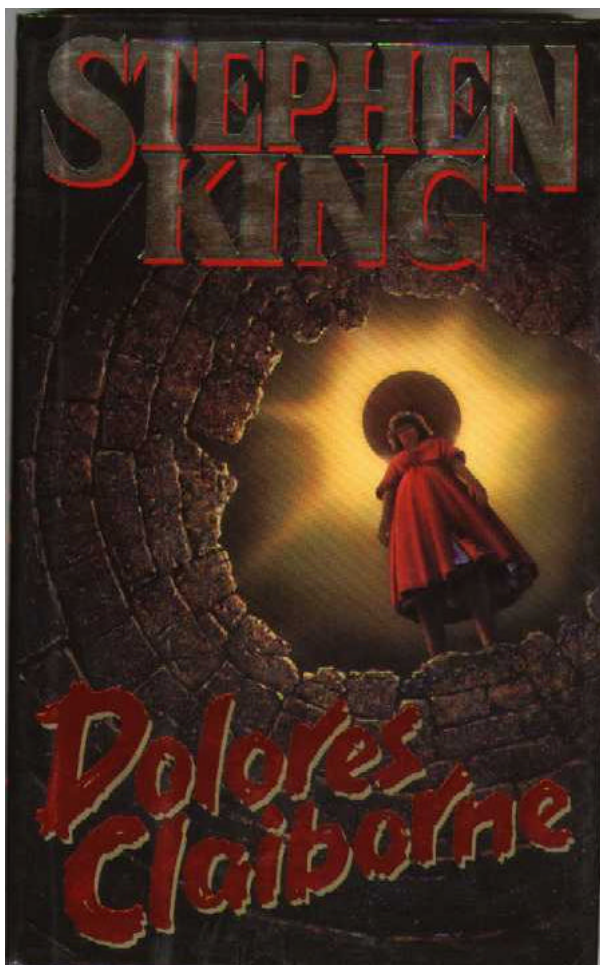
With regard to buying film in Australia, Fletcher's Photographic Stores carry a full range of professional and amateur film, including some infrared and certainly fast films if people want them. The web address is <http://www.fletchers.net/fletchers/body.html>, and I'm almost sure they have a store in Adelaide, but the web site was not working this morning so I couldn't check. I buy all my film at their Canberra store and it is always very fresh with long expiry dates. Odille Esmonde-Morgan Canberra, Australia <http://analog6.members.easyspace.com/> analog6@ozemail.com.au

From: Fraser Farrell

The 2003 Adelaide White Pages has no "Fletchers Photographic" listed in it. And the Fletchers website still isn't working. cheers, Fraser Farrell

From: Odille Esmonde-Morgan & Warwick Lawson

My error, it seems. I have checked the Yellow Pages and there are 2 outlets for Ted's Camera Stores, which offer a range comparable to Fletchers. One is in Adelaide (Rundle St) and one at Oakland's Park. Web link <http://www.teds.com.au/p/58/index.asp> Odille Esmonde-Morgan Canberra, Australia



Book Dolores Claiborne by
Stephen King

May 31 airborne

From: Olivier "Klipsi" Staiger To: SOLARECLIPSES@AULA.COM Date: Fri, 16 Aug 2002 21:58:12

Dear friends, I have a question for mathematicians, please: In May next year I go chase storms in the U.S. again . On my way back to Europe I thought I would first land in Europe, then fly back NW to get to Iceland, just for 2 days or 3, to see the May 31 eclipse, weather permitting. And that, the "weather permitting" is a big if. So I start doubting about that eclipse. Maybe I would not get to Iceland.... But then I thought on this: If I leave the U.S. May 30 back to Europe, on an overnight flight, to arrive early morning May 31 in Amsterdam, then I might maybe see the eclipse from my aircraft. The flight does not get me over Iceland, but usually further southwest of Iceland and England, before landing in Amsterdam. But since the Sun is so low, the ant-umbra caresses the Earth's atmosphere to the west. So my question for Fred or other mathematicians: can we create a map that would show the area from where annularity would be visible if flying 10km (10'000m) above sealevel ? In other words: how much to the west of the surface-based band of annularity can I go and still see annularity, from an aircraft doing transatlantic flight at about 10km altitude? thanks for your wise words . Klipsi

From: Jay.M.Pasachoff@williams.edu

Planning to see an eclipse from aloft sounds like a good idea, but let me relate my experience at Christmas Day 2000's partial eclipse. I was in Hawaii, I think the only US state that wasn't getting an eclipse, so i flew back to Los Angeles on Christmas eve. My plan was to be aloft between LA and San Francisco during the eclipse. But there was terrible fog at LAX (Los Angeles International Airport), and we were grounded for a couple of hours. The eclipse began and we weren't aloft. I finally wound up watching the eclipse from the airplane on the runway, since it was clear overhead. We took up just before, as I recall, the end of the eclipse.

I got to SFO just in time to fly back to Hawaii that night with terrible crowding on a Hawaiian airlines plane, but that's another story.

Anyway, Klipsi, your plan may work, but if the plane is delayed or cancelled, you wouldn't be in the zone to see the annular eclipse. Jay Pasachoff

May 2003 British Isles

From: Rybrks1@cs.com To: SOLARECLIPSES@AULA.COM Date: Sun, 25 Aug 2002 03:34:18

I officially submit a request to all the UK for some good weather in May 2003.

On the Seventh is the Mercury transit, the Fifteenth is a Lunar Eclipse and on the Thirty-first is an Annular Eclipse..quite a plateful unless it is cloudy and foggy.

The east coast of England on the 15th will allow one to see a rising sun and a partially eclipsed Full Moon in the sky simultaneously. This is possible roughly from the east coast to about 50 miles inland since the terminator is essentially parallel to the average line of the coast. Finding a spot with a good ENE and WSW low horizon is what is needed.

The Mercury transit is viewable from all of the Isles. The annular only from the north coast with the sun rising already in eclipse. Should be fun. Clear Skies Ray Brooks

From: Gerard M Foley

The weather in the parts of the British Isles when I visit is usually good. I am not sure that I can make it next May. but I will certainly think about it.

It is also uncertain whether my wife was entirely or partly responsible for British weather when we visited. She passed on a few years ago, so she is no longer available. I am planning to sail in "Olympic Countess" in December, 2002, and will do my best to have a good eclipse for my shipmates. Good Luck Gerry

TSE 2003

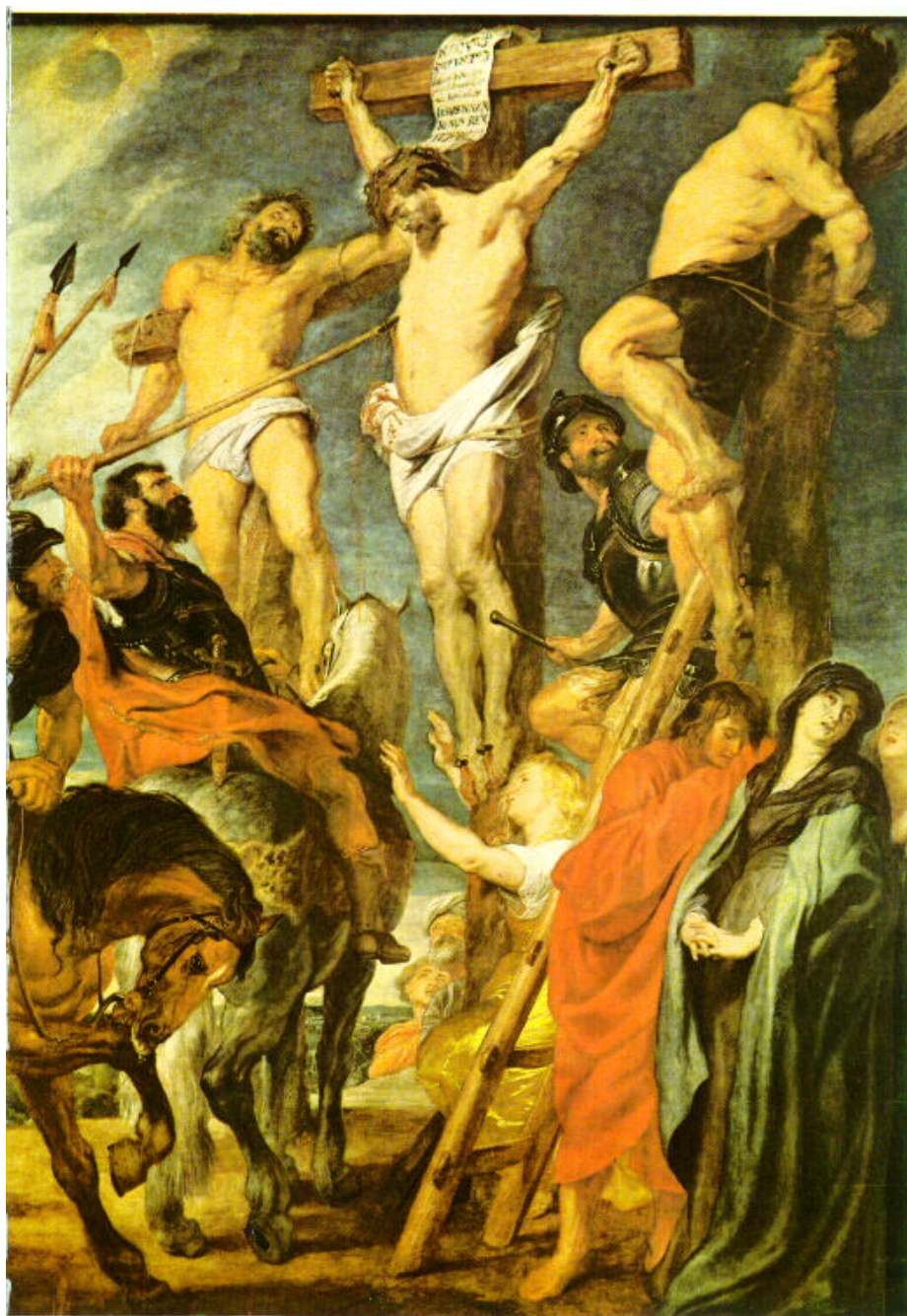
Antarctic weather for the eclipse

From : "Jay Anderson" <jander@cc.UManitoba.CA> Date : Sun, 25 Aug 2002 22:24:02 -0700

I have added Antarctica to the list of eclipse weather studies available on my web page.

The next project will be cloud and weather prospects for the transit of Venus - give me a few weeks. Jay

<http://home.cc.umanitoba.ca/~jander>



Ruben's painting.
An eclipse???



Joanne & Patrick

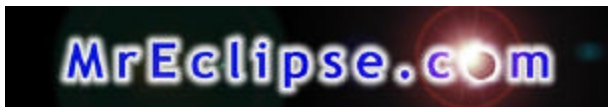
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to Solar Eclipses*



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