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SOLAR ECLIPSE NEWSLETTER

April 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 (listserver) 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 e-mail messages that other subscribers send to the listserver. Only subscribers can send messages.

The sole Newsletter dedicated to Solar Eclipses

Dear friends,

Another issue has been compiled for you. Time passes quickly. It's April! Live is too short...

It has been busy on the SEML. Contributions of the subscribers have been good. The annular and the total for 2002 are well discussed, as well as both 2003 solar eclipses. But many other topics as well of course.

The SEML has been revised behind the screens. Many safeties have been built in. All subscribers are in a data base. An updated and extended Welcome Questionnaire has been send to all new subscribers, but as well to the current members. The replies are positive. We hope to get an idea of the background of all the SEML subscribers and know them a little better. It is a big

family and we try to keep it friendly and nice for everyone.

At the backpage of this issue, you will find a small part of the photographic collection of California 2002. Of course there are much more. See as well the T shirts on this front page. Instead of buying, photographing ...

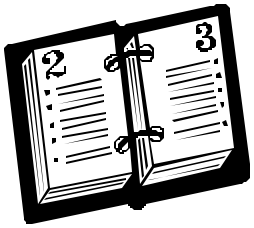
In the next issue we will tell you more about an extra solar eclipse item we are working on. It is currently in review and hope to release the news soon. Surprise!

Enjoy the newsletter. If you have comments or contributions, please let us know. And ... keep those solar eclipse related messages coming ...

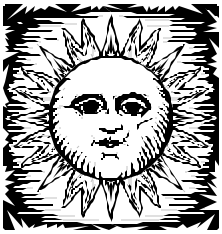
Best regards,

Patrick and Joanne

SECalendar



APRIL 2002



Dear All,

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

April 01, 0637 Total solar eclipse on April's fool day. Beside this date, and the last and next April's fool day total solar eclipses in the years 740 and 2899, are these 3 total solar eclipses the only total solar eclipses on April 1 between 0 and 3000. April 01, 0740 is the last total solar eclipse on April's fool day. April 01, 1764 Annular eclipse visible in Ukkel and on April's fool day. The altitude was 42 degrees. The other central eclipses between 0 and 3000 where partial in Ukkel, Belgium: in 740 (total), 1621 (annular), 2136 (annular), 2899 total) with magnitudes 0.053; 0.553; 0.636; and 0.245. April 01, 1783 was the last solar eclipse on April fools day. This was a partial solar eclipse. The next solar eclipse on this day will be in 2098; also a partial solar eclipse. Next total solar eclipse on April's fool day is April 01, 2899.

April 01, 1764 "It will be Eclipse first, the rest nowhere." Dennis O'Kelly (at Epsom, 3 May 1769) (Quoted in The Penguin Dictionary of Quotations by Cohen and Cohen. In UK Solar Eclipses from Year 1, Sheridan Williams says: "One of the world's most successful racehorses was born around the time of this [annular eclipse of 1 April 1764] and was named Eclipse. The Eclipse Stakes, named after that horse, are still run today, and the horse of the year awards in the U.S. are called Eclipse Awards after him."). Ref. SW.

April 01, 1764 In a letter Reverend W. Stukely, Rector of St. George in Kent, to the Whitehall Evening Post (out of his dairy, volume XX p. 44): In regard to the approaching solar eclipse of Sunday April 1, I think it advisable to remark that, it happening in the time of divine services, it is desired you would insert this caution in your public paper. The eclipse begins soon after 9, the middle a little before 11, the end a little after 12. There will be no total darkness in the very middle, observable in this metropolis, but as people's curiosity will not be over with the middle of the eclipse, if the church service beordered to begin a little before 12, it will properly be morning prayer, and an uniformity preserved in our duty to the Supreme Being, the author of these amazing celestial movements. (Ref. SLK 06/99).

April 01, 1764 Probably the first solar eclipse map with the complete eclipse visibility (including the zone of partial phase) drawn by Robert Health in <A General and Particular account of the Annular Eclipse of the Sun of 1763 April 1>. Since 1830, the English yearbook The Nautical Almanac, published eclipse maps. (Ref. SLK 06/99).

April 01, 1970 Minor planet (1976) Kaverin 1970 GC. Discovered 1970 April 1 by L. I. Chernykh at Nauchnyj. Named in memory of Aleksej Aleksandrovich Kaverin (1904-1976), an instructor in astronomy at Irkutsk Pedagogical Institute, expert in the field of the theory of eclipses. (M 4190) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 01, 1976 Minor Planet (2849) Shklovskij 1976 GN3. Discovered 1976 April 1 by N. S. Chernykh at Nauchnyj. Named in honor of Iosif Samuilovich Shklovskij {1916-1985}, corresponding member of the USSR Academy of Sciences, professor at Moscow University and member of the staff at the Space Research Institute. A brilliant popularizer of astronomy, he has also made substantial contributions to research on the solar corona, galactic radio emission and various cosmic objects. (M 8543) Obituaries published in Astron. Zh., Tom 62, Vyp. 3, p. 618-619 (1985); Kosm. Issled., Tom 23, Vyp. 3, p. 495 (1985); Pis'ma Astron. Zh., Tom 11, No. 4, p. 319-320 (1985); Rise hvezd, Vol. 66, No. 6, p. 113 (1985); Astron. Vestn., Tom 19, No. 4, p. 359-361 (1985); Sky Telesc., Vol. 70, No. 2, p. 109 (1985); Sov. Astron., Vol. 29, No. 3, p. 364-365 (1985); Sov. Astron. Lett., Vol. 11, No. 2, p. 131-132 (1985); Sterne, 61. Band, Heft 4, p. 232-234 (1985); Sterne Weltraum, 24. Jahrg., Nr. 8-9, p. 427 (1985); Zemlya Vselennaya, No. 4, p. 44-46 (1985); Astron. Zh., Tom 63, Vyp. 5, p. 835-838 (1986); Q.J.R. Astron. Soc., Vol. 27, No. 4, p. 700-702 (1986); Sov. Astron., Vol. 30, No. 5, p. 495-497 (1986). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 01, 1976 Minor Planet (4165) Didkovskij 1976 GS3. Discovered 1976 April 1 by N. S.

(Continued on page 3)

SECalendar

Chernykh at Nauchnyj. Named in honor of Leonid Vladimirovich Didkovskij (1948-), astrophysicist and deputy director of the Crimean Astrophysical Observatory {see planet (1725)}. He is known for his research on the brightness oscillations of the sun, for his development of scientific instrumentation for the Soviet space telescope "Astron" and for his work with the active main mirror on the 1.7-m Space Telescope "Spectrum UV", an international project. (M 34340) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 01, 1976 Minor planet (4683) Veratar 1976 GJ1. Discovered 1976 April 1 by N. S. Chernykh at Nauchnyj. Named in honor of Vera Petrovna Tarashchuk, an astrophysicist at the Astronomical Observatory of Kiev University. An active observer of major planets, minor planets and comets, she is known for her contribution to photometric and spectroscopic research on minor bodies. She also studied the association of cometary processes with solar activity, as well as the structure and rotation of minor planets. (M 30095) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 02, 1925 Death of Johann Palisa, Austrian astronomer. Discovered 125 minor planets (Ref. A by EE). He gave many names of Minor Planets to solar eclipse related places or persons. He also observed eclipses.

April 02, 1952 Death of Bernard Ferdinand Lyot in Cairo, French astronomer and engineer. Studied polarization of moonlight and planets. Later mainly solar research. Constructed chronograph in 1930 and the 'lyot-filter' or monochromatic polarizing filter.

April 02, 1998 Launch of Trace, American Satellite for research of the sun in UV and XUV.

April 03, 0033 "And I will show portents in the sky above, and signs on the earth below - blood and fire and drifting smoke. The Sun shall be turned to darkness, and the moon to blood, before that great, resplendent day, the day of the Lord, shall come." Peter in Acts of the Apostles. This reference to a blood-red Moon, and the following references in the Gospels to a darkening sky, have been interpreted as placing the date of the crucifixion to 24 November AD 29, when there was an eclipse of the Sun, or Friday, 3 April AD 33, when there was a partial eclipse of the Moon over Jerusalem. Ref. FE 01/01.

April 03, 1976 Minor planet (3493) Stepanov 1976 GR6. Discovered 1976 April 3 by N. S. Chernykh at Nauchnyj. Named in memory of Vladimir Evgen'evich Stepanov (1913-1986), a corresponding member of the former Soviet Academy of Sciences, well-known for his work in solar physics and solar-terrestrial relations. For many years he led the solar researches at the Siberian Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation, and he did much for the development of astronomy in Siberia. (M 20835) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 04, 1807 Death of Joseph Jerome le Francois de Lalande (1732-1807), French astronomer. Calculated the distance of the sun in 1771 to 154,198 mio km. (Ref. Rc 1999)

April 06, -0647 (648BC) "Nothing can be surprising any more or impossible or miraculous, now that Zeus, father of the Olympians has made night out of noonday, hiding the bright sunlight, and . . . fear has come upon mankind. After this, men can believe anything, expect anything. Don't any of you be surprised in future if land beasts change places with dolphins and go to live in their salty pastures, and get to like the sounding waves of the sea more than the land, while the dolphins prefer the mountains." May refer to a total solar eclipse of 6 April 648 BC. Archilochus, Greek poet (c680-640 BC). Quoted in Historical Eclipses and Earth's Rotation, by F. Richard Stephenson, Cambridge University Press, 1997, page 338. Partly quoted in Encyclopaedia Britannica CD 98. Ref. FE 01/01

April 06, -0647 (648BC) "Zeus, the father of the Olympic Gods, turned mid-day into night, hiding the light of the dazzling Sun; and sore fear came upon men." Archilochus (c680-c640 BC), Greek poet. Refers to the total solar eclipse of 6 April 648 BC. Ref. FE 01/01

April 06, 1852 Sir Edward Sabine (1788-1883) mentioned a correlation between sunspots and magnetic disturb on earth. (Ref. Rc 1999).

(Continued on page 4)

SECalendar

April 06, 1855 Minor Planet (34) Circe Discovered 1855 April 6 by J. Chacornac at Paris. Named for the enchantress, daughter of the Sun, celebrated for her knowledge of magic and venomous herbs. Circe changed the companions of Odysseus {see planet (1143)} into pigs. She had no influence on Odysseus because Hermes protected him. Odysseus lived a year with Circe, his friends were retransformed into men. (H 6) The planet was named by the members of Paris observatory. Ref. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 06, 1916 Minor Planet (857) Glasenappia Discovered 1916 April 6 by S. I. Belyavskij at Simeis. Named in honor of Sergej Pavlov Glasenapp (1848-1937), director of the Observatories in Pulkovo (1870-1877) and St. Petersburg (1893). Glasenapp worked on visual binaries and on the satellites of Jupiter. He observed the transits of Venus and Mercury and several solar eclipses. Glasenapp was a founder of the Russian Astronomical Society. (H 84) Glasenapp is also honored by a lunar crater. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 08, 1652 ". . . [the Sun was reduced to] a very slender crescent of light, the Moon all at once threw herself within the margin of the solar disc with such agility that she seemed to revolve like an upper millstone, affording a pleasant spectacle of rotatory motion." Dr Wyberg, observing the total solar eclipse of 8 April 1652 at Carrickfergus, Scotland. Ref. SW.

April 08, 1947 Largest sunspot group ever observed. Surface 18.1 billion square km.

April 08, 1968 Death of Harold Delos Babcock, American astrophysics. Studied laboratory spectra, magnetic field of the sun, constructed solar magnetograph.

April 09, 1046 <Ch'ing-li reign period, 6th year, 3rd month, day hzin-szu, the first day of the month. The Sun was eclipsed by 4 1/2 divisions. At 3 marks in the hour of shen it was restored> Wen-hsien, T'ung-k'ao, chap283 (Ref. PG 3/99)

April 09, 1567 Christoph Clavius (1537-1612) witnessed two spectacular Eclipses of the Sun in the space of 7 years. <The other I saw at Rome in the year 1567 also about midday in which although the Moon was placed between my sight and the Sun it did not obscure the whole Sun as previously but a narrow circle was left on the Sun, surrounding the whole Moon on all sides.>. Clavius 1593 p 508 In sphaeram Ioannis de Sacrobosco, Commentarius. (Ref. EJ 98, PG 3/99)

April 09, 2043 The only non-central total solar eclipse in that century. The central line of this total solar eclipse is missing the surface of the earth near the North Pole. The last century there weree 3 such total solar eclipses: 19 May 1928, 23 October 1957 and 2 November 1967 all near the South Pole. The years 1957 and 2043 do have two non-central solar eclipses while also the central line of the annular eclipse does miss the earth. (Ref. SLK 6/99).

April 10, 0628 <36th year of Empress Suiko, spring, 2th month, 27th day. The Empress took to her sick bed. 3rd month, 2nd day. There was a total eclipse of the sun. 6th day. The Empress' illness became very grave and death was unmistakably near. 7th day. The Empress died at the age of seventy-five> Translation Aston 1972, p155 (Ref. PG 3/99)

April 10, 1698 This was the last total solar eclipse visible on Tahiti. Not that strange in time, but knowing that the next will be 2 March 2910. Ref. JM 09/99.

April 10, 1813 Death of Joseph Louis Lagrange (1736-1813), French mathematician and astronomer. Described the 3 points, later called Lagrange Points.

April 11, -0368 (369 BC) <Artaxeres II, year 35, month XII. In 6 deg daytime 1/3 of the disk was covered> British Museum tablet 37097 and 37211 (Ref. PG 3/99)

April 11, 1176 "In this year 1487 (Seleucid), on New Sunday, the 11th of the month of Nisan [April], at daybreak, at the end of Office, that is, after the reading of the Gospel, the Sun was totally obscured; night fell and the stars appeared; the Moon itself was seen in the vicinity of the Sun. This was a sad and terrifying sight, which caused many people to lament with weeping; the sheep, oxen and horses crowded together in terror. The

SECalendar

darkness lasted for two hours; afterwards the light returned. Fifteen days after, in this month of Nisan at the decline of Monday, at dusk, there was an eclipse of the Moon in the part of the sky where the eclipse of the Sun had taken place . . ." Refers to a total solar eclipse at Antioch of 11 April 1176. From: Chronicle of Michael the Syrian. Ref. FRS 1997.

April 11, 1176 "In this year the Sun was eclipsed totally and the Earth was in darkness so that it was like a dark night and the stars appeared. That was the forenoon of Friday the 29th of Ramadan at Jazirat Ibn 'Umar, when I was young and in the company of my arithmetic teacher. When I saw it I was very much afraid; I held on to him and my heart was strengthened. My teacher was learned about the stars and told me, 'Now, you will see that all of this will go away', and it went quickly." Refers to a solar eclipse of 11 April 1176. Jazirat Ibn 'Umar is now Cizre in Turkey. From: Ibn al-Athir.. Ref. FE 01/01.

April 11, 1176 "The Sun was eclipsed and it became dark in the daytime. People were frightened and stars appeared." Refers to the solar eclipse of 11 April 1176. From: Imad al-Din, Islamic. Chronicle of the crossing of the Orontes River, near Hamah (in present-day Syria) by Saladin and his army. Quoted in Encyclopedia Britannica CD 98. Ref. FE 01/01.

April 11, 1176 (Sunday) <In this year 1487 (Seleucid), on New Sunday, the 11th of the month of Nissan, at daybreak, at the end of Office, that is, after reading the Gospel, the Sun was totally obscured, night fell and the stars appeared, the Moon itself was seen in the vicinity of the Sun. This was sad and terrifying sight which caused many people to lament with weeping, the sheep, oxen and horses crowded together in terror. The darkness lasted for two hours, afterwards the light returned. Fifteen days after, in this month of Nissan at the decline of Monday, at dusk, there was an eclipse of the Moon in the part of the sky where the eclipse of the Sun had taken place> Chronicle of Michael the Syrian, book XX, chap 3, translation from the rendering into French by Chabot (1905, vol3, p367). Ref. PG 3/99

April 11, 1862 Birth of William Wallace Campbell (1862-1938), American astronomer. Studied spectra of comets, corona and atmosphere of the sun. (Ref. Rc 1999).

April 11, 1875 Death of Samuel Heinrich Schwabe (1789-1875), German amateur astronomer. Searched for the planet in the orbit of Mercury. Discovered in 1843 the sunspot cycles. (Ref. Rc 1999)

April 12, 1851 Birth of Edward Walter Maunder F.R.A.S. in Middlesex, England. Died 1928, March 21, Greenwich, London, England. Ref. MK 5/99

April 12, 1889 Death of Warren de la Rue (1815-1889), UK. Royal Society also mentions 12 or 19 April 1889. Warren de la Rue (1815-1889), UK and Angelo Secchi (1818-1878), Italy, use photography during a solar eclipse in Spain to demonstrate that prominences (and hence at least that region of the corona) are part of the Sun, not light scattered by the Earth's atmosphere or the edge of the Moon, because the corona looks the same from sides 250 miles apart. (Ref. Rc 1999)

April 13, 1763 The only central eclipse which will be visible in Mecca (21.4333N and 39.8166E) and in the (mathematical) Ramadan month is the annular eclipse of Wednesday 13 April 1763 or on 29 Ramadan 1176.

April 14, 1905 Death of Otto Wilhelm von Struve (1819-1905) in Karlsruhe, Russian astronomer. Discovered 547 double stars, studied rings of Saturn and parallax of the Sun. (Ref. Rc 1999)

April 14, 1972 Launch of Prognoz 1, Russian satellite for research of the sun and X-rays.

April 14, 1976 Helios 2, German Solar mission comes close to the sun at 43,4 million km.

April 14, 1991 Minor planet (6558) Norizuki 1991 GZ. Discovered 1991 April 14 by K. Endate and K. Watanabe at Kitami. Named in memory of Sojiro Norizuki (1912-1995), founder of Norizuki Technical Works. Under the guidance of H. Tanaka, he constructed the first parabolic antenna for solar observations in Japan in 1949. He was later engaged in the construction of the interferometer at the Nobeyama Solar Radio Observatory and for other radio telescopes. After 1972 he extended his work to infrared and optical telescopes. (M 30099) Name proposed by the second discoverer following a suggestion by K. Tomita. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

(Continued on page 6)

SECalendar

April 15, -0135 (136 BC) <Year Se 175, month XII. the 29th, at 24 deg after sunrise, solar eclipse, when it began on the south-west side, in 18 deg day towards noon it became entirely total> British Museum tablet 34034 and 45745, translation Hunger (Ref. PG 3/99)

April 15, -0656 (657 BC) <On the 28th day, at 2 1/2 double hours of the day in the west it also covered 2 fingers towards it made an eclipse> Assyrian British Museum tablet, translation Hunger 1992, p63 (Ref. PG 3/99)

April 15, 1707 Birth of Leonhard Euler (1707-1783), Swiss mathematician and astronomer. Observed the transit of Venus in 1769 and concluded that the sun has a distance of 151.225.000 km. (Ref. Rc 1999)

April 15, 1985 (5100) Pasachoff 1985 GW. Discovered 1985 April 15 by E. Bowell at Anderson Mesa. Named in honor of Jay M. Pasachoff, Field Memorial professor of astronomy, director of the Hopkins Observatory and chair of the astronomy department of Williams College, Williamstown, Massachusetts. Pasachoff's broad range of astronomical research has centered on the sun, and especially on studies of solar eclipses. He is also well known for an extensive series of college-level textbooks and popular-astronomy textbooks and articles. Besides being an indefatigable public lecturer, Pasachoff has served as chairperson of the astronomy section of the American Association for the Advancement of Science, as a committee member of the American Association of Physics Teachers and on the Astrophysics Council of the National Aeronautics and Space Administration. (M 21956) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 15, 1997 Dr. Richard Tousey, a physicist and long-time employee at the Naval Research Lab, died of pneumonia at Prince Georges Hospital Center on 15 April 1997; he was 88. One of his experiments involved an expedition to Peru to observe a Solar Eclipse at sunset from an airplane. The experiment came to nothing because the 4 engine airplane lost 2 engines over the Andes mountains. Fortunately the airplane managed to return safely.

April 16, -1177 (1178BC) ". . . and the Sun has perished out of heaven, and an evil mist hovers over all." Said to refer to a total solar eclipse of 16 April 1178 BC. From: Homer (Greek), The Odyssey (8th century BC).

April 16, 1893 As per E.S. Holden, Schaeberle discovered a comet like object on the plates of the eclipse from Chili. The comet was 0,8 moondiameters from the moon. In May 1894 Schaeberle identified the comet on the plates of the British eclipse expeditions to Brazil and Africa, and the measured distances were respectively 1,15 en 1,5 moondiameters.

April 16, 1993 Minor Planet (6201) Ichiroshimizu 1993 HY. Discovered 1993 April 16 by K. Endate and K. Watanabe at Kitami. Named in honor of Ichiro Shimizu (1923-1996), who began work for the Tokyo Astronomical Observatory in 1945 and was heavily involved in the construction of the Corona Observing Station on Mt. Norikura. He was later a key astronomer in the solar physics division of the Observatory until he retired in 1984. (M 29146) Name proposed by the second discoverer following a suggestion by K. Tomita. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 17, 1912 Previous central solar eclipse in Belgium, prior to 1999. This eclipse of April 17, 1912 was annular (nearly total) in Belgium. The line of centrality went just west of Paris. The weather in Paris and London (and also surrounding areas) was absolutely perfect. This may have been, in 1912, the most observed eclipse in history. In a major Paris newspaper, an observer likened one phase of the eclipse to <an engagement ring>. Since an engagement ring traditionally has diamonds, unless anyone can find an earlier reference, this is the very first eclipse at which what we now know as Baily's Beads were liked to <diamonds>. Ref Bob Morris 04/01 SEML

April 18, 1955 Death of Albert Einstein (1879-1955), American theoretical physicist, mainly known for his relativity. (Ref. Rc 1999)

April 19, 1882 Minor Planet (225) Henrietta Discovered 1882 April 19 by J. Palisa at Vienna. Named in honor of the wife of the French astronomer Pierre J. C. Janssen (1824-1907), pioneer of solar spectroscopy and director of the Meu-

(Continued on page 7)

SECalendar

don Observatory. (H 27) Named (BAJ Circ., No. 213 (1883)) by P. J. C. Janssen. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 19, 1941 Minor planet (3892) Dezsö 1941 HD. Discovered 1941 April 19 by L. Oterma at Turku. Named in honor of the Hungarian astronomer Dezsö Loránt, an old friend of the discoverer, founder of the Observatory for Solar Physics in Debrecen and its director for many years. (M 18454) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 21, 1697 Of the 14 summits, higher then 8000 meter, this total solar eclipse is visible on 7: Mount Everest, Lothse, Makalu, Cho Oyu, Dhaulagiri, Manaslu, and Annapurna.

April 23, 1984 Minor planet (4478) Blanco 1984 HG1. Discovered 1984 April 23 by W. Ferreri at La Silla. Named in honor of Carlo Blanco, professor of astronomy at Catania University. Known for his intense activity in the observation and analysis of the mutual eclipses of the major satellites of Jupiter and Saturn, he is also involved in international campaigns devoted to observations of minor planets and the Pluto-Charon system. Furthermore, he has contributed to the study of solar-type stellar activity, in particular to analyses of stellar chromospheres and coronas. (M 17224) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 24, 1932 Minor Planet (1862) Apollo 1932 HA. Discovered 1932 April 24 by K. Reinmuth at Heidelberg. This object is named for the god of the Sun, child of Zeus and Leto {see planets (5731) and (68)}. (M 3758) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

April 24, 1967 Images of Surveyor 3 have been made of the 24 April 1967 lunar eclipse. This was a lunar eclipse across East Asia, Australia and the Pacific. Surveyor 3 made unusual views of a lunar eclipse: A total solar eclipse as seen from the moon. (Ref. OE by R, S, 1995). The crew of Apollo 12 visited Surveyor III in 1969. They brought back the Streptococcus mitis bacterium which was 31 months on the moon. Surveyor III camera system operated by having a TV camera aim up through a tube to a rotating mirror, which can be turned by radio command on Earth. Because the spacecraft tilted, a view of the earth was visible (which was not foreseen). The lunar eclipse of 24 April 1967 was video filmed. Surveyor III, and Jet Propulsion Lab scientists saw a beautiful scintillating ring of sunlight, refracted through the Earth's atmosphere. Very colorful and splendid. The halo was broken into beads. These beads have been measured by filters and their colors plotted on a chromatically diagram. Temperature took a plunge from 100 Fahrenheit to - 150 Fahrenheit (minus). There was another eclipse of the sun by the Earth on October 18, 1967 and Surveyor V was functioning then. Unfortunately, the mirror could not be tilted to see the Earth, although temperature measurements were obtained. Apollo 12 also brought back its TV mirror, the first human articraft to catch light from a lunar eclipse on the moon, to its makers on Earth. (Ref. S, LE O 1943-1993, FG)

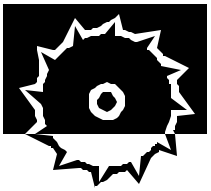
April 25, 0822 <C'hang-ch'ing reign period, 2nd year, 4th month, day hsin-yu. The first day of the month. The Sun was eclipsed> Chiu-t'ang-shu, chap36 (Ref. PG 3/99) This eclipse was also visible on 4 of the 14 summits, higher then 8000 meter: Mount Everest, Lothse, Makalu, and Cho Oyu. Ref. PA 06/00.

April 25, 1979 Minor planet (3885) Bogorodskij 1979 HG5. Discovered 1979 April 25 by N. S. Chernykh at Nauchnyj. Named in memory of Aleksandr Fyodorovich Bogorodskij (1907-1984), Soviet astrophysicist, director of the Astronomical Observatory of Kiev University, well known for his works on Einsteinian gravitation, solar physics and planetary nebulae. (M 19693) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

(Continued on page 8)

SECalendar

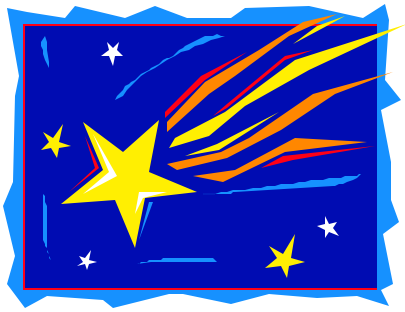
April 26, 1957 (Sir) Patrick Alfred Caldwell Moore launched his first program, the longest running show on television The Sky at Night. He is host of the program without a break. He observed many solar eclipses and he showed them many times in his program. (Ref. A-S 3/98)



April 28, 1774 Birth of Francis Baily (1774-1844), British astronomer and Co-founder of the Royal Astronomical Society. Baily's beads have been named to him although Edmond Halley (1656-1742 or 1743) did notice them before. Baily studied the phenomenon more in detail. (Ref. Rc 1999)

April 29, 1921 Birth of Cornelis de Jager, Dutch astronomer. Studied the Sun and solar eclipses. Still active astronomer and gives many lectures.

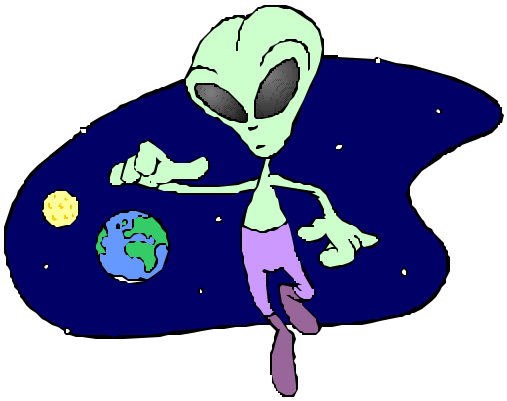
April 29, 2014 Next annular solar eclipse which will not be a central solar eclipse on earth. This limit solar eclipse is like the one of 3 October 2043 a miss, the two only exceptions next century. The central line of the solar eclipse will not be visible on earth. Both central lines are near the South Pole. This century there where as well two misses, 18 March 1950 near the North Pole and 30 April 1957 near the South Pole. The value of Gamma for the April 29, 2014 eclipse will be (to 3 significant figures) exactly equal to minus 1.000 (-1.000). This is fairly rare. Following solar eclipses that have a value of Gamma equal to 1.000 (both positive and negative) at maximum eclipse are -1339 Jul 03 (A-), -1320 Jun 04 (T+), -0869 Sep 25 (A+), -0196 Feb 01 (P), 2014 Apr 29 (A-), 2507 Apr 13 (A-) and 2662 Jan 12 (A+). (Ref. SLK 6/99 and Michael Gill 4/01).



April 30, -0462 (463 BC) In his book, Les Eclipses de Soleil, M.G.Bigourdan mentioned four eclipse comets. Besides the ones of 418, 1882 and 1893, he notes that Posidonius did observe a comet during the eclipse in -462. No other references have been found.

April 30, -0462 (463BC) "Beam of the Sun! O thou that seest from afar, what wilt thou be devising? O mother of mine eyes! O star supreme, reft from us in the daytime! Why has thou perplexed the power of man and the way of wis dom by rushing forth on a darksome track? Art thou bringing a sign of some war, or wasting of produce, or an unspeakably violent snow-storm, or fatal faction, or again, some overflowing of the sea on the plain, or frost to bind the earth, or heat of the south wind streaming with raging rain? Or wilt thou, by deluging the land, cause the race of men to begin anew? I in no wise lament whate'er I shall suffer with the rest!" "God can cause unsullied light to spring out of black night. He can also shroud in a dark cloud of gloom the pure light of day" Both these quotation probably refer to the solar eclipse of 30 April 463 BC, which was nearly total at Thebes. Pinder (Greek poet) Ninth Paean, addressed to the Thebans. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 344, and, in part, in Encyclopedia Britannica CD 98. Ref. FE 01/01.

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



SECalendar

SECalendar - March 07, 1970 Total solar eclipse

From : Evan Zucker <ez@AbacusTotality.com> To : SOLARECLIPSES@AULA.COM Date : Sat, 02 Mar 2002

How about this addition: March 07, 1970 Total solar eclipse across Mexico and up the east coast of the United States was observed by millions of people and is widely considered as being largely responsible for beginning today's eclipse tourist industry. This was also the first total eclipse observed by many of today's leading eclipse chasers, including Fred Espenak (http://www.mreclipse.com/SEphoto/SEgallery1.html) and Glenn Schneider (http://nicmosis.as.arizona.edu:8000/Biography.html), as well as some less fanatical eclipse chasers, such as Evan Zucker <g>. [Add other names as appropriate.]

SECalendar April - Small non central eclipse

From : Egan Mark <astrophoto@yahoo.com> To : SOLARECLIPSES@AULA.COM Date : Tue, 26 Mar 2002

>April 09, 2043 The only non-central total solar eclipse in that century. The central line of this total solar eclipse is missing the surface of the earth near the North Pole. The last century there weree 3 such total solar eclipses: 19 May 1928, 23 October 1957 and 2 November 1967 all near the South Pole. The years 1957 and 2043 do have two non-central solar eclipses while also the central line of the annular eclipse does miss the earth. (Ref. SLK 6/99).

Interesting eclipse... how to view this one? Folks (Glenn?????) the challenge is on! later.... Mark Egan astrophoto@yahoo.com

SECalendar April - Campbell and Menzel

From : Jay.M.Pasachoff@williams.edu To : SOLARECLIPSES@AULA.COM Date : Tue, 26 Mar 2002

Patrick's eclipse calendar lists the birthday of W. W. Campbell for April 11. Donald H. Menzel's major paper on the solar chromosphere in 1931 was based on Campbell eclipse observations. In a manuscript autobiography, Menzel write:

""Dr. Campbell had been to many total solar eclipses: 1898 in India, 1900 in Georgia, 1905 in Spain and 1908 in Flint Island of the South Pacific. He had been to other total eclipses as well, but on the ones just mentioned he had secured spectra of the sun's chromosphere, the pinkish-hued atmosphere of the sun that gives, when the moon covers the bright, shining surface, a spectrum of bright lines.... Dr. Campbell had indeed secured a number of remarkable spectra, including some by his own unique method: the moving plate.... This assignment I found most exciting and, within less than a week, had made two fairly important discoveries.... (OHT) The moving plates clearly depicted the change from dark-line to bright-line spectrum at the moment of totality."

The publication of Menzel's famous paper was: Menzel, D. H., 1931, Publications of the Lick Observatory, XVII, 1931, "A Study of the Solar Chromosphere Based Upon Photographs of the Flash Spectrum Taken by Dr. William Wallace Campbell, Director of the Lick Observatory, at the Total Solar Eclipses of the Sun in 1898, 1900, 1905 and 1908." Jay Pasachoff

SECalendar

SECalendar April - Additional eclipse events

From : "Michael L. Gorodetsky" <gorm@HBAR.PHYS.MSU.RU> To : HASTRO-L@WVNVM.WVNET.EDU Date : Tue, 26 Mar 2002 21:49:03 +0300

Some more April eclipses from my collections:
http://hbar.phys.msu.ru/gorm/eclipse.htm
http://hbar.phys.msu.ru/gorm/russian.htm (in Russian)

April 18, 497: Marcellini: "Comitic V.C. Chronicon" "(A. C. 497.) Ind. V, consulship of Anastasius Aug. solar eclipse happened."

The Annals of Ulster, The Chronicon Scotorum, The Annals of Tigernach (Ireland) AU496, CS493, AT497: "An eclipse of the sun was visible."

April 19, 1064: The first solar eclipse in russian chronicles (letopises), described together with famous apparition of comet Halley (of Hastings).

"The year of 6573 [Byzantian era: 5508 should be subtracted, but the beginning of the year could be March or September] ... These times there was a portent on the East: the star great, having beams as bloody, rising from evening after sunset and was for 7 days ... Before this time and the sun changed, and was not bright but as a crescent it was."

April 30, 59 Simultaneous eclipse in Italy and Armenia: Pliny, "Natural History", Pliny, II, 180, LCL, v.330. "An eclipse of the sun that occured on April 30 in the consulship of Vipstanus and Fonteius a few years ago was visible in Campania between 1 and 2 p.m. but was reported by Corbulo commanding in Armenia as observed between 4 and 5: this was because the curve of the globe discloses and hides different phenomena for different localities."

Tacitus, "The Annals", XIV, 12 "There occurred too a thick succession of portents, which meant nothing. A woman gave birth to a snake, and another was killed by a thunderbolt in her husband's embrace. Then the sun was suddenly darkened and the fourteen districts of the city were struck by lightning. All this happened quite without any providential design; so much so, that for many subsequent years Nero prolonged his reign and his crimes."

Tacitus, "The Annals", XIII, 41 "Corbulo then encamped on the spot, and considered whether he should push on his legions without their baggage to Artaxata and blockade the city, on which, he supposed, Tiridates had fallen back. [...] Then too there was a wonderful occurrence, almost a divine interposition. While the whole space outside the town, up to its buildings, was bright with sunlight, the enclosure within the walls was suddenly shrouded in a black cloud, seamed with lightning-flashes, and thus the city was thought to be given up to destruction, as if heaven was wroth against it."

Cassius Dio, Roman History, LXII, 16, LCL, Translation by Earnest Cary "Nevertheless, in the midst of the sacrifices that were offered in Agrippina's honour in pursuance of a decree, the sun suffered a total eclipse and the stars could be seen."

SEScannings

SEScannings Astronomy April 2002

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com> To : "SE Mailing List" <SOLARECLIPSES@AULA.COM> Date : Mon, 18 Mar 2002 22:09:30 -0000

Astronomy April 2002

- Quenching the Sun's Fire by Richard Talcott pages 64 to 68

A choice between Africa and Australia for the December 2002 eclipse. Two main factors distinguish: Weather and duration. To keep the latest news about the political and danger situation in Africa, see the State Department's Web-Pages www.state.gov. Details table and maps along the track of some locations. And despite the disadvantages of the December 2002 total solar eclipse, think twice about passing it up. The next one is Antarctica November 2003 or the rare annular-total solar eclipse of April 2005 which last is does not touch land during totality.

Pictures of Wesley Jacobs, Robert Slobins, Heidi Kikawada, Alberto Levy and Wesley Jacobs once more.

- My favorite Objects by Jack Newton, Osoyoos, British Columbia page 80

The Sun is one of Jack's favorite photographic object. "I am relatively new in H Alfa solar photography." he writes. But see as well:

- Ultimate Exposure: Partial Solar Eclipse over Florida by Jack and Alice Newton page 104

A wonderful image in H Alfa of the 14 December 2001 partial eclipse

- Hot Shots: Partial Eclipse and Pelican over Tampa Bay by Ed Scott page 103

See: Http://www.astronomy.com

Lunar Eclipse by Geoff Simms, Australia

SETalk

Europe's largest solar telescope sees first sunlight

From "Mats Löfdahl" <xyzzy@chello.se> 28 Feb 2002

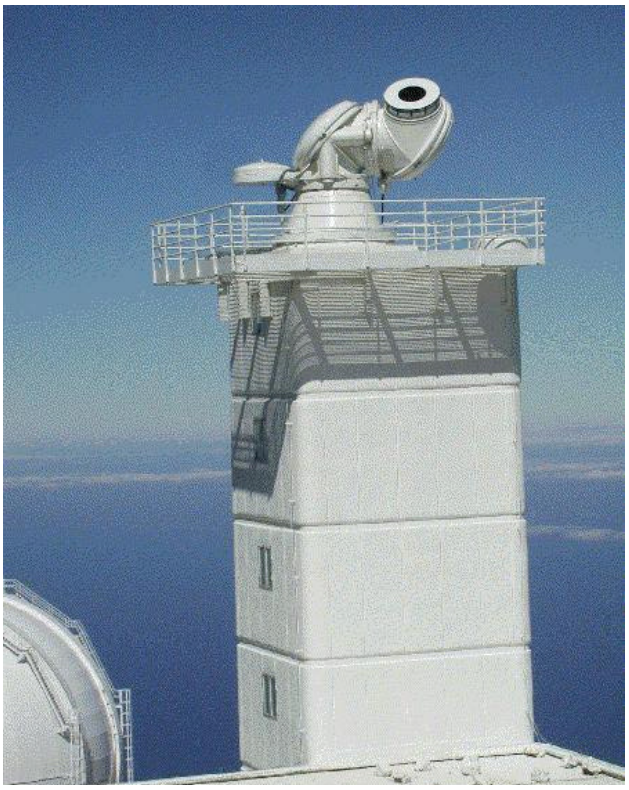
The Institute for Solar Physics of the Royal Swedish Academy of Sciences announces that its new solar telescope on the island of La Palma, Spain, will have first light on Saturday March 2. The telescope design includes a technique that counteracts blurring caused by the atmosphere. This will enable the researchers to see and photograph details of smaller size than previously possible.

The new telescope will address current and important questions concerning solar magnetic fields and the dynamics of the upper solar atmosphere and also be used to improve our understanding of the formation of stellar spectra

The front lens of the telescope has a diameter of just under 1 meter, making it the largest optical solar telescope in Europe and the second in the world, after the McMath-Pierce telescope in Arizona, USA. Located on the best known site for solar telescopes in the world, it is expected to see details as small as 70 km on the solar surface. This requires the use of a so-called adaptive mirror that 1 000 times per second corrects for the blurring caused by the Earth's atmosphere. The new telescope is the first solar telescope that is designed for use with such a mirror. The adaptive optics system will be installed during April following optical verification tests. The telescope is expected to be operational at the end of April. . The Royal Swedish Academy of Sciences is perhaps best known for the Nobel prize, but also operates seven scientific institutes (in Sweden and on La Palma). Its President, Professor Janne Carlsson, the Secretary General, Professor Erling Norrby, Mr. Kai-Inge Hillerud, Executive secretary, and the Institute Director, professor Goran Scharmer will be present during the informal event. The telescope is operated by the Academy but located within the Observatorio del Roque de los Muchachos of the Instituto de Astrofisica de Canarias on the island of La Palma, Spain. The telescope replaces a previous 50 cm telescope that has been a world leading solar research instrument for over ten years

The telescope has been funded mainly by the Academy and three private foundations in Sweden. The telescope will operate in collaboration with the Institute of Theoretical Astrophysics in Oslo, Norway and other international partners

For further information, see http://www.astro.su.se/groups/solar/first-light.html or contact Göran Scharmer at scharmer@astro.su.se .



Europes larges solar telescope 60cm

Index SENL March 2002

Please find herewith the contents of the March 2002 issue of the Solar Eclipse Newsletter. Beside the topic, the page number is listed:

Part A …/...
Part B …/...

Comments are welcome at patrick_poitevin@hotmail.com
Cheers, Patrick

Delta T

From : Jean Meeus <JMeeus@compuserve.com> Date : Tue, 5 Mar 2002 02:44:38 -0500

On 2002 February 1, the difference between the uniform Dynamical Time and the Universal Time was 64.32 seconds. Jean Meeus

SETalk

SENL February & March 2002 NOW ONLINE!

From : FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov> To : SOLARECLIPSES@AULA.COM, eclipse@hydra.carleton.ca Date : Wed, 6 Mar 2002 15:41:37 -0400

In spite of being a newlywed, Joanne Poitevin has prepared several more issues of the SENL (Solar Eclipse Newsletter) for the months of February and March 2002. You'll find some wedding photos too!.

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 - July 2001 (Special A) (1.2 MB pdf file*)
SENL - July 2001 (Special B) (0.7 MB pdf file*)
SENL - July 2001 (Special C) (0.7 MB pdf file*)
SENL - August 2001 (Part A) (1.0 MB pdf file*)
SENL - August 2001 (Part B) (0.6 MB pdf file*)
SENL - September 2001 (Part A) (1.0 MB pdf file*)
SENL - September 2001 (Part B) (1.0 MB pdf file*)
SENL - October 2001 (1.0 MB pdf file*)
SENL - November 2001 (Part A) (0.7 MB pdf file*)
SENL - November 2001 (Part A) (0.8 MB pdf file*)
SENL - December 2001 (1.3 MB pdf file*)

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*)

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/). Thanks for the hard work Joanne! - Fred Espenak

Longitude by lunar eclipse

From : rdickson@achilles.net To : eclipse@hydra.carleton.ca Date : Wed, 6 Mar 2002 19:22:18 -0500

A scientist with the NRC in Canada ,Dennis Crabtree, found this site for me: http://www.findarticles.com/cf_dls/m2082/4_61/56909071/print.jhtml about Nicolas-Claude Fabri de Peiresc (1580-1637). It is a fascinating story science and astronomy in the midst of the Inquisition, plague, corruption, ignorance... There are numerous references.

From the lengthy article: "Despite inconsistencies and inaccuracies, the observations of the 1635 eclipse enabled astronomers to determine the difference in terrestrial longitude of numerous cities. Furthermore, the Provencal astronomers led by Peiresc determined that the length of the eastern Mediterranean Sea was approximately 1,000 kilometers shorter than shown on existing maps, an error which had forced sailors to make adjustments in navigation." Ross

Tribune de Genève article this weekend ?

From : "Olivier Staiger" <klipsi@bluewin.ch> To : <SOLARECLIPSES@AULA.COM>

howdy, for those of you who can find a copy of the Geneva daily newspaper, TRIBUNE DE GENEVE, it is likely to have an article about my eclipse voyages in this weekend edition, saturday-sunday, 9-10 March. I don't know if there's a difference in the local editions and exported international editions, which you might buy in some major newstands at various airports .

maybe their website http://www.tdg.ch will also run the story ? happy reading ... ;-)

Earliest sighting of Lunar shadow

From : "barr derryl" <dbarr@nque.com> To : "Patrick Poitevin" <patrick_poitevin@hotmail.com> Date : Thu, 7 Mar 2002

Dear Patrick: Several months ago you posted the question "what is the earliest known observation of the approaching or departing lunar shadow during a total eclipse?" By chance reading in Todd's "Total Eclipses of the Sun," I happened on a remark regarding the 1706 May 12 eclipse: "This was also the occasion when, if DUILLIER'S account is to be trusted, the Moon's shadow was first seen in its swift approach." (p 110) Sorry, there is no more. Checking with other chronicles of early eclipses, I find nothing that verifies or expands upon this passage. I do, however, plan to check out possible leads to the identification of "Duillier" as soon as possible. I hope you do not mind my posting this directly to you rather than to the list as it is a rather dated reference, and the information is at best hazy. Certainly, after confirming the information, you may do with it as you like.

SETalk

2005 eclipse maps/software?

From : "Henry Mendt" <henry_mendt@yahoo.com> To : <solareclipses@aula.com> Date : Thu, 28 Feb 2002

Hello. Is there any good software that can plot detailed maps of the path of the shadow (umbra/antumbra) through a specific location? Now I use Win-Occult, but I'm searching for other programs. I heard on this list about MapStudio. It works for eclipses?

I want it to plot detalied maps of the narrow antumbra for the 08-april-2005 hibrid eclipse here in Venezuela. Also we have a team ready to visit in the months to come some towns and locations very near the antumbra centerline were annularity last less than half a minute! We have GPS and detailed charts, all we need is to search a good place with an unobstructed view of the western horizon and high chances of good weather. Clear skies in Puerto Vallarta 2002! Regards, Henry Mendt - henry_mendt@yahoo.com Maracaibo, Zulia. VENEZUELA.

From : "Olivier Staiger" <klipsi@bluewin.ch>

hi Henri, see Fred's map at http://sunearth.gsfc.nasa.gov/eclipse/TSE2001/TSE2001fig/TSE2001fig16.GIF it doesn't show all, but it is a good starting point. and you'll find coordinates at http://sunearth.gsfc.nasa.gov/eclipse/SEpath/SEpath2001/SE2005Apr08H.html best regards, Klipsi

From : John Tilley <john@tilley.demon.co.uk>

Henry - The only mapping software that I know of that might help is Manifold Systems professional product that is US245. There are examples on their web-site - note that it does NO eclipse calculations at all - but if you have the co-ordinates for the centre-line and limits - you can import these and draw the path.

You can use Digital Chart of the World (free download) for Venezuela or you can buy the Manifold equivalent.

There is a good example of the Aug 1999 eclipse with a European map and a world map showing all total eclipses to 2020 (courtesy of Fred Espenak for free download). You need to do a web search on "manifold" "GIS" and then go to archived news number 4. Its worth a look - their home page is: http://www.manifold.net/index.html

The emphasis here is on the mapping software -it just happens to let you draw lines on it. The manual is freely available on the web. Good Luck - John

SEML and spam, hackers, misuse, ...

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com> To : SOLARECLIPSES@AULA.COM Date : Fri, 08 Mar 2002 13:04:29 +0000

Dear all, Do NOT reply to the SEML, but send comments and replies to patrick_poitevin@hotmail.com Thank you!

We are running the Solar Eclipse Mailing List (SEML) for over 4 years. We have more then 320 subscribers over more then 40 different countries. The Welcome message has been updated at several times. Though, spam and hackers still come through. There are still attempts of those who want to abuse and misuse the SEML. All control is manual and it is time consuming. But it is worth!

Thanks to you all, the SEML became a big solar eclipse family. And the family is still growing. The Welcome message has been updated and a questionnaire is included. Some of the subscribers or re-subscribers received this Welcome Questionnaire. Some others received an older version.

No one can subscribe and send immediately a message. Every new subscriber will arrive in my mailbox. I will check and validate the address and add the subscriber to the SEML. In case of doubt, the new subscriber will be on the read only list or will not be on any list at all. Every new subscriber will receive the Welcome Questionnaire (see below)

We do not want to interfere in your privacy, though, as a private mailing list, we have to trust you as well. Also the existing subscribers' database need to be checked. See below the Welcome Questionnaire. Please read the Welcome Questionnaire and take some time to fill in the data and reply on the questions. Again: Do NOT reply to the SEML, but send to patrick_poitevin@hotmail.com We really appreciate your help. The SEML data base will be updated and there where you want to keep your data private, we will respect your wish and we will keep it private.

With this message I want to thank Jan Van Gestel for using his server and last but not least for all his help in the past. Without him, the SEML was not possible.

The Solar Eclipse Mailing List

You subscribed to the Solar Eclipse Mailing List. Welcome! Please take some time to read this welcome.

(Continued on page 15)

SETalk

1. Introduction

The Solar Eclipse Mailing List (SEML) is an electronic newsgroup dedicated to Solar Eclipses. It is a private mailing list published by eclipse chasers Patrick and Joanne Poitevin (mail to: patrick_poitevin@hotmail.com) and is a forum for discussing anything and everything about eclipses and planetary transits.

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

2. Status of SEML subscribers

Status after 4 years: over 310 subscribers out of about 40 different countries.

Countries: Argentina, Australia, Austria, Belgium, Bolivia, Canada, Colombia, Costa Rica, Czech Republic, Denmark, Finland, France, Germany, Hong Kong, Hungary, India, Ireland, Italy, Japan, Korea, Mexico, Nigeria, Norway, Poland, Qatar, Romania, Russia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, The Netherlands, Turkey, UK, USA, Venezuela, Zambia, Zimbabwe.

See below how to obtain the status of a SEML subscriber.

3. Objective of SEML

Main purpose of this Solar Eclipse Mailing List is to share information between all Solar Eclipse enthusiasts. Our objective is to permit and encourage world wide contacts among eclipse observers, calculators, scientists, ancient researchers, etc. It is a media where you can send questions, answers, items wanted, items for sales, announcements, reports, observations, discussions, information, introductions, etc. All topics should be related to Eclipses and Planetary Transits. Contact the SEML Owner for advertisements and commercial announcements.

4. Rules for SEML

SEML subscribers agree to the following basic rules designed to maintain SEML as an interesting and lively place for both amateurs as professionals.

- Do not send large files. For the convenience of the subscribers, there is an automatic filter on the size of the messages (50K).
- Send plain text, not in html or any other format. Watch your settings.
- Do not send any attachments.
- All messages should be posted in English.
- Unsubscribe during your holidays or do not use auto replies or confirmation of receipts.
- Do not send <Thank You> or <Best Wishes> messages to the entire list.
- Personal messages should not be send to the whole list.
- Problems with WebPages or private e-mail addresses, info about virus files or any other non-solar eclipse related messages are not allowed on the SEML.
- Do not go on and on about certain topics. It might bore the other SEML subscribers after a while.
- If you change your e-mail address, please unsubscribe with your old address and re-subscribe with your new address. If you have problems, please feel free sending a message to the list owner.
- Do not use false names, aliases or nick names to subscribe to the SEML.
- In an ideal world, everybody behaves respectfully with regard to the work and messages of other people in the community.
- Avoid political and religious messages and conflicts. Keep messages solar eclipse related.
- No harassing, threatening or stalking to other SEML subscribers.
- SEML subscribers may not transmit or announce material that is obscene, fraudulent, harmful, abusive or hateful. Additionally, no material that is pornographic or that is intented to offend or attack other SEML subscribers will be tolerated.
- We tend to be optimists and we think you won't have any problems following these simple guidelines of mutual respect and descent conduct.
- The SEML Owner can not be responsible for the contents of any material posted on the SEML.

5. SENL (Solar Eclipse Newsletter)

If you want to publish pictures, graphs or your reports about solar eclipses, please send them to patrick_poitevin@hotmail.com. Joanne and Patrick are the editors of the Solar Eclipse Newsletter. Your contribution will be published in the monthly Solar Eclipse Newsletter (SENL). The SENL (since November 1996) is available on the internet and can be downloaded free of charge. See: http://www.MrEclipse.com/SENL/SENLinde.htm

Besides the Solar Eclipse Newsletter, where all SEML messages (and solar eclipse related messages of other mailing lists of course) are captured, the archive of the SEML messages can be found on: www.astroarchive.com.

SENL: http://sunearth.gsfc.nasa.gov/eclipse/SENL/

(Continued on page 16)

SETalk

Index: http://www.mreclipse.com/SENL/SENLinde.htm

Example: SENL0011.pdf: http://sunearth.gsfc.nasa.gov/eclipse/SENL/SENL0011.pdf

6. Copyright and SEML

All subscribers automatically give their permission to archive the messages being sent. If you decline, please write your copyright on the bottom of each message. The non-copyright messages are regarded as public domain and imply your silent consent to include such messaging in the archive or Solar Eclipse Newsletter. If you feel this is wrong or you have changed your mind, please contact the list owner. If you use information or messages from the SEML in any correspondence, article, paper or lecture, please mention the SEML and how to subscribe or write a message to the SEML Owner.

7. Privacy of SEML

It is never the intention to announce the addresses of the members. If you are looking for somebody, write a message to the SEML Owner and the contact person will be informed. A list of the subscribers is not available to the members. In this case we avoid junk mailers.

8. Spam, hackers and junk mail

Only subscribers can send messages to the Solar Eclipse Mailing List. The Solar Eclipse Mailing List is for 99.9 percent safe for virus files or messages. The server is updated twice a week with the latest virus scans. Thanks to Jan Van Gestel of eMailMasters.com. The SEML is a private mailing list. The SEML Owner reserves the right to put a subscriber on READ ONLY or even comp lete removal from the list.

9. How to subscribe and write to the SEML?

To subscribe send E-mail to listserv@Aula.com
within the body SUBSCRIBE SOLARECLIPSES name, country

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 e-mail messages that other subscribers send to the listserver. Only subscribers can send messages.

10. Questionnaire

As a private mailing list, we have to trust the subscribers. In reverse, we want you to trust us and answer following questions. We want to know our SEML subscribers a little better. The information with an asterisk (*) are optional. Though, the other information needs to be filled in and send back to the SEML Owner (patrick_poitevin@hotmail.com). We will add your e-mail address on the READ ONLY list. As soon as we have your questionnaire back we will add you on the READ and WRITE list. If we do not have a reply to the questionnaire within 2 to 3 weeks, we will remove your address from the SEML.

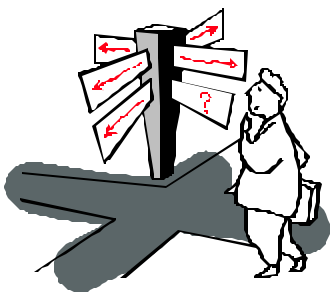
In this case we avoid Spam, hackers and all nonsense on the SEML.

First name:

Last name:

E-mail address(es):

Profession*:



(Continued on page 17)

SETalk

Membership Astronomical Associations*:

Address*:

City:

Country:

Telephone(s)*:

WebPage(s)*:

Gender (male/female):

Age Group: under 18; 18-25; 26-35; 36-45; 46-55; 56-65; over 65

Interests:

Solar Eclipses observed:

From where did you learned about the SEML?

If so, from where did you learned about the SENL?

11. Confidentiality, Privacy and Visibility controls

Please read this carefully. Answering is necessary to successfully register or subscribe to the SEML.

- Please write YES if you have read and accept terms and rules of SEML membership:

- Please write YES if you allow us to use and show your above mentioned personal information:

- Please write YES if you want to keep your above mentioned personal information private:

- Please write YES if you allow us to use information of your above mentioned WebPage(s) for the SENL:

Thank you very much for your time. If you have any remarks or questions, please send me a mail and I will come back to you shortly.

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

CDROM SEC2000 proceedings/compilation

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com> Date : Thu, 28 Mar 2002:

Hi, I still have 5 spare CDROMs of the SEC2000 proceedings/compilations in Antwerp. Those who want, let me know, and need to buy Joanne and me a beer in the Hard Rock Cafe in Puerto Vallarta on June 9th. Please reply in private and NOT to the list. First ordered, first served... Due to postage costs, I will not send them! PP

SETalk

Annulars and perihelion

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com> To : "SE Mailing List" <SOLARECLIPSES@AULA.COM> Date : Wed, 6 Mar 2002 22:16:05 -0000

>From Ray Brooks: Annulars and Perihelion

The discussion last week about south hemisphere summers experiencing more annular eclipses than the north hemisphere summers prompted me to look up some notes I made to myself a few years ago. Most of the notes (copy below) are straightforward but note #6 may be wrong. I am seeking comment from the brain trust specifically on note #6 but certainly, comments on any other section are also welcome.

Is it accurate to say the perihelion (January for now) new moons average farther from earth than the aphelion new moons over the eons?

If true, then that would be another reason for more annulars around perihelion in addition to the sun being larger. Intuitively it would seem true but yesterday I looked at just a few sample new moons (years 2001 thru 2072) near perihelion and compared them to the new moons near aphelion. For that time period my note #6 is not true.

>From that observation alone, I must conclude my note is wrong. Please comment, friends. Thanks Raymond Brooks

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com>

From Ray Brooks (the file which was missing in his first postage):

This note has 4 related sections

Perihelion Effects (in particular, annulars)
Saros True Age
All New Moons And Saros Pedigree
Why 26 Eclipses In A Saros Step

The discussion last week about south hemisphere summers experiencing more annular eclipses than the north hemisphere summers prompted me to look up some notes I made to myself a few years ago. I am seeking comment from the brain trust specifically on note #6 but certainly, comments on any other section are also welcome.

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From that observation alone, I must conclude my note is wrong. Please comment, friends.

Here are my notes:

PERIHELION EFFECTS

It takes 7.6 fewer days for Earth to travel from September equinox to March equinox than it does to travel from March to Sept equinox. 186.42 days vs. 178.83 days Longer trip through aphelion. 186.4 / 178.8 = 1.042 or 4.2% difference

Because June solstice to December solstice lies slightly more in the aphelion side of the orbit it takes 0.62 days longer than an exact half year. (365.25 / 2 = 182.625 days) Moving from December to June solstice is 0.62 shorter than 365.25/2 so net difference solstice to solstice is 2 x 0.62 = 1.24 days. Half a percent. Perihelion to aphelion takes equally long as aphelion to perihelion.

Are southern hemisphere summers (for this discussion I define summer as equinox to equinox) warmer than north summers because south is closer to the sun? No, they are not according to the climate experts because there is more ocean water mass to the south. But they missed some other

(Continued on page 19)

SETalk

(Continued from page 18)
effects.

There are at least four effects, one effect increases heat, the other three effects decrease the amount of heat.
Total number of incoming photons is greater
A) solar flux is 6.1% higher (proportional to distance squared) hotter
B) but the south summer 6 months are 4.2% shorter (the 7.6 days mentioned above) cooler
C) Antarctic ice cap albedo is higher, more reflective cooler
D) More water mass in south oceans cooler

Other general effects near the time of perihelion (happens to be Jan 4 this epoch) are :

1) a larger sun (decreases TSE durations, increases annular durations)
2) A faster sun (increases all three types of solar eclipse durations and lunar eclipse durations)
3) a faster sun is the same thing as a faster earth, so it should take more days for the moon to go from new moon to new moon (synodic months are longer) confirmed
4) Larger sun makes a smaller earth umbra and a larger earth penumbra for lunar eclipses
5) Larger sun reduces the chance that a solar eclipse is total
6) The closer, thus stronger, sun should on average pull the January new moons farther from earth than the July new moons (correspondingly, the full moons of January should average closer to earth than the July full moons) Smaller moon thus more annulars. By January new moon I mean perihelion new moon....perihelion will be early March in about 4,000 years. 7) Larger sun should make January full moons brighter, July full moons dimmer 8) A sunny day on top of Mt. Kilimanjaro (basically the equator) should feel noticeably stronger to the skin in January 9) There should be fewer eclipses of all types (both lunar and solar) during the south summer simply because their summer is 4.2% shorter (this will all flip-flop in 13,000 years due to precession) 10) A saros lasts about 1300 years. So using a saros as a unit of time, any south hemisphere favored effects are fleeting and will apply to the north in only ten end-to-end saros passings.

SAROS TRUE AGES

Last entry somewhat of a misleading statement about saros lengths. We define a saros (ignoring the partials), rather we stop taking notice of it, when the moon's shadow leaves the top or bottom of earth. If we had an eclipse elevator that could ride up or down 3 earth diamters and could observe at gamma values greater than one earth radius we would continue to see the next (annular or total) eclipse in the elongated saros (call it an e-saros) every 18 years 10 days. And the e-saros would continue another 3700 years until the moon reached its maximum height 21,500 miles above (or below) the ecliptic.

For the same reason that the sun rushes past the equator at equinox and spends most of the year languishing near the Tropic of Cancer or Capricorn, the moon rushes past earth in only 1300 years in the conventional saros but languishes 6400 years of its life (calc below) up near the top or bottom at gamma greater than abs. value 1.0 where an e-saros truly ends (almost 3 earth diameters high or low). At that point another e-saros with a new saros number begins as the moon turns around and very slowly heads back toward the ecliptic. When it returns as a new saros, obviously it must do it associated with the opposite node. (e.g. Ascending node eclipses migrate south in a saros and return about 7500 years later from the south migrating north as a descending eclipse series.)

The returning new saros does not resemble the old saros in terms of type of central eclipse. If the old saros was all annulars, the new saros is not necessarily all annulars. No reason to think they would resemble each other. They are also centered on different months of the year so the rate of gamma change is different for each. Except for them being connected end to end, they are as different as any other saros.

In any saros (conventional or e-saros) each eclipse first migrates towards its node for the entire first half and then away from that same node the entire second half. Once it has migrated away from that node by more than one-quarter of a circle (about 3700 years), it now makes sense to say it is associated with the other node. Actually, it really is associated with that new node because the moon has reached its tropic (Greek for turning) and now started back.

Thus note #10 above could be re-written saying 180 degrees of earth precession rotation are only two e-saros series long. (Trivial)

An e-saros would take about 7500 years from very top to bottom. This was deduced from how many average years it takes the moon to travel from gamma of zero to gamma of 1.0 in a conventional saros.

ALL NEW MOONS AND SAROS PEDIGREE

IMPORTANT: NOTO BENE: Every typical new moon (a non-eclipse new moon) is in a solar eclipse e-saros #XYZ either waiting to start a conventional saros #XYZ or having finished one, ie, it visited Earth in the past or it will visit.

(Continued on page 20)

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So all new moons have a saros number even if not an eclipse on Earth. Take any new moon, if it is near an ascending node and it is high as it passes the sun, it will in time mature into a solar eclipse. And it will step toward maturity with the 18 year 10 (or 11) day increment. If it is a low pass then it already was a conventional saros and is now just in the latter half of an extended saros. Similar rules applies for descend node/low pass.

Take the new moon of late July 2001 that follows a month after the Africa 2001 TSE. It is near the ascending node like the eclipse of June but is above the sun. So it must eventually become an eclipse. Successively adding 18 years 10 days to the new moon, it migrates down to become a partial in year 2145, starting Saros 165 and a series of all annular eclipses. Pretty cool. (Guy Ottewell book shows how to assign a number to a saros)

Conversely, check the new moon four months later November 15, 2001. It is also high but is near descending node so it must have already finished a conventional saros in the past. Deducting 18 years 10 days incrementally reveals that it was last a partial eclipse Aug 1262 finishing the conventional Saros #94. I love it. That series was about half totals and half annulars with two hybrids in the middle.

If a new moon is very high or very low (meaning it is nearly exactly midway between the nodes) then it is near the finish or the start of an extended saros.

Viewing the saros number with each successive new moon shows orderly sequences in 6 month steps that last 3 or 4 years. In groups of six, each new moon increases by 38 (5 x 38 = 190) and then the sixth moon decreases by 185. So a six month group is higher by 5 to the previous group.

WHY 26 ECLIPSES IN A SAROS STEP

MOST IMPORTANTLY, this extended view shows why there are about 26 concurrent conventional saroses. (26 non-partial solar eclipses over an 18 year period.) (There are more concurrent conventional saroses if partials are considered. But I am now strictly considering a partial as part of an extended saros)

In the period of 18 years 10 days there are 223 new moons so there are 223 (combined conventional and extended) saroses in progress at all times, most of which are too high or too low to be an observed eclipse. A total or annular eclipse occurs with gamma less than 1.0

The moon's upper and lower limit of travel is gamma of 5.4 average. (At max distance and max lunar orbit inclination it is 5.9, at min dist/inclination it is 4.9) For sinusoidal motion, like the sun at equinox, little time is spent at the zero value, most time is spent near the peaks and valleys. 1 / 5.4 = 0.185 arcsin of 0.185 equals 10.6 deg (this says, once the moon is more than 10.6 degrees past the node it is either above or below the Earth's limb. By above and below we always mean slightly out of true vertical due to lunar orbit inclination) 10.6 deg / 90 deg = .12, in round numbers for half an e-saros. 21.2 deg / 180 deg for a full e-saros, same ratio by definition.

So extended saroses spend only about 12% of their life in the observable region (Earth)

(A curiosity: Because lunar inclination is 5.15 deg plus/minus 0.15, the moon has roughly 550 years of opportunity to reach or exceed its average max gamma during the top or bottom of the e-saros..due to the plus/minus. But that is just a curiosity and does not effect the age-calculation of an e-saros which is "splitting the nodes". Put another way, the very top/bottom of e-saros gets fuzzy with some extreme high/low wipes by the moon. Not a factor.) 223 total saroses x 0.12 = 26.76 observable eclipses in 18 years 10 days. Indeed, the 18 year period beyond June 21 2001 has 26 central eclipses. (Math in this equation is an integer function since an eclipse either is or is not a central eclipse. So by 26.76, there must be some 18 yr 10 day periods with 26 centrals, and some with 27. Must check that. Checked it..most 18 yr periods seem to have 26 but example, from Apr 11 2070 to Apr 21 2088 there are 27 centrals)

Looking at a typical extended saros, a total life of 7500 years means the moon spends about 3700 years above the ecliptic and another 3700 years below.

Number of years on Earth? 12% x 7500 = approx. 880 years on Earth 880 / 18.03 = approx. 49 central eclipses per conventional saros (totals, annulars, less than absolute value of 1.0 gamma)

That is about right and there is much leeway in this number of observable centrals since conventional saroses are stacked quite differently from one another. Many of the recent saros series have only 39 to 44 centrals (annulars/totals) but Saros 136 (the big one July 11 1991) for example has 56. This variance in a conventional saros is a function of whether the center of the saros is in January or July. Centered in January the gamma shifts very slowly vs July, so more eclipses of that saros intersect earth. (See individual saros evals elsewhere)

LIFE IN THE ARCTIC

So what is the moon doing while it spends almost 90% of

(Continued on page 21)

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its e-saros off Earth? Basically, it is oscillating every 1200 years from perigee (lower apsis) to apogee (upper apsis) and back (stated another way, rotating through the line of apsides). Looking at the second half of its life: Half of an e-saros is roughly 3700 years. Starting at gamma of zero (mid-life) approx. 400 years is spent on Earth and the remaining 3300 years is spent off Earth (some of these are partials centered off Earth). Hybrids make no sense to consider at this point since our elevator has no equatorial bulge.

Takes about 1200 years to transition from one apsis to another, then another 1200 back to the original apsis. 3300 / 1200 equals roughly 2.8 apsis transitions for each half life above and below the ecliptic. (Again an integer function, so there would be a minimum of two or maximum of three swings through the line of apsides while off Earth.) This implies 2 or 3 transitions between a string of total eclipses and a string of annular eclipses in the elevator off Earth. Individual timing of earth-sun perihelion/aphelion versus moon apogee/perigee would make each e-saros distinct, and expand and contract this 1200 year annular-total transition period for each e-saros just as a conventional saros does. And within the 1200 years are weaker alternations between annular and total due to changing months of the year (Earth-Sun distance)

Very Cool.

Look at Saros 145 (the Europe Aug 11 1999, USA Aug 21 2017 saros) soon after landing on Earth:

It is an ascending node series migrating south

Europe and USA are early in the series (first half of saros) and high, gamma +0.5 and 0.44 The most centralized saros pass is Sunday 2342 Mar 8 gamma 0.0074 June 2486 passes near perigee while still visible on Earth Leaves Earth Saturday morning 2648 Sep 9 gamma -0.9925 as a 2:49 long TSE, Brianne's birthday just west of Antarctica Peninsula, ALTITUDE -0.7 degrees below ecliptic

Here is the series watching altitude step down lower and lower till it bottoms out May 31 3081 between perigee and apogee, altitude -1.4 degrees below ecliptic
May 3676 passes near apogee, altitude -2.9 degrees below ecliptic
May 4271 between apogee and perigee, altitude -3.3 degrees below ecliptic
May 4866 passes through perigee, altitude -4.6 degrees below ecliptic
May 5461 between perigee and apogee, altitude -4.99 degrees below ecliptic Around year 5842 it bottoms out and transitions from Saros 145 to Saros 406 altitude -5.4 degrees approx

May 6056 already returning as Saros 406, passes thru apogee, now associated with a descending node altitude -4.88 degrees below ecliptic

Saros 406 migrates up, passing thru the apsides every 1200 years May 7246, passes perigee, altitude approx. -3.2 degrees below ecliptic April 8436, passes apogee altitude approx. -1.3 degrees below ecliptic First shows signs of return Oct 1 9247 as an Antarctic partial Dec 28 9391, lands on Earth, hybrid altitude approx. -0.7 degrees below ecliptic April 9626, near perigee, and is now a total, no longer a hybrid because it's near perigee Sep 9842, most central eclipse, gamma -0.0096

Time from the most central pass in Saros 145 to the most central pass in Saros 406 is 7500.5 years.

Another example is Saros 136, descending node, central July 1991 the big one changing to Saros 392, ascending node, central Feb 9492, again 7500.5 years later

Another example is Saros 127 ascending node central Feb 9 1785 (the Africa 2001 saros) changing to Saros 392 descending node central Oct 9339, 7554 years later

Cool.

Completely different question for later....can a conventional saros that changes from total to annular (or reverse) ever make the transition without having a hybrid eclipse?

Some saroses are all totals, more are all annulars, most are a mix. I suppose a saros could be all totals until just before the last central eclipse and then this last central eclipse is purely annular because the Arctic bulge is so small (compared to the equatorial bulge) and so the shadow length from the moon changes very little. Also, the flip flop could happen at the start of a conventional saros. So both transitions should be possible without a hybrid. Must check that.

I checked saros numbers 1 through 200 but all transitions do it with a hybrid. The saros that comes closest to not having a hybrid is Saros 124 at the end, Oct 3 1986. (And Saros 142 at the start) They are all totals but this last one is barely a hybrid... annular / total / annular. How about a weird hybrid ?..... I suppose an Arctic hybrid theoretically could start as annular, transition to total from the small bulge, and if the moon has moved away from the Earth enough in half an hour then not go back to being annular.

SETalk

Eclipses and omens of death ...

From : "Mick Wolf" <mickwolf@picknowl.com.au> To : <SOLARECLIPSES@AULA.COM> Date : Sat, 16 Mar 2002

During the reading of an article on Charlemagne's life and death I came across a very interesting paragraph...;.....

...Very many omens had portended his approaching end, a fact that he recognised as well as others.Eclipses both of the sun and moon were very frequent during the last three years of his life,and a black spot on the sun was visible for the space of seven days.....

The sun spot must have been very spectacular to be seen visually and noticed by the people. Charlemagne died on 28th Jan. 814 in Aix-la Chapelle (Achen), at present in West Germany. Could someone confirm the occurence of solar and lunar eclipses between 811 and 814 AD? Are the eclipses mentioned in Th. von Oppolzer's Canon of Eclipses? Rgs. Mick Wolf.

From : Jean Meeus <JMeeus@compuserve.com>

At the request of Mick Wolf, here are the solar and lunar eclipses which were visible from Aachen (Aix-la-Chapelle) during the years 810-814. The magnitudes of the solar eclipses are for Aachen.

SOLAR ECLIPSES

810 Nov 30 Magn. 0.94 shortly before noon
812 May 14 Magn. 0.58 after noon
813 May 4 Magn. 0.93 at sunset
814 Sep 17 Magn. 0.62 in afternoon

LUNAR ECLIPSES

810 Jun 20 Magn. 1.84 (deep total), at moonrise (evening)
810 Dec 14 Magn. 1.01 (just total), in the evening
812 Oct 23 Magn. 0.07 (small partial), in late evening
814 Oct 3 Magn. 1.12 (total), in the morning

Best regards. Jean Meeus (Belgium)

From : "Mick Wolf" <mickwolf@picknowl.com.au>

Jean, thank you for your info.I expected more eclipses as mentioned by the writer. With regards Mick.

Calender sign

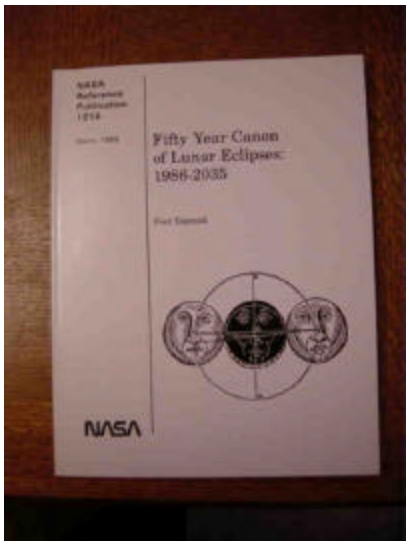
From : "John B. Carlson" <jcarlson@POP.DEANS.UMD.EDU> To : HASTRO-L@WVNVM.WVNET.EDU Subject : Re: Tables of Jupiter Saturn Conjunctions Date : Wed, 20 Mar 2002 14:36:41 -0500

At 11:22 AM +0100 3/20/02, Sepp Rothwangl wrote: Hi John,

>> I recently got a request from a friend about the best, most relaible tables available for scholarly research documenting various types of Jupiter - Saturn conjunctions.

>You will find a lot of calendrical and religious significant alignmnets on: http://www.calendersign.ric.at/en/topics/turn_of_era1/ Sepp

Thank you all so much for sending the many useful replies. This has helped a great deal and I have passed the information on to Lloyd Anderson. HASTRO continues to be one of the best and most useful lists on the net, thanks to the scholarship and courtesy of the members. Viva HASTRO! Sincerely, John Carlson



SETalk

Proceedings of the Meeting "Eclipses and the Solar Corona"

From : Serge Koutchmy <koutchmy@iap.fr> To : patrick_poitevin@hotmail.com Date : Wed, 20 Mar 2002

Dear colleagues, You have received or you will receive soon 2 copies of the Proceedings of the Meeting "Eclipses and the solar corona" (Observations et Travaux, 2001, Vol. 53) that was held in April 2000 in Paris.

More copies are available (9 euros each, free of charge) if you contact saf@fr.inter.net : indicate how many copies you want, your credit card number and the expiration date, and the address where the copies should be delivered.

Best regards, Karine Bocchialini and Serge Koutchmy

Chers collegues, Vous avez du recevoir 2 exemplaires des Comptes-rendus de la Rencontre "Eclipses et couronne solaire" (Observations et Travaux, 2001, Vol. 53) qui s'est deroulee en Avril 2000 a Paris.

Des exemplaires supplementaires sont en vente a la SAF, pour la somme de 9 euros par exemplaire ; les frais de port sont offerts. Vous pouvez contacter saf@fr.inter.net : indiquez le nombre d'exemplaires desires, votre numero de carte de credit et la date d'expiration, ainsi que l'adresse a laquelle les exemplaires doivent etre livres.

Bien cordialement, Karine Bocchialini et Serge Koutchmy

Karine Bocchialini tel : 33 1 69 85 87 39
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From : FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov> To : SOLARECLIPSES@AULA.COM Date : Wed, 20 Mar 2002 13:47:06 -0400

Just published - Proceedings of the Meeting "Eclipses and the Solar Corona" (Observations et Travaux, 2001, Vol. 53) that was held in April 2000 in Paris.

This publication is 78 pages long and includes complete papers by Koutchmy, Clette, Pasachoff, Poitevin and many others. Papers are in either French or English.

For those of you who are interested in how to make digital composite photos of the corona, the proceedings contains two papers on the subject. One is by C. Viladrich, and the other is by me.

Copies of the proceedings can be ordered by contacting saf@fr.inter.net - Fred Espenak

Computer programs

From : Victor Reijs <geniet@IOL.IE> To : HASTRO-L@WVNVM.WVNET.EDU Date : Thu, 21 Mar 2002

Hello all of you, Some years ago Mr Dearborn started some benchmarking of computer software, by looking at the eclipse at Athens in 484 BCE. I continued this idea and added some more computer programs (http://www.iol.ie/~geniet/eng/skyprog.htm), but I was wondering if there are already some better methodologies to 'test' computer programs for archaeoastronomical work (for the region 4000 BCE until 1000 BCE)?Please let me know if other/better benchmarks can be implemented. All the best, Victor

Calculating Delta T

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com> To : SOLARECLIPSES@AULA.COM Date : Thu, 28 Mar 2002 21:07:13 +0000

For those who did not know, please visit following site: Delta T Calculator

http://www.phys.uu.nl/~vgent/astro/deltatime.htm#Javascript%20Delta%20T%20Calculator

SETalk

Oldest recorded eclipse?

From : "Joel M. Moskowitz, M.D." <moskowi@attglobal.net> To : <SOLARECLIPSES@AULA.COM> Date : Thu, 21 Mar 2002 00:03:38 -0500

Comments on this?:

> From: Syzygy Research & Technology <support@syz.com> Date: Tue, 19 Mar 2002 23:10:48 -0700 To: LIskies@aol.com Subject: Discovery of World's Oldest Solar Eclipse Recorded in Stone
>
> Irish Archeoastronomer Discovers World's Oldest Solar Eclipse Recorded in Stone
>
> PRESS RELEASE March 19, 2002 FOR IMMEDIATE RELEASE
>
> Contacts: Dan Charrois, President Syzygy Research & Technology Box 83, Legal, AB T0G 1L0 Canada Phone: 780-961-2213 email: support@syz.com Paul Griffin 38 Jenkins Ave. #511 Lansdale, PA 19446 USA Phone: 215-631-9543 email: flightnow@hotmail.com
>
> Using The Digital Universe astronomy simulation software created by Syzygy Research & Technology, Irish archeoastronomer Paul Griffin has dated and announced the confirmation of the world's oldest known solar eclipse recorded in stone. Images of the event were carved at the Loughcrew Cairn L Megalithic Monument a short distance from Dublin, Ireland, and the software was able to determine that the eclipse occurred on November 30, 3340 BC - 500 years older than eclipse observations made by ancient Chinese astronomers.
>
> Different petroglyphs at the site have been identified with the various stages of the eclipse as it would have been observed. One image shows the relative positions of the Sun and Moon at sunrise on the day of the eclipse. Another indicates the moment of mid eclipse, and a third the appearance of the event when the Sun and Moon set that evening. The eclipse was not yet over when the Sun set, a fact of particular significance considering that the Neolithic people would have been unsure that the Sun would again rise the next day. Deposited charred bones from approximately 48 individuals under a stone basin inside the monument attest to a possible human sacrifice to save their "sky God" (the Sun) from dying as it descended to the "underworld" at the horizon. After the event, a pillar was then erected at the location at which the Sun's rays would have first shone in the site the next morning.
>
> The multitude of descriptive petroglyphs and alignments in the site correspond precisely with the circumstances of the event as modeled by the computer software, providing conclusive evidence that the event depicted was the solar eclipse of November 30, 3340 BC.
>
> For more details of the discovery, please visit http://www.astronomy.ca/3340eclipse/ on the web, or contact either of the individuals listed above.
>
> Syzygy Research & Technology Ltd. Box 83, Legal, AB T0G 1L0, Canada Phone: 780-961-2213 support@syz.com, sales@syz.com

From : "Carton, WHC" <Wil.Carton@corusgroup.com>

Joel, Interesting, but doubtful. My first remark: To a so ancient epoch scientists have no approximate knowledge of the accumulated shift in geographical longitude that is caused by the retardiation of the Earth's rotation and the corresponding clock error (in jargon the Delta T). Specialist F.R.Stephenson devoted his career to study this phenomenon, and I remember that he in his book "Historical Eclipses and Earth's Rotation" quoted no older sources than about 800 BC. Existing software make use of adopted values that are extrapolations with a high guess.

My second remark: The eclipse software Wineclipse of Heinz Scsibrany (Vienna, Austria) says that in the year 3340 BC, which was arithmetically -3339, there occurred an annular solar eclipse on 1st December. The area of visibility would have been the western part of Canada. The short and also narrow path of annulary would have stretched from 70 degrees North 130 degrees West, through 57 N 133W, up to 52N 109W. Summarized: 120 degrees west from Ireland and Dublin, a difference of 8 hours mean solar time. The eclipse software Emapwin of the Japanese Takesako has no older eclipsedata ("Besselan Elements") than the year -3000 (3001 BC). But its algorithm for Delta T for that epoch generates a value close to that of Wineclipse: the eclipse of 3 October -3000 passes in both programs across the same area of the Earth and finishes in both cases on the Antarctic bulge south from S-America.

So I am doubtful about the discovery of Syzygy R&T. I tried to access the website to read more information, but MS Explorer couldnot find it. Wil Carton.

From : "David Bell" <sdbell@gofree.indigo.ie>

Wil, can I have your permission to circulate your email amongst the members of various Irish astronomy clubs? David Bell, Secretary, Irish Federation of Astronomy Societies.

SETalk

Panama 2005

From : Alejandra León-Castellá <leonale@racsa.co.cr> To : patrick_poitevin@hotmail.com Date : Sun, 10 Mar 2002 21:53:51 -0600

I have investigated the path with the help of a local astronomer and this annular eclipse does not touch Costa Rica at all. I guess it is not obvious from Fred Espenak's map, because of the scale. On the other hand, we have not decided where in David (the northern panamanian state) will we go. A cruise might be a better solution, but we would need more detail on the eclipse's path. Our concentration on the Mexican archeoastronomical tour is taking most of our spare time, but soon we will be able to focus on this other one and let you know. Clear Skies, Alejandra

> --- Alejandra León-Castellá <leonale@racsa.co.cr> wrote: My next trip will probably be Panama 2005, much closer to home.

>----Michael Gill wrote: I notice from Fred's map...
>
> http://sunearth.gsfc.nasa.gov/eclipse/TSE2001/TSE2001fig/TSE2001fig16.GIF
>
> ...That the track of the antumbra in 2005 just clips a piece of Costa Rica (either side of Golfo Dulce). Is that region easily accessible?
>
> Since observers will be closer to the apex of the umbral cone in Costa Rica then in Panama and Venezuela (who will get longer annular phase) that might be an option for me if a Pacific total eclipse cruise cannot be arranged. If however, Panama is more accessible, then perhaps I will station myself in the Puerto > Armuelles locality. Clear skies, > Michael

From : FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov> To : SOLARECLIPSES@AULA.COM Date : Wed, 20 Mar 2002 13:29:23 -0400

>> I have investigated the path with the help of a local astronomer and this annular eclipse does not touch Costa Rica at all. I guess it is not obvious from Fred Espenak's map, because of the scale.

My preliminary map is posted at: http://sunearth.gsfc.nasa.gov/eclipse/TSE2001/TSE2001fig/TSE2001fig16.GIF

I also have a detailed file of coordinates for the eclipse path in 0.5 degree steps in longitude. If you would like a copy of this file to plot on higher scale maps, please email directly to me, rather than to SEML. - Fred Espenak

From : Michael Gill <eclipsechaser@yahoo.com>

Using Fred's co-ordinates (thanks Fred for supplying them) I have plotted the central line on an online map which does show the April 2005 eclipse track crossing Costa Rica in the extreme south of the country.

To do this yourself, go to an online map creator: http://www.aquarius.geomar.de/omc/make_map.html

Under the 'BASIC PARAMETERS' heading, input 10 into the 'North' field (i.e. latitude 10 degrees north) -84 for 'West', -82 for 'East' and 8 for 'South'.

Check the 'national boundaries' option. For 'Map Projection' use the Mercator default.

Under the 'PLOT LOCATIONS' heading, check the 'plot user defined locations' box, and the 'connect locations (track mode)' box and then copy and paste the following co-ordinates into the text box on the form (don't forget the commas):

-84.0, 8.2605,
-83.5, 8.3053333,
-83.0, 8.3463333,
-82.5, 8.3836667,
-82.0, 8.4176667,

Then click the 'Create Map' button. After 30-120 seconds you will see a map displayed in your browser showing the Costa Rica – Panama border with the eclipse central line displayed. In my experience this site can be a little 'temperamental' at times, but it was working fine when I used it around 10:30UT on Friday. Michael Gill

From : Alejandra León-Castellá <leonale@racsa.co.cr>

Thank you Michael! Wow! This Digital Cartography site is really neat. Thank you for taking the time to teach me how to use it. I can see the path passing very close to the Isla del Caño (83°52` W, 8°43`N) but the annularity only last around 12 seconds there. Very short. I will keep researching the subject. Regards, Alejandra León Castellá

SETalk

Oldest recorded eclipse — HASTRO messages

From : Ron Baalke <baalke@ZAGAMI.JPL.NASA.GOV> To : HASTRO-L@WVNVM.WVNET.EDU Date : Thu, 28 Mar 2002 10:06:43 -0800

http://www.astronomy.com/Content/Dynamic/Articles/000/000/000/806newea.asp

From : Joanne Conman <joanneco@MAINE.RR.COM>

http://www.astronomy.com/Content/Dynamic/Articles/000/000/000/806newea.asp

Is this being taken seriously? Is there any documented evidence from anywhere in the world in ancient times of people becoming hysterically panic stricken at an eclipse and then reacting by spontaneously sacrficing each other? Is there any documented evidence of human sacrifice in history as a routine response to an eclipse? (this is excluding Hollywood's version of history)

I know Babylonians had beliefs about the dangers of eclipses, but who else is factually known to have held beliefs about eclipses? What is the evidence?

Is every ancient drawing of a circle now going to become some ancient's "photo" of a celestial body; every animal painted or carved somewhere, an ancient constellation? Is this really considered to be science? wondering, Joanne Conman

From : Patrick Poitevin <patrick_poitevin@HOTMAIL.COM>

Sorry for those subscribed as well to the Solar Eclipse Mailing List (see below). Thes econversations took place a while ago about these "findings":

begin SEML messages --- .../...

From : Victor Reijs <geniet@IOL.IE>

Hello all of you, This eclipse story is precisely picking up the point we discussed some days ago; accuracy of computer programs.

Patrick Poitevin wrote: Specialist F.R.Stephenson devoted his career to study this phenomenon, and I remember that he in his book "Historical Eclipses and Earth's Rotation" quoted no older sources than about 800 BC. Existing software make use of adopted values that are extrapolations with a high guess.

This reference sounds interesting (is is more remote that the one I now use: in 484 CE), is there some information on this eclipse: Location, time of day, totality, etc. Perhaps I can extent my information with this older eclipse: http://www.iol.ie/~geniet/eng/skyprog.htm

I think we should urge the software makers to implement something as a VERY visible accuracy warning (say when error becomes more than 0.??°, is easy to implement, I would say). All the best, Victor

From : Frank Reddy <fjr1@MINDSPRING.COM>

Out of curiosity, what are the oldest accepted solar and lunar eclipses? Frank Reddy Newberry, SC

From : Patrick Poitevin <patrick_poitevin@HOTMAIL.COM>

(Continued on page 27)

SETalk

I think quite interesting is the Delta T Calculator from Harry van Gent:

http://www.phys.uu.nl/~vgent/astro/deltatime.htm#Javascript%20Delta%20T%20Calculator

From : "Dr. Michael A. Rappenglück M.A." <mr@INFIS.ORG>

Frank, this may be a first hint on some of them. The Ugarit eclipse from the 5th of March 1223 BC may be one of the first. But their also are some rare examples in very ancient Chinese sources.

But there really exists the problem of a sufficient accuracy of the software and the basic astronomical values for computation. I quickly checked the solar eclipse stated by Paul Griffin and found, that using different software I get very differend results. A colleague of mine Henrik Goranson, Sweden had developed a special software to compute solar eclipses for the Bronce Age and to check, whether some rock pictures might represent certain solar eclipses. But I think without a reliable archeological dating it is pretty doubtful to make valuable statements.

We need not astronmical based datings for proposed solar eclipses in the record. It is necessary to have a longer empirical basis in time to calibrate astronomical algorithms and the corresponding software. Michael

From : "Dr. Michael A. Rappenglück M.A." <mr@INFIS.ORG>

Frank, ok. I forgot the URL: ttp://www.nunki.net/isis/jacf3article1.htm Michael

From : gorm <gorm@HBAR.PHYS.MSU.RU>

As for software, than the best program for displaying eclipses I know is EmapWin http://www2c.biglobe.ne.jp/~takesako/cal/emapwin_eng.htm by Shinobu Takesako.

Concerning the eclipse of 14 January 484, I would like to admit that it is described in the "Life of Proclus" by Marino Neapolitano and there is a discrepancy in translations of whether there is indeed a mention in the text about sunrise.

Stephenson gives translation of Rosan (1949): "A year before his death there were various omens. There was an eclipse of the Sun which was so pronounced as to turn day into night and the darkness was deep enough for the stars to become visible; it occurred in the eastern horn of the sign of Capricorn. And the almanacs predicted another eclipse that would occur after the first year. They say that such events that are observed to happen in the heavens are indicative of things that happen on the earth; so that these eclipses clearly foretold us of the privation and departure as it were of the light of philosophy."

And D.Schove and A.Fletcher (Chronology of eclipses and comets AD 1-1000) give translation of J.F.Boissonade, 1814: "This happened in Capricorn near the rising point (of the Sun)." In latin version of the source critical words are "in cardine orientali", which indeed looks like sunrise point, and what about greek version?

According to D.Schove and A.Fletcher there is another not contemporary record about this eclipse from the Near East during the last battle of Piruz (Peroz), king of Perses. Best wishes, Michael

From : Gary Thompson <gtosiris@MPX.COM.AU>

[snip] ... The Ugarit eclipse from the 5th of March 1223 BC may be one of the first. [snip]

Hi Michael. From memory I think that whether this is an eclipse (dated possibly also to 14th century BCE as well as date above) is still uncertain. I think the reasons for uncertainty were mentioned by Dr Hermann Hunger on HASTRO-L some years ago. Regards, Gary Thompson

(Continued on page 28)

SETalk

From : Gary Thompson <gtosiris@MPX.COM.AU>

Hi Sepp, I think you will find that the date you mention above is thatconnected with David Rohl's proposed "new chronology" for the so-called Ugarit Eclipse Tablet. (I thinks also that somebody else doing "revisionist chronology" proposed a date of May 20th 1078 BCE.) The two dates that were able to be originally postulated for the so-called Ugarit Eclipse Tablet were May 3rd 1375 BCE and 5th March 1223 BCE. Dr Hermann Hunger has quite convincingly shown that the tablet under discussion does not contain a record of an eclipse. Regards, Gary Thompson

From : Gary Thompson <gtosiris@MPX.COM.AU>

Oops .... I forgot to mention in my previous posting that David Rohl's proposed date for the so-called Ugarit Eclipse Tablet was, it appears, based on computer retrocalculation. GDT

From : "Dr. Geoffrey Kolbe" <geof@BORBAR.SCOTBORDERS.CO.UK>

Gary In view of the importance - or perhaps notoriety - of this tablet, perhapsyou could briefly state Dr Hermann Hunger's arguments? Thanks, Geoffrey Kolbe

From : "Dr. Michael A. Rappengluck M.A." <mr@INFIS.ORG>

Dear Geoffrey, here are some statements of Dr. Hunger: Ugarit

From: Hermann Hunger Hermann.Hunger@univie.ac.at">Hermann.Hunger@univie.ac.at To: ppoitevin@village.uunet.be Subject: Solar eclipse in Ugarit Date: Wednesday, April 28

Please exclude the supposed solar eclipse of -1374 from your list. As you quote yourself, the word used means "to set". The beginning ("put to shame") is also uncertain. There is no indication of an eclipse, but just to sunset, and (the god) Reshep being in attendance. whether Reshep is Mars here, is also open to doubt. If it is, we have an observation of Mars at (after) sunset. It is used as an omen, so no astronomy is involved. Yours, Hermann Hunger University of Vienna

made at http://www.mreclipse.com/SENL/SENL9907/SENL907ab.htm and Just two notes of caution about very early solar eclipses:

>May 03, 1375 BC Syria: A clay tablet found at that site notes that "the day of the new moon in the month of (April-May) was put to shame. The sun went down in the daytime with Mars in attendance. This means the overlord will be attacked by his vassals." ulysses 3/97

The translation of this Ugaritic text is not beyond doubt, to put it mildly. In particular, "was put to shame" was also translated as "on the sixth" (day) and again differently by others. "went down" is the same word as that used for "to set" (said of celestial bodies) in cognate languages. "in the daytime" is not in the text. The last sentence has also been translated as: "Livers were inspected: (it meant) danger". This probably suffices to show that there is no reliable solar eclipse record fro m Ugarit. Reference: C. B. F. Walker, Nature 338 (1989) 204-205.

>May 28, 585 BC The first known prediction was made by the Greek philosopher Thales, who forecast the eclipse of May 28, 585 BC. This occured near sunset in the Mediterranean area, and is said to have put an end to a battle between the forces of King Alyattes of the Lydians and King Cyaxares of the Medes. It was in the midst of their battle and scared both sides.

In Herodotos' account of the battle, Thales is said to have predicted theeclipse "for the year" in which it actually occurred. This makes it very unlikely that he could predict a solar eclipse to the day (or at least for a certain new moon). As far as is known, no astronomical theory capable of predicting solar eclipses existed in Thales' time. I take this from O. Neugebauer, The Exact Sciences in Antiquity, and A History of Ancient Mathematical Astronomy .

Hermann Hunger Institut fuer Orientalistik, University of Vienna, Austria Universitaetsstrasse 7 A-1010 Vienna Fax: +43-

SETalk

1-4277-9434

at HASTRO-L http://wvnvm.wvnet.edu/htbin/listarch?$ITEM$&HASTRO-L&LOG9804&A:SCMCC.ARCHIVES&6425&50 greetings Michael

From : Michael Mickelson <mickelson@DENISON.EDU>

Neugebauer's comments notwithstanding, Willy Hartner puts forth an interesting analysis of the Thales eclipse making use of eclipse patterns. The article appears in Centaurus vol. 14: no. 1 : pp. 60-71 (1969). mike mickelson

From : "Dr. Geoffrey Kolbe" <geof@BORBAR.SCOTBORDERS.CO.UK>

Thankyou Michael Rappengluck for posting Hermann Hunger's comments on the Ugarit Eclipse Tablet.

As has been noted, David Rohl has used this tablet as (part of his) evidence for redating much of Egyptian Pharaoh chronology. Dr Hunger is pretty dismissive of the translation and so in turn we are tempted to be dismissive of David Rohl as a "revisionist".

But. In his book "Pharaohs and Kings" David Rohl cites the eclipse translation as that of Wayne Mitchell - 1990: 'Ancient Astronomical Observations and Near Eastern Chronology' in JACF3,pp.18-20, which in turnis based on that of Sawyer and Stevenson - 1970: "Literary and Astronomical Evidence for a Total Eclipse of the Sun Observed in Ancient Ugarit on 3 May 1375 BC" in BSOAS33,pp.467-89, with the added observation of C.B.F. Walker - 1989: "Eclipse seen at Ancient Ugarit" in Nature 338,pp.204-05, where he states: "At first sight the text refers to an event occuring at sunset".

Unless there are later translations which rebutt these works, one can only conclude that David Rohl has been careful to use the best translation of this tablet

Is Dr. Hunger just reflecting an increase in understanding of Ugaritic texts? His only reference was to the Nature article of C.B.F. Walker in 1989, and Rohl cites later work.

Or, dare I say it, is there some politics at work here.....? Geoffrey Kolbe.

From : Gary Thompson <gtosiris@MPX.COM.AU>

Hi Geoffrey,For a critical discussion of David Rohl's chronology (and the identification of some significant flaws with such) see the essays posted at: http://www.bga.nl/en/discussion/ Regards, Gary Thompson

SETalk

Sunset over LA from Griffith Observatory (by PP)

Sunset eclipses

From : Egan Mark <astrophoto@yahoo.com> To : SOLARECLIPSES@AULA.COM Date : Tue, 26 Mar 2002 00:23:42 -0800 (PST)

Hey Folks My name is Mark Egan, and I am from Houston. I've been looking at the messages on this mailing list for a while now (through www.astroarchive.com) and I've been enjoying reading them. I've also been enjoying following many of your eclipse chasing endeavors over the years.

I finally got around to joining the group (yaaay, me!!!) and thought I'd make a few postings.

I'm looking forward to meeting many of you at the Hard Rock Cafe in PV on June 9-- my flight arrives at 2:30 that day, and I'll be staying at the Playa De Oro hotel. Is anyone else here staying there?

Glenn Schneider noted that we have 2 sunset eclipses this year, so it will be interesting to compare the two. (although I can't go to the total. lack of funds. :-( )

I, like most, am interested in the view of the sun during maximum eclipse (the annulus, Bailey's Beads, etc.)

But, as a photographer and "nature observer", I'll also be interested in the wide- angle view. Not just to the west, where the sun will be....but north, south, east, and overhead.

In his (fabulous, if I may say so) book "Light and Color in the Outdoors", M.G.J. Minnaert describes a "typical" sunset in detail. (pages 292 through 298, in my version (1993 printing)

He also describes more features about sunset and twilight on pages 298-306, and 326-327.

It may serve all of us well to watch a few sunsets ourselves (clear and cloudy) to compare the colors and light levels between the eclipses this year and "typical" sunsets.

Perhaps those who have watched sunset (or sunrise) deep partial or total eclipses can enter some input here on the "lighting" of an eclipse of this nature.

I myself would love to run, let's see, 6 video cameras: 1 close- up to the sun, and one facing each direction, and 1 looking overhead, all with wide-angle lenses....

but again, lack of funds prevent me from doing that. :-)

So I guess I'll get my wide angle perspective using the cheapest but most delicate "camcorders": my own two eyes. Later, folks! Mark Egan astrophoto@yahoo.com

From : "Marc Bernstein" <marc.bernstein@worldnet.att.net>

For more "twilight science" you may also want to check out the following:

Sunsets, Twilights and Evening Skies by Aden and Marjorie Meinel 1983. out-of-print but should not be too difficult to find

Color and Light in Nature, second edition, by David Lynch and William Livingston 2001

SETalk

Easter day and lunar eclipses

From : "Onderbeke Julien" <hortarosa@pi.be> To : <Solareclipses@aula.com> Date : Tue, 26 Mar 2002 20:18:29 +0100

Although this is a solar eclipse mailing list, I take the “risk” to write something about Lunar Eclipses. As we are now in the week before Easter Sunday (the Holy Week) for Christianity it is interesting if eclipses can occur at the end of this week.

As Easter Sunday is defined (in the Catholic Church) as the first Sunday after the full Moon which falls on the vernal equinox or later, it is impossible to have solar eclipses in the “neighbourhood” of Easter Sunday. The earliest possible date of Easter is on March 22, the latest possible date is on April 25.

The days before Easter have special names. Thursday is called Maundy Thursday, Friday is Good Friday (the day of Christ’s death) and Saturday is Holy Saturday.

I searched for total lunar eclipses on one of these days in the period 1583-2083 (the first 500 years of the Gregorian Calender). The list (which gives us the “Luna XIV paschalis” that is totally eclipsed) would be much longer if we take partial lunar eclipses and lunar eclipses in the penumbra into account.

The results :

Year	Total Lunar Eclipse	Day	Easter Sunday
1606	24.03.1606	Good Friday	26.03.1606
1772	17.04.1772	Good Friday	19.04.1772
1819	10.04.1819	Holy Saturday	11.04.1819
1866	31.03.1866	Holy Saturday	01.04.1866
1884	10.04.1884	Maundy Thursday	13.04.1884
1931	02.04.1931	Maundy Thursday	05.04.1931
1968	13.04.1968	Holy Saturday	14.04.1968
1978	24.03.1978	Good Friday	26.03.1978
1996	04.04.1996	Maundy Thursday	07.04.1996
2015	04.04.2015	Holy Saturday	05.04.2015
2033	14.04.2033	Maundy Thursday	17.04.2033
2062	25.03.2062	Holy Saturday	26.03.2062
2080	04.04.2080	Maundy Thursday	07.04.2080

SETalk

March 2002 issue of 'Shutterbug' - X-ray scanning in airports

From : "76630,2206" <76630.2206@compuserve.com> To : "INTERNET:SOLARECLIPSES@AULA.COM" <SOLARECLIPSES@AULA.COM> Date : Fri, 29 Mar 2002 13:28:31 -0500

I know that this my be late, but I have been very busy with issues relating to my wife's and my emigration from the USA. I do believe that this matter is important for this year's and future eclipse expeditions:

The 3/2002 issue of Shutterbug (USA) magazine has a feature article on the augmented airline security and its effect on film. I found it very informative.

I know that for all of us, solar eclipses are quite important and our images count among our most valuable possessions. The risk posed by airline x-ray scanners that may not be avoided (as far as I know, the only country that requires security personnel to hand-inspect carry-on bags on request is the USA) is significant, and if film is in lead-lined bags, security personnel may turn the x-ray machine to the highest setting to penetrate the lead.

I have taken exposed eclipse film through the metal detectors on my person, and that has worked before, even through the UK airports. However, the safest way to bring the images back in one piece is to get them processed before the return trip. It behooves all who are going to South Africa or Australia to identify where the best and most reliable labs are and spend a day (even an extra day) getting the film processed there.

For those in SA or "Oz", can you help us with information on these labs? --Robert B Slobins

From : FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov>

I have taken three trips to South Africa in the last two years and will return in December. I always carry my film in lead bags in my CARRY ON luggage and I have never had a problem with security or with fogged film.

Note that it is critical that the film be packed on your CARRY ON luggage. Checked luggage is subject to much stronger x-ray inspection which could damage film. - Fred Espenak

From : Jay.M.Pasachoff@williams.edu

Mr. Slobins's question about how lead-lined bags are treated is important. I have heard that the personnel don't actually turn up the x-ray strength but, rather, merely turn up the display. But I would like that verified. And I guess they sometimes move the conveyor belt back and forth, increasing the exposure. Jay Pasachoff

From : Vic & Jen Winter <webmaster@icstars.com>

We just took our lead-lined bags to South Africa this March for our site inspection trip. We brought the typical amount of film (around 50 rolls) and our typical amount of camera gear.

While airport security was markedly higher than last year, what we noticed was actually the opposite effect on our unusual carry-on cargo. We also always bring either a 500mm or 600mm Nikkor in carry-on as well. In the past, with both a large, lumpy lead bag and a mechanical cannon of a lens going through X-ray we were accustomed to the same ritual of loading our equipment onto the belts, watching it advance until it reached the bag; back-up and promptly draw a crowd of on-lookers to the view-screen. We have been told that they use more than JUST X-ray. The last technician we spoke to indicated that the newer systems use both Xray and sonogram technology. It wasn't an official report, but the colors looked pretty on the screen.

This trip was quite the opposite of normal. The bags were handled much more, but our lead bags weren't examined even as long on X-ray as before. What we did notice is that the bag contents are handled much more than normal. There were many instances where we were required to prove that an electronic component WORKS. Turn on the cell phone. Turn on the camera so I can see it works. We also took the extra precaution of packaging our extra lenses in ziplock bags. This way, the at-

(Continued on page 33)

SETalk

tendants could see the contents, but didn't need to paw the optics.

On another note, on our return, I noticed that our lead bag is aging quite a bit. I examined it closer to find that after years of abuse, it has many cracks in the lead lining and cannot be providing complete protection as it was designed to. We took ASA 100, 400 and 800 Fugi color negative film. On development, NONE of our film showed any signs of fogging after perhaps 15-20 sessions through xray. I suggest that if your lead bag is more than a year or two old, check it carefully on the creases and bends to see if it hasn't cracked open a bit inside the layers of plastic.

BTW, while a 500 or 600mm are great focal lengths for shooting the eclipse, I wouldn't necessarily think one would need such a monster to achieve good wildlife photography. Many of those rolls through that camera revealed great pictures of an elephant's EYE only. We did get some good shots with the 500, but the 80-200mm zoom worked much better 90% of the time.

From : "Crocker, Tony (FSA)" <Tony.Crocker@transamerica.com>

For compact travel and amateur photography I bought a 28-300mm zoom lastfall in anticipation of this year's trips to the Winter Olympics and South Africa. I have little doubt after the Olympics that it will be perfect for safari, and while not ideal for the eclipse better than the 210mm I used in 1999.

At every Olympic security checkpoint we were were required to turn on camera and cell phone electronics. I did forget to turn the camera off a few times, but the battery was new and lasted the whole week.

From : "76630,2206" <76630.2206@compuserve.com>

Fred: I do the same as you. But I always try for hand inspection to assure that the rolls do not even go through X-ray.

I am sure that most on this list know, but it's worth remembering that X-ray damage is cumulative. And one needs to be sure that the lead is thick enough for the speed of the film he is carrying. -Robert B Slobins

From : "76630,2206" <76630.2206@compuserve.com>

Jay: You are correct; I have seen the guards hold the carry-ons in the machineif they are not sure of what they are looking at. I often tell guards that since the film is in lead bags and they would have a difficult time seeing inside, it would bein every-one's best interest for a hand inspection.

That even worked in the UK, whch has been extremely cautious about terrorism for decades. --Robert B Slobins

From : "Joel M. Moskowitz, M.D." <moskowi@attglobal.net>

The xray machines for carry-on do not have the capability to have their xraystrength altered. What the personnel do is turn up the gain in the image processing. And, yes, the film is visible through the lead bags, but the exposure is decreased by the lead.

From : Mike Simmons <msimm@ucla.edu>

I've been told by a local photo shop that the x-ray machines used to inspect carry-on bags are now much more powerful than before and that the old lead-lined bags won't protect the film any more. Can anyone shed light on this? They now sell much heavier lead bags than the standard I've been using for years. Is this necessary? Mike Simmons

From : "Olivier \"Klipsi\" Staiger" <klipsi@bluewin.ch>

with all this problem about Xray on film, you might want to get a digital camera sooner or later.

New cameras arriving soon on the market:

SETalk

CANONwill have an EOS D60 model with 6 Mpixel Cmos (not CCD) for , probably,around 5'000 $ more or less. You can use the full line of EF lenses with that camera.

SONY video cameras: new Digital8 model will now have STREAMING USB ! the USB portallows to do streaming , so you can use the cam as a webcam, too, e.g. with NetMeeting. Provided you have the necessary software to do streaming right on your web-site it will be soon possible to do live streaming of an eclipse.This videocamera has x25 optical zoom, equivalent to around 1150mm focal length. Time to upgrade ! ;-) Klipsi

From : Mike Simmons <msimm@ucla.edu>

The D60 will cost $2200 or $2300 in the US. It's coming out for less than the current D30 model. The EOS-1D will cost $5500 US. I've used the D30 a little and it's an excellent camera, very similar to my Canon A2/EOS5. The D60 will be an improvement. I'll be taking one or the other on a trip in May because I'll be filing regular reports on an online magazine site and need digital. Mike Simmons

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com>

Following contributions have been posted on the SEML and published in the SENL. Please have a look:

Volume/Volume-Year-Month-Part/Tittle/Pages/WebPages

6 6 2001 06b Films and X rays page 72 to 77 http://sunearth.gsfc.nasa.gov/eclipse/SENL/SENL200106B.pdf

6 7 2001 07 Sa X ray machines at Heathrow 32 to 34 http://sunearth.gsfc.nasa.gov/eclipse/SENL/SENL200107A.pdf

Best regards, Patrick

From : Evan Zucker <ez@AbacusTotality.com>

I flew yesterday from Maui, Hawaii to San Diego, California. In Maui we were directed to an X-ray machine to X-ray our check-in luggage, but the ticket agent, as well as signs on the machine, said to tell the machine operator if we had film in our luggage. We told the operator we had exposed film in 2 of our 4 suitcases, and we were allowed to skip the X-ray machine and have our luggage swapped for explosive residue by another official. She swapped my hands too.

I found that security in Maui and at Kona on the Big Island was stricter than any airport I've been at on the mainland since September 11. At Kona I had to remove my shoes twice -- my wife had to remove hers once -- and even my 9-year-old son has to stand like a scarecrow for the handheld metal detector sweep. At least they spared my 4-year-old.

While on the Big Island, I had the thrill of ascending to the summit of Mauna Kea as part of a tour group. What a great place that must have been (but for the marginal weather) to observe the 11 July 1991 total solar eclipse.

I was amazed how cold and windy it was up there, and I definitely felt queasy from the altitude. What really annoyed me was the battery on my Canon EOS A-2E dying, presumably from the cold. It revived after we returned to 9,000 feet, near the visitor center. I had only been using the battery for one month since the exact same thing happened to me last month at the Olympics in Salt Lake City. Since this didn't happen to anybody else's camera in our group, I'm thinking that my aged camera has become too susceptible to cold weather.

Fortunately, my birthday is in just 2 weeks, which would leave me plenty of time to break in a new camera before the June 10 annular eclipse. Does anybody have any recommendations for a replacement for my A-2E? I usually shoot slides. -- EVAN

From : Assoc Prof J R Huddle <huddle@usna.edu>

Several times, I have SEEN them move the conveyor belt back and forth. A friend who is a pilot tells me this is so the examiners

(Continued on page 35)

SETalk

can get different angles, or different perspectives on objects they don't recognize. Jim Huddle

From : Assoc Prof J R Huddle <huddle@usna.edu>

Regarding airport security, Jen Winter wrote, "There were many instances where we were required to prove that an electronic component WORKS. Turn on the cell phone. Turn on the camera so I can see it works." Guess that means to add "Install new batteries" and "Recharge cell phone" to your departure checklist... Jim Huddle

ASE 2002

Meeting in PV

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com> To : SOLARECLIPSES@AULA.COM Date : Fri, 08 Mar 2002

In regard of the annular eclipse of 10 June, Puerto Vallarta in Mexico is expecting quite a few eclipse chasers. While some people leave immediately after the event, Joanne and I wanted to gather all chasers the night before, June 9th.

Chasers are staying in the PV Holiday Inn, La Jolla De Mismaloya, Intercontinental Presidente, Vista Playa de Oro, etc., etc.

We suggest we meet at a neutral place. Please meet us June 9 evening in the Hard Rock Cafe:

Av. Presidente Diaz Ordaz 652
Col. Centro, C.P. 48300
Puerto Vallarta
tel. 523 223 2702

Open from 11 am to 2 am See http://www.hardrock.com/locations/cafes/Cafes.asp?Lc=PUER

From : Alejandra León-Castellá <leonale@racsa.co.cr>

Hi all! We are trying to put together a group from Costa Rica for an archeoastronomical tour that will visit Mexico City, Teotihuacan and end up in Puerto Vallarta. We would love to meet others that night before the eclipse. Alejandra León Castellá Fundación CIENTEC San José, Costa Rica

Paved roads south of PV

From : "Olivier Staiger" <klipsi@bluewin.ch> To : <SOLARECLIPSES@AULA.COM> Date : Mon, 11 Mar 2002

news from PV: Carlos Leon, GM of PV's tourism office (whom I met last year in Geneva at a tourism trade show), tells me " There are paved roads to must of the towns in the detail map you sent.Actually yes there are a couple of hotels towards that area but I do not know if they have the infrastructure you require to do a live transmission. I will try to find out more about this. " more soon...

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Eclipse in Puerto Vallarta (PV)

From : "Olivier Staiger" <klipsi@bluewin.ch> To : <SOLARECLIPSES@AULA.COM> Date : Sun, 10 Mar 2002 09:31:39 +0100

here are a few gif animations I just made , using cybersky, mspaint, irfanview, and 3space gifanimator:

eclipse as seen from centerline a few miles south of PV, with sunset following: http://eclipse.span.ch/southofpvoncenterline.gif

eclipse as seen from PV http://eclipse.span.ch/pvanim.gif

sunset as seen from PV http://eclipse.span.ch/sunsetpv.gif (no animation, single image)

of course, this does not include clouds, air refraction, air movement. cheers,

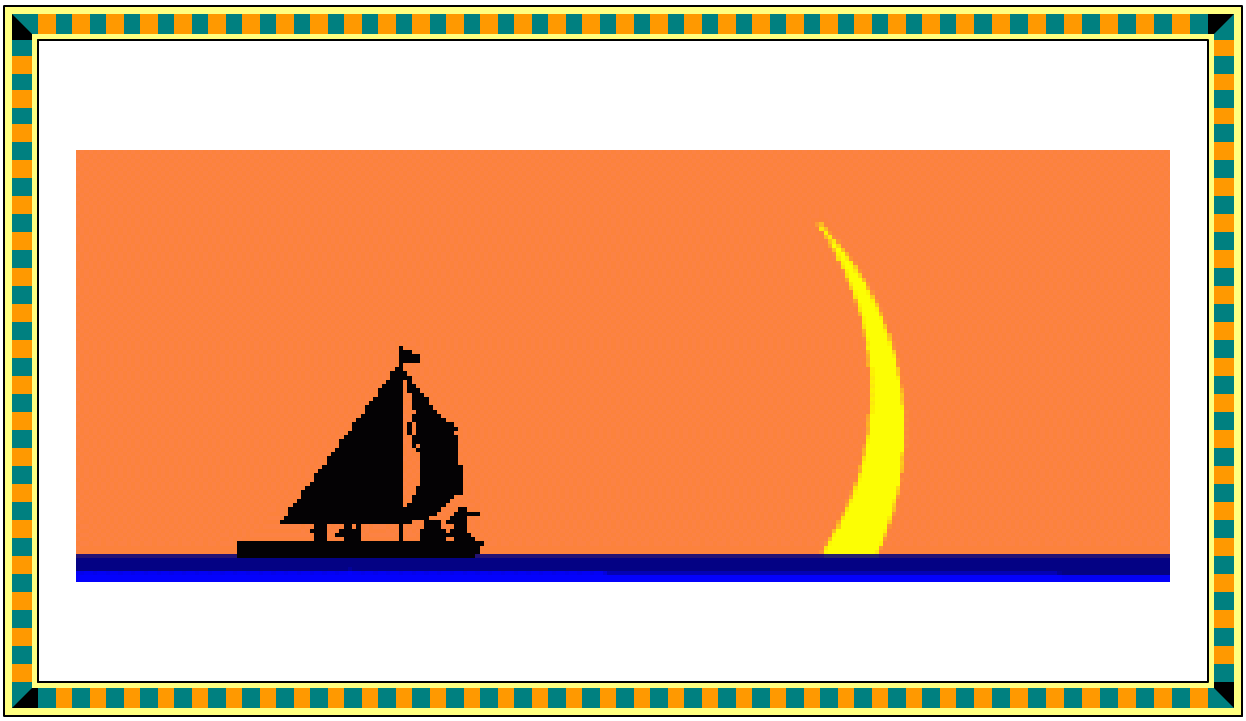
From : Jörg Schoppmeyer <schoppy@kwsoft.de>

I saw the eclipse of May 30, 1984 near sunset under good conditions in Morocco. I was near the Atlas mountains. The ring was thin but you were not able to see so many beads like in Oliviers animations. So don't expect too much..... CU in Puerto Vallarta ! Joerg

From : olivier.staiger@span.ch

dear Schoppy , yes, the animation does show more beads artificially enhanced. furthermore the animation is for what you see from the centerline, where beads are small and shortlived. best beads for annular eclipse is from northern limit (because southern limb of Moon has deeper contrast mountain/valleys than if you look from southern limit , where you see the profile of the northern limb at an annular eclipse - at least this is what I've learned)

Jay Anderson's map at http://home.cc.umanitoba.ca/~jander/Ann2002/mexico02.jpg shows village road from Pizota to la Sauceda is on the coast AND on northern limit. so this is where , in theory, I'll head for best combination of both beads AND sunset view. I'll visit the place for sunset the day before and judge on the spot. if view is not good, I'll go further south , along Jay's map (Jay, thanks a lot, great map ;-) And weather may also make me drive elsewhere on June 10, of course. but this is my plan for June 9: go see sunset from SW of Pizota, then head back to PV to join you guys at Hard Rock Café ! has anybody driven that road to Pizota yet ? do you need a 4x4 or is the road paved ? How big is Pizota ? any restaurant, hotel , bar in Pizota ? Klipsi



ASE 2002

Weather prospects for 10 June 2002 Annular eclipse

From : Eric Pauer <pauer@bit-net.com> To : Solar Eclipse Mailing List <solareclipses@aula.com> Date : Mon, 11 Mar 2002 16:19:24 -0500

I'm looking for information on weather prospects along the coast of Mexico (south of Puerto Vallarta) near the sunset terminator for the upcoming annular eclipse. With the sun at such a low angle, what are the chances of a decent view of annularity from that location? Perhaps some folks who were in the PV area for the July 11, 1991 TSE might comment, although this eclipse is about a month earlier in the year. What is the typical weather and cloud cover like in that area of Mexico during early June? Any links or advice would be appreciated. Regards, Eric

From : "Olivier Staiger" <klipsi@bluewin.ch>

Jay Anderson has excellent info, see http://home.cc.umanitoba.ca/~jander/Ann2002/annintro.html

in short, if I read it well: cloudy inland, clear out at sea. If you can get a boat, do sail out ! If not, chances are, looking NW, sun is just visible below overhead clouds. Klipsi

From : Evan Zucker <ez@AbacusTotality.com>

I'm no expert, but from everything I've read this year and back in 1991, the prospects for clear skies on the horizon aren't great. I belive June is the time of year when towering cumulus clouds start to build in the afternoon, especially late afternoon, which is when annularity occurs. That's why I've thought the best weather prospects would be a boat about 70 miles south of Cabo San Lucas.

I guess the good news is that the clouds may be more likely to accumulate toward the mountains in the east than toward the gulf in the west. -- EVAN

Another animation

From : "Olivier Staiger" <klipsi@bluewin.ch> To : <SOLARECLIPSES@AULA.COM> Date : Sun, 17 Mar 2002 23:12:06 +0100

yo ! another gif animation of eclipse and sunset as seen from Puerto Vallarta , slightly north of northern limit (thus, no ring) http://eclipse.span.ch/pveclipsanim.gif enjoy ! Klipsi

Hola gringo !

From : "Olivier Staiger" <klipsi@bluewin.ch> To : <SOLARECLIPSES@AULA.COM> Date : Wed, 20 Mar 2002 12:45:07 +0100

Hola Muchachos y Muchachas ! Vamos con el loco Klipsi a ver un eclipse del sol in Mexico. Hastalavista!

benvenido a: http://eclipse.span.ch/liveframe.htm

;-) this page is frame-based, so only the frame with the image does refresh. refresh rate currently 60seconds, maybe I'll do 45 seconds by June 10.

also, it is not yet decided if I'll really do a live webcast, or just upload nearlive. If I find a phone line to webaccess on the northern limit , with view to sunset (e.g. in a hotel near Pizota ???) then I might choose to do so. it seems that GSM 1900 phone works in PV, but not for data transfer, only voice

we'll soon know. Anyway, this above page is a starting point for my live - or nearlive - report. enjoy ! Klipsi

P.S. I had an interview on Radio Swiss International today. will be aired some time soon within 1-2 weeks, dunno precise date, will advise asap . Radio Swiss International can be heard worldwide on shortwave radio. or read on the web www.swissinfo.org .

Hotel change in PV

From : "Olivier \"Klipsi\" Staiger" <klipsi@bluewin.ch> To : <SOLARECLIPSES@AULA.COM> Date : Mon, 1 Apr 2002 17:56:37 +0200

for those who want to contact Klipsi in PV, June 8-11, I have changed hotel. will no more stay at Intercontinental Presidente hotel. New: Klipsi will stay at La Jolla de Mismaloya hotel one mile closer to the northern limit ;-) anyway, I will meet with all of you at Hard Rock Café June 9 evening. however I will arrive there long after sunset as I plan on observing sunset from along the northern limit, scouting for possible areas. C-ya soon Klipsi

From : "Mark" <rainbowsymphony@rainbowsymphony.com>

Has anyone checked Yelapa Bay for a possible viewing site? This is just south of PV. Maybe to far south... take a look! Great place to hang out! http://www.yelapajal.com/ Mark

From : "Olivier \"Klipsi\" Staiger"

ASE 2002

(Continued from page 37)

<klipsi@bluewinch>

Yelapa is just outside the northern limit ! you may see nice Baily's beads, though. it is just a stroll from Pizota on Jay Anderson's map, see http://home.cc.umanitoba.ca/~jander/Ann2002/mexico02.jpg Yelapa is officially "only accessible by Sea" , allthough the road to Pizota goes to Yelapa, mostly for construction / delivery. 99% of visitors go to Yelapa by boat. see http://www.yelapa.com and their linkspage as you can see there are lots of trees in the hood. some of the Yelapa beaches will certainly offer clear view to WNW sunset. But there is sand for sure. Also, keep in mind: once you are there, you can't get out easily, in case of weather change. Plus, do verify if your taxi-boat brings you back after sunset ... also, Yelapa used to , till recently, only have solar power, no telephone. This has just recently changed. It is still very laid back. No deluxe hotels.

to learn more about Yelapa simply go http://www.google.com and type in Yelapa , also on the picture search, very helpful ! Klipsi

From : "barr derryl" <dbarr@nque.com>

Klipsi and All: Good choice! I reserved rooms at La Jolla de Mismaloya in December for the same reason. In fact, my wife and daughter plan to observe the eclipse from the hotel's beach. They are not what one would call real hard core eclipse chasers. I will look forward to visiting with you and any other eclipse enthusiasts who are in the area. Best Regards, Derryl Barr

Eclipse Near Misses

From : Egan Mark <astrophoto@yahoo.com> To : SOLARECLIPSES@AULA.COM Date : Tue, 26 Mar 2002 00:29:22 -0800 (PST)

Hey Everyone It struck me recently (with Puerto Vallarta in the eclipse-chaser news) that Puerto Vallarta itself is having a bit of "bad luck" when it comes to recent eclipses:

1991: totality passes approximately 25 miles to the North of PV

2002: annularity passes about 25 miles south of PV

Hmmm.... when does PV itself get a central eclipse?

It also reminds me of other "near misses" (major cities or landmarks just outside the path of totality or annularity-- most notably Paris 1999 and The Taj Mahal 1995.....

(Perhaps something could be done about that. just kidding. :-)) comments? Later! Mark Egan astrophoto@yahoo.com

From : Evan Zucker <ez@AbacusTotality.com>

I'd take that kind of "bad luck" any day! -- EVAN

From : Egan Mark <astrophoto@yahoo.com>

> I'd take that kind of "bad luck" any day! -- EVAN

Hmmmm..... agreed. I sure would like a central eclipseor two to come around my area (Houston) but that's not going to happen in my lifetime..... :-(

Funny thing is.... it's not so much for myself. I'm addicted. I'll go anywhere now to see one... (assuming that it's safe and

ASE 2002

that I can afford it)

What I really want is all my friends and family to see one.... and it would be easy for me to convince them to "drive 50 miles to see a total (or annular)eclipse" with me.....

but I'll never get to do that....

it's going to be hard to convince them to go to placeslike Turkey in 2006 or Mongolia in 2008, etc.

Ever since I saw a total eclipse, I've wanted to "spread the word" to everyone I know (especially family and friends)

I'm sure many of you have done that..... how successful have you been? Have any of you been able to convince family, friends, or acquaintances to see a total eclipse? How far were they willing to travel? What did they think? thanks! C- U later! Mark!!!!!

From : Marc Weihrauch <marc.weihrauch@student.uni-halle.de>

Hi Mark, dear shadow-chasers, I can only speak of the European TSE in 1999. Convincing people to travel even 100 kilometers for a TSE is not as easy as you might think. You'd get to hear rather stupid comments such as "A solar eclipse? So what!? As well you might switch the light off and on." (both stupid andignorant) or "Why travel for 100% if I can get 98% at home?" (well,errare humanum est).

But I intend to force my parents to come with me to Turkey in five years :) Have a happy Easter! Marc

From : Evan Zucker <ez@AbacusTotality.com>

I think you may find it's a lot harder than you think to get the uninitiated to travel ANY distance to see an eclipse. John Hopper has discussed here how he unsuccessfully tried to get his mother to travel to see an eclipse. I had the same problem with my parents.

They refused to drive me 10 hours to see the total solar eclipse on 7 March 1970. Fortunately, I was finally able to convince my high school biology teacher to take me. Twenty-one years later I thought I had finally convinced them to join me in Baja on 11 July 1991, but they chickened out a few months beforehand. They did wet their toes by joining me at my home in San Diego on 4 Jan 92 for the sunset annular eclipse.

FINALLY, they decided to take a cruise for the February 1998 Aruba eclipse, and their penance was having to treat me to the cruise. Naturally, they were blown away and promptly scheduled a Black Sea cruise the following year for the August 1999 eclipse.

My father died last year, and so at least he got to see those 2 total solar eclipses. Hopefully, my mother will get to see one or two more. Evan H. Zucker San Diego, California

From : "Marc Bernstein" <marc.bernstein@worldnet.att.net>

While we all like to share special experiences with people we care about, I find my attitude about eclipse promotion is shifting.

Am I the only one who is growing tired of overcrowded eclipse venues, airline seats, hotel rooms and even entire national parks booked solid years in advance?

It is a little late to keep this a secret, but maybe less hype wouldn't be such a bad thing.

From : "76630,2206" <76630.2206@compuserve.com>

In 1972, my family and I went to Nova Scotia. It turned out that my father was in the path of the 1932 eclipse in Massachusetts, and other aunts and uncles lived in New Bedfordon 24 Jan 1925.

(Continued on page 40)

ASE 2002

In 1984, I took a girlfriend to the annular eclipse in South Carolina. Itwas cute to see hertry to communicate in a Romanian accent with the country folk north ofSpartanburg.

I married well. As others on this list know, my wife Elisabeth has been to the last 3 totaleclipses. She is not much into the science, but thinks eclipses are pretty. She is also my director on-site. --Robert B Slobins

From : "Crocker, Tony (FSA)" <Tony.Crocker@transamerica.com>

2024 is total in San Antonio, Austin and Dallas. Is that close enough?

The real problem for first timers is that most people think you get (forexample) 93% of the eclipse experience at a 93% eclipse. I know that was myattitude when I discovered that I was going to be in New York City on May30, 1984. Since that was the middle day of a 3-day torrential downpour, theonly effect I saw was that streetlights came on for about half an hour midday.

The big difference for me was the Internet. When I knew in fall 1998 that Iwould be in Prague Aug. 10, 1999 I typed "solar eclipse 1999" into Google, found Fred Espenak's site, and quickly realized that I would be an idiot tostay in Prague and only experience 96%. Fred's site further convinced me togo to Lake Balaton in Hungary rather than to more convenient places inGermany and Austria where I might have repeated my NYC 1984 experience. Sonow someone who did not think 1991 was worth the effort from SoCal is going to southern Africa this December.

From : "Crocker, Tony (FSA)" <Tony.Crocker@transamerica.com>

Showing Fred's website to my 2 kids (then ages 10 and 14) easily convinced them that the 400+ mile detour from Prague to Lake Balaton would be worth the trouble. Adults might be a harder sell. And if we had been rained out like 1984, I'm sure I would have heard complaints about how we wasted a day of our vacation for nothing.

From : Jay.M.Pasachoff@williams.edu

The way I look at it is that totality is one million times darker than normal, so a one percent eclipse is only one-ten thousandth of the way to totality, or 0.01%. Jay Pasachoff

From : Egan Mark <astrophoto@yahoo.com>

Hmmmm... there was a small article about this in S&T a while back.... I'm sure some of you remember...

I didn't like the thought of "less hype" at first but it is a valid point. Still, I think that only a small percentage of people have seen totality.

We can certainly conclude, regarding those who haven't seen it, that it is "their loss"

I'm still going to try to get my family and friends to see one. happy chasing! Mark!!!!

Sealing in Disneyland, CA 2002

TSE 2002

Australia weather links

From : "Olivier Staiger" <klipsi@bluewin.ch> To : <SOLARECLIPSES@AULA.COM> Date : Sun, 3 Mar 2002 07:48:16 +0100

a starting point to find lots of links to Australia weather: http://www.sydneystormchasers.com/links/index.htm

Africlipse Map error

From : Assoc Prof J R Huddle <huddle@usna.edu> To : Solar Eclipse Mailing List <SOLARECLIPSES@AULA.COM> Date : Fri, 1 Mar 2002 10:28:50 -0500 (EST)

Peter, et. al., I had a similar problem with a map I bought in Zimbabwe on a scouting trip I made in March 2001. The longtitude lines were mislabled, the error being a full degree in magnitude. When I plotted the eclipse path, I thought I was in the wrong country, with the eclipse less than 3 months away! Fortunately, I'd bought several maps on that trip, and was able to find the error. Just goes to show that you always need to check your work, including the references you use.

Even Astronomy magazine showed an erroneous path for the 21 June 2001 eclipse in an annual supplement they published. Incidents like these make me very appreciative that Fred does such careful work. Jim

A bicentenary and annulars

From : Fraser Farrell <fraser@trilobytes.com.au> To : eclipses <solareclipses@aula.com> Date : Sat, 2 Mar 2002 01:37:59 +1030 (CST)

While preparing some material for a forthcoming conference presentation on this year's eclipse, I noticed we're about to have an interesting astronomical bicentenary here in South Australia.

200 years ago this month the Royal Navy frigate HMS Investigator, under the command of Matthew Flinders, was busily exploring the coastline of South Australia as part of its mission to be the first ship to circumnavigate the continent. And thereby prove that assorted disconnected bits of coast on the maps of the day were actually part of the same landmass; which could then be annexed as an English dominion & subsequently colonised, etc....

Back to the eclipse angle of this story. On 1802 March 4 the ship was in the vicinity of (what is now) Port Lincoln when a 97 percent partial eclipse was observed. The path of totality of this eclipse passed over the future site of Adelaide (the SA state capital) which was not founded until 1836.

This eclipse was one of the first - if not _the_ first - to be carefully observed from Australia. But it's also interesting because it begins a remarkable 2000-year sequence of eclipses for Adelaide:

1802 Mar 04 - total (55 sec, but before Adelaide existed)
1916 Jul 30 - annular
2418 Feb 06 - annular
2472 Mar 10 - annular
2606 Jan 01 - total (59 sec at city centre)
2708 Jan 15 - annular
2845 Aug 24 - annular
3083 May 09 - annular
3184 Nov 25 - annular
3466 Oct 02 - annular
3565 Dec 16 - annular
3583 Dec 27 - annular
3969 Sep 25 - annular

Sunset from Dantes View,
Death Valey 2002

So over this span of two millennia, Adelaide gets about one minute to look at the corona, and about 3/4 hour of the annular sun. In fact if you're in Adelaide's outer northern suburbs it's worse - totality for the 2606 eclipse misses them.

Statistically over long timespans any given spot should see more annular eclipses than totals, because annulars have the potential to paint a much wider swath across the Earth. Jean Meeus' book "Astronomical Morsels" also discusses why the southern hemisphere gets fewer and shorter total eclipses than the northern hemisphere. But the details escape me at the moment and I don't have the book at hand (perhaps Jean would be kind enough to explain again?).

(Continued on page 42)

TSE 2002

Nevertheless I wonder how many other places will experience such an unfortunate sequence of "Moon too small to hide Sun" time & time again, even though the rest of the eclipse geometry is favourable?

By contrast most other South Australian towns will each see a few total eclipses during this timespan. During this century alone the total eclipses of 2002 Dec 4, 2038 Dec 26, and 2093 Jan 27 get a lot of them! cheers, Fraser Farrell

From : Jean Meeus <JMeeus@compuserve.com>

All I can tell is the following.

(1) The distribution of total or annular solar eclipses at a given place is extremely irregular, so it is no surprise than many centuries may pass without a single solar eclipse. On the other hand, sometimes 3 or 4 total eclipses are visible from a given place within a period of less than 20 (TWENTY!) years. See my article on pages 63-65 of Sky & Telescope, April 2000. An enlarged version appears as Chapter 14 of my new book "More Mathematical Astronomy Morsels" (2002).

(2) The Sun is longer above the horizon during the summer months, increasing the frequency of solar eclipses. But in the southern hemisphere, the summer period coincides with the period of the year when the Earth is farther from the Sun, which reduced the probability of a total eclipse and increases that of annular eclipses. Jean Meeus

From : "Cliff Turk" <cliffturk@yebo.co.za>

Re para (2) of the message from Jean Meeus.

Sorry, but I seem to be confused!

I agree the Sun is longer above the horizon in summer. But I cannot agree that the Earth is farther from the Sun in the southern summer as perihelion is on January 2 this year (Jan 4 in 2001) and it is always near the southern midsummer.

Approx one-third of one percent nearer would hardly make the Sun appear much bigger and thus increase the likelihood of annular eclipses as opposed to totals.

Surely it is the lunar distance which has the greatest influence on whether an eclipse is total or annular?

Or am I missing something somewhere? Cliff Turk

From : Jean Meeus <JMeeus@compuserve.com>

Sorry, I wrote the following and made a typing error, as pointed out by Fred Espenak.

>(2) The Sun is longer above the horizon during the summer months, increasing the frequency of solar eclipses. But in the southern hemisphere, the summer period coincides with the period of the year when the Earth is farther from the Sun, which reduced the probability of a total eclipse and increases that of annular eclipses.

Of course, in the the southern hemisphere, the summer period coincides with PERIHELION and not APHELION. So, in the summer there the Sun's disk is larger. Jean Meeus

From : Evan Zucker <ez@AbacusTotality.com>

I think you meant that the southern summer is when the Earth is CLOSEST to the sun (perihelion around January 4, I believe), and so the sun is bigger, which makes total eclipses less likely and annular eclipses more likely.

From : "Cliff Turk" <cliffturk@yebo.co.za>

Hi All Sorry for my mistake in the percentage change for Sun/Earth distance. I was out by a factor of TEN! It should of course be approx 3.2%, not one-third of one percent. Cliff

TSE 2002

From : Fraser Farrell <fraser@trilobytes.com.au>

Thanks to all those people who reminded me that we're closer to the Sun during southern hemisphere summer; thereby making annulars more probable than totals for southern locations. Of course, 13,000 years from now precession reverses those odds; but I understand that the algorithms get a little wobbly by then, making eclipse predictions suspect at best.

Thanks also to the few people who reminded me of the 2030 Nov 25 total eclipse. This one has about 2 minutes totality on centreline, and runs almost parallel to and south of this year's eclipse.

For the photographers, I note that it also goes over the very scenic Gawler Ranges and Flinders Ranges National Parks during the late afternoon... cheers,

Australia's Aborigines Still Dream Upon the Stars

From : Ron Baalke <baalke@ZAGAMI.JPL.NASA.GOV> To : HASTRO-L@WVNVM.WVNET.EDU Date : Tue, 5 Mar 2002 08:48:52 -0800

http://www.space.com/SpaceReportersNetworkAstronomyDiscoveries/Carter_aboriginies_022502.html

Australia's Aborigines Still Dream Upon the Stars

posted: 10:31 am ET 05 March 2002 By James Carter, Community Contributor, Edited By William Brooks, Contributing Editor

Every culture has stories, legends and fables based on cosmology. The Incas, Greeks, Romans and Chinese all formulated complex star charts as ways of interpreting the night sky. But there exists one culture whose cosmology predates just about every other on earth, and their stories about the heavens that have shaped their very existence. They are the Australian Aborigines.

The Aborigines' knowledge of the Southern sky was extraordinary. They not only made complex and highly accurate observations of first- and second- magnitude stars, but also viewed those down to fourth magnitude as well. That's no mean feat, given the latter's faintness and the Aborigines' reliance upon the naked eye and primitive recording techniques.

This incredible knowledge of the heavens allowed the Aboriginal people to create a complex seasonal calendar based on the constellations. Some tribes even used certain stars (particularly the Pointer of the Southern Cross) for navigational purposes. Movements and patterns of stars at particular times of the year helped them predict changes in the weather to determine their seasonal supply of food.

An Abstract But All-Encompassing 'Dreamscape'

Before attempting to understand Aboriginal cosmology, one needs to have a greater appreciation of what they call the "Dreaming" or "Dreamtime". It could be said that the Dreaming was that period of time before time when nothing existed. It is their story of creation.

Yet to call it "creation" is far too simplistic. The Dreaming envelops everything. From law and ancestry, to song, dance, culture and philosophy, the all-encompassing Dreaming is inherent in all things that occupy the planet.

According to Aboriginal myth, it was during the Dreaming that the world was created by the Aborigines' "creative ancestors" in accord with their own power, wisdom and intent. These ancestors would travel the void of darkness that existed before time. They would hunt, make camp, fight and love and by doing so shape the void into the landscape we have before us today.

Before they traveled, the ancestors would "dream" of what would be created the following day, from plants and animals to mountains, rivers, the sun, moon, stars and of course the human tribes that would populate the landscape.

Once the ancestors had created all things, they retired back to the sky and became a part of all things they created -- the soul of that which they had created. These journeys became Aboriginal Dreamtime Law, which is portrayed in all the art, stories, song, dance and social patterns which the Aboriginal tribes held to so dearly.

The Dreaming is more than just myths and legends; it's a deeply-embedded holistic philosophy of existence that provides the framework for their lifestyle and identity.

How To Build a 'Cathedral in the Sky'

As with many cultures around the world, such as the Native American Indians, the stories that make up myth and legend vary from tribe to tribe. This is also the case with the Aborigines. And their explanations of the formation of the moon, stars, sun and indeed the entire Milky Way varies from tribe to tribe.

Author Dianne Johnson writes in 'Night Skies of Aboriginal Australia', that 'Aboriginal astronomical knowledge was not discrete and separate from other aspects of cultural life. It was interwoven into song, dance, ritual art and myth, and certain aspects could be owned by one group of people to the complete or partial exclusion of another."

But what they had in common is that they didn't just see the skies as a place of wonder, but one that explained natural occurrences on earth that paralleled with tribal experiences and behavior.

Roslynn Haynes wrote in The Australian Journal of Astronomy that many of the Aboriginal legends and myths had a direct correlation with the constellations, and so the night sky became a constant reminder of the moral lessons enshrined in the myths. She likens them to the stained glass windows of cathedrals, providing an illustrated textbook of morality and culture, during the thousands of years when oral tradition was the only means of communication within the tribes.

Given that there are literally thousands of stories, myths and legends relating to how the sky, moon, sun, stars, etc. were created, it is impossible to publish them all here. However, one favorite among many Northern Australian tribes is this interpretation of the moon's creation:

In a time long forgotten, the tribes became aware that light was just as necessary at night as it was during the day if the tribes were going to venture out or hunt.

One of the tribe members had an idea. He thought if he could make a flaming boomerang and toss it high into the sky it would shine with enough light at night to illuminate the people and animals below. So a boomerang was made and the tribesmen attempted to throw it high into the sky. As much as they tried, they weren't able to throw it high enough.

A thin, elderly man saw what was going on and asked if he could try. The younger members of the tribe laughed at the old man but a wise elder of the tribe said the old man should be allowed to try. The old man threw the boomerang. Upward it sailed before settling in the sky, shining down on the people as the moon. And every month when the new moon appears in the sky, we can see the boomerang, still shining brightly.

Dreaming Fades in Face of Modernity

But as with many ancient cultures throughout the world, the myths and legends that have been an integral part of life for those cultures are slowly being lost to time. The elder members of tribes are slowly passing away and the stories are not being handed down as they once were. Modern culture now increasingly incroaches -- both physically and spiritually -- on the ways and beliefs of native peoples.

TSE 2002

If we neglect cultural heritage, such as that of the Australian Aborigines, these unique 'windows on the world' could also become a thing of myth and legend. The bond between this incredible culture and the landscape it holds so dear could be lost forever.

In the Kakadu region of Northern Australia, a very wise and much respected elder of the Bunitj Clan named "Big Bill" Neidjie has collected together his thoughts about Aboriginal life. In his book Story About Feeling, he poignantly describes in this poem the unique relationship between the Aboriginal people and the land that they hold so sacred -- a relationship that could only be born out of the Dreaming:

All my people all dead

but we got few, that's all.

Not much, not many . . . getting too old

and young-fellas I don't know they hang on this story.

All my uncle gone

but this story I got im.

They told me, taught me

and I can feeling.

Feeling with my blood or body,

feeling all this tree and country.

While you sitting down e blow,

you feel it wind

and same this country you can look

but feeling make you.

James Carter is an Australian-based writer.

Eclipse Camp in Australia

From : Jörg Gerdes <j.gerdes@uni.de> To : SOLARECLIPSES@AULA.COM Date : Thu, 07 Mar 2002 15:14:27 +0100

Hello, I plan a trip to Australia for observing the Total Solar Eclipse in December this year. My question is, if somebody knows about an eclipse Camp in or near the centerline in the Region of Glendambo, Andamooka or Lyndhurst. What kind of short trips are available? Thanks for answering. Greetings, Jörg

From : Henrik Glintborg <hg@etc.dk>

Hi Jörg! I have 40 tents in Ceduna at the coast in connection with a 20 day roundtrip in Australia, departure Copenhagen November 25th, and back in Copenhagen again December 14th. If interested in more details please contact me at hg@etc.dk Henrik Glintborg EtC Space & Nature Denmark

From : Fraser Farrell <fraser@trilobytes.com.au>

Jorg, Ask our Tourism Commission. In fact, I urge everyone on this list to bombard them with questions, so that the experience of eclipse day can be improved for everyone. We local astronomers have been trying to convince them for the last couple of years that there are _thousands_ of foreigners already _definitely_ planning to come here to watch this one; and that they had better Do Something About It. Otherwise the day will be utter chaos.

The Commission's announced plans so far can be seen at: http://www.outback2002-southaustralia.com/events/eclipse.html

You may also find some useful links on my own eclipse page at: http://www.trilobytes.com.au/astronomy/2002/eclipse.htm

Speaking _unofficially_, I have discovered that there are at least two special trains going to the Wirraminna siding (between Woomera & Glendambo), approximately 20,000-30,000 people on the adjacent section of highway, another 5,000-10,000 people on the Woomera - Roxby Downs road, and at least 2,000 people on the highway near Lyndhurst.

All of these roads are bitumen ~7 metres wide, running through desert/semidesert. In fact sand dunes covered with Callistris pines will obstruct the view from the Roxby road for several km north of centreline. And the highway to the east of Glendambo has quite a lot of mulga scrub along it.

In addition I am aware of organized groups totalling about 1,200 people who will be inside the Woomera Prohibited Area, probably at the former missile-tracking station of Koolymilka (on centreline). The military authorities at Woomera intend to charge a "non-trivial entry fee" to the Prohibited Area on eclipse day; and to thoroughly patrol the area to catch any gatecrashers. The people of Andamooka are organizing a huge outdoor party along the old unsealed Woomera - Andamooka road,

TSE 2002

with about 4,000-5,000 visitors anticipated there.

The vast majority of these crowds of people will be arriving by car or bus on the day, and most likely parking on the side of the road. And then optimistically trying to drive home again after it's over. Should be interesting to see 10,000+ cars/hour trying to drive down "kangaroo alley" near Port Augusta at night....

Of course, those numbers pale into insignificance against the hordes expected at Ceduna. I'm hearing quite serious rumours that our Army will be going there to help out with the logistics!

We local astronomers are also expecting that the Australian public will delay their own trip planning (and associated purchases) to about the 3rd week of November. So bring your eclipse glasses from home, folks.

Finally, for the drivers among you, be warned that nobody who actually lives in South Australia believes any of the driving times publicised by our Tourism Commission. Unless you're travelling on a large motorbike that can zoom past slow vehicles at will.... cheers, Fraser Farrell

From : Maxine & Michael <oliri@ozemail.com.au>

Dear Jorg, I know of two places you could stay - one in Andamooka a self contained flat sleeps 4, and one in Roxby Downs, your own room and bathroom and breakfast in a private house.

BUT you would have to get there. Either go by bus (book NOW) or drive in a hired car 7- 8 hours. Regards, Maxine Komlos (Astronomical Society of SA)

South Africa Site Inspection Report

From : Vic & Jen Winter <webmaster@icstars.com> To : SOLARECLIPSES@AULA.COM Date : Thu, 07 Mar 2002

Hello all, Vic and I have just returned from South Africa with more photos and data than we know what to do with. As I mentioned earlier, we would visit the Venda region around Messina and the Kruger Park area.

We have pictures to share if anyone wants to see what any of the following look like, what the general climate is, or policies regarding accessability for eclipse viewing.

We noted that the region's weather is dominated by its topography. A sizeable mountain range runs from the area of the Pufari Gate near the Zimbabwe border diagonally East-West between Louis Trichardt and Tshipise. Weather systems Northwest from the Mozambique coast inland and are trapped by these mountains. Weather on the Northwest of the mountains is predominantly clearer than to the Southeast of the range. Locations in that southeastern region in the path include Shinwedzi and Punda Maria. The weather pattern daily seems to be that dawn comes with a high layer of cirrus clouds (Scuzz) that begins clearing with shortly after dawn. The sky was nearly clear in the Tshipise region by 8am and remained so until mid afternoon, when cumulus clouds began to build back and stay until sunset. We overnighted in Tshipise and at Punda Maria. There was a marked difference in the amount and type of clouds we observed in each location. The sky at Punda Maria took much longer to clear. We traveled early morning directly from Punda Maria to Shingwedzi. By 11am when we arrived, the sky was still / already 50% cloudy. We were in Messina from approximately 11am until 2pm and it was clear the entire time we were there.

We also found those southeastern locations to have very much more tree-cover. Punda Maria has a nice campground and may afford some reasonable stretches of clear patches between trees, but Shingwedzi has a large tree issue.

A very important note about Kruger National Park is that guests are not allowed to get out of their vehicles when in the park / or outside of the rest-camps. The camp gates close at 6:00pm and don't open until dawn. An eclipse viewer would not expect to be able to leave any of these camp gates and set-up outside of a designated camp for viewing. There are small segments of road where bridges span large rivers, where yellow lines mark safe zones. Visitors are permited to exit their vehicles "between the yellow lines" on these bridges, but that is the ONLY location outside of daycamps that it is allowed or really safe.

We found this safety concern to be very legitimate. Not only did we observe a large number of dangerous animals in our visit through Kruger park, but we were able to tell that unseen animals were present by their droppings. Lions and Hyenas can be

TSE 2002

spotted easily. Hippos are not so easy to spot. The other cats such as cheetah and Leopard are virtually invisible and are a noteworthy threat to villagers in some areas of the Venda and Mpumalanga regions.

There have also been a large number of changes in management within the park and in surrounding lodges. Land and management are in a state of transition from state-run to privitization. It would be hard to speculate what differences we can expect between now and December, but as they are organized at present, most day camps are State owned and run. Facilities resemble those of other countries' National parks and are staffed similarly. We found the gate restrictions to be very strict (as they should be) and that penalties are levied if the rules are broken; as well as severe time inconvenience to the visitor in answering to authorities in that instance. - Get in the gate by 6pm!

Access to the Venda region is also at issue. There are a number of mountain passes which host trucking traffic. Officials say that trucks will be re-routed, but when we were there, the two-lane road from Louis Trichardt over the mountains towards Messina was riddled with slow-moving, overloaded trucks. There is also a tunnel to traverse through a mountainside. This area could prove hazardous on trafic, so delays may be expected. There are a few other mountain passes southeast of Tshipise towards Punda Maria. Our guide made a trek in December over the area in a 4x4 vehicle. The roads were very precarious, poorly maintained and he claims that non-4x4 vehicles do not belong making this trek.

We didn't encounter many craft vendors. Most souvenirs are available via gift-shops in day-camps. Those crafters we did encounter, we were sure to express a desire to see quality souvenirs specific to the eclipse.

We will post as many photos as we can on our website about our inspections and will be happy to answer any questions we can. Some of you asked for specific information. I will email you individually with those results.

Sites visited - We found that older, common names are still in-use and the transition to new, northern province names will take some time:
Louis Trichardt (pronounced Louie Trihart)
Messina
Tshipise (pronounced Chi-piece)
Pufari Gate
Punda Maria
Shingwedzi (pronounced singvedzi)
Letaba
Satara
Skukuza
Mala Mala - Kirkmans Camp
Thornybush
Sabie
Pilgrims' Rest.

Clear Skies! Jen Winter - Owner www.Astronomicaltours.net www.ICSTARS.com (913) 432-4636

From : "Peter Tiedt" <rigel@stars.co.za>

Hi List Just to fill in on Vic & Jen. In Dec/Jan rest camp gates open at 04h30 and close at 06h30. External gates open at 05h30.

There are a number of places where egress is allowed.

The obvious ones are the restcamps, but add to this:- all picnic spots, and there are three in the path.
Viewpoints - I think there are two.
Bird and game viewing hides - but these are generally small and won't take more than 4 or 5 vehicles.
Major bridges over rivers - not sure of a number on this one.

Plus - the park authorities are creating quite a few special observation areas which will be manned by park rangers.

Generally speaking egress is NOT allowed at waterholes ec - for obvious reasons.

(Continued on page 48)

TSE 2002

Fred's KNP places for which local circumstances have been calculated are all OK for egress, as are the places listed on www.eclipse.za.net/html/knp.html Peter Tiedt

From : "Vic & Jen Winter, ICSTARS Astronomy" <webmaster@icstars.com>

Peter does bring up an important point about some additional spots where egress is allowed. I had completely forgotten about the picnic sites. We visited two (in locations I cannot remember) but both of those sites were completely shaded by trees.

The direction of my position to the group is to emphasize that many people may have a misguided impression that they may wander the park, seeking an adequit location which provides good viewing. Rather, that visitors to the park are bound by a certain number of restrictions to access which require a great deal more advanced planning; and offer less real estate choices than may be anticipated.

I think that Peter will agree that a morning influx of 10,000 guests to Kruger will not very well fit within the confines of Punda Maria, Shingwedzi, 3 picnic areas and the sections of wide bridges within the path.

I would feel very bad if any SE group member were stuck inside cars somewhere on the roads of Kruger, unable to fit inside an overcrowded designated area - or worse, fined for impersonating an elephant in an attempt to push down shade-trees via a push bumper to facilitate better viewing. Clear Skies, jen

South Africa Site Inspection Report

From : FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov>

>> I think that Peter will agree that a morning influx of 10,000 guests to Kruger will not very well fit within the confines of Punda Maria, Shingwedzi, 3 picnic areas and the sections of wide bridges within the path.

I believe that Kruger Park also limits the number of visitors within the park on any one day. So there's no guarantee that you can even drive into the park on eclipse day if they've already reached the visitor limit. Maybe Peter can speak to this concern? - Fred Espenak

From : "Peter Tiedt" <rigel@stars.co.za>

Kruger Park - Some Information

http://www.parks-sa.co.za/knp/ - Kruger National Park Website
Lots of information there for those who want in-depth information.

Malaria info - http://www.parks-sa.co.za/malariainfopage.htm

CAMPS - see http://www.parks-sa.co.za/knp/accommodation.htm
RATES - see
http://www.parks-sa.co.za/Tariffs/oldtariffs/generalinfotariffs04013110.htm
MAP - http://www.parks-sa.co.za/knp/map.htm

Camps in Totality

Main Camps
Mopani - nr S Limit
Shingwedzi - on c/l
Punda Maria, between c/l and n/l

Bushveld Camps - semi private

(Continued on page 49)

Bateleur - between s/l and c/l
Sirheni - on c/l

Trails Camps
Nyalaland - near n/limit.
Note: from the trails camp walking trails have freedom of movement.

At the main and bushveld camps, although well treed, there is still good observation possible for at least the camp population. Sun angle is high during totality.

Camps close to totality (gates open at 04h30)

Main
Letaba - south of path, about 50 km to umbral track - one hour's drive.
Olifants & Balule - south of path, about 80km to umbral track - 1.5 hours drive.
Satara - further south than above - about 120 km to s/l - 2.5 hours drive
Orpen & Tamboti - 48 km west of Satara add one hour to Satara time.

see http://www.parks-sa.co.za/knp/times.htm for more accurate information

Trails
Olifants Trails - close to Oliphants
Shimuwini - but not really a proposition

Bushveld (semi-privte)
Boulders - fairly close to Mopani

NOTE WELL
==========
NO OTHER CAMPS within reach of totality between opening time and 2nd contact.

Entrance Gates in Totality (open at 05h30) but there is talk of opening earlier on the 4th Dec.

Punda Maria - see above.

Entrance Gates close to Totality

Pafuri - close to n/l
Phalaborwa - reasonably close to s/l. - 74 km
Orpen - possibly at the limit for entrance at 5:30am to make the zone of totality. about 170 km (3.5 hours drive)

Note: It is my gut feel that queues will begin to form at the gates from about 10pm on the 3rd December. As the Park is totally full on the 4th, the number of cars allowed in WILL be limited and I believe that anyone who is not in the queue by (say) 4am will not make it.

There is definitely a limit on the number of daily visitors allowed into the park, but this limit may be relaxed slightly, but NOT too much on e-day. Don't bank on it.

My advice to those who do not have confirmed bookings for the park for the 3rd Dec is not to even bother. What will happen is that a local will park his car at the gate at 10pm on the night of the 3rd, go back home to sleep and have a friend drop him off in the morning just before the gates open.

Rather head for places OUT o f the park near Messina. A number of sportsfields have already been earmarked for observtion points.

(Continued on page 50)

TSE 2002

Picnic Sites in Totality -

Mooiplaas - on southern edge
Babalala - on c/l

View Points in Totality -

Tshange Lookout Point - near c/l - great elevated position!! If I was going to KNP, this is the spot I would choose!!!

Kanniedood Dam Bird Hide - on c/l - If you can get in - (will have to be first out of gate) promises fantastci views as outlook is to the NE.

Major Bridges in Totality -

Shingwedzi River - close to camp of same name - on c/l

No other major bridges that I know of

AT ALL OF THE ABOVE PLACES (EXCEPT TRAILS CAMPS) UNESCORTED EGRESS IS ALLOWED
==========

At Trails Camps - no unescorted egress away from campsite

I have information that KNP authorities are fencing off a number of areas in the umbral path which you will be able to reach with an easy drive from the camps mentioned above. In these areas, rangers will be on duty and egress will be allowed. KNP rangers are aware of the requirements for a good observation point and these areas have probably already been selected.

If anyone wants more information - please ask and I will try to provide ASAP. I will post all replies in the SEML as I believe this will be on general interest - Patrick - please confirm that this is OK. Rgds, Peter Tiedt

From : "Patric k Poitevin" <patrick_poitevin@hotmail.com>

>> From: "Peter Tiedt" <rigel@stars.co.za> If anyone wants more information - please ask and I will try to provide ASAP. I will post all replies in the SEML as I believe this will be on general interest - Patrick - please confirm that this is OK.

Your work and commitment is more then appreciated Peter. I am sure everyone does enjoy and relay on the information you provide on this SEMl and your WebPages. PP

Australia Eclipse Travel

From : "Dale Ireland" <direland@drdale.com> To : "Solar Eclipse List" <SOLARECLIPSES@AULA.COM> Date : Fri, 8 Mar 2002 06:59:31 -0800

Those with airline bookings for the eclipse may want to check this out http://www.ansett.com/faq_frame.htm Ansett Airlines has gone out of business Thanks Janita for the heads Dale

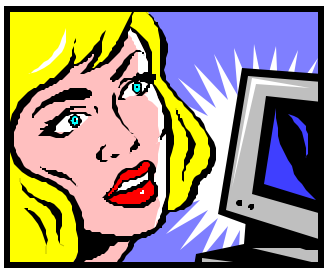
ASA eclipse pages

From : Fraser Farrell <fraser@trilobytes.com.au> To : "eclipses" <SOLARECLIPSES@AULA.COM> Date : Wed, 13 Mar 2002 18:11:20 +1030

To all, Yet another website about the Australian end of the 2002 eclipse. This one has been approved by Australia's professional astronomical body for widespread distribution:

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

FYI the author, Martin George, has been educating the masses here in Australia for many years. This site is de-signed for public reading. cheers, Fraser Farrell



TSE 2002

An Introduction, and a few Questions!

From : Geoff <gsims@iprimus.com.au> To : solareclipses@Aula.com Date : Wed, 13 Mar 2002 11:47:23 +1000

Hey everyone, My name is Geoff, and I have been on this mailing list for a couple of weeks now, and I thought a short introduction was in order! I also have a few photographt questions I am unsure of. Well, I am a student, and live in Sydney, Australia. I have been interested in eclipses for a few years now, but only really the last year I have been interested in Solar Eclipses (because I will have the chance to view one this year!). I love photography, and I love taking photos of the sky - the stars, planets, moon, satellites.. whatever really, but all through a camera + lens (I do not own a telescope). I predominantly use an older, manual Olympus OM-1, for which I have a 50mm-f/1.4, 200mm-f/4, and 2x converter.

Eclipses I have observed (all from Sydney) are as follows:
-16 July 2000: Total Lunar Eclipse (spectacular!)
-05 July 2001: Partial Lunar Eclipse
-30 December 2001: Penumbral Lunar Eclipse

I am yet to see a Solar Eclipse of any kind, but am really looking forward to heading to Sth Australia at the end of this year!!!

A have a few TSE related questions I am yet to find answers to, and would be greatful if you guys could give me your opinions.

1. Solar Filter Material - does anyone know where you can buy Baader Solar Filter Film in Australia (preferable NSW?) I have found one place in South Australia, but am looking for somewhere closer. It seems the Baader film would be the cheapest and easiest filter solution for a camera-lens setup? I'm also looking for eclipse glasses/viewers, but I suspect as well they are only available by mail order from the US (or will they be readily available in Oz closer to the eclipse?).

Also regarding the Baader film, they have a denisty 5 and 3.8, for visual/photographic, but I'm wondering is the density 5 still suitable for photography (if I bought a sheet, could some be used for visual, and some for photography?) or is it best to use a different grading for photography.

2. Photography - I need a few things cleared up with photography, due to the low altitude of the eclipse. Firstly, after totality when the sun is VERY low to the horizon, how much will the exposure need to be increased (through a solar filter), in order to compensate for the low, and somewhat dimmer sun?

Secondly, when NOT using a filter, would the exposure for the partially eclipsed sun (I think it sets ~30% eclipsed?) be the same as for any other setting sun at the same altitude?

Finally, I can't recall seeing any moderately small (~200mm) telephoto shots of Totality along with the landscape. As December 04 presents a unique opportunity to photgraphy Totality with the Australian landscape, what sort of exposure would be needed to bring out the landscape as well? I know that with a standard lens, 1-2 seconds does the job, but I don't really know about anything longer.

Thats it! If anyone could offer any opinions or advice, it would be greatly appreicated! --Geoff

From : "76630,2206" <76630.2206@compuserve.com>

Geoff:

1. I'd use the density 5 Baader filter. It would be safe for your eyes and will admit enough light for the partial phases.

2. Photography - I need a few things cleared up with photography, due to the low altitude of the eclipse. Firstly, after totality when the sun is VERY low to the horizon, how much will the exposure need to be increased (through a solar filter), in order to compensate for the low, and somewhat dimmer sun?

Secondly, when NOT using a filter, would the exposure for the partially eclipsed sun (I think it sets ~30% eclipsed?) be the same

TSE 2002

as for any other setting sun at the same altitude?

A partial solar eclipse at sunset is the same thing as the uneclipsed sun at sunset. Therefore, refer to any near sunset images you have done with the sun, say, sitting on the horizon. I encourage you to run tests and take notes.

If I understand the situation, the sun will be much more than 30% eclipsed.

Use print film. It is more forgiving of under or overexposures.

Finally, I can't recall seeing any moderately small (~200mm) telephoto shots of Totality along with the landscape. As December 04 presents a unique opportunity to photgraphy Totality with the Australian landscape, what sort of exposure would be needed to bring out the landscape as well? I know that with a standard lens, 1-2 seconds does the job, but I don't really know about anything longer.

I'd use ISO 400 or 800 Fuji print film and a maximum 1 second exposure. Anything longer and the earth's rotation would smear the sun in your frame. You'd get outer corona and some landscape. Just how much requires you to test just how much ground you'll get in the image between 15-35 minutes after sunset.

You have eight months. That is plenty of time. Film is cheap. Have fun.

On another related subject, please be mindful of the field coverage of a 200 mm lens. Your scene would not work with a 200 mm lens in Ceduna with the sun 9 degrees above the horizon. You need to be well inland. 3-5 degrees above the horizon would work.

Get a very sturdy tripod and a cable release. Ensure that *EVERYTHING* is secure and set up correctly before totality. Try to get a motor drive for your camera, if it is available. I use motor drives on my cameras for convenience--and it reduces your workload. Also, get a level--a bubble level to ensure that your horizon line is straight.

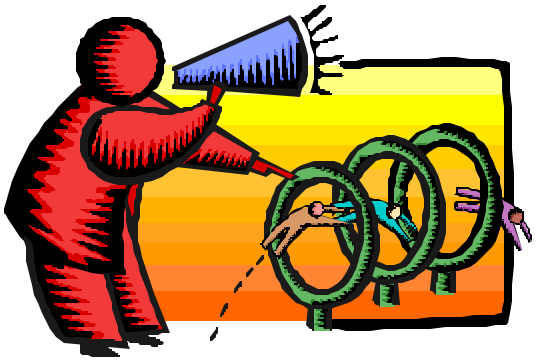
Write up a program and check list and drill, drill, drill. Your actions need to run just about auto-matically. What you are going to do is something like landing an airplane. Hope this helps. regards, Robert B Slobins

Answers to amy questions

From : Fraser Farrell <fraser@trilobytes.com.au> To : "eclipses" <SOLARECLIPSES@AULA.COM> Date : Sat, 9 Mar 2002 13:00:57 +1030

I'm receiving tons of email asking questions about the South Australian end of the December 2002 eclipse. Rather than answer them all individually, I'm going to post a categorised generic response to the list. My apologies in advance for its length and for unintentionally offending some readers by stating the Very Obvious.

Categories are:
Non-eclipse tourist activities
Observing spots at Ceduna, Woomera region, Lyndhurst
Driving in SA
Prices / money / shopping
Telephones
Miscellaneous
Links to tourist information



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NON-ECLIPSE TOURIST ACTIVITIES

A general comment. Some of the itineraries I've read in relation to this eclipse are extremely optimistic. It's obvious that some tour operators have no idea of distances and travel times here. A hint: Australia has about the same diameter as the Moon.

Andamooka - Produces about 2/5 of the world's opal, and yes they are very happy to sell it to tourists ;-) Be careful when wandering about because there are tens of thousands of unfenced excavations and holes. You may not be found for months, if ever. In addition, fossicking for opal without the lease holder's permission may get you shot. The locals at Andamooka are organizing some special events for eclipse visitors.

Barossa Valley - Frankly I don't know why so _many_ of the international tours are going there. We in the McLaren Vale wine region consider Barossa wine as adequate for unwelcome visitors, or to water the garden with, but otherwise undrinkable ;-) And the Clare Valley wineries are almost as good as us.

Ceduna - Fishing, diving, surfing, sailing boats. The sea temperature is about 15 C all year, thanks to offshoots of the Antarctic Circumpolar Current flowing onto the SA coasts. It will be the wrong time of year for seeing whales.

Everywhere outside the towns at night - look up and enjoy the More Scenic Half Of The Sky. The southern Milky Way begins the nights on the southern horizon, but the Puppis to Crux section rises as the evening progresses.

Glendambo - Their welcome sign reads "Population: humans 30, sheep about 22,000". Pretty well sums it up. Nice motel there - fully booked out for the eclipse - plus a large caravan/camping area behind the petrol station. Take plenty of soap; their showers use very saline bore water.

Leigh Creek - Service town for the nearby opencut coal mine. Some quite scenic spots in the mountains east of the town, but sadly the wildflower season is likely to be over by December.

Port Augusta - Large town with a lot of unemployed people and angry frustrated youth. If you're out at night, travel in a group and conceal your valuables... A huge Arid Lands botanical gardens near the town will interest the botanists & gardeners. Lots of scenic places and bushwalking trails in the Flinders Ranges are reachable by car in an hour or less.

Quorn - You can buy giant astronomical binoculars at "Quornucopia", a souvenir/antique shop run by astronomers Phil & Cathy Bott (no I don't know their specific plans for this eclipse). Apart from that there's scenic rides on the historic steam trains, bushwalks, and loads of antique shops to browse through.

Roxby Downs - Very large copper/gold/uranium mine and processing plant about 15km north of the town. Minibus tours are available. The town itself has a nice public swimming pool, and crappy unshielded street lights on high poles. There are some nice dark observing spots reachable from tracks off the Roxby-Andamooka road. Just watch out for weekend Rambos going roo-shooting in their 4 wheel drives. Accommodation in Roxby has always been limited: there's a housing shortage there. Special note to any anti-uranium or anti-nuclear people; the locals at Roxby regard you all as pond scum. It's a long story...

West Coast of Eyre Peninsula (Ceduna to Port Lincoln) - basically lots of places to go fishing, diving, surfing, boating etc.

Wirraminna - I'll say it again, it's just a railway siding for oncoming trains to pass each other safely! There's no hotels or pubs or anything for visitors there! Bring _everything_ you may need, including water!

Woomera - Population has declined from ~10,000 in the mid-1970's to a few hundred now. Has indoor & outdoor displays showing the town's history as a military research base. University of Adelaide runs the CANGAROO gamma-ray telescope north of the town; and there is some aerospace-related activity at the adjacent military base and rocket range. The Woomera Prohibited Area extends several hundred km north & west of the town. Two other locations that are definitely off-limits are Nurrangar (a military surveillance base southwest of the town) and the recently-established prison for illegal immigrants just west of the town.

CONDITIONS AT CEDUNA, WOOMERA, LYNDHURST

Ceduna region in early December....it's the beginning of summer and in a normal year the wheat harvest finished about a month ago. The last significant rain probably fell 5-7 weeks ago, so it's dry and getting dusty. The farms only go inland about 40km or so and end in trackless sand dunes covered in low scrub. All the roads outside Ceduna, apart from the main highway, are unsealed and any vehicle moving on them will raise significant dust.

Best places at Ceduna would be the beaches & shorelines; or large open spaces like the town racecourse or football ovals. The

view from the town generally will be obstructed by its buildings and trees. Ceduna is also noted for its winds; indeed many sailing regattas are held there for that reason. Inland the wind can raise substantial dust and blow away soils.

In addition, the streetlights of Ceduna will almost certainly activate automatically during totality - and they are unshielded. For more info on the crap streetlighting we are afflicted with in SA, see http://www.trilobytes.com.au/astronomy/pollution/lpadel.htm

I would not be at all surprised if some enterprising farmers in the path make their harvested paddocks available for car parking & eclipse viewing. For a fee, of course...

The Ceduna radio telescope is less than one km _outside_ the northern limit of totality. Nevertheless its owners at the University of Tasmania are making plans for both science and tourism to occur there on the day.

The region between Ceduna telescope and Glendambo contains salt lakes and millions of scrub-covered sand dunes. Very few roads or tracks exist, and even the "main track" from Glendambo via Kingoonya and Skull Camp Tanks to Kyancutta is often a low-range-4 wheel-drive slog through sand drifts and dust. It is often quicker to travel from Ceduna to Glendambo on the ~1000km of bitumen via Port Augusta, rather than the more direct route through Skull Camp Tanks. Some lucky travellers, however, have done the direct route in about 4 hours using ordinary cars!

The shores of Lakes Acraman, Everard and Gairdner define Australia's biggest known impact crater; created when a ~10km asteroid smashed into the (then active) volcanoes of the Gawler Ranges about 700 million years ago. The ejecta from this impact can be found in sediments from that time for hundreds of km around - but it was long mistaken for glacial debris.

The Woomera region offers two bitumen roads and the trans-Australian railway through the path of totality. See my recent post to this list about the trains and traffic expected there on the day. Note that both roads have significant truck and road train traffic 24 hours a day.

The highway from Wirraminna to Glendambo (and beyond) passes through a region of ancient mulga trees 5-6 metres high. The canopy on these trees is sparse and many gaps exist between them; but you may need to walk away from the highway to its south to get a clear line of sight to the eclipse. The Woomera Prohibited Area begins at the fence on the north side of this highway. Between Wirraminna and Woomera lies a treeless stony desert.

The Woomera to Roxby road initially goes across an ancient peneplain, now a stony desert with metre-high saltbush and ground covers. On a clear day, you can see the power lines beside you following the curvature of the Earth over the horizon ahead. The Woomera Prohibited Area begins at the fence immediately to the west of the road. Centreline and north of centreline is more sandy country, and sand dunes up to 10 metres high do occur quite close to the road. Many dunes are also home to Callistris pines which can grow up to eight metres high. Nevertheless you should be able to find a clear line of sight to the eclipse, perhaps by climbing the sand dunes _east_ of the road?

People doing their own calculations for the Woomera region should note that the town's coordinates are wrongly listed in many atlases. I suspect this may have been deliberate Cold War misinformation to help confound Soviet nuclear attacks. A few atlases also do not include the town of Roxby Downs which is only ~20 years old; instead listing only the sheep station homestead of the same name.

Lyndhurst is basically a few houses, a pub, petrol station, and the bitumen road from Leigh Creek to Marree. There are virtually no trees or shrubs along this road except where the creeks come down from the northern Flinders Ranges. The former route of the Port Augusta to Alice Springs railway follows the road on the eastern side.

Incidentally everywhere you go there will be millions of flies, and dangerous levels of UV radiation. The latter is a consequence of the Antarctic ozone hole. Daytime shade temperatures away from the coast can reach 40 C at this time of year, but temperatures in sunlight and on certain surfaces will be significantly higher. The dark stones of the Woomera region, for example, can reach temperatures of 90-100 C, the sand everywhere often exceeds 70 C - and the bitumen on the highways has been known to melt in summer. Anyone planning to drive to a viewing spot and wait for the eclipse to begin will need effective shade, sun protection lotion, and lots of water. In the Outback it is possible for an adult to emit over seven litres of sweat per day performing only mild activities.

TSE 2002

DRIVING IN SA

We drive on the left side of the road here. All distances and speeds are in the metric system. The general speed limit outside of towns is 100 km/hour and our police love using their speed cameras. Allegedly only in "known accident spots", but more typically at the bottom of a downhill, or just around a slight bend, or by the only patch of trees on an otherwise featureless straight stretch of road. Are we cynical about speed cameras? Yes...

Wearing of seatbelts is _mandatory_ in any vehicle fitted with them. Legal limit for alcohol in car drivers is 0.05 (about 3 standard beers), and all police patrols are equipped with breathalysers. Legal limit for alcohol in bus drivers is zero. Significant penalties apply for drunk driving, including mandatory manslaughter charges if you kill someone. At a less serious level you can be legally detained at a police station until you sober up; so don't go boozing on the evening of December 3!

Consequently it is now socially acceptable to have a "designated driver" who refuses alcoholic drinks when your group is out on the town. And who drives you all home again afterwards.

Rule #1 of Outback travel: IF YOU BREAK DOWN, ALWAYS STAY WITH YOUR VEHICLE. Many tourists have died in the Outback, trying to walk somewhere to get help. A car is much easier to spot than people and it can be used for shade while you await rescue. Raise the car bonnet to indicate to any passing traffic that you're in trouble, otherwise you might be assumed to have paused for a toilet stop or photo opportunity or similar.

What American readers would call "gas" is called petrol here - remember this if you are asking about its prices & availability. Refuelling a vehicle with "gas" in Australia means that you are putting Liquid Petroleum Gas (LPG) into it. The price of LPG is significantly lower than petrol (due to different taxes) and many vehicles have converted despite the high cost of the hardware involved. However most rental cars run on petrol.

Petrol (and LPG) price discounting is fairly common in the Adelaide region but much less so in country areas. In addition, the wholesale price of fuel increases as you get further from Adelaide: it's about 15 percent more at Port Augusta and 20-30 percent more at Coober Pedy or Ceduna. By a remarkable coincidence, everyone seems to sell petrol at the maximum permitted price at the start of long weekends, major public holidays, and (perhaps) in the days before a total eclipse. Diesel fuel - which many 4 wheel drives & minibuses use - is rarely discounted.

At time of writing, petrol was about 88 cents/litre, LPG was about 45 cents/litre and diesel was about 93 cents/litre. Prices during a discounting cycle can change hourly within the Adelaide region.

The "highways" in South Australia are not like the English motorways or German autobahns or American freeways. Our highways are typically single-lane-each-way strips of bitumen about seven metres wide. The northern highway out of Adelaide is, however, a proper dual-lane divided road for its first 90km. Just before Port Wakefield it reverts to single lane. If you're unlucky you can get stuck for a while on our highways behind someone's grandmother towing a caravan.

On hot days, the inevitable mirages over the roads here can make overtaking _extremely_ dangerous, because it is so difficult to distinguish an oncoming vehicle. Many of us put our car headlights on in these conditions to reduce the chances of a head-on smash. In addition, many apparently flat stretches of highway contain subtle depressions that can hide oncoming traffic until it's only seconds away.

Night driving in rural / Outback areas brings with it the risk of hitting livestock or animals. Outback roads are usually unfenced and the onus is on _you_ to watch out for sheep or cattle on the road. Emus and kangaroos can jump ordinary fences and are particularly active during the cooler hours. Emus will ignore any traffic when panicked, and kangaroos have an instinctive panic reaction to "move immediately to the nearest place I can see clearly". Often this is the road surface illuminated by your headlights at that instant!

Important note: you will see many rabbits as you drive, but do not swerve to avoid them. Many tourists have died because they didn't want to run over the "cute bunny", and rolled their cars (or hit oncoming traffic) trying to dodge the creature. Do not succumb to this merciful impulse because it can kill you. Or others. Run rabbits over if they don't move out of the way.

T S E 2 0 0 2

Now before all the animal lovers start bombarding me with hate mail, let me remind them that rabbits are _not_ a native species. They are a major pest in Australia; causing immense devastation to native plants, displacing native animals from their burrows, eating their food sources, generally destroying native ecosystems - so run the bastards over if they get in front of you. It doesn't hurt the car at all, helps restore the pre-rabbit ecosystem, and their carcasses help feed the eagles and goannas.

Dense traffic and special events tend to bring out the feral side of the local drivers. Don't be at all surprised to encounter idiots overtaking other cars 20+ at a time, or driving a hair's thickness from your car's rear, or deliberately closing the traffic gap you're trying to move into.

PRICES / MONEY / SHOPPING

The unit of currency is the Australian dollar, which is divided into 100cents. Denominations used are the $100, $50, $20, $10 & $5 notes; and the $2, $1, 50c, 20c 10c & 5c coins. Australian note denominations are different sizes and colours, and include a holographic plastic insert. The$1 and $2 coins are commonly referred to as "gold coins" because of their colour, and the latter is very efficient at locating holes in your pocketor purse!

Astronomy has featured on Australian money: the original $100 note had John Tebbutt (19th century amateur, & discoverer of the Great Comet of1861), and the $50 note has the Parkes radio telescope. The Mint do changethe pictures occasionally and there have been commemorative notes & coins circulated.

Prices of most items you buy are quoted to the nearest cent; but because there is no longer any sub-5c money the total value of any purchase will be rounded to the nearest 5c if you're using cash. For example, a one litre carton of milk ticketed at $1.53 will cost you $1.55 cash, whereas buying two cartons will cost you $3.05 cash. Averaged over many purchases the losses and gains cancel each other out (for both you and the shop).

All credit card or direct debit purchases are charged to the exact cent. The most widely accepted international credit card in SA is Visa; with American Express, Mastercard & Diners Club well behind (their merchant fees are much higher). The Australian / New Zealand Bankcard is also popular. The most popular direct debit system here is Cashcard, which numerous banks have deployed. Of course, check with your bank to see if _your_ card will work in Australia, and equally important, under what conditions.

Traveller's cheques will probably need to be cashed at a bank; which areincreasingly rare institutions in SA country towns! Very few businesses outside of the well-known tourist places will accept traveller's cheques directly. The only airport in SA where you can change your traveller's cheques to cash is at Adelaide.

Alternatively you can get Money Orders from your local post office made out to yourself in Australian dollars, and get them cashed here at any Australia Post office or agency (which exist in all but the tiniest towns). This technique is popular among backpackers touring the remoter areas and works well for amounts up to a few hundred dollars. You will need to present photographic ID with your name on it (your passport or international driving ID is fine).

Nobody accepts $US, Euros, Yen or other foreign money. Get it changed to Australian money before you leave Adelaide airport, or visit a branch of the Commonwealth, Westpac or ANZ banks in the larger towns to get it changed.

Automated Teller Machines exist in most towns, but in times of heavy demand they can run out of money. It is possible to do ATM-style cashwithdrawals at supermarkets and petrol stations but cash limits will apply.

A Goods and Services Tax (GST) of 10 percent applies to most things sold in Australia. However the exemptions and exceptions to GST are insanelycomplex (I know, I run a business...) and even the mainstream accounting software here gets it wrong at times. Applicable GST will be included in the prices shown.

Most basic foods are exempt from GST; although the Australian Tax Office definition of "basic foods" has some bizarre limitations. Why did the cooked chicken cross the road? So it could cool down to ambient temperature and avoid the GST. Why did it cross back again? Because it was about to be cut into slices for a sandwich, which would get the GST.

Also exempt from GST, in theory anyway, are purchases by foreign tourists. However do not try this one out when you're spend-

ing modest amounts of money such as on your souvenir t-shirt. Frankly it's a major administrative nuisance for the seller to track specific GST exemptions, so they tend to do it only for expensive items. Like a camera lens, or a week's accommodation, or a hundred souvenir t-shirts.

At time of writing, one Australian dollar = $US 0.52 = Euro 0.60. For the last year or so our dollar has been in the range $US 0.48 to 0.53. The latest official inflation rate is about 3 percent/year.

A shopping caution for the American readers. It is not a good idea to complain to us about the absence of Budweiser beers, Hershey Bars and other American-made products in our shops. It makes you look like arrogant snobs and reinforces many Australian prejudices about Americans.

TELEPHONES

Most public telephones use a pre-paid card known as PhoneCard. These can be bought almost everywhere; which is fortunate because an increasing number of public phones _only_ accept PhoneCards nowadays.

Standard mobile phone coverage is nonexistent in many of the places this eclipse goes through, largely because there are no potential customers living there. It's a desert! If you have a GSM mobile phone, and your provider has a "roaming" agreement with Telstra, Optus or Vodafone (our 3 biggest networks), then you should get coverage in the larger towns and along some of the busier highways. For example my mobile gets continuous coverage during the entire 300km drive from Adelaide to Port Augusta, and then for about 20km north of Port Augusta. I then get no coverage for the next ~160km until I near Woomera, lose coverage again leaving Woomera for Roxby Downs, and regain coverage at Roxby Downs.

Some areas that are covered have limited call capacity and it's likely that Ceduna, for example, will suffer a "cell overload" on the day. Nevertheless a mobile phone brought from home may prove cheaper and more convenient than relying solely on public phones or an Iridium handset.

MISCELLANEOUS

After months of protracted negotiations with potential buyers it's now official. Ansett Airlines, Australia's second biggest airline, has finally closed down as of this week after ~66 years in business. The collapse has nothing to do with terrorism; instead it seems the parent company (Air NZ) has been doing some interesting bookkeeping. This leaves Qantas and Virgin Blue as the two major local airlines. The fate of several Ansett subsidiaries (eg: Kendell Airlines) is currently unclear. Meanwhile, you should check your prepaid air tickets to see who they're with.

SOME LINKS

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

Eyre Peninsula Tourism Association website - http://www.epta.com.au

Flinders & Outback Tourism Association - http://www.flinders.outback.on.net

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

Phew...I hope that helps a few of you! Fraser Farrell

From : Stephen Russell <smr@cse.unsw.edu.au>

Hi Fraser. Nice to read your very informative contribution to the SEML. I've been trying to get info from the SA Tourism Commission, and to date, they seem to have _no idea_ what's going to happen.

I'm going to be in Adelaide for Easter for the NACAA, and to get some local intelligence re the eclipse. Are you going to be at the NACAA? If not, who else should I chat with to get information? Joe Grida? ...? Cheers, Steve.

TSE 2002

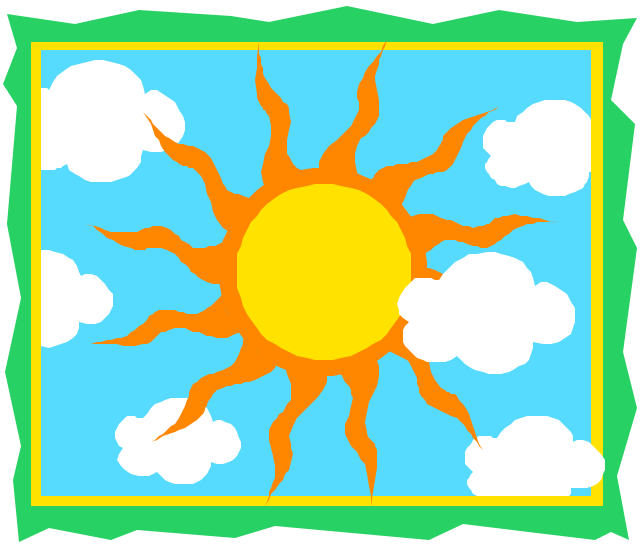
From : Fraser Farrell <fraser@trilobytes.com.au>

I wrote: Lyndhurst is basically a few houses, a pub, petrol station, and the bitumen road from Leigh Creek to Marree.

Thanks to Janita for reminding me that the bitumen on the Leigh Creek to Marree road actually _ends_ at Lyndhurst. Another ~10km on gravel road brings you to eclipse centreline. cheers,

From : "Odille Esmonde-Morgan & Warwick Lawson" <analog6@ozemail.com.au>

Dear Fraser, Our railway society is looking to run a long-distance train to SA for the event. We hope to stable the train in the siding at Wirraminna, it's looking hopeful (but rail folk change their mind at the last minute more then most!). Can you tell me if there is much vegetation there, low scrub or whatever, or is it fairly clear and just sandy? Any info you can pass on will be more then what I've got. We're a volunteer run society and the train will be run by volunteers, so we don't have much money for speculator trips to check out local conditions. Thanks in anticipation Odille Esmonde-Morgan



African Eclipse Cruise Knus from Hole in the Sky

From : "eclipse98" <eclipse98@earthlink.net> To : <patrick_poitevin@hotmail.com> Date : Sun, 17 Mar 2002

Dear Eclipse-o-phile, Many of you have indicated a reluctance to travel following the events of September 11th. Because of the uncertainties in the world, we here at Hole in the Sky and Giselle's Travel waited longer than usual before confirming our plans for the upcoming Total Solar Eclipse. To the best of our ability, we wish to make sure the various entities with whom we contract for services would still be in business and be able to provide the high level of service Hole in the Sky travelers have come to expect. In this month's email, I wish to tell you a little about our 'cruise option' for the December 4, 2002 Total Solar Eclipse.

Our Africa travelers will board the Marco Polo for a wonderful trip down the East Coast of Africa. The Marco Polo is operated by Orient Lines, a company that we know personally (1999 Black Sea Eclipse) and received 'rave reviews' from everyone who traveled with us that year. The tour begins on November 25, 2002 in Nairobi, Kenya for 2 days of safari including Amboseli National Park at the foot of Mt. Kilimanjaro. We will tour Mombassa before heading to sea and the picturesque island of Zanzibar (recently featured in National Geographic). After a day at sea, we visit the island of Nose Kombe off the coast of Madagascar in search of the beautiful black lemur. A couple of days relaxing at sea brings us to eclipse day where the ship's maneuverability will allow us to position the ship in the best possible location to view totality. [I have viewed two eclipses at sea and find that long lens photographs and video were possible both times. The large size of the ship provides a good platform for viewing and recording the eclipse].

After eclipse day, we begin the South African portion of our trip with stops in Richard's Bay, Durban, Port Elizabeth and finally 'the fairest Cape city of Cape Town. Presently the exchange rate strongly favors visitors with excellent values on food, wine and souvenirs (what more could a traveler need, especially as the Marco Polo is our floating hotel for the 3 day stay in Cape Town!). The tour officially ends on December 12th, although you may wish to stay on the Marco Polo as she sails to several exciting ports including St. Helena, Rio de Janeiro and Buenos Aires.

We have secured excellent pricing for our tour, where the second passenger sharing a cabin is one half-price! For all of the pricing information, complete itinerary and reservations, please go to our web site: www.holeinthesky.com . If you prefer,

TSE 2002

give Georgia a call 800-982-5545 (US) or 916-922-5500 to make a reservation. The best cabins go early, so make plans now to join us for the African Total Solar eclipse. We look forward to seeing you this November!

Clear Skies (and smooth sailing), Jerry Levy President Hole in the Sky Tours

From : "eclipse98" <eclipse98@earthlink.net>

Australian Eclipse Knus from Hole in the Sky Tours

Dear Eclipse-o-phile, Many of you have told us you are having a hard time deciding where to view this year's eclipse, Africa or Australia. The Africa portion of the eclipse will be viewed about 8:40 in the morning from the deck of the Marco Polo. A large ship provides a surprisingly stable platform for viewing the eclipse, resulting in more than acceptable photographs. The Australian eclipse viewers have an entirely different eclipse experience, viewing totality as the sun begins to set against the dramatic backdrop of the Australian Outback.

Weather is a prime factor in choosing where Hole in the Sky Tours plans to view Totality. Africa will be in its rainy season, but an early morning eclipse improves our odds for clear skies, being at sea dramatically improves our ability to find a clear view of the sun. The eclipse path in Australia is dry, but subject to blowing dust, especially along the coast. This is why Hole in the Sky Tours has chosen an inland viewing location, again trying to maximize our chances of seeing Totality.

The December 4th eclipse has a relatively short period of totality, 1'38" in Africa and approximately 30 seconds in Australia. Unfortunately, the next 'accessible' Total Solar Eclipse will not occur until March 2006 making this year's your best chance to 'stand in the shadow of the moon' for a long time to come.* To help you choose which trip is best for you, we've made extensive additions to the web page (www.holeinthesky.com) including maps of the eclipse path and more detailed itinerary information on the Australian Outback Eclipse Tour. Jerry Levy President Hole in the Sky Tours Email: eclipse98@earthlink.net

P.S. Please share our web address with any of your friends who would be interested in seeing the wonder of a total solar eclipse. Thank you.

*The Antarctica eclipse will be less than 2 minutes, and require a month long trip and nearly $20,000 to view it!

Updated web page for 2002 eclipse

From : "eclipse98" <eclipse98@earthlink.net> To : "Solar Eclipse Newsletter" <solareclipses@Aula.com> Date : Mon, 1 Apr

The Hole in the Sky Tours web page has been completely updated and now includes complete itinerary information for both prime viewing locations for the December 4, 2002 eclipse, Africa and Australia. I have included maps, including a topo of the Outback Region in Australia (should be pretty interesting!) Jerry

From : Fraser Farrell <fraser@trilobytes.com.au>

Jerry, Actually it was interesting but possibly not in the way you intended. The topographic map on your website appears to be an outdated one, and there seems to be a little confusion on your map about where Leigh Creek actually is....?

FYI the "Leigh Creek" indicated on Fred Espenak's maps is the sheep station homestead of that name, estabilised well over a century ago. This corresponds to the northernmost "Leigh Creek" on your map. I also note that heavens-above.com uses this same position for its satellite predictions. But what South Australians regard as the _town_ of Leigh Creek has the official name of "Leigh Creek South"...which is also on your map.

History digression: the Leigh Creek coal mines were opened in 1943 to guarantee continuity of coal supply to South Australia's power stations. The government of the day was worried that Japanese and/or German submarines & minefields could disrupt the existing coal shipments from the ports along the east coast of Australia.

By world standards Leigh Creek coal is very dirty; so the power stations using it require specially designed boilers (and formid a-

TSE 2002

ble waste gas scrubbers). But it was wartime and electricity was a Vital Commodity. Therefore the enormous expense of conversion was undertaken....and after the war was over the state was being run by a very parochial government who were fanatical in their promotion of self-sufficient local industries. It would have been political suicide (and massively expensive) to re-convert the power stations back to using the original coal.

Therefore the Leigh Creek mines stayed open. And in the mid-1960's it was discovered that the original town of Leigh Creek had been built over a particularly large coal deposit. So to make way for the miners the entire town was rebuilt a few kilometres south. The new location was gazetted as "Leigh Creek South", and the original town of Leigh Creek eventually fell to the draglines and power shovels. After a few years the redundant "South" was dropped from the name in daily useage, and the new town is known here simply as "Leigh Creek".

I can understand why some placename databases still list the old location - after all towns don't usually move after they are built! And perhaps some compilers thought the new town was just a suburb of the old?

Incidentally the new Leigh Creek is a much nicer-looking town than its predecessor. Your itinerary isn't clear about where you're staying but I assume Hole In The Sky is one of many organisations who booked out all available accommodation there months ago?

A couple of other notes about your topographic map:

- The bitumen does continue to the north of the mine access road, and now ends at Lyndhurst. Then it's an unsealed road to Marree and beyond. The vegetation there is rarely above chest-high so you should have no trouble getting a clear view of the eclipse. Just be damned careful not to upset the local snakes when you walk away from the road. Almost all species are venomous. Fortunately, Leigh Creek has a hospital...

- The railway shown extending from the mine area off the northern edge of the map no longer exists. This was part of the old Port Augusta to Alice Springs railway - what we call the "Old Ghan" - which was ripped up during the 1980's. The railway for the "New Ghan" runs from the trans-Australian line at Tarcoola up to Alice Springs; avoiding all the low-lying and flood-prone regions which made the Old Ghan a legend for unreliability.

I'm amused to read your itinerary proposing lunch at Wilpena Pound followed by a Barossa Valley wine tour and return to Adelaide that evening. In a "motorcoach" ie a bus, which will be speed-governed to 100 km/h max. Of course if you get caught behind Uncle Les & Auntie Merle towing their caravan then you won't maintain 100 km/h, and you may not have many opportunities to overtake them either. The main highway is single lane and will have lots of oncoming traffic. The back road (via Quorn-Wilmington-Clare-Gawler) is quieter but has many more "blind" bends and crests on it.

Frankly, my fastest time for the Wilpena to Adelaide drive is about 4 3/4 hours. In a car, nonstop, and unimpeded by eclipse-enhanced traffic. And I won't mention how fast I did the Wilpena to Quorn section in case our SA police are reading this list!

Do not believe any travel times suggested by our SA Tourism Commission. These are derived by some clerk in Adelaide measuring the road distance off a map and then dividing by 110 km/h, which is the open-road speed limit for cars. All impediments such as towns, roadworks, hills, frequent curves, slow traffic etc are ignored in their calculation.

I would respectfully suggest that you alter your itinerary to either:

- have a really early lunch at Wilpena, or

- go to the Clare Valley wineries instead. They are about one hour closer to Wilpena than the Barossa; and in my biased opinion have better wines. In fact almost as good as the wines made around here ;-)

You would also avoid being delayed by the legions of other foreign tourists planning to visit the Barossa that week! Most SA wineries, incidentally, close their doors to visitors after 5pm, except by prior arrangement. HTH

ASE 2003

2003 Annular Eclipse

From : "Andrew Wells" <andrew@wellinghall.force9.co.uk> To : <SOLARECLIPSES@AULA.COM> Date : Thu, 21 Mar 2002 18:48:36 -0000

Hello Apologies if this has already been discussed on the list - I'm a newbie here.

Can anyone offer advice on the best place to view the 31 May 2003 annular eclipse from, please? I confess that I don't have a strict definition on "best", but it should cover:
- height above horizon
- chance of good weather
- accessibility from England.

My initial thoughts were Orkney (which I love anyway) and Iceland (which I have long wanted to see) - Thorsteinn Saemundsson has given me some useful information for the latter. Thanks Andrew -- Andrew Wells "Truth is high; higher still is truthful living"

From : Assoc Prof J R Huddle <huddle@usna.edu>

I'm worried about the weather in both locations: Harrington's "Eclipse", Table 7.32 on page 151 has dismal outlooks for all three places he lists, Inverness in Scotland, Lerwick in the Shetlands, and Reykjavik. None is clear more than 1.6% of the time, and Iceland and the Shetlands have greater than 30% chance of being overcast. And Inverness is right on the edge of the, well, "path" may not be quite the right word for this Backwards Annular Eclipse.

When I plan eclipse trips, I look at several factors: Duration of totality and weather are most important, because they have the largest effect on probability of seeing the eclipse, but I also look at things like political stability, infrastructure (roads, tourist facilities), personal comfort (Why stay in a yurt, if you can find a hotel room with a Jacuzzi?). And I always INSIST that there be something else worthwhile to do, so that if I do get clouded out, the trip isn't a total waste. During my trip to Santa Catalina Island for the 4 Jan 1992 annular, it rained so much that there was literally nothing to do but stay in the hotel reading murder mysteries, which I could have done at home!

For the May 2003 "Backwards" Annular Eclipse, I think my last criterion will get promoted, maybe even to the top of my list. How are the single malts in Inverness?

Please keep in mind that associated with the Backwards Annular, there will be a "horizontal" total lunar eclipse on 16 May 2003. If you choose the right spot, you should be able to see the sun and a partially eclipsed moon at the same time! That may be too strong a statement since they are 180 apart and you can't look both ways at the same time, but from the right spot, the sun and eclipsed moon will both be above the horizon for a few minutes. Does anyone know where the "right spot" is? I don't, yet, but hope to do a recce this summer, and would appreciate any suggestions any of you ecliptomaniacs has to offer. Jim Huddle

From : Evan Zucker <ez@AbacusTotality.com>

At 12:39 PM 3/21/2002, you wrote: I'm worried about the weather in both locations: Harrington's "Eclipse", Table 7.32 on page 151 has dismal outlooks for all three places he lists, Inverness in Scotland, Lerwick in the Shetlands, and Reykjavik. None is clear more than 1.6% of the time, and Iceland and the Shetlands have greater than 30% chance of being overcast.

Having lived at NAS Keflavik, Iceland for 13 months, I can vouch that it's cloudy there an awful lot. I got to see the aurora and northern stars now and again, but more often than not it was above the clouds from my F-4 cockpit.

> And I always INSIST that there be something else worthwhile to do, so that if I do get clouded out, the trip isn't a total waste.

That's one nice thing about Iceland -- there's lots of interesting things to see, including the "original" geyser (the word is derived from the "Geysir" there, http://www.geysir.com), waterfalls, glaciers, volcanoes, puffins, Reykjavik (http://www.reykjavik.com), and the Westmann Islands (http://www.eyjar.is/eyjar).

ASE 2003

> During my trip to Santa Catalina Island for the 4 Jan 1992 annular, it rained so much that there was literally nothing to do but stay in the hotel reading murder mysteries, which I could have done at home!

You would have been better off here in San Diego. Not only were there a bunch of things you could have been doing, but you would have seen annularity too.

> For the May 2003 "Backwards" Annular Eclipse, I think my last criterion will get promoted, maybe even to the top of my list. How are the single malts in Inverness?

I made a special trip to Inverness just to see Loch Ness, and there's the added bonus of the deserted castles along its shores (http://www.aboutscotland.com/ness/urquhart.html). I later had the fun experience of flying an F-4 a few hundred feet directly over the loch, the only problem being that the loch is so narrow (about a mile wide) that we couldn't see it. Easily solved -- we rolled upside down and had a great view of the entire loch directly "overhead."

> If you choose the right spot, you should be able to see the sun and a partially eclipsed moon at the same time! That may be too strong a statement since they are 180 apart and you can't look both ways at the same time, but from the right spot, the sun and eclipsed moon will both be above the horizon for a few minutes.

I enjoyed this phenomenon during a lunar eclipse in Wisconsin on September 6, 1979, when the partially eclipsed moon set 5 minutes after the sun rose. I was in a large open field in flat Wisconsin around 6:30 AM and had a view of both east and west horizons. Evan H. Zucker San Diego, California

From : Michael Gill <eclipsechaser@yahoo.com>

Andrew, I'm assuming you've looked at the data on this eclipse presented on the Fred Espenak's NASA web site so you know the solar elevation at various locations. If not then check out: http://sunearth.gsfc.nasa.gov/eclipse/SEpath/SEpath2001/SE2003May31A.html

Further information can be obtained from a number of other sources. The Journal of the British Astronomical Association recently published something on this eclipse by Peter Macdonald (JBAA Feb 2002, Vol. 112 No.1, pages 29 to 34). See also the chapter devoted to this eclipse in 'UK Solar Eclipses from year 1 to 3000' by Sheridan Williams: http://www.clocktower.demon.co.uk/eclipse/index.htm

The Sun will be close to the horizon during the annular phase of this eclipse so using medium focal length lenses might allow you to record the annular phase with foreground objects like castles, churches etc. You shouldn't have to go too far to find something suitably scenic.

Since it is hard to be optimistic about the weather prospects for this eclipse perhaps mobility will be an important factor for you? In which case driving a car up from England and having it on hand in case there is a need to chase cloud holes might be useful.

I seriously doubt there will be any road congestion problems for an annular eclipse at that time of morning. Hopefully the eclipse-chasers will have the roads to themselves, but that may depend upon the amount of advance media coverage this eclipse receives. Michael Gill

From : "76630,2206" <76630.2206@compuserve.com>

I saw and photographed the moon deep in the penumbra from the DelMarVa peninsula on 9 Dec 1992, and from Rye Beach, NH on 4 April 1996. --Robert B Slobins

From : "Joel M. Moskowitz, M.D." <moskowi@attglobal.net>

Craig Small and I did the 2000 lunar eclipse from the top of Mt Haleakala in Maui. At sunrise, the moon was still partially eclipsed in the umbra, with the sun in one direction and the moon in the other.

From : Fraser Farrell <fraser@trilobytes.com.au>

(Continued on page 63)

ASE 2003

> If the moon is in the beginning stages of its eclipse, it can NOT be 180 degrees away from the sun at sunset. Alternatively, the moon could be emerging from the earth's shadow at sunrise. Therefore, it is quite common to see a partially eclipsed moon with the sun still up.

Actually it is also possible to see the sun and a _totally_ eclipsed moon simultaneously; a phenomenon known as "selenelion", because the moon can still be totally eclipsed while not quite 180 degrees away from the sun. Remember that the earth's shadow is a bit over 2 1/2 times bigger than the moon at average lunar distance.

I've seen two selenelions so far, without much effort or arduous travel to exotic locales.

First occasion was by accident, on the morning of 1990 Feb 10 (local time). I knew about the lunar eclipse in advance and watched it until about mid-totality before starting the drive into work. But I didn't realize I was going to see a selenelion, until I drove onto the crest of a ridge and got the rising sun in my rear mirrors, with the totally eclipsed moon ahead of me.

Of course I immediately pulled over to enjoy this unexpected treat, which lasted for about five minutes. The moon had just begun to emerge from the umbra when it set. A beautiful sight, with the usual eclipse colours deepened to blood red by low altitude, and a little orange-yellow "cap" of sunlit moon on top....

My second selenelion was seen on the morning of 2001 Jan 10 (local time); and this time I knew about it in advance. In fact at my location I had calculated that I needed to be at least 350 metres above sea level to see it - a condition barely achieved by the escarpments near home. Totality this time was a little later in the night; and we watched anxiously as the shrinking segment of sunlit moon approached the sea, with the sky to the southeast relentlessly brightening. It's a really wierd sight, seeing what looks like a young crescent moon facing the "wrong way" as it sets!

The lower edge of the moon's disc was about to touch the sea when totality finally began. Literally seconds later, the upper edge of the sun appeared behind us. So this time I only saw selenelion for about two minutes.

For both of my selenelions, I had cloudless skies, the setting moon over a sea horizon, and I was on top of hills with lower ground to the east. So in effect my horizons were "lowered", providing a little more time to see both the sun and moon. In principle, however, an observer on flat terrain or a calm sea could also see a selenelion for a few minutes (atmospheric refraction permitting). Binoculars definitely help in spotting the eclipsed moon in a bright sky, especially if there's haze or dust in the air.

Potential regions of visibility for each selenelion are enormous - a ring girdling the earth - but obviously you still need to be in The Right Place At The Right Time with a clear view of both sun and moon. Someone on a favourably-located high mountain or in an aircraft could potentially see selenelions lasting tens of minutes. Someone in the Antarctic (or Arctic) regions might even witness the entire lunar eclipse with the sun in the sky throughout!

Perhaps this will engender a new astronomical endeavour - that of chasing selenelions all over the world? But what should we call these people? Seleneliphiles? Or just crazier than most of us....? ;-) cheers, Fraser Farrell

From : MrEclipses@aol.com

Don't forget about refraction which is about 34 arc-minutes at the horizon. At sea-level, you can actually see approximately 181 degrees of the sky above the theoretical horizon.

Of course, if you are above sea level (via mountain or aircraft), then the horizon appears even lower via the dip angle as a function of your altitude. - Fred Espenak

From : "Andrew Wells" <andrew@wellinghall.force9.co.uk>

Thank you for all the information you have given me on this eclipse. I have now obtained the book "UK Solar Eclipses from year 1 to 3000" by Sheridan Williams, which seems to contain all the information I need. Given the difficulties of predicting the weather in that part of the world, we may indeed follow the suggestion of taking a car to the north of Scotland and then heading to the most likely spot the day before. Andrew

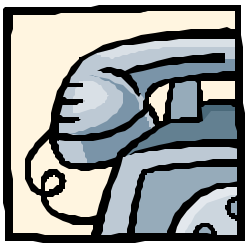
TSE 2003

Iridium satellite telephone for Antarctica 2003

From : "Olivier \"Klipsi\" Staiger" <klipsi@bluewin.ch> To : <SOLARECLIPSES@AULA.COM> Date : Wed, 27 Mar 2002 22:34:33 +0100

to all of those who will be with me on the Kapitan Khlebnikov icebreaker for the november 2003 total eclipse off the coast of Antarctica:

if you are thinking or planning to maybe buy an Iridium satellite telephone so you can stay in touch with civilization, well, I am going to get one anyway, and am willing to rent airtime. So, save the money, and come see me. We can share a phone, no need to buy one if you just need to do a few occasionnal calls. If you have any questions on this, please e-mail to me directly, not to the SEML , as it is not 100% eclipse-related. thanks. Klipsi klipsi@bluewin.ch klipsi@hotmail.com olivier.staiger@span.ch http://eclipse.span.ch



November 23rd 2003

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com> To : SOLARECLIPSES@AULA.COM Date : Mon, 11 Mar 2002

From: Michael Gill <eclipsechaser@yahoo.com>

TravelQuest International (with Adventure Network International and Sky & Telescope) have made an announcement about their Antarctica expedition for the November 2003 TSE.

Those with deep pockets click here: http://www.travelquestinternational.com/antarctica/Antarctica.htm Michael Gill

Joanne & Patrick

The sole Newsletter dedicated to Solar Eclipses

WE'RE ON THE WEB AT
http://www.Mr.Eclipse.com/SENL/SENLinde.htm

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