

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 email messages that other subscribers send to the listserver. Only subscribers can send messages.

The sole Newsletter dedicated to Solar Eclipses

Dear Friends,

From Joanne and Patrick, Michael and Laura to all: A Happy New Year. May all your wished will become true!!!

The annular solar eclipse of Costa Rica is over... Only a very few could witness the eclipses at its maximum. Many were pestered with clouds, sometimes too thick to show any glimpse of annularity. Those not travelling, could try to watch the eclipse from the computer. And some of them observed the eclipse from the back garden, ..., as a partial eclipse.

This issue contains quite a few reports and pictures of the annular eclipse of 14 December 2001. Some more in the next issue.

Preparations started for the next Annular Solar on June 10, 2002. Will it be from Mexico or will it be from one of the small islands. Jay Anderson published some weather forecasts on his WebPages.

This issue is rather thin. The Solar Eclipse Mailing List was quite in December 2001. All prepared for the eclipse, all prepared for the season holidays? We hope you had a good Christmas and a wonderful New Year.. Please enjoy this SENL issue. And ... keep those solar eclipse related messages coming ...

Next month will be quite special for Joanne and Patrick. We are getting married on 2 February. As you will understand we could not invite you all on the wedding party.



Some good friends will be present though.

Time to close this Newsletter. Time to continue with the February issue. Time to start the preparations for the next eclipse.

Best regards,

Patrick and Joanne

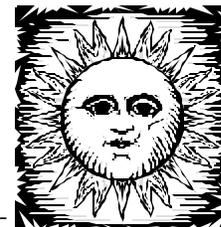


SECalendar



Dear All,

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



JANUARY 2002

January 01, 1386 New Years total solar eclipse in Europe. January 01, 1443 Partial solar eclipse on New Years day. January 01, 1489 Annular eclipse on New Years day. For Papua New Guinea was this eclipse visible on January 2. Question: Did it occur on January 1st or, due to the 10 day cut of Gregory in 1582, rather on December 21, or January 11? (Nicolas Gessner 12/00). January 01 1805 Partial solar eclipse on New years day. January 01, 1824 Annular eclipse on New Years day. January 01, 1889 New Year's Day Eclipse. Illustration with direct telegraph line from San Francisco to New York for the astronomers has been published in many eclipse books. January 01, 2215 Annular eclipse of January 01, 2215 will be visible on New Years eve December 31, 2214 for the Southeast Pacific. January 01, 2272 Partial Solar Eclipse on New years day January 01, 2272.

January 01, 1981 Minor planet (2761) Eddington 1981 AE. Discovered 1981 January 1 by E. Bowell at Anderson Mesa. Named in memory of the great English astronomer and physicist Arthur Stanley Eddington (1882-1944) on the occasion of the centennial of his birth. Eddington made fundamental contributions to studies of stellar structure and relativity, and he was also a lucid and undefatigable popularizer of astronomy. (M 7621) Eddington served as president of the International Astronomical Union from 1938 to 1943. He is also honored by a lunar crater. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

January 02, 1424 The annular eclipse on January 2, 1424 was visible on New Years day for the South pacific, east of New Zealand.

January 02, 1892 Death of Sir George Biddell Airy (1801-1892), British Astronomer Royal from 1835 to 1881. President of the Royal Society from 1871 to 1873. Calculated the distance to the Sun. Observed transit of Venus and much more. (Ref Rc 1999)

January 03, 1976 Minor Planet (2490) Bussolini 1976 AG. Discovered 1976 January 3 at the Felix Aguilar Observatory at El Leoncito. Named in memory of Juan A. Bussolini, S.J. (1905-1966), solar physicist, director of the Observatorio de Fisica Cosmica de San Miguel and a member of the commission of the International Year of the Quiet Sun. He was also an important benefactor to the Felix Aguilar Observatory. (M 8800) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

January 04, 1989 Minor planet (4499) Davidallen 1989 AO3. Discovered 1989 January 4 by R. H. McNaught at Siding Spring. Named in honor of David {Anthony} Allen {1946-1994}, staff astronomer at the Anglo-Australian Observatory (AAO). Following his Ph.D. from Cambridge University, Allen held research fellowships at the Hale Observatories and the Royal Greenwich Observatory. In 1975 he became one of the "founding members" of the scientific staff of the AAO, initially as a research fellow. He has remained as one of the pillars of that establishment ever since, having become the only permanently-appointed research astronomer. Notable for his extraordinarily wide interests across all astronomy, from the solar system to observational cosmology, his main contributions have been in the field of infrared instrumentation and its applications. He developed the radiometric method for determining asteroid diameters and recently discovered several new infrared "windows" in the atmosphere of Venus. Allen is also a leading figure in public education in astronomy, contributing to many radio and TV programs and the author of many popular articles and several books. (M 17980) Citation prepared by R. D. Cannon at the request of the discoverer. Obituaries published in Publ. Astron. Soc. Aust., Vol. 12, No. 1, p. 139-141 (1995); Observatory, Vol. 114, No. 1122, p. 250-252 (1994); J. Br. Astron. Assoc., Vol. 104, No. 5, p. 259 (1994); Q.J.R. Astron. Soc., Vol. 36, No. 2, p. 173-174 (1995). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. David Allen wrote, together with Carol the book <Eclipse>.

January 05, 1935 Extreme solar eclipse. Magnitude of the eclipse was 0.0012. The maximum is only 0.12 percent of the solar diameter. This solar eclipse was <visible> in the South Pole sea.

(Continued on page 3)

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January 05, 1989 Minor planet (4498) Shinkoyama 1989 AG1. Discovered 1989 January 5 by T. Seki at Geisei. Named in honor of the solar physicist Shin Koyama, who has served as a professor at Kagawa University for 30 years. Born in Kyoto in 1927, Koyama has retired from public life in March 1991. (M 18001) This planet was first (MPC 17980) accidentally named Koyama. This name, however, was already assigned to planet (3383). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

January 07, 1976 Minor Planet (2062) Aten 1976 AA. Discovered 1976 January 7 by E. F. Helin at Palomar. Named for the Egyptian sun god. This object is distinguished among the Apollo asteroids as the first discovered to have a semimajor axis less than 1 AU and a period less than one year. (M 4420) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

January 08, 1587 Johannes Fabricius was born. Fabricius was a Dutch astronomer who discovered the sunspots and Sun rotation. Died in 1615. (ref DD. 01/00)

January 08, 1642 Death of Galileo Galilei. Discovered his eye illness in January 1637. He could not read or write without technical help in June of the same year. Before the end of the year he was completely blind. His sight was eclipsed forever. (ref. De jonge Galileo, Davidfonds nr. 341)

January 08, 1868 Sir Frank W. Dyson was born. Dyson proved that Albert Einstein (1879-1955) was right about light being bent by gravity. Co-writer of the book Eclipses of the Sun and Moon, 1937 (with R.v.d.R. Woolley). Died in 1939.

January 09, 1201 <Within the sun there was a black spot as large as a date> (ref BAA 12/00)

January 10, 1829 Birth of James Francis Tennant (1829-1915). During an eclipse seen from the Red Sea through India to Malaysia and New Guinea, prominences are first studied with spectroscopes and shown to be composed primarily of hydrogen by James Francis Tennant (1829-1915), UK, John Herschel (UK - son of John F.W. Herschel, grandson of William), Pierre Jules Cesar Janssen (1824-1907, France), George Rayet (France), and Norman Pogson (UK/India). (Ref. Rc 1999)

January 12, 1983 Minor planet (3819) Robinson 1983 AR. Discovered 1983 January 12 by B. A. Skiff at Anderson Mesa. Named in honor of Leif J. Robinson, editor of 'Sky and Telescope'. Robinson's career as an observer began with a series of planetary drawings and observations of the rapidly changing variable stars in the Orion Nebula. He worked at the Griffith Planetarium in Los Angeles before joining the staff of the magazine in 1962 as an editorial assistant, and he succeeded the late Joseph Ashbrook {see planet (2157)} as editor in 1980. Robinson has been an active promoter of professional-amateur cooperation in astronomy, and retains interests in solar-eclipse viewing and bird-watching. (M 16246) Citation provided by D. H. Levy, S. J. Edelberg and J. K. Beatty at the request of the discoverer. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

January 12, 1986 Death of Ludwig Biermann, German astro physicist. His research of comet tails made him predicting the solar wind in 1951 with success. He described models of the corona and chromosphere of the sun s. (ref DD 01/00)

January 13, 1983 Minor Planet (5862) Sakanoue 1983 AB. Discovered 1983 January 13 by T. Seki at Geisei. Named in honor of Tsutomu Sakanoue (1921-), professor emeritus of Kyushu University whose specialties included agricultural meteorology, countermeasures against meteorological disasters, medical meteorology and rainmaking. An amateur astronomer with particular interests in atmospheric seeing, the green flash and shadow bands, he contributed to the popularization of astronomy as an advisor at several science museums. He also served as vice president and president of the Oriental Astronomical Association. (M 32788) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg Name proposed by the discoverer following a suggestion by S. Murayama, T. Sato and A. Fujii.

January 14, 0484 "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." Refers to a total solar eclipse in Athens of 14 January AD 484. From:

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Marinus, Greek philosopher, Life of Proclus. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 368.

January 14, 0484 Athens "The eclipse of Sun was so pronounced that it turn day into night and the darkness permitted to see stars..." Marinus Neapolitanus. Life of Proclus, chapter 37 (ref. PG01/00)

January 14, 1742 Death of Edmond Halley (1656-1742 or 1743), British astronomer. Famous for comet Halley. Observed the so called Bailys' beads before Francis Baily (1774-1844). Royal Astronomer Royal from 1720 till his death. The Royal Society mentioned 14 January 1742 or 1743. (ref. Rc 1999)

January 15, 1815 Birth of Warren de la Rue (1815-1889), UK. 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)

January 15, 1948 Death of Henri Alexandre Deslandres (1853-1948), French physicist and astronomer. Did spectroscopic Solar research. Designed independent but at the same time from Hale the spectra heliograph. (Rc 1999)

January 15, 1976 German satellite Helios 1 passes the Sun at only 48 million km.

January 16, 1135 "Shao-hsing reign period, 5th year, 1st month, the first day of the month. A man named Ch'en Te-I predicted that the Sun should be 8-1/2 tenths eclipsed with the beginning of loss in the initial half of the hour of the sxu. (These predictions) were verified by observation." Refers to a partial solar eclipse of 16 January 1135. From: Sung-shih (Chinese). Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 253.

January 16, 1135 Lin-an Shao hsing reign period, 5th year, first month, the first day. Ch'en Te-I predicted that the Sun should be eclipsed..." Sung-shih, chapter 81 (ref. PG 01/00)

January 17, 1938 William H. Pickering, American astronomer died. He studied several solar eclipses. Born in 1858. (ref DD 01/00)

January 17, 2447 Three total solar eclipses visible within a strip of the Pacific Ocean south of Hawaii over a period of only 4.3 years: 17 January 2447, 12 May 2450 and 1 May 2451. Approximate geographic longitude and latitude is 159 to 156 degrees West, 10 degrees North. (Ref. JM 09/99)

January 18, 0120 "On the day wu-wu, the 1st day of the 12th lunar month, the Sun was eclipsed; it was almost complete. On the Earth it became like evening. It was 11 degrees in the constellation of Hsu-nu [the Maid]. The woman ruler [ie the Empress Dowager] showed aversion to it. Two years and three months later, Teng, the Empress Dowager, died." Refers to a solar eclipse of 18 January AD 120. From: the Hou-Han shu ("History of the Later Han Dynasty"). (China). Quoted in Encyclopedia Britannica CD 98, and in Historical Eclipses and Earth's Rotation by F Richard Stephenson, Cambridge University Press, 1997, page 237. .

January 18, 0120 Lo yang "Yuan ch'i reign period, 6th year, 12th month, day wu wu. The Sun was eclipsed. It was almost completes. On Earth, it was like evening..." Hou-han-shu, chapter 28. (Ref PG 01/00)

January 18, 0120 Of the 14 summits 8000 meter, 9 did witness a total eclipse of the sun: Everest, Kangchenjunga, Lhotse, Makalu, Cho Oyu, Dhaulagiri, Manaslu, Annapurna and Shisha Pangma. This is the most summits in totality between year 0 and 3000. Ref PA 6/00

January 18, 1898 Total solar eclipse on the Everest. The next total solar eclipse on Everest will be on march 18th 2360 (totality : 94 sec) and the last one occurred on Jan 18th 1898 (65 sec). Totality is also on the 8000 meter summits Lhotse and Makalu. Ref. PA 5/99

January 19, 0301 From China <Within the sun there was a black vapour.> (ref BAA 12/00)

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January 21, 1292 "Chiih-yuan reign-period, 29th year, first month, day chia-wu. The sun was eclipsed. A darkness invaded the Sun, which was not totally covered. It was like a golden ring. There were vapours like golden earrings on the left and right and a vapour like a halo completely surrounding it." Refers to an annular eclipse of 21 January 1292. The halo is caused by ice crystals in the Earth's atmosphere. From: Yuan-shih . Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 258.

January 22, 1969 Launch Orbiting Solar Observatory 5, American spacecraft for Solar research.

January 23, 0901 Antakyah "We observed the solar eclipse at Antakyah on the 23rd of Kanun al thani in the year 1212 of Dhu al Qarnayn... more than half of the Sun was eclipsed..." Al Battani (Ref. PG 01/00)

January 24, 1004 Cairo "The was in the afternoon of monday the 29th of the month of rabi al-Awwal in the year 394 of al-Hijrah..." Al Zij al Kabir al Hakimi. (ref. PG 01/00)

January 24, 1544 Rainer Gemma observed the solar eclipse by using of solar projection. (ref DD 01/00)

January 24, 1882 Harold D. Babcock was born. Babcock was an American solar astronomer who proposed in 1961 that the sunspot cycle was the result of the Sun's differential rotation and magnetic field. Died in 1968.

January 24, 1914 Sir David Gill, Scottish watchmaker and astronomer died. Designed the value of a helio meter. Born in 1843. (ref DD 01/00)

January 24, 1925 Famous New York Eclipse. Southern limit passed somewhere through Manhattan: exact line between 95 and 97th Streets. Observers stationed at every intersection between 72nd and 135th Streets. Path New York and Connecticut clear skies. Millions of people witnessed the Eclipse.

January 24, 1925 Mabel L. Todd also was passionately interested in total solar eclipses, and traveled to a dozen of them at a time when expeditions often lasted for many months. He photographed the New England total eclipse of January 24, 1925 from an airplane, and some sources credit him with being the first astronomer to photograph the sun's corona from an airplane. Richard Sanderson 6/97

January 24, 1982 Minor planet (2602) Moore 1982 BR. Discovered 1982 January 24 by E. Bowell at Anderson Mesa. Named in honor of Patrick Moore {1924- }, astronomer, broadcaster, and writer. For some years director of the Lunar Section of the British Astronomical Association, Moore has been most energetic and successful in popularizing astronomy. He is author of many books and has regularly presented 'The Sky at Night' on BBC television since April 1957. In 1967 he was awarded the Order of the British Empire. (M 7157) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. Patrick Moore observed many solar eclipses.

January 24, 1992 Minor Planet (6731) Hiei 1992 BK. Discovered 1992 January 24 by Y. Kushida and O. Muramatsu at Yatsugatake. Named in honor of Eijiro Hiei (1931-), professor at Meisei University and professor emeritus of the National Astronomical Observatory of Japan. A solar physicist best known for his research on white-light flares, Hiei was the fourth director (1982-1992) of the Norikura Solar Observatory, where he conducted coronagraphic studies. (M 28090) Name proposed by the discoverers following a suggestion by T. Sakurai. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg Hiei was also one of the guest speakers at the conference SEC2000.

January 24, 1925 Capt. F. B. Littell took the company of 19 crew and scientists to an altitude of 4500 feet with a Zeppelin. Of the scientists, there were E. T. Pollock, G. H. Peters, H. H. Barnes, J. A. Jennings, and C. B. Watts, of watts limb charts fame. It was a normal eclipse expedition but on a platform unique among them all. (ref. S and L E observations 1943-1993, F. Graham)

January 25, 1736 Birth of Joseph Louis Lagrange (1736-1813), French mathematician and astronomer. Described the 3

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points, later called Lagrangepoints. (Ref. Rc 1999)

January 25, 1742 Edmund Halley, British astronomer died. During an eclipse in England, is the first to report the phenomenon later known as Baily's Beads; also notes bright red prominences and the east-west asymmetry in the corona, which he attributes to an atmosphere on the Moon or Sun. Halley observed from London (John Flamsteed (1646-1719) observed from Greenwich). Halley also probably draw the first eclipse map. Born in 1656.

January 25, 1908 The corona of the Sun was photographed for the first time (not during a TSE).

January 25, 1944 Hergé, with his famous Adventures of TINTIN (Kuifje) published his book Prisoners of the Sun in 1949. The Total Solar Eclipse described in this book is the one in South America on January 25, 1944.

January 28, 1611 Born of J. Hevelius, Polish amateur astronomer, discovered the libration of the Moon.

January 29, 1932 (2485) Scheffler 1932 BH. Discovered 1932 January 29 by K. Reinmuth at Heidelberg. Named in honor of Helmut Scheffler (1928-), staff member of the Heidelberg Königstuhl Observatory and professor of astronomy at Heidelberg University (1963-1991), on the occasion of his retirement. He has made important contributions to the fields of radiation transfer in the outer solar atmosphere, atmospheric seeing and the structure of the interstellar medium. In collaboration with H. Elsässer {see planet (4385)}, Scheffler has written the the well-known textbooks Physik der Sterne und der Sonne and Physics of the Galaxy and Interstellar Matter. (M 18643) Name proposed and citation prepared by G. Klare and L. D. Schmadel. Endorsed by E. Bowell, who found the key identification involving this planet. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

January 30, -0280 (0281 BC) solar eclipse in Babylon (ref. PG 01/00)

January 31, -0253 (0254 BC) solar eclipse in Babylon (ref. PG 01/00)

January 31, 1310 "On the last day of January at the 8th hour of the day at Avignon there was an eclipse of the Sun, and it was eclipsed in an extraordinary manner, and was notably sparkling. There appeared as if at nightfall a single star, a second was the opinion of the crowd. Then a remarkable semicircle was seen and it lasted until past the night hour." . Refers to a total solar eclipse of 31 January 1310. From: Ptolomaei Lucensis Hist. eccles.. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 382.

January 31, 1972 Launch of HEOS 2 (US). Research of magneto sphere, solarwind and the interaction between. Ref. DD 2/99.

January 31, 1981 Minor planet (7324) Carret 1981 BC. Discovered 1981 January 31 at the Harvard College Observatory at Harvard. Named in honor of Philip L. Carret (1896-), on the occasion of his 101st birthday and the 80th anniversary of his graduation from Harvard University. Passionately interested in solar eclipses, Carret has travelled the globe for most of the century in search of them - from Borneo to Siberia, from Baja to Kenya and from Prince Edward Island to Indonesia. Dean of American investment management firms and legendary stock picker, he created one of the first mutual funds in the U.S., Pioneer Fund, in 1928 and helped to found the mutual fund industry. He has been generously concerned about education, and about the environment and wildlife. (M 31025) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

and ... keep those solar eclipse related messages coming ...

Best regards,

Patrick



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SECalendar December - first reported corona

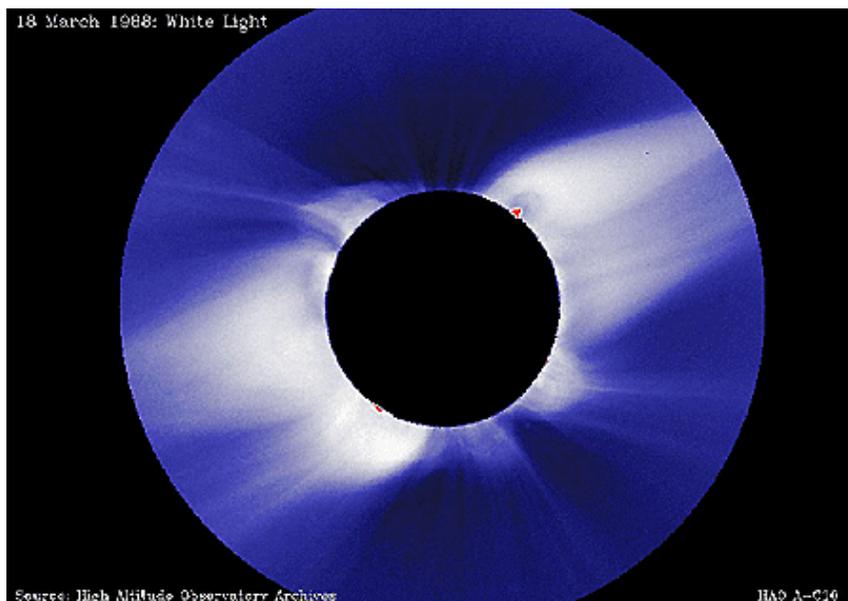
968: The first mention of the solar corona

The solar corona is the hot, extended outer atmosphere of the Sun. It is far too faint to be seen against the blinding brightness of the solar disk itself, but becomes visible, and spectacularly so, at times of total solar eclipses when the solar disk is obscured by the Moon.

While the solar corona is visible at any solar eclipse, the first explicit mention of what can be pretty ambiguously interpreted to be the corona was made by the Byzantine historian Leo Diaconus (ca. 950-994), as he observed the total eclipse of 22 December 968 from Constantinople (now Istanbul, Turkey). His observation is preserved in the *Annales Sangallenses*, and reads:

"...at the fourth hour of the day ... darkness covered the earth and all the brightest stars shone forth. And it was possible to see the disk of the Sun, dull and unlit, and a dim and feeble glow like a narrow band shining in a circle around the edge of the disk".

Compare this description to the modern eclipse photographs shown on slides 9 and slide 10 of the HAO slide set. A much older possible description of the corona is said to be found on engraved oracle bones dating from the Shang dynasty in China (1766 to 1123 BC), but is far more ambiguous and open to interpretation than Diaconus' description.



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SECalendar December - first reported corona & Perry

From : "J.P. van de Giessen" <janpieter@giessen.fol.nl> To : <SOLARECLIPSES@AULA.COM> Date : Thu, 6 Dec 2001 22:03:28 +0100

>December 22, 0968 First clear description of the corona seen during a total eclipse, by a chronicler in Constantinople. The first mention of the corona may have been due to Plutarch, who lived from about AD 46 to 120. Plutarch's book 'On the Face in the Orb of the Moon' contains a reference to 'a certain splendour' round the eclipsed Sun which could well have been the corona.

While the solar corona is visible at any solar eclipse, the first explicit mention of what can be pretty ambiguously interpreted to be the corona was made by the Byzantine historian Leo Diaconus (ca. 950-994), as he observed the total eclipse of 22 December 968 from Constantinople (now Istanbul, Turkey). His observation is preserved in the *Annales Sangallenses*, and reads: "...at the fourth hour of the day ... darkness covered the earth and all the brightest stars shone forth.

And it was possible to see the disk of the Sun, dull and unlit, and a dim and feeble glow like a narrow band shining in a circle around the edge of the disk". A much older possible description of the corona is said to be found on engraved oracle bones dating from the Shang dynasty in China (1766 to 1123 BC), but is far more ambiguous and open to interpretation than Diaconus' description. See: http://www.hao.ucar.edu/public/education/sp/great_moments.html

>December 22, 1889 Father Stephen Joseph Perry, Director of Stonehurst >College Observatory, Lancashire was a martyr to science and eclipse chasing.

For a photo see: http://www.exploratorium.edu/eclipse/eclipse_photos3.html Jan Pieter van de Giessen



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SECalendar December - Transit Venus

From : Jean Meeus <JMeeus@compuserve.com> To : "INTERNET:SOLARECLIPSES@AULA.COM" <SOLARECLIPSES@AULA.COM> Date : Tue, 4 Dec 2001 04:09:26 -0500

Remark about the transits of Venus.

The transit of 1631 did occur on December 7, not December 6. Moreover, this transit has NOT been observed.

The first observed transit of Venus (by only ONE observer) was that of 1639 December 4, which is not mentioned in your list. Regards. Jean Meeus

From : Jay.M.Pasachoff@williams.edu

I know that the 1639 Dec 4 transit was Nov 24 Old Style. Was the 1631 Dec 7 similarly Nov 27 Old Style? That is, the date on a calendar when it was observed was Nov 27. Jay Pasachoff

From Wil Carton

A guess to the question above: In Great-Britain the Julian Calender had been maintained up to in the 18th Century (from my memory I believe up to 1740). Example: the Westeuropean TSE of 3d May 1715 ("continental" Gregorian calendar) has in England been chronicled on 22d April 1715. I think that in the colonies of the growing British Empire, together with the British culture also the Julian Calendar has been maintained so long after 1582, the year in which "catholic" Europe switched to the Gregorian calendar. Wil Carton.

From : Jay.M.Pasachoff@williams.edu

But 1632 and 1636 were leap years, so the number of days of deviation of OS and NS may have changed between 1631 and 1639. Jay Pasachoff

From : "J.P. van de Giessen" <janpieter@giessen.fol.nl>

The only one observer of the transit of Venus on 1639 was Jeremiah Horrocks [1619-41] who predicted that a transit of Venus would be observable on November 24, 1639. His observations were published posthumously in his wok 'Venus in Sole Visa'.

See for more information:

*) Observation: <http://www.venus-transit.de/1639/horrox.htm>

*) Biography: <http://es.rice.edu/ES/humsoc/Galileo/Catalog/Files/horrocks.html>

*) Chapman, Allan. "Jeremiah Horrocks, the Transit of Venus, and the 'New Astronomy' in early seventeenth-century England". Qtrly. Jnl. Ry. Astr. Soc, 31 (1990) pp 333-357. An appraisal of Horrocks' achievement; an attempt to dispel some myths which surround him, and a discussion of his methods.

*) And for those who have many see: <http://www.worldbookdealers.com/books/forum/0000156700/bk0000156719.asp> the price is \$10,000

From : Jean Meeus <JMeeus@compuserve.com>

Concerning the question posed by Jay Pasachoff : Yes, 1632 and 1636 were leap years, but they were so in *both* the Julian and the Gregorian calendars.

Therefore, the number of days of deviation between OS and NS did *not* change between 1631 and 1639. That number of days of deviation changed only in 1700, 1800 and 1900, which were no leap years in the Gregorian calendar. Jean Meeus

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From : Michael Gill <eclipsechaser@yahoo.com> To : Patrick Poitevin <Patrick_Poitevin@Hotmail.Com> Date : Fri, 7 Dec 2001 02:12:11 -0800 (PST)

--- "J.P. van de Giessen" <janpieter@giessen.fol.nl> wrote:

> He chased other total solar eclipses plus both the Venus transits of the 18th century.

Patrick - a correction: the above sentence should have read "He chased other total solar eclipses plus both the Venus transits of the *19th* century." Apologies and clear skies, Michael.

SECalendar December - Xmas eclipse

From : "Crocker, Tony (FSA)" <Tony.Crocker@transamerica.com> To : "SOLARECLIPSES@AULA.COM" <SOLARECLIPSES@AULA.COM> Date : Mon, 3 Dec 2001 16:07:11 -0800

The past 2 years I have questioned the Christmas Island comments in the December calendar. The confusion was mine as there are 2 Christmas Islands. Patrick's Christmas Day references are to an island NW of Australia, recently in the news in connection with a political issue in Australia about refugees detained there. We Americans are more familiar with the mid-Pacific Christmas Island. This island is likely where Captain Cook observed the 1777 eclipse. According to Emapwin the eclipse of 29 December 1777 was annular, and the mid-Pacific Christmas Island would have experienced about an 80% partial midday.



SEDates

SEDates - British Astronomical Association

Saturday January 05, 15:00-18.00

BAA Ordinary Meeting and Christmas Lecture

Speakers: Richard Stephenson with "Historical Eclipses"

preceded at 13:30 by the Special BAA Christmas Lunch

(please contact the BAA Office (office@baahq.demon.co.uk) to book your lunch place - thank you)

See <http://www.ast.cam.ac.uk/~baa/>

SETalk

Index December 2001 SENL

Please find herewith the contents of the December 2001 issue of the Solar Eclipse Newsletter. Beside the topic, the page number is listed:

.../...

The SENL will be soon on the WebPages of Fred Espenak. See

SENL:

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

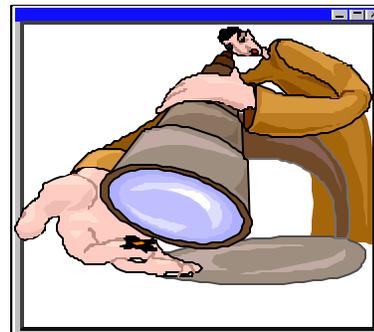
Index:

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

Example: SENL0011.pdf:

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

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



Delta T update

From : Jean Meeus <JMeeus@compuserve.com> Date : Mon, 17 Dec 2001 04:36:09 -0500

On 2001 November 1, the value of Delta T (the difference between the uniform Dynamical Time and the Universal Time) was 64.25 seconds. Jean Meeus

5 minutes of fame?

From : Stefano Rosoni <s.rosoni@unian.it> To : eclipse@hydra.carleton.ca Date : Mon, 03 Dec 2001 20:08:46 +0100

Hello Mrs. Sarah! Our scientific interest is not an obsession, and we are amateur astronomers, not astrologists or so on. I am not yet organized for sending my photos in electronic format on the web, but all of my colleagues can do it now. Any astronomical expedition is a new wonderful exploring adventure, and if a person does not trust it, he would try at least a time in his life such an adventure. Thanks to amateur astronomer's discoveries, knowledge of the Universe today is more advanced, especially for new stars and new little planets (asteroids). A remark: unfortunately the greatest amount of astronomy international literature and matters is in English, and therefore I must do many strains to be and rest up to date. My

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best regards and bye bye, Sarah. Stefano Rosoni Ancona (Italy)



Natural Flash Spectrum

From : "Jean-Luc L. J. DIGHAYE" <jdighaye@epo.org> To : SOLARECLIPSES@AULA.COM Date : Mon, 03 Dec 2001 15:26:22 +0000

Hi everybody! I wonder whether a kind of flash spectrum (or at least a rainbow effect) is visible without using a dispersing element when the eclipsed Sun is low on the horizon, due to differential refraction effects.

A crude formula for the angular separation (expressed in arcsec) between C and F lines (aka H-alpha and H-beta) when the Sun's altitude A is less than 10° above the horizon and the site elevation is less than 1000 m is: $CF (") = 0.6 * \tan (90^\circ - A)$. If the violet spectrum is not absorbed too much, so that one can see the H and K lines of Ca, the formula becomes: $CK (") = 1.3 * \tan (90^\circ - A)$.

For the next annular eclipse across Costa Rica and Nicaragua, CF should be 3" to 4", and CK 7" to 8". Values above 5" and 10", respectively, should be seen at Australia 2002 and Antarctic 2003 TSEs.

Did anybody observe or record these 'natural flash spectrum' effects during previous total or annular eclipses? Does anybody plan to capture such effects and, if so, with which setup? Thanks in advance, Jean-Luc.

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

Jean-Luc: What you are saying here is whether or not one can see a flash spectrum without optical aid. I doubt it. You are talking about a spectrum seconds in width. Is that not below the visual limit.

Also, sunrise/sunset points are not the usual or ideal locations for eclipse work, because of the risk of clouds. Also, what of the absorption of the atmosphere?

The only instances I could think of where one can view the spectrum without optical aid would be through cirrostratus - ice crystals or rain --as in a rainbow. However, the light coming through the refracting medium would be very much diminished.

Perhaps someone can set up and run a lawn sprinkler in the correct position to afford a view of the flash spectrum. ;-) As for me, I'll stick with my gratings. cheers/Robert B Slobins

From : Glenn Schneider <gschneider@mac.com>

In 1977, while suffering the indignity of my second clouded-out totality (missed it by just this much! ->.<-), I was privileged to witness a phenomenon much like Robert suggests. Just prior to totality, while under mostly clear skies except for one lone cumulous cloud which scooted up to the sun at just the wrong instant, a rainbow was seen toward low toward the eastern horizon. (The altitude of the Sun was 11 degrees). Just seconds before we were enveloped by the Moon's (and cloud) shadows the rainbow faded save for a single strand of brilliant red arc. A Hydrogen-Alpha rainbow had occurred, lit by chromospheric light, reinforcing for me just how close we were to seeing the big show - but missed it nonetheless. Sorry, I did not get a photograph of that (for me) unique event - one I hope never to see again. Rainbows and TSE by nature mix as well as oil and water as far as I am concerned. More? http://nicosis.as.arizona.edu:8000/ECLIPSE_WEB/

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ECLIPSE_77/ECLIPSE_77.html Cheers, Glenn Schneider

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

Glenn-- I was thinking of that story when I was making that comment. Frankly, a lawn sprinkler putting out a fine mist against a very dark background would work--I'd prefer it over the natural kind. ;-)

In 1970, I was able to see a very thin halo around the solar crescent. However, I could not make out any H-alpha line in the halo. I was on the edge of the shadow in Chatham, MA where I may have seen a second of totality. But in any event, it was a perfect flash spectrum location--I would have seen the spectrum wheel around the moon as I saw on the centerline in India in 1995.

Would we be able to see something like this in Australia?

Would the atmosphere cause problems with extinction with the sun 5 degrees above the horizon--where would extinction become significant?

I am still torn between Africa and Australia. A morning eclipse could kill whatever convection there may be unless we would be under a 'system'. This would be like 18/3/1988 when we saw the thunderhead dissipate before totality.

I had a thought--Umbraphile could be used for auroral photography--to make sequences of 15 second exposures to examine large-scale feature motions in bands. cheers/
Robert B Slobins

From : "Jean-Luc L. J. DIGHAYE" <jdighaye@epo.org>

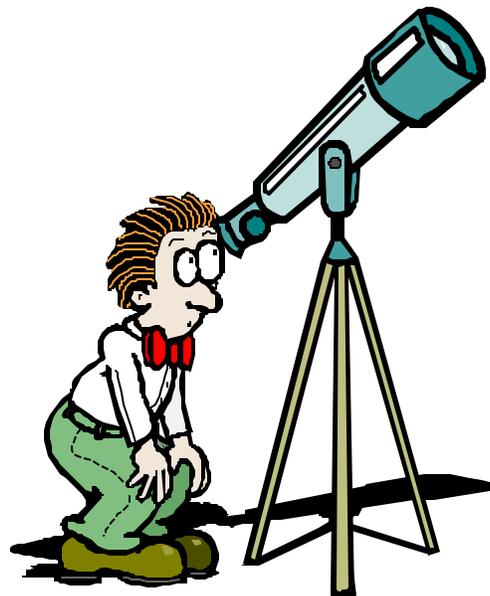
I was talking seriously and I didn't expect jokes (like the 'refracting' cirrostratus?) as feedback. Nor did I say that features in the arcsecond range could be visible 'without optical aid'. A telescope or a long telephoto lens must be used. Also, I'd never purposely go to sunrise/sunset points if there were countries with the eclipsed Sun high in a cloudless sky, a scarce circumstance in the years to come. The prisms and gratings our team used in 1999 and 2001 for taking flash spectra will stay home for a while - in particular, no science intended in Australia 2002.

Coming again to what one could see (through a telescope and without any dispersing element except the Earth's atmosphere), assuming an eclipse altitude of 7° before sunset: at second contact, the chromosphere forming a thin crescent above the Moon will be spread into the red H-alpha line downwards (thus towards the dark side), the yellow He line just above it - an absorption of about 1 mag is expected, the blue H-beta line, absorbed by 1 to 2

mag, about 5 arcsec above the H-alpha line, and other lines at the blue-violet end being strongly absorbed and washed out in the light of the inner corona. At third contact, the blue end being then dispersed towards the Moon could be easier to observe, and the red end will coincide with the inner corona below the Moon.

Now, all this assumes that the chromosphere is infinitely thin and that there's no atmospheric turbulence. What would one actually see? Layered colour fringes? A kaleidoscope effect? Or everything blurred?

So, my message is: perhaps the setting eclipsed Sun can be used for something else than scenic wide-angle pictures. High resolution images of the second and third contacts, albeit of little scientific interest, could be aesthetic - and in any case challenging!



SETalk

Crucifixion

From : Nicholas Campion <ncampion@CAOL.DEMON.CO.UK> To : HASTRO-L@WVNVM.WVNET.EDU
Date : Tue, 18 Dec 2001 11:20:54 +0000

As I understand it the crucifixion occurred at Passover, i.e., at a new moon, so the reference to the moon turning red is a literary one rather than an astronomical one. There cannot have been a lunar eclipse at the crucifixion. Nick Campion

From : Peter Nockolds <ASTROLIT@AOL.COM>

There could have been one during the evening following, ie just after the entombment of Jesus, as was the case in Passover 33CE.

I don't find any reports of lunar eclipses in the Gospel records, but there is an image in the Book of Joel of 'the Sun turned to darkness and the Moon turned to blood', which could refer to solar and lunar eclipses. This image is cited by the Apostle Peter at the beginning of the Acts. I assume that the report of three hours darkness during the crucifixion became linked with the first part of this image (ie Sun turned to darkness) and then the Moon turned to blood was drawn in by association. Peter Nockolds

From : "Sara L. Gardner" <slgardner@QWEST.NET>

Good morning list, In my opinion, you cannot cite literary passages as astronomical events or date them without corroborating evidence from another source, for example the work done by Stephenson et al identifying Halley's comet viewed in and recorded in China with comet records in Mesopotamia. Until you support your arguments by other evidence you deal with myth. With Bible in particular there are too many versions, and nuances in versions, not translated into languages that most of us read to assume that one version is an accurate account. This is particularly true of the Old Testament, but I would venture that it is also true of the New Testament.

Sara L. Gardner University of Arizona

From : Peter Nockolds <ASTROLIT@AOL.COM>

Sara I was not trying to argue that there was a lunar eclipse at the Crucifixion but simply seeking to show how the idea that there was a lunar eclipse at the Crucifixion came about. I do not presently have access to the 1983 Nature article in which Humphreys and Waddington argue that the Crucifixion took place in 33CE when there was a lunar eclipse came about, and should be rather interested to know what arguments they managed to get past the editors of that journal .

Peter Nockolds

From : Joan Griffith <despinn@HOTMAIL.COM>

Nick, Passover is at the full moon, not the new moon. Passover is on the 14th of the month, which begins on the new moon. Joan

From : Joan Griffith <despinn@HOTMAIL.COM>

Hi list, About the lunar or solar eclipses I am in the dark (sorry) but: Jesus was crucified right at Passover. He had to be buried before the Sabbath. It is entirely possible that 33 AD was selected because the particular day fell on Friday. Suppose there was another, annual holy day that week, in addition to the Saturday Sabbath. Then Jesus could have been crucified on Wednesday or Thursday, according to some writers.

A Wednesday, Thursday, or Friday crucifixion between 23 and 33 AD (depending on whether Christ was born in 7 BC, no year 0, or 1 AD) leaves a LOT of room for discussion. Joan

From : Larry Ely <ldely@CROCKER.COM>

Yes, the Moon turning blood red is a reference to Joel, and perhaps other authors of the Bible. At the crucifixion it was reported that there was darkness. This was not from a solar eclipse, but from a sand storm. At the crucifixion the ecliptic longitude of the Moon was 190:27 and the Sun was 11:31. As this was at 3:00 pm, at about 5:00 pm, towards sundown, the eclipse of the Moon occurred.

Waddington and Humphreys that Ormond Edwards (The Time of Christ) cites are scholars at Oxford. They surely could pass muster at Nature. Fotheringham, who earlier pointed to the year 33 AD for the crucifixion was a leading light in astronomical circles. Academic inertia has persisted in sitting on the date for the birth of Jesus as 4 BC, thus giving the wrong date for the crucifixion when the roughly 30 + 3 years are added. So the wrong eclipse had been identified. The 33 AD eclipse was near total.

If anyone is too time constricted to get to the Nature volumes, I would be willing to mail them a photocopy of my photocopy for a US \$1.00 to handle postage.

Besides giving the birth and crucifixion dates of Jesus, Edwards gives a full chronology of his life. He says that Herod died soon after an eclipse in January, 1 BC, which is before the birth of the December 25, 1 BC Jesus. But according to Steiner there were two Jesus children born that

(Continued on page 15)

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year, the earlier one on January 6, 1 BC. These two dates are exactly 12 synodic cycles of the Moon, Sun apart, the number 12 being significant, and the 12 days of Christmas may be seen to be an allusion to this. The Jesus born January 6, 1 BC is the one visited by the Kings (astrologers), as this Jesus was a highly developed individual (in soul) who had earlier been Solomon, according to Steiner. It is he who Matthew reports fleeing to Egypt. But in Luke there is the story of the shepherds visiting Jesus. This Jesus had his first birth on earth at this time, and was totally pure of heart (had done no injury to another human being, so was free of sin, karma). Christian theologians always skip over the contradictory biographies of Jesus between the Matthew and the Luke Gospel. Here is another instance where Steiner turns on the light for us: in his mind's eye he purported to be able to read or revisit history and report on what happened. The two Jesuses were present together in the Temple at age 12, and at that time the ego, that component of the human being that reincarnates and learns from experience, passed over to dwell in the bodily sheaths of the Luke (carpenter) Jesus. This created an amalgam human being who was strong enough to hold the Christ being, the being from the Sun, at the Incarnation. The body of the Matthew Jesus then died off, as it had no regulating ego anymore. Edwards gives all the dates that he thinks are accurate and justifies his reasons, but there may be cases where, for example Jesus was said to be 12, but it could have been his 12th year, so the date can be off one year. Same for the age 30. I have been working on the problem of the correct time of day for each of these Jesuses by comparing these charts to theologians, priests, pastors, etc. In this way, and through other ways astrological, I have arrived at what I think are the correct times of the day for each. Larry Ely

From : Joan Griffith <despinn@HOTMAIL.COM>

Scholars they may be, Larry, but if you read Matthew, Mark, Luke, and John, you will notice Jesus did not ask scholars to follow him, but fishermen. So much for your wise men. ;) Joan

From : "Bradley E. SCHAEFER" <schaefer@ASTRO.AS.UTEXAS.EDU>

Hi; "The Sun shall be turned into darkness, and the Moon into blood..." [Acts 2:20]. To any astronomer, this sounds like a solar and lunar eclipse. With a Bible concordance, we can find many other passages that repeat this passage nearly word-for-word. In all cases, these 'eclipses' are directly associated with Judgement Day. For example, the above quote continues "..., before that great and notable day of the Lord come."

This same connection has been carried over into Islam

which has a strong tradition that the Day of Judgement will be heralded by a solar and lunar eclipse occurring together in the holy month of Ramadan. (These happen cyclically, with the next ones {both total} in 2003.) Ramadan has just ended, although both its start and end are based on alleged observations that no astronomer accepts.

The above quote from Acts has been used by Humphreys & Waddington (1983, Nature, 306, 743) as a tie-breaker for deciding the date of the Crucifixion. The background to this is that the date of the Crucifixion is the key to much in New Testament chronology. Generally, this is stated as looking for a date that is a Friday which is the 14th or 15th of the lunar month Nissan between the years of AD 26 and 36 (preferably from AD 30 to 33). This is an astronomical problem. Numerous calculators have found only two equally possible dates (7 April AD 30 and 3 April AD 33) and then chosen one or the other on various weak grounds. Since I have a vastly improved lunar crescent visibility algorithm, I have checked the start dates of all relevant lunar months, but come to the same conclusion (Schaefer, 1990, QJRAS, 31, 53). Into this, Humphreys & Waddington point out that there was a lunar eclipse on the night of 3 April 33 AD and then connect this with the quote from Acts. This they claim is a tie-breaker (actually, this is merely a repeat of a very old claim), showing that the Crucifixion was on the AD 33 date.

The Humphreys & Waddington tie-break has big problems: (1) They tried to connect the Acts 2:20 verse with the verse Acts 2:23 which mentions the Crucifixion. But verses 21 and 22 are talking on different topics, making the connection weak at best. (2) Sun-to-darkness and Moon-to-blood refers to the Day of Judgment, as is shown in many Old and New Testament passages. This also breaks the connection and kills the tie-breaker. (3) The lunar eclipse was not noticeable from Jerusalem [Schaefer 1990, QJRAS, 31, 53], having the Moon below the horizon well into the penumbral phases. (4) The Moon in these phases would not have any red coloration [Schaefer, 1991, PASP, 103, 645]. So we are back to the tie between AD 30 and 33.

A problem with this 'standard' solution is that some groups believe that the Crucifixion was on either a Wednesday or a Thursday. In fact, this is the one most common issue that I get in letters on this topic. The point is that three-days-and-nights in the tomb counted backwards from Sunday morning is ambiguous depending on how and what is counted. I have written a whole paper titled "Was the Crucifixion on Good Wednesday?" to answer questions by concerned people (it would then be on 25 April AD 31), but have never tried submitting it anywhere.

(Continued on page 16)

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The provenance of an article in Nature has been presented as a reason to believe in the result. But all astrophysicists know that Nature has the worst reputation amongst all journals. [Well, maybe Earth, Moon, and Planets is worse.] In fact, I have made a detailed study from 10 years of Nature papers on three topics with each being reviewed by 3 front-line researchers. My result is that about one-third of all claims made in Nature (at least in astrophysics) are wrong. Another way of saying the same result is to point out that Nature has subsequently published a denial of the original Humphreys & Waddington paper [Ruggles, 1990, Nature, 345, 669]. Cheers, Brad schaefer@astro.as.utexas.edu

From : Peter Nockolds <ASTROLIT@AOL.COM>

Brad Your remarks on Nature made me sit up ! I don't have the book to hand but I read in connection with the Spanish Armada that 1588 had been widely anticipated as a fateful year because Regiomontanus had predicted that three eclipses (2 lunar, one solar) would be visible during the year (presumably from Europe. I'm not dsure this was astronomically accurate but it would seem to attest to the persistence of traditions that a number of eclipses in quick succession represent a particularly fateful portent. There's another hint of this in Shakespeare

"These late eclipses in the Sun and Moon portend no good to us" (Duke of Gloucester, King Lear)

Could you mention the other 'weak grounds' which have been used to decide between 30 and 33 CE ?

For myself I incline to 33 CE because Venus would then have been at maximum brightness as morning star between the resurrection and ascension, and there are a number of morning-star references in the New testament. There's a good deal of research behind this which I've not yet published, but I'll throw it out in case anyone has had a similar idea. Peter Nockolds

From : Brian Whatcott <inet@INTELLISYS.NET>

I hear that about 50% of UTexas theses turn out to be mistaken, overcome by events or wrong-headed too.

Does this mean that Nature peer reviews provide 50/33 = 50% better reliability than the papers written by people in UTexas? <big smile> Brian W



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Good news

From : "Olivier \"Klipsi\" Staiger" <olivier.staiger@span.ch> To : <SOLARECLIPSES@AULA.COM> ate : Tue, 18 Dec 2001 00:40:22 +0100

good news, we are not alone to have seen the eclipse in Costa Rica.

I just saw that Paul Maley and his group saw it , too, quite close from our location.

very interesting article to read at www.eclipsetours.com/HideandSeek.html . congrats, Paul. Klipsi

From : "Hole in the Sky Tours" <eclipse98@earthlink.net>

good news from our end too, the Hole in the Sky was successful as well.

Next annular, June 11 2001 off of Cabo San Lucas!!

From : "Dale Ireland" <direland@drdale.com>

Kelly Beatty of Sky and Telescope saw it also and photographed it with a 1250mm lens. He was on the CompuServe astronomy chat Sunday afternoon just after he arrived back from C.R. Dale

San Diego CA partial report webpage

From : Fred Bruenjes <fred@moonglow.net> To : solareclipses@Aula.com Date : Fri, 14 Dec 2001 19:40:26 -0800

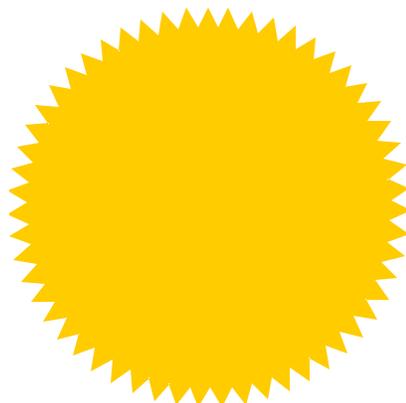
Unlike Evan, I was able to see the partial phases of the eclipse from the San Diego area, by driving out to the desert. I've put together the story and some photos here: <http://www.moonglow.net/eclipse/2001dec14.html>

At 22% magnitude it's not that spectacular. However, I did get a really cool photo of a rainbow during the eclipse which is worth seeing. Fred Bruenjes, Ramona, CA

LIVE

<http://eclipse.ice.co.cr/>
<http://eclipse.span.ch/liveframe.htm>
www.icstars.com/AstronomicalTours/costarica/
http://nacion.com/ln_ee/ESPECIALES/eclipse/home.html
<http://cientec.or.cr/astronomia/eclipse/english.html>
<http://sohowww.nascom.nasa.gov/data/realtime-images.html>

Fase Hora
 Primer Contacto 15 h, 13 min.
 Inicio Fase Anular 1 6 h, 30 min.
 Máximo del Eclipse 1 6 h, 32 min.
 Fin Fase Anular 16 h, 33 min.
 Se acuesta el Sol 17 h, 18 min.
 Último Contacto 17 h, 39 min.



Dec 14, 2001, Solar Eclipse Gallery

From : Eric Pauer <pauer@bit-net.com> To : Solar Eclipse Mailing List <solareclipses@aula.com> Date : Tue, 18 Dec 2001 11:03:48 -0500

There are some interesting photos of the 14 December solar eclipse, featuring a photo of annularity by Olivier "Klipsi" Staiger, on the Spaceweather.com site at:

Dec 14, 2001, Solar Eclipse Gallery http://www.spaceweather.com/eclipses/gallery_14dec01.html

I find the low angle shots of the eclipsed sun with the horizon/landscape to be particularly striking. The 2002 annular in Mexico and 2002 total eclipse in Australia will present such opportunities. The downside of low elevation eclipse as we all know is the vulnerability to clouds. My ideas of trying to see the tiny partial eclipse from New England or New York were thwarted by complete cloudiness in the northeast USA. Eric

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Change in web cast address

From : Alejandra León-Castellá <leonale@racsa.co.cr> To : SOLARECLIPSES@AULA.COM Date : Fri, 07 Dec 2001 06:24:14 -0600

Dear Eclipse chasers, Please note that we have made a change in the web cast address. I apologize to those who had already made links and appreciate your support and promotion.

Our eclipse Web cast: <http://eclipse.ice.co.cr/>

List of Live WEBcasts and WEBcams. Please let us know about any other transmission and we will include it here. <http://cientec.or.cr/astronomia/eclipse/english.html>

The campaign here is in full force. We had the first of 2 presentations with Olivier Staiger yesterday. Today is the second one in Cartago, the old capital. University students and mathematics teachers will be our audience today. It has been a lot of fun. Regards, Alejandra

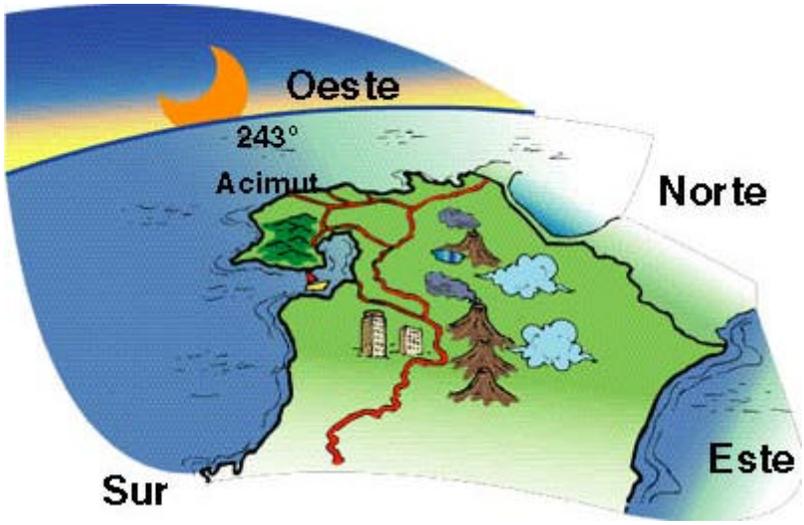
From : Vic & Jen Winter <webmaster@icstars.com>

We will be providing a webcast in conjunction with Olivier Staiger at the site:

<http://www.icstars.com/AstronomicalTours/costarica/index.html>

We are posting his daily trip reports and will maintain live images from Klipsi as he uploads.

7 days to go! Clear Skies, Jen Winter - Owner



Dec 14, 14.59 p.m. EDT



Dec 14, 15.46 p.m. EDT

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Dec 14, 16.32 p.m. EDT



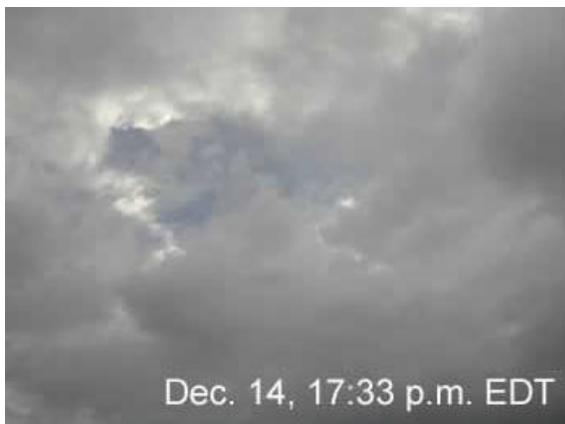
Dec 14, 16.44 p.m. EDT



Dec. 14, 17:15 p.m. EDT



Dec. 14, 17:25 p.m. EDT



Dec. 14, 17:33 p.m. EDT



Dec 14, 17:38 p.m. EDT

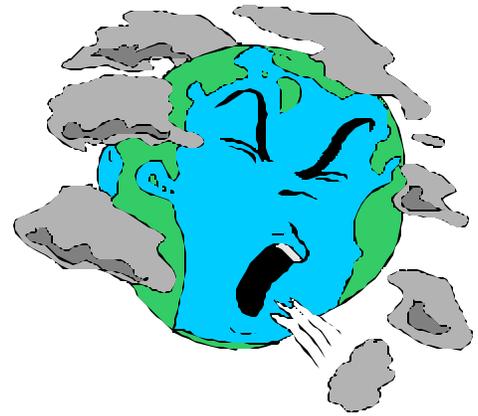


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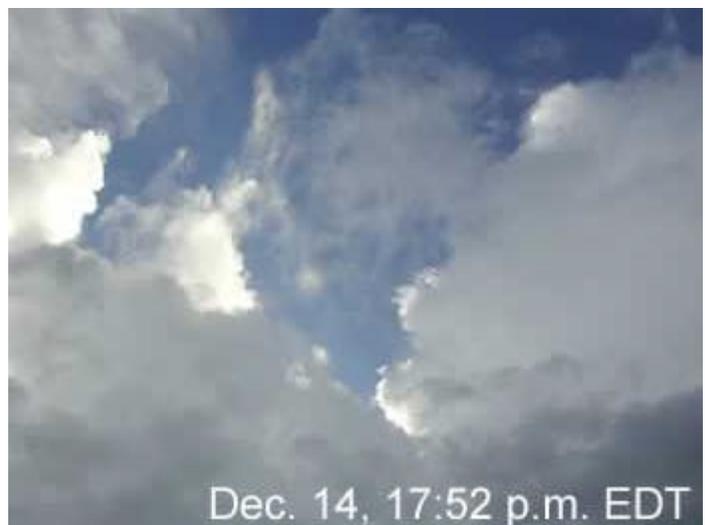
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Dec. 14, 17:42 p.m. EDT



Dec. 14 17:44 p.m. EDT



Dec. 14, 17:52 p.m. EDT