Volume 8, Issue 12
SOLAR ECLIPSE NEWSLETTER

December 2003

SOLAR ECLIPSE NEWSLETTER

The sole Newsletter dedicated to Solar Eclipses

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Dear All,

Year end, end of November 2003 eclipse. For many, although some did not see the full spectacle, it was a success. We tried to see from the live Web-Pages, though, without success. But we where please with the posting on the solar eclipse mailing list. The result is in this solar eclipse newsletter. Many good accounts and beautiful images. Congratulations to you all.

To all of you best wishes for the new year. May 2004 bring you all good health and all what you may wish. Only two partial solar eclipses, but a not to miss Transit of Venus. And ... of course there will be the international Solar Eclipse Conference SEC2004 in August in the Open University of Milton Keynes (UK). For those whom did not know, Barrie Jones, professor in astronomy at the Open University and our main contact and help for SEC2004, is currently in treatment for a serious illness, and we all wish him all the very best.

This newsletter is pretty big and we had to split in many issues to make the files reasonable in downloading. The next issue will be due in a few weeks time and of course we invite you to have a look into the WebPages.

Best regards and Happy Holidays,

Patrick and Joanne

Miquel Serra Juan Carlos Casado ima23nov03

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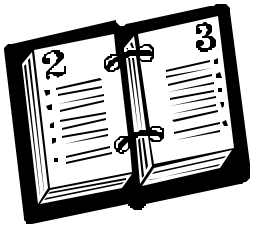
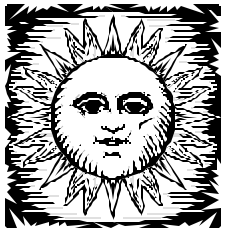


December 2003



Dear All,

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

For the whole Solar Eclipse Calendar, see our Solar Eclipse WebPages at

http://solareclipsewebpages.users.btopenworld.com

December 01, 1980 Minor Planet (3168) Lomnický Stít 1980 XM. Discovered 1980 December 1 by A. Mrkos at Klet. Named for the meteorological and solar observatory in the High Tatras, where the discoverer worked for some 20 years. (M 23136; M 30819) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

December 01, 1989 Minor planet (7176) Kuniji 1989 XH. Discovered 1989 December 1 by A. Takahashi and K. Watanabe at Kitami. Named in honor of Kuniji Saito (1913-), who joined the Tokyo Astronomical Observatory in 1936 and was engaged mainly in research on the solar corona. Following his retirement in 1974, he has collected historical materials from Japan, China and other countries to analyze them from the viewpoint of modern astronomy, using computers. He named this field of research "paleoastronomy" and hopes that many other reearchers will enter into this kind of research. He also served as president of the Astronomical Society of Japan. (M 32789; M 33151) Name proposed by the discoverers following a suggestion by A. Fujii and A. Tanno. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

December 01, 2206 There will be 3 eclipses in 2206: A Partial Solar Eclipse on December 01 and December 30 and a Total Lunar Eclipse on 16 December 2206. There were 3 eclipses in December 1880: A Partial Solar Eclipse on 2 December and 31 December and a Total Lunar Eclipse on 16 December. Ref. SEML 06/00

December 02, 1989 Solar Max lost orbit and burned in Earth's atmosphere. Launched in 1980, Solar Max was repaired in the cargo bay of the Space Shuttle Challenger in 1984. Solar Max studied the Sun and discovered 10 comets skimming past or crashing into the Sun.

December 02, 1995 The SOHO satellite was launched in a halo orbit around the L-1 Lagrangian point between the Sun and the Earth.

December 04, 1639 The first observed transit of Venus (by only ONE observer) was that of 1639 December 4. 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 work 'Venus in Sole Visa'. Ref SENL 01.02

December 04, 1983 A 1 percent magnitude partial eclipse was visible in Belgium. The eclipse was annular in Africa.

December 04, 2002 Last total solar eclipse which occurred in the month December. The last one happened on 22 December 1889. The next TSE in the month December will be 14 December 2020. There will be a gap again between 27 December 2084 and 9 December 2197 with no total solar eclipses in the month December. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

December 05, 1879 Sir William Abney proposed to the Royal Society a photographic map of the solar spectra in infra red. He made photographic emulsions which were sensitive at a wave length of 12000 Angstrom. This could not be copied for many years. Ref. DD 11/99

December 05, 1967 Launch of HEOS 1 (USA). Research of magnetic fields, solar wind and cosmic rays. Ref. DD11/99

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December 06, 1695 Total solar eclipse visible on the Mount Everest (Chomolungma). At the same time as well on two other 8000 meter summits (14 in total): Lhose and Cho Oyu. Ref. PA 05/00

December 07, 0150 Longest duration of an annular eclipse between year 0 and 3000. Duration is 12m23s. Theoretical longest duration is 12m30s. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

December 07, 1631 The first transit of Venus as predicted by Johannes Kepler.

December 09, 1991 Minor Planet (5070) Arai 1991 XT. Discovered 1991 December 9 by S. Ueda and H. Kaneda at Kushiro. Named in honor of Ikunosuke Arai (1836-1909), the first director of the Central Meteorological Observatory. In his early days, he contributed to the triangulation of Hokkaido. In 1887 he observed the total eclipse of the sun at Sanjo, Niigata, and successfully photographed the event. (M 22506) Name suggested and citation prepared by H. Fukushima. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

December 10, 1974 Helios 1 was launched to observe the Sun and its solar wind. It was constructed in West Germany and launched by the US from Cape Canaveral in Florida. Because it was equipped with special heat-dispersal systems, the spacecraft were able to withstand extremely high temp's, which reached an estimated 700 F (370 C). It was the closest any spacecraft has approached the Sun (28 million miles from the Sun).

December 10, 1997 Start of the Solar Eclipse Mailing List (Solar Eclipse List) on internet. This is the first worldwide Mailing List on Solar Eclipses. Jan Van Gestel from Belgium offers the server, Patrick Poitevin is the Solar Eclipse List Owner. After 3 years there are between 280 and 300 subscribers out of more then 35 different countries.

December 12, 0429 "Yuan-chia region period, 6th year, 11th month, day chi-ch'ou, the first day of the month. The sun was eclipsed; it was not complete and like a hook. During the eclipse, stars were seen. At the hour of fu (= 15-17 h), then it disappeared (i.e. ended). In Ho-pei (province) the Earth was in darkness." Refers to a total solar eclipse of 12 December AD 429. From: Sung-shu (Chinese). Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 242.

December 12, 1871 Edward Walter Maunder mentioned an eclipse comet on December 12, 1871, observed by A.C. Ranyard. But he speaks " ... less convincing evidence ..." comparing with the eclipse comet of 1882 and 1893. On the drawing you can clearly see the dark lines visible in the corona. Edward Walter Maunder (1851-1928), his wife Annie Scott Dill (1868-1947)and his elder brother Thomas Frid (not an astronomer, assistant secretary of the BAA from 1890 to about 1928), observed and wrote numerous about solar eclipses.

December 12, 1871 Pierre Jules Cesar Janssen (1824-1907, France) uses spectroscopy from an eclipse in India to propose that the corona consists of both hot gases and cooler particles and therefore is part of the Sun. Jules Janssen discovered dark lines in the solar corona spectrum. (ref Rc 1999)

December 12, 1928 Jean Meeus birthday.

December 13, 1967 Launch of Pioneer 8 (USA). Research of the sun. Ref DD 12/99

December 13, 1974 Last solar eclipse on a Friday the 13 th. The next solar eclipse on a Friday 13 th is in July 2018. Both are partial solar eclipses. There are 24 solar eclipses on a Friday the 13 th between 0 and 3000. Of which 13 partial, 9 annular and 2 total solar eclipses. The most odd is the one of 13.03.313 which was an annular eclipse.

December 14, 1546 Birth of Tycho Brahe, Danish astronomer. His interest in astronomy started due to the observation of a solar eclipse in 1560. He died in 1601. Ref. DD 12/99

December 14, 1881 William R. Birt, Engish selenograph died. He founded the Selenographical Society and Selenographical Journal in 1878. He studied as well sunspots and the solar rotation. He was born in 1804. Ref DD 12/99

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December 14, 2001 On December 14, 2001, the Japanese solar observatory Yohkoh began spinning out of control. Since then, all scientific operations have stopped. The problem began during the annular eclipse of 14 December 2001. Yohkoh uses a Sun-centering system to determine its position at any given time. During the eclipse, the craft lost contact with the Sun, put itself into a "safe mode," and slowly began to drift off track and rotate. Normally this wouldn't have been a problem -- during its decade in orbit, Yohkoh has seen its share of eclipses. However, this event occurred during a rare period of the craft's orbit (known as an invisible orbit) when the craft was out of communication with Earth. Thus controllers on the ground couldn't detect (or compensate for) the craft's sudden roll. Ref. SENL 02.02

December 15, 1859 Gustav R. Kirchhoff distillated from the sun spectra which elements are present in the sun. Ref. DD 12/99

December 16, 1965 Pioneer 6 was launched to observe the Sun, orbiting between Earth and Venus in a 311-day orbit. The space-craft is still functional to this day, and is the world's oldest surviving spacecraft.

December 19, 1973 Skylab took its now famous photo of a giant solar prominence loop.

December 20, 1876 Walter S. Adams, American astronomer was born. His spectroscopic research of sunspots and starts caused the discovery of a spectrometric method to detect the distances of stars. Died in 1956. Ref. DD 12/99

December 21, 1998 SOlar and Heliospheric Observatory (SOHO) positioned in a safe mode because the last gyroscope failed. Any orbit corrections would need too much energy. They bused software to point the gyroscope. This was the first satellite successful in it. Ref. DD 12/99

December 22, 0968 "When the Emperor was waging war in Syria, at the winter solstice there was an eclipse of the Sun such as has never happened apart from that which was brought on the Earth at the Passion of our Lord on account of the folly of the Jews. . . The eclipse was such a spectacle. It occurred on the 22nd day of December, at the 4th hour of the day, the air being calm. Darkness fell upon the Earth and all the brighter stars revealed themselves. Everyone could see the disc of the Sun without brightness, deprived of light, and a certain dull and feeble glow, like a narrow headband, shining round the extreme parts of the edge of the disc. However, the Sun gradually going past the Moon (for this appeared covering it directly) sent out its original rays, and light filled the Earth again." Refers to a total solar eclipse in Constantinople of 22 December AD 968. From: Leo the Deacon, Historiae, Byzantine. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 390, and, in part, in Encyclopaedia Britannica CD 98.

December 22, 0968 While the solar corona is visible at any solar eclipse, the first explicit mention of what can be pretty am-biguously interpreted to be the co-rona 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, Tur-key). His observation is preserved in the Annales San-gallenses, and reads: "...at the fourth hour of the day ... darkness covered the earth and all the brightest stars shone forth. And is 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". Ref. SENL 01.02.

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.

December 22, 1828 Death of William Hyde Wollaston (1766-1828), Britisch Doctor and chemist. He saw in 1802 the Fraunhofer lines in the Solar spectrum but considered it as a limitation of colors. (Ref Rc 1999.)

December 22, 1870 "From the first second of contact I watched with all the attention I could command for any change in the effect on the landscape and sky. The sky might then be described as dull, not particularly dark, with small light clouds passing rapidly across, the general tone being inclined to violet-grey. No change took place till within a few seconds of totality, when the light was very sensibly lessened. At the first moment of totality, sudden darkness came on; dark purple clouds appeared on the horizon, with streaks of bright orange between them. The distant town of Jerez, from white, became a dark rich blue. The corona was radiating, and not perfectly circular, and varied as totality progressed; it was never symmetrical, and much too vague to enable me to describe by a line, excepting where a curved opening on the left-hand lower limb of the moon occurred, as shown in the drawing. The colour of the corona was warm white, and I could perceive nothing approaching a defined edge to the bright light immediately around the

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moon; it simply became less bright as the distance increased from the moon, though the contrast of the dark moon with the brightest part of the corona might induce a less practised observer to call it a ring of light. The drawing I send with this was painted immediately after, and is truest in colour and general effect as anything I ever did." Refers to a total solar eclipse in Spain of 22 December 1870. From: Paul Jacob Naftel (official artist for the eclipse expedition, led by the Reverend J S Perry). Quoted in Paul Jacob Naftel by Furniss and Booth. Ref FE 01/01

December 22, 1870 Jules César Pierre Jules Cesar Janssen (1824-1907, France) uses a balloon to escape the German siege of Paris to study the December 22 eclipse in Algeria. He reached Aran (or Wahran), Algeria, but the eclipse is clouded out.

December 22, 1870 Photograph high level of sun spots in Eclipse/Bryan Brewer 1991 page 29 and sketch page 48. See also Young's description on the Fraunhofer lines in Total Eclipse of the Sun/J. Zirker 1995 p. 12+18.

December 22, 1870 Spain: Numbers of scientific experiments. Charles A. Young (US) was successful in Spain and revealed that the chromosphere is responsible for producing both the flash spectrum and dark line spectrum observed in Sun's photosphere. Corona was bright and suspect on relation to activity.

December 22, 1889 Father Stephen Joseph Perry, Director of Stonehurst College Observatory, Lancashire was a martyr to science and eclipse chasing. He lost his life to the eclipse of December 22, 1889. He led one of the two English expeditions organised by the Royal Astronomical Society. He was stationed on Iles du Salut, off the coast of French Guiana. He was stricken with malaria by the time of the eclipse and was already dying. He expired five days later on the ship Comus. Although he obtained photographs at this eclipse, his plates deteriorated due to the climate and the delayed development caused by his unfortunate situation. He chased other total solar eclipses plus both the Venus transits of the 19th century. Source: The Daily Telegraph Guide to the Eclipse (of June 1927). The 2006 annular eclipse can be observed from this location. Ref. Michael Gill 02/01

December 22, 1975 Launch of Prognoz 4 (former USSR). Research of the sun. Ref. DD 12/99

December 22, 1989 Minor planet (7575) Kimuraseiji 1989 YK. Discovered 1989 December 22 by Y. Kushida and O. Muramatsu at Yatsugatake. Named in honor of Seiji Kimura (1932-), an amateur astronomer who first suggested sending a solar eclipse expedition to the U.S.S.R. in 1968. Since then he has organized several overseas expeditions to observe total solar eclipses. Secretary of the committee of the Japan Amateur Astronomers' Convention for over 14 years, Kimura established the Herschel Society of Japan in 1984 and has been editing bimonthly newsletters promoting knowledge of the Herschels and keeping contact with the William Herschel Society in the U.K. (M 33789) Name proposed by the discoverers following a suggestion by S. Morikubo. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

December 23, 1907 Death of Pierre Jules Cesar Janssen (1824-1907, France). Studied the Sun. Co-discoverer of the lines of Helium in the Sun, that time on Earth not yet discovered. Observed solar eclipses of which one from Algeria when he escaped Paris with a balloon during the war. (ref Rc 1999)

December 24, 1957 Very high Wolf number (sunspot number): 355. The next it was also 355. Ref. DD 12/99

December 25, 1581 Due to the de lunation period (29,5 days), over 2 following years, no phase of the moon can be on the same day. In fact neither a solar eclipse. Though, there was a solar eclipse on 25 December 1581 and a solar eclipse on 25 December 1582. The first visible in South America and the second in the south of Asia and in Australia. It was only possible because of the change from Julian to Gregorian calendar. In October 1582, there were 10 days eliminated. (ref. H 5/88)

December 25, 2038 Partial Solar Eclipse with magnitude of 0.845 on Christmas Island. On December 26, 2019 there is a partial eclipse of magnitude 0.658 on the same island. At Christmas Creek, Western Australia, both partial eclipses: a magnitude of 0.798 and 0.297. Christmas Creek will get a total solar eclipse on 22 July 2028 with almost 4 minutes of totality. The TSE starts in the Indian Ocean, crosses Australia NW to SE, and sunsets just after crossing S. Island New Zealand.

December 26, 1886 Prof. Theodor Ritter Oppolzer (1841-1886), professor in astronomy in Vienna and author of the monumental Canon der Finsternisse died in Vienna. He started his work October 22, 1885 and it was published spring 1887 after his death.

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December 27, 1571 Birth of Johannes Kepler, German mathematician and astronomer. He predicted for the first a transit of Mercury. Died in 1630. Ref. DD 12/99

December 28, 1882 Birth of Arthur Stanley Eddington, British astro physician in Kendal Cumbria. In 1912 he was leading an expedition to a solar eclipse in Brazil. Eddington confirmed his observations (that light bends when it passes a heavy mass) at the solar eclipse of 1919, together with Sir Frank Dyson. He had organized for this, special an expedition to the island Principe. He died in 1944 on 22 November in Cambridge. Ref. The Bibliographical Dictionary of Scientists, edited by David Abbott, 1994.

December 30, 1777 Eclipse observed by Captain James Cook (1728-1779), actual date December 29, during his 3 rd travel. Eclipse Island, currently called Cook Island (at the entrance of the lagoon surrounded by Christmas Island in the Pacific). Christmas Day references are to an island NW of Australia. 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. Ref SENL 01.02

December 31, 1719 Death of John Flamsteed (1646-1719) who observed the 1715 solar eclipse from Greenwich. (Ref. Rc 1999)

December 31, 1842 Annular eclipse on New Years eve. December 31, 1880 Partial solar eclipse on New years eve. December 31, 2195 Partial Solar Eclipse on New Years eve. December 31, 2233 Total Solar Eclipse of December 31, 2233 will be visible on New Years day, January 1, 2234 for the West Pacific. December 31, 2252 Total Solar Eclipse of December 31, 2252 will be visible on New Years day, January 1, 2253 for the West Pacific.

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

Best regards, Patrick and Joanne

solareclipsewebpagesSENL200312btopenworld.com
http://solareclipsewebpages.users.btopenworld.com

Chinese eclipse observors

From: Inessa To: HASTRO-LSENL200312LISTSERV.WVU.EDU Date: Sat, 29 Nov 2003 10:50:18

>December 12, 0429 "Yuan-chia region period, 6th year, 11th month, day chi-ch'ou, the first day of the month. The sun was >eclipsed; it was not complete and like a hook. During the eclipse, stars were seen. At the hour of fu (= 15-17 h), then it >disappeared (i.e. ended). In Ho-pei (province) the Earth was in darkness." Refers to a total solar eclipse of 12 December >AD 429. From: Sung-shu (Chinese). Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, >Cambridge University Press, 1997, page 242.

excerpted from SECalendar for December

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Can anyone tell me how Chinese observers managed to see the "hook" of the sun? Did they use a projection? Or watch through smoke? Some other method? Enquiring minds want to know! Lester Ness

From: Joe Kress

The Chinese used two methods to observe the sun. It can be observed much of the year through an atmosphere laden with dust from the Gobi desert. When that is not available, they observed its reflection in a bowl of specially prepared black ink. Joe Kress

SEDates

On Francois Arago in Paris

"Francois Arago et l'Observatoire de Paris"

Exhibition from October 4 to December 6, 2003 at Paris Observatory

Paris Observatory opens its gates between October 4 to December 6, 2003 to present an exposition dedicated to Francois Arago, astronomer and politician, whose 150th anniversary of death is remembered this year.

Francois Arago (1786 - 1853) was an important figure of the scientific and political life in the first half of the 19th century. Paris Observatory, which he joined in 1805 and where he died in 1853, is the center of his intense and many-sided activity. The observatory owns an abundant estate which is unknown to the general public, and has thus arranged an exhibition to pay tribute to this unusual personality. The exhibition permits to rediscover his scientific and political adventures by means of manuscripts, instruments and vestiges, and the lecture hall where he gave his famous "Course in popular astronomy". Each visitor can feel the impression which has been imprinted into the walls of the Observatory and into the memory of Paris by one of its famous directors who was also briefly president.

The exhibition is open on Wednesdays, Fridays, Saturdays and Sundays between 2 and 6 p.m.
Batiment Perrault, 61, avenue de l'Observatoire, 75014 Paris, France
Admission fee: 4.50 EUR

[adopted from: http://www.obspm.fr/actual/nouvelle/oct03/Expo-Arago.fr.shtml]

Ausstellung zum Venusdurchgang in Utrecht

Item 2 EMA Nr. 66, 22. Nov. 2003

Vom 19. Dezember 2003 bis 5. September 2004 zeigt das Astronomiemuseum "Sterrenwacht Sonnenborgh" in Utrecht (Niederlande) die Ausstellung "Venus achterna: Sterrenkundigen op expeditie in 1874". Die Ausstellung dokumentiert die niederlaendische Venusexpedition von 1874 von den Anfaengen bis zur abschliessenden Entscheidung, zum Transit 1882 keine Expedition mehr zu entsenden. Die niederlaendische Expedition hatte die Insel Reunion im Indischen Ozean zum Ziel, und die Ausstellung illustriert auch die Probleme und Gefahren, die mit einer solchen Expedition verbunden waren. Es werden die von der niederlaendischen Expedition verwendeten Instrumente (aus den Sammlungen des Universitaetsmuseum Utrecht, des Museum Boerhaave und des Teylers Museum), aber auch Dokumente und Aufzeichnungen aus verschiedenen niederlaendischen Archiven gezeigt.

Das Museum "Sterrenwacht Sonnenborgh" ist Teil des Universitaetsmuseums Utrecht und wird zur Zeit neu eingerichtet. Neben der Sonderausstellung zum Venusdurchgang wird auch eine neue, permanente Ausstellung zur Meridianastronomie in Utrecht und ab Herbst kommenden Jahres auch zwei Ausstellungen zur Meteorologie (Buys-Ballot) und Sonnenphysik (Minnaert) gezeigt. Am 8. Juni 2004 wird es eine "Venusparty" mit Beobachtungsmoeglichkeiten geben.

Die Oeffnungszeiten des Museums sind Dienstag bis Freitag 11:00 bis 17:00 Uhr und Sonntag 13:00 bis 16:00 Uhr. Fuehrungen und Beobachtungsabende koennen im Voraus gebucht werden.

Anschrift: Museum Sterrenwacht Sonnenborgh Zonnenburg 2 3512 NL Utrecht Niederlande Tel.: 030-2302818 (Mo - Fr 9.30 - 16.00) Fax: 030-2334992 E-mail: infoSenl200312sonnenborgh.nl

Weitere Informationen: www.sonnenborgh.nl

[Mitgeteilt von Klaus Staubermann.]

SEDates

IAU Colloquium "Transits of Venus"

Item 5 ENHA No. 52, Nov. 15, 2003

We are very pleased to announce IAU Colloquium 196, "Transits of Venus: New Views of the Solar System and Galaxy", to be held in Preston, Lancashire, UK, 7-11 June 2004.

On 24 November 1639 (Julian Calendar) in the tiny Lancashire village of Much Hoole, Jeremiah Horrocks made the first observations of a Transit of Venus. He was one of the first Englishmen to appreciate the astronomical revolution going on in Europe following the works of Tycho, Galileo and Kepler. It was Horrocks who first proved that the orbit of the moon is an ellipse, and Newton made good use of Horrocks' discovery. Horrocks, who died at age 22, can be considered to be the father of British astrophysics for the remarkable depth of his accomplishments. His legacy reverberates today.

This meeting will have history running through it, linking modern research topics on: high precision determination of the solar parallax; distances in the Solar System and in the Galaxy; precise determination of the motions of planets, realisation of a dynamical time scale and fluctuations in Earth's rotation. It will examine critically the remaining uncertainties in currently available parallaxes, how they can be further reduced, and the implications for stellar physics and Galactic structure studies. This will include the galactic distance scale, and will look at the future of astrometry from the ground and especially from space, including Gaia and Jasmine.

This meeting provides an opportunity to observe an extremely rare astronomical event in its prime historical venue while having discussion of its current context and relation to modern science. This will allow experts to present the most recent and future developments in the scientific topics linked to this astronomical phenomenon and exchange ideas on the most important issues for the future.

The morning of Tuesday, 8 June (the 2nd day of the meeting) will be devoted to observing the Transit of Venus beginning just after 05:19 UT (06:19 BST) and lasting for nearly 6 hours. Live observations will be conducted through the telescopes of the University of Central Lancashire's Alston Observatory near Preston, and live video links to other observing sites will be displayed. There will also be visits in small groups throughout the transit to Carr House (built 1613) in Much Hoole where Horrocks made his seminal 1639 observations. After an afternoon's rest, the day will finish with a conference banquet at the beautiful Hoghton Tower, a 16th-century manor house overlooking the rolling green hills of Lancashire where it is claimed Shakespeare worked for 3 years and where in 1622 James I was served a loin of beef that he so liked, he knighted it on the spot, Sir Loin. Our top table for the banquet will be the very table where the deed was done!

The meeting will have multi-disciplinary threads of science and history running throughout the sessions. An ancillary historical meeting for students will be held with some participation by this colloquium's invited speakers.

Following the first relatively precise determination of the a.u. from the opposition of Mars in 1672 by Richer and Cassini, the great scientifically competitive expeditions to observe the Transits of Venus in 1761 and 1769 were the first examples of modern "big science"; those expeditions have given us some of the most colourful stories in all astronomy. With the length of the astronomical unit known, and with the discovery of stellar parallax in the 1830s, our view of the universe was fundamentally changed. It is fair to say that modern astrophysics blossomed from these determinations.

Transits of Venus were observed again in 1874 and 1882 for refinement of the value of the a.u.

No living person has ever seen this rare event. Many astronomers from around the globe will want to experience seeing this historic event, and Carr House in Much Hoole, Lancashire, is the prime historic site. We are sure they will appreciate the historical connections planned in the sessions and during the transit itself.

Scientific topics are:

* Transits of Venus: their history and science
* Transits of Mercury
* Observations of transits of extra-solar planets

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* Modern and historical determinations of the a.u.
* Precision measurement of time and rotation of the Earth
* New discoveries in the solar system
* Astrophysics from high precision parallaxes from space and from the ground
* Hipparcos parallaxes and the Galactic distance scale
* The scientific promise of future astrometric space missions: Gaia and Jasmine

The meeting has wide IAU support from Divisions I (fundamental astronomy), Division III (solar system) and Commission 41 (History) and is supported by the Royal Astronomical Society.

Presentations will include invited reviews, contributed talks and poster papers. The second announcement and the call for scientific papers will be sent out in November 2003.

The conference will be hosted by the Centre for Astrophysics and be held on the campus of the University of Central Lancashire in Preston, Lancashire, UK. The University of Central Lancashire, in its various forms as a teaching and research institution, is 175 years old in this year. It currently has 35,000 students and has strong astronomy research in its Centre for Astrophysics. Preston is a small city (awarded city status by the Queen in 2002) of 135,000 with large green spaces within the city. The university in integrated with the city and is within easy walking distance of central Preston. It is easily reached by direct train from Manchester airport, the UK's third largest airport serving many international airlines, and by direct train service from London.

Preston is ideally situated for day trips to the English Lake District, the Yorkshire Dales, the Peak District, North Wales and the Forest of Bowland with the most beautiful scenery in England: National Parks, 900-year-old Cistercian monasteries, stone circles >3500 yr in age, lakes, rivers, mountains, forests (including the one where Tolkien walked as he imagined the Lord of the Rings), stately homes, lovely old stone villages, canals and canal-boats, traditional English Pubs, puffins, and unlimited historical sites.

The weather in Preston in early June is temperate. Daytime temperatures are likely to be in the range 15-25 C with overnight minima of 5-15 C. The total rainfall is about 1 m per year spread throughout the year with an average of 75 mm in June, so light rain is always possible. There will be a live video link at the Alston observatory to other observing sites, in case of cloud on the day of the transit. Of course, in 1639 Horrocks had to contend with this, too, and he successfully observed the transit. Let history be your guide!

For more information on the University of Central Lancashire see: http://www.uclan.ac.uk

and for Preston City see: http://www.transit-of-venus.org.uk/conference/local.html#about

At this time you are invited to send expressions of interest by using the form provided at the conference's web site or available on request.

We look forward to seeing you in Preston next year!

Don Kurtz and Gordon Bromage (Co-chairs, SOC)

..on behalf of the Scientific Organizing Committee:

* co-chair: Don Kurtz - UK
* co-chair: Gordon Bromage - UK
* Nicole Capitaine, France
* Mikhail Marov, Russia
* Steven Dick, USA
* Mike Feast, South Africa
* Wayne Orchiston, Australia
* Jay Pasachoff, USA
* Dale Cruikshank, USA

(Continued on page 11)

SEDate

* Naoteru Gouda, Japan

..and the Local Organising Committee:

* Gordon Bromage, chair
* Barbara Hassall
* Peter Hingley, RAS librarian
* Don Kurtz
* Paul Marston
* Gillian Saunders
* Robert Walsh

For more information about the conference, please email to tovSenl200312uclan.ac.uk or see http://www.transit-of-venus.org.uk/conference/ .

[Source: http://www.transit-of-venus.org.uk/conference/announcements.html#first]

History of astronomy at the 203rd AAS Meeting

Item 3 EMA Nr. 67, 27. Nov. 2003

On January 4-8, 2004, the 203rd Meeting of the American Astronomical Society (AAS) will be held in Atlanta, GA, USA. The Historical Astronomy Division (HAD) of the AAS organized the following sessions:

Sunday, January 4, 2004, 2:00-5:00pm
Session 1 HAD I: Transit of Venus

Chasing Venus: Putting the Transits of Venus on Exhibition
R.S. Brashear (Smithsonian Inst.)
Jeremiah Horrocks, The New Astronomy, And The Transit Of Venus
W. Applebaum (Illinois Institute of Technology)
The American Transit of Venus Expeditions of 1874 and 1882
S.J. Dick (NASA)
Explanation of the Black-Drop Effect at Transits of Mercury and the Forthcoming Transit of Venus
J.M. Pasachoff (Williams College-Hopkins Obs.),
G. Schneider (Steward Obs., U. Az.), L. Golub (Harvard-Smithsonian CfA)
David Peck Todd and the transit of 1882: A lover's triangle forms while an astronomer triangulates the distance to the Sun
W.P. Sheehan (Independent Scholar)
E. E. Barnard and the New Star in the Andromeda Nebula
J. Bryan (McDonald Observatory)

Monday, January 5, 2004, 10:00-11:30am
Session 28 HAD II

Space Travel is Utter Bilge: Early Ideas on Interplanetary Exploration
D.K. Yeomans (JPL/Caltech)
The Maximum Duration of Astronomical Incomprehension
V.L. Trimble (University of Maryland, College Park)
Leslie Peltier, Amateur Astronomer and Observer Extraordinaire
B.G. Corbin (U.S. Naval Observatory)
The Forgotten History of the 4050 Angstrom Group of C3
B.J. McCall (UC Berkeley)
The Clyde W. Tombaugh Papers and the Rio Grande Historical Collections: Preserving the History of Astronomy

SEDates

M. Gottwald (New Mexico State University)
Challenges of Data Archives
R.E.M. Griffin (Dominion Astrophysical Observatory)

Monday, January 5, 2004, 11:40am-12:30pm
Session 29 Doggett Prize Lecture

The REAL Caroline Herschel
M.A. Hoskin (Fellow, Churchill College, Cambridge, UK)

Monday, January 5, 2004, 2:00-3:30pm
Session 35 HAD III

The Latitude and Epoch for the Origin of the Astronomical Lore of Eudoxus
B.E. Schaefer (Louisiana S. U.)
First Description of Discrete Stars Composing the Milky Way in
Thomas Watson's Hekatompathia (1582)
E.L. Altschuler (Mt. Sinai School of Medicine),
W. Jansen (Independent Scholar)
Galileo's Telescopy and Jupiter's Tablet
P.D. Usher (Penn State)
Lowell's Martian "Canals" in the Light of Modern CCD Imaging
C.M. Gaskell (Univ. Nebraska), T. A. Dobbins (ALPO)
What Happened to the Amateurs After Professionalization?
The Amateurization of Astronomy in Britain and the United States
T.R. Williams (Rice University)
Remeasuring the Alignment of the Nantucket Meridian Line
P.B. Boyce (Maria Mitchell Obs.),
A. Davis (SUNY at Plattsburgh and Maria Mitchell Obs.)
Satellite Imagery Measures of the Astronomically Aligned Megaliths at Nabta Playa
T.G. Brophy (EMCS Consulting),
P.A. Rosen (California Institute of Technology)

Contact address for the 203rd AAS Meeting: American Astronomical Society 2000 Florida Avenue, NW, Suite 400 Washington, DC 20009-1231, USA phone 202-328-2010, fax 202-234-2560 e-mail aasSenl200312aas.org

More information on the AAS Meeting including abstracts of papers is available at: http://www.aas.org/meetings/aas203/

For information on HAD see: http://www.aas.org/~had/had.html

[Text compiled from information at http://www.aas.org/meetings/aas203/]

Eddington Workshop

Item 5 EMA Nr. 67, 27. Nov. 2003

Arthur Stanley Eddington - Interdisciplinary Perspectives:

A workshop hosted by the Centre for Research in the Arts Social Sciences & Humanities (CRASSH)

Cambridge UK, Wednesday 10th - Thursday 11th March 2004

This workshop brings together scholars from the history of science, philosophy, literary studies and the history of art, as well as

SEDates & SEScannings

physics and astronomy.

The aims are: to explore Arther S. Eddington's continuing significance for these various disciplines, to gain a richer appreciation of his life and work, and to explore ways of promoting effective interdisciplinary discussion.

Papers will be circulated in advance and all participants are asked to read these before the workshop. The emphasis will be on structured discussion, and the contribution in discussion of those not supplying a formal paper will form an equally significant component of the workshop.

Contributed papers from: Malcolm Longair, Steven French, Matt Stanley, Gavin Parkinson, Michael Whitworth, Arthur Miller, Robert Smith, Ian Durham, Alan Batten and Kate Price.

Participants with an interest in Eddington, from any discipline, including graduate students, are welcome.

The deadline for registration is 20 January 2004. To get the most out of the workshop format, places are limited to 40 people.

For further details and abstracts see the CRASSH webpage,

http://www.crassh.cam.ac.uk/events/events2004/eddington.html

To find out more or to register your interest please contact the convener:

Dr Kate Price Junior Research Fellow Homerton College Hills Road Cambridge CB2 2PH UK Telephone: +44 (0)1223 507189 Fax: +44 (0)1223 507120 e-mail: kep26Senl200312cam.ac.uk

[Text provided by William Vanderburgh on behalf of Kate Price.]

Dear all, Please find herewith the Index of the November 2003 issue of the Solar Eclipse Newsletter (SENL). Beside the topic, the page number is listed. Please post your solar eclipse related contributions to us. Thank you.

The SENL can be downloaded free of charge. You only need Adobe Acrobat Reader on your computer. For Adobe see http://www.adobe.com/products/acrobat/readstep2.html

.../...

See the latest SENL and also the complete SENL Index since November 1996 at our Solar Eclipse WebPages at

http://solareclipsewebpages.users.btopenworld.com

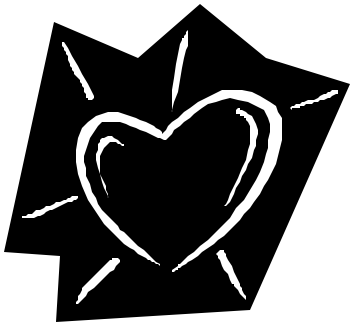
The SENL will be soon on the WebPages of Fred Espenak/NASA. See
http://sunearth.gsfc.nasa.gov/eclipse/SENL/ and the index at
http://www.mreclipse.com/SENL/SENLinde.htm with example: SENL0011.pdf
http://sunearth.gsfc.nasa.gov/eclipse/SENL/SENL0011.pdf

Comments and contributions are welcome at solareclipsewebpagesSenl200312btopenworld.com

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

Best Regards, Patrick and Joanne

SEScannings



Eclipse Mailing List Closing

From: Barry McLarnon <bdmSenl200312bdmcomm.ca> To: eclipseSenl200312hydra.carleton.ca Date: Sun, 23 Nov 2003 13:46:50 -0500

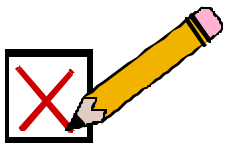
Greetings! Perhaps you've been wondering what became of the eclipse mailing list in recent months. Then again, traffic has been so light on the list in the past few years, you may not have noticed its absence. In any case, the server that hosts this mailing list has been down due to hardware problems, and although the server is back up at the moment, the problems have not really been resolved, and the future of the server is uncertain.

In addition to the server problems, it has become obvious that SEML (Patrick Poitevin's Solar Eclipse Mailing List) is serving the needs of eclipse enthusiasts, and that there is no need for a second eclipse mailing list. Therefore, I am taking the opportunity on this Antarctic solar eclipse day to formally close the eclipse mailing list at the end of the day today. Thank you all for participating! Clear skies, Barry -- Barry McLarnon Ottawa, ON

From: Bill <billSenl200312autocode.com>

Thanks for the efforts you've put in!

(By the way, I do not feel Pat's list satisfies anyone except a few people who have a vested interest in the eclipse travel business. That is why I am not an active member along with a lot of other very serious eclipse chasers who have dropped from that list. We got tired of the advertising for the lame conferences and sponsor tour groups.) Clear sky -Bill Kramer www.eclipse-chasers.com



SETalk

Naked Eye Venus Transit 1769 (and MUCH earlier?)

From: Robert B Slobins To: "'SOLARECLIPSESSenl200312AULA.COM'" <SOLARECLIPSESSenl200312aula.com> Date: Tue, 04 Nov 2003 17:26:03

Glenn: The comment about seeing a transit of Venus and knowing that it was a transit of Venus back then has serious implications.

As we all know, total solar eclipses took ancient peoples by shock and terror. A predicted event does not produce shock--it is expected and even welcomed. If the Assyrians knew that Venus was transiting the sun, then it is entirely possible that they knew that solar eclipses were caused by the moon. And it is quite possible that not only the Assyrians knew this, but other cultures had to have figured it out.

So, then, why are there all those stories about how solar eclipses terrified ancient peoples, killing kings and stopping wars if the authorities had an idea as to what was to happen? cheers/rbs

From: Govert Schilling

Glenn -- The text below (with numerous references) is copied from the very informative website http://www.phys.uu.nl/~vgent/ of Rob van Gent (University of Utrecht), which deals with numerous historic aspects of astronomy. --Govert

Pre-Telescopic Transit of Venus Observations

The Frankish annalist Einhard reported in his biography of Charlemagne (Vita Karoli Magni, cap. 32) that a few years before his death a black spot had been seen on the Sunýs disk for seven days. Other contemporary sources placed the event in March 807 and averred that it had been the planet Mercury. Later, Islamic philosophers as Abu Yusuf Yaýqub ibn Ishaq al-Sabbah al Kindi (c. 810 - c. 866), Abu ýAli al-Husayn ibn ýAbdallah ibn Sina (Avicenna, 980 - 1037) and others cited similar observations as proof that the orbits of Mercury and Venus were situated below the solar orbit.

Although a transit of Mercury can only be seen with the aid of a telescope, a transit of Venus should be visible to the naked eye when the sunlight is sufficiently tempered by thin clouds or dust or when the Sun is near to the horizon. So it is possible that amongst the many pre-telescopic observations of sunspots noted in Chinese, Islamic, European and other sources there may lurk an early record of a transit of Venus. However, many of these observations are only roughly dated, and those that are accurately dated do not coincide with a date for a transit of Venus.

Samuel Jenkins Johnson, ýOn a Probable Assyrian Transit of Venusý, Monthly Notices of the Royal Astronomical Society, 43 (1882), 41-42 ý appears to be based on an early and unreliable translation from the so-called Venus tablets of Ammisaduqa (Enuma Anu Enlil, tablet 63).

George Sarton, ýEarly Observations of the Sunspotsý, Isis, 35 (1947), 69-71.

Cottie Arthur Burland, ýInscription on Stela I, El Castillo, region of Santa Lucia Cozumalhuapa, Guatemalaý, in: Proceedings of the 32 International Congress of Americanists, Copenhagen, 8-14 Aug. 1956 (???, Copenhagen, 1958), pp. 326-330 [not seen] ý refers to a supposed Maya observation of the Venus transit in 416. There was no transit of Venus in that year.

Cottie Arthur Burland, ýThe Consummation of Quetzalcoatl: Transits of Venus in Mexican Inscriptionsý, in: Verhandlungen des XXXVIII. Internationalen Amerikanistenkongresses, Stuttgart-Mýnchen, 12. bis 18. August 1968 (Renner, Munich, 1969), vol. 2, pp. 155-157 ý gives speculative interpretations of Mesoamerican references to Venus which are linked to transits of Venus in 416, December 659, 9 December 1145 and 25 May 1518 (or possibly December 1388 or 1396). There were no transits of Venus in 416, 659, 1145 and 1388. The Venus transits of 23 November 1396 and 25 May 1518 were completely and partially visible from the Yucatan peninsula.

Bernard R. Goldstein, ýSome Medieval Reports of Venus and Mercury Transitsý, Centaurus, 14 (1969), 49-59 ý reprinted in: Bernard R. Goldstein, Theory and Observation in Ancient and Medieval Astronomy (Variorum Reprints, London, 1985), nr. XV.

Bernard R. Goldstein, ýTheory and Observation in Medieval Astronomyý, Isis, 63 (1972), 39-47 ý reprinted in: Bernard R. Goldstein, Theory and Observation in Ancient and Medieval Astronomy (Variorum Reprints, London, 1985), nr. V.

A.U. Usmanov, ýIbn Sina and his Contributions in the History of the Development of the Mathematical Sciencesý, in: ??? (ed.), Mathematics and Astronomy in the Works of Ibn Sina, his Contemporaries and Successors (???, Tashkent, 1981), pp. 55-58 & 156 [in Russian, not seen].

Patrick Moore, The Guinness Book of Astronomy Facts & Feats, 2nd ed. (Guinness Superlatives, Enfield, 1983), p. ?? ý claims that the Venus transit of 23/24 November 910 was possibly observed by Abu Nasr Muhammad ibn Muhammad ibn Tarkhan ibn Awzalagh al-Farabi (Alpharabius, c. 870 - 950) in Kazachstan but gives no source. The 910 transit of Venus was not visible from Kazachstan.

S. Mohammad Hadi Hadavi, ýAnother Reports for Observation of Venus Transit by Avicenna and its Effect on Ancient Astronomyý,

SETalk

Bulletin of the American Astronomical Society, 18 (1986), 686 & 19 (1987), 690-691.

F.R. Stephenson, ýHistorical Evidence concerning the Sun: Interpretation of Sunspot Records during the Telescopic and Pretelescopic Erasý, Philosophical Transactions of the Royal Society, Series A, 330 (1990), 499-512 ý download from JSTOR.

John North, Norton History of Astronomy and Cosmology (W.W. Norton & Co., New York/London, 1994), pp. 156-157 ý mentions a supposed Maya observation of a transit of Venus on 15 December 1145. No source is quoted but it appears to be based on Burland (1969). Venus passed just north of the solar disk on 26 November 1145 but there was no transit.

From: Robert B Slobins

That is true, Mike, but it did spread. It may have taken decades as opposed to seconds. There had to be observers in places like Babylon, China and Mexico. Even the henges of Britain, Ireland, and Normandy display some knowledge of astronomy.

Given the usual weather of Britain, how could anyone observe anything and still lay-out Stonehenge? I am surprised that the place is still not under construction today! :-) We have to give the ancients more credit for what they know! cheers/rbs

From: Dale Ireland

Hi Am I missing something here? The Charlemagne account says it was visible for seven days. This would be just right for a really big sunspot, not a transit. Maybe I read it wrong.. Dale

From: Mike Simmons

That some people were terrified of eclipses doesn't rule out that some others knew what was going on. I'd bet there are even some people in today's wired world that wouldn't know what was happening when an eclipse occurred. And we know that the Babylonians knew a lot about astronomy that was not known elsewhere. Knowledge just didn't spread through the ancient world like it does today. Mike Simmons

Venus transits

From: Jean Meeus To: "INTERNET: SOLARECLIPSESSenl200312AULA.COM" <SOLARECLIPSESSenl200312AULA.COM> Date: Wed, 05 Nov

Why are there no known ancient observations of Venus transits?

I am not a historian of astronomy, but as far as I know the Ancients believed that the planets were self-luminous bodies. In that case, they probably would not expect to see Venus (or Mercury) as a *black* spot on the solar disk, even if they knew the cause of a solar eclipse.

Moreover, Venus transits are rare. There were only 11 of them between the years -1000 and 0. Some of them may have occurred below the observer's horizon or when the sky was overcast. Jean Meeus

From: Glenn Schneider

Hello Jean,

I haven't worked this through, or taken a look at the osculating elements, etc. but find this immediately curious and interesting. I would have expected roughly twice that number. At some point back in relatively recent (on astronomical timescales) history do we "loose" the 8 year parings of Venus transits as the "repeat" in successive centuries? -GS-

From: Jean Meeus

Twice that number, that would not be possible! Even when the Venus transits would occur in pairs, that would give *less* than 20 events in 1000 years, because the interval between successive pairs is somewhat larger than 100 years. Think about 1761-1769, 1874-1882, 2004-2012, etc.

But, moreover, several transits between the years -1000 and 0 do NOT come in pairs; they are 'single'. One example is the transit of May 22 of the year -426. There was no transit in -434 nor in -418. This has *nothing* to do with changing orbital elements. The distance between the chords described by Venus across the solar disk is somewhat larger than the Sun's semidiameter, but smaller than the Sun's diameter. This is why couples of transits are possible, such as 2004-2012. However, if a transit is nearly central (this was the case for that of the year -426), then 8 years earlier as well as 8 years after the transit Venus will miss the Sun, so that transit will be single. All transits till A.D. 3000 will occur in pairs. The next 'single' transit will be that of December 3089. Jean

From: Glenn Schneider

(Continued on page 17)

SETalk

Thanks, Jean. I realize, of course that "twice" is impossible given the longer than 100 year *APPROXIMATE* repetitive alternating cadence of transit pair centers at 113.5 an 129.5 years (+/-4 yrs for each), i.e. [105.5, 8], [121.5, 8]... I had said "roughly twice" only descriptively, rather than an expectation value based upon mean beat periods more like 16 and a fraction per millennium based on the continuance of 8 year spaced pairs. As an old prof of mine was fond of saying "factor of 2 is astronomy, factor of 10 is astrophysics... 0.1% or better is astrometry". (You can guess what his field was) But that was not the question, my interest, rather, is the "contemporary" bias that we have where, at least since the invention of the telescope - and as you point out, well into the future - Venus transits occur in couplets - but they do not necessarily have to. My question, really was is there a longer modulation period - for "near central" transits, such that there are epochs where couplets are less prevalent. Clearly having only 11 transits in the first millennium peaked my interest as I han't thought about that before. Were any of those "singlets" successive, and s there a "cycle" off such events? I.e., is it more likely to have near-central transits contiguously? Glenn Schneider

From: Mick Wolf

What would be the angular diameter of the next Venus transit? Mick.

From: Glenn Schneider

In 2012, 0.971 arc minutes. -GS-

From: Glenn Schneider

Speaking of breaking ice -- those now keeping an eye on Antarctic weather may be interested in: http://www.cnn.com/2003/TECH/science/11/04/iceberg.split.ap/index.html

which was called to my attention by Carter Roberts. -GS-

From: Gerard M Foley

Nearly 1 degree? Isn't that pretty big? Gerry

From: Glenn Schneider

Gerry, I don't understand your question. I had noted 0.970 arc MINUTES, not 1 degree (?) -GS-

From: Gerard M Foley

Sorreee!!! (;-((Gerry

Miraculous recovery of looted Maya altar stone

From: LARRY KLAES To: HASTRO-LSenl200312LISTSERV.WVU.EDU Date: Sat, 08 Nov 2003 00:50:35

Working together, archeologists, Maya villagers and Guatemalan authorities foiled looters' attempts to sell a magnificent Maya altar stone that they had stolen.

http://exploration.vanderbilt.edu/news/features/mayaaltar/news_miller.htm

An unprecedented collaboration of archeologists, Maya villagers and Guatemalan authorities has resulted in the recovery of a magnificent Maya altar stone that was carved in 796 AD and sheds new light on the collapse of the classic Maya civilization. In addition to the altar's archeological importance, its recovery illustrates the value of working with indigenous peoples to restore ancient ruins.

It reads like a combination of the movies “Traffic” and “Raiders of the Lost Ark.” An unusual collaboration among Guatemalan undercover agents, local Maya villagers and American archaeologists have successfully recovered of an elaborately carved, 600-pound Maya altar, replete with images and writing that offer new information on the shrouded history of the Maya civilization.

Arthur Demarest, the Ingram Professor of Anthropology and Archeology at Vanderbilt, who spearheaded the recovery effort, said the relic is one of the finest Maya altars known and provides important clues about one of the wealthiest Maya kingdoms.

The great altar was placed in A.D. 796 as a marker at the end of the royal ball court of Cancuén, the site of one of the largest and richest royal palaces ever found, where the ancient city's ruler would play the sacred Maya ball game with visiting kings. The role of the game was more ritual than sport. Location of ball courts in the ritual space within Maya cities, and the imagery that accompanies them, underscores their role as boundaries between the actual and supernatural worlds.

SETalk

Explorers rediscover Inca city - solar temple included

From: LARRY KLAES To: HASTRO-LSenl200312LISTSERV.WVU.EDU Date: Fri, 07 Nov 2003 16:12:34

Explorers rediscover Inca city

The Inca ruins were lost for centuries in the Peruvian jungles, despite being within sight of the religious center at Machu Picchu.

http://www.msnbc.com/modules/exports/ct_email.asp?/news/990097.asp

Explorers rediscover Inca city

Infrared imagery helps them locate ruins near Machu Picchu

LONDON, Nov. 6 — An Anglo-American team of explorers has found Inca ruins lost for centuries in the Peruvian jungles despite being within sight of the key religious center at Machu Picchu. Using infrared aerial photography to penetrate the forest canopy, the team led by Briton Hugh Thomson and American Gary Zeigler located the ruins at Llactapata, 50 miles northwest of the ancient Inca capital Cusco.

THIS IS a very important discovery. It is very close to Machu Picchu and aligned with it. This adds significantly to our knowledge about Machu Picchu," Thomson told Reuters by telephone on Thursday. "Llactapata adds to its significance."
The site was first mentioned by explorer Hiram Bingham, the discoverer of Machu Picchu, in 1912. But he was very vague about its location, and the ruins have lain undisturbed ever since.
After locating the city from the air the expedition, which only last year found another lost Inca town at Cota Coca 60 miles (100 kilometers) west of Cusco, used machetes to hack through the jungle to reach it, 9,000 feet (3,000 meters) up the side of a mountain.
They found stone buildings including a solar temple and houses covering several square kilometres in the same alignment with the Pleiades and the June solstice sunrise as Machu Picchu, which was a sacred center.
This gives the site great ritual importance," Thomson said.

Front-page science

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Not only was Llactapata probably a ceremonial site in its own right, excavations suggested that it might also have acted as a granary and dormitory for its sacred neighbor, he added.
The Incas abandoned their towns and cities and retreated from the treasure-hunting Spanish invaders after the Conquistadors captured and executed the last Inca leader, Tupac Amaru, in 1572.
Some of the cities have since been rediscovered, but many more are believed to lie hidden in the dense jungle, almost impossible to detect without new technology or a chance encounter.

The fact that we have found two in two years means there could be many more out there," Thomson said.
He said the use for the first time of an infrared camera to locate a set of ruins from the air had been a breakthrough, but one that did not make the humble machete redundant.
It makes wielding the machete slightly more purposeful — at least you know where you are going and that there is something definitely in front of you — but it certainly won't put it out of business," Thomson said.

SETalk

Lunar eclipse on sat

From: KCStarguySenl200312aol.com To: SOLARECLIPSESSenl200312aula.com Date: Thu, 06 Nov 2003 17:56:55

Lunar eclipse maximum is 8pm EST and will only last 20 minutes sat. More of it will be seen in East and less in Mountain and Pacific time zones. It is starting to clear up hear in Kansas so we are looking for a good eclipse even if it is short one this saturday.

From: Alessandro Pieri

Dear Sir, Italian Astronomer amateur Union (UAI), "Corriere della Sera" (the most read italian newspaper) and QuiCOMM.it will perform a streaming live event of Total Lunar Eclipse on November 8/9.

We offer two different real-time contents:
- streaming live for both low and broadband users
- a real-time slideshow of pictures for low-bandwidth users

Online event starts at 23:30 U.T. on: http://www.uai.it Best Regards

From: Koen Vansant

Dears, for those who want to follow the Total Lunar Eclipse of this evening live, you can visit our website at www.urania.be. Koen Vansant

From: Nicki Mennekens

Dear all, More links to sites with live coverage at my homepage: http://users.telenet.be/nmenneke/eclips/engels/live_en.html Greetings, Nicki Mennekens

LUNAR ECLIPSE

Lunar Eclipse - Report from South Africa From: Peter Tiedt To: SOLARECLIPSESSenl200312AULA.COM Date: Sun, 09 Nov 2003 01:42:48

Beautiful clear skies in Durban South Africa. Moon appeared dark coppery / brown closer to the centre of the shadow, but very light grey at the edge closest to the penumbra. Observed it with my son and 14 year old daughter who was thrilled with her first lunar eclipse. Peter Tiedt

Lunar Eclipse -From Valley Stream, NY From: KidinvsSenl200312aol.com To: SOLARECLIPSESSenl200312aula.com Date: Sun, 09 Nov 2003 02:54:28

I just have a moment for a quick report... clear skies over Long Island, about 30 degreesF. (quite chilly.. the coldest night of the season.) Fairly dark eclipse, with a beautiful copper color. As totality approached, I felt as though I was watching a solar eclipse, with the seemingly sudden appearance of many more stars, and an eerie glow to the sky. My wife and friends were quite amazed viewing the moon through my 11x80 Meade binos. It was well worth the chill in the air. Rick Brown EclipseSafaris

TLE successfully observed From: Marc Weihrauch To: solareclipsesSenl200312aula.com Date: Sun, 09 Nov 2003 03:08:17

Dear friends, despite some doubtful weather forecasts we could observe the TLE form Halle under clear skies. The umbra appeared copper-red with a bright, yellowish rim, so we assigned it a Danjon value of L=3. This is the fifth major celestial event this year I observed successfully, after all three May events and the aurora of October 30/31. We had a TV team here, and according to them footage of the eclipse over Halle will be used in the "Tagesschau", the German TV-news tomorrow. I wish equally good luck to all of you going to Antarctica for the TSE 2003! Marc

SETalk

Lunar Eclipse

From: Gerard M Foley To: SOLARECLIPSES-Senl200312AULA.COM Date: Sun, 09 Nov 2003 02:56:25

Several images of the eclipse from Columbus, OH USA are at http://www.pbase.com/gfoley9999/lunar_eclipse

most are out of focus. The moon was too dim for the camera to do a good autofocus job, and my eyes are too poor to do a good manual focus. Sorry. Gerry

From: tedSenl200312saker-law.com

Just a quick note from Columbus-- Clear skies, very chilly temps. My 6 year old saw his first Total Lunar Eclipse. His older brother and sister weren't interested. Very bright southern limb, and a gradual gradient from a light copper to a dusky red from south to north. It reminded me a little of this past Martian apparition. Overall, I'd rate it about a 2.5 on the Danjon Scale

Lunar Eclipse Houston Texas style (and a late aurora report:OT)

From: Mark Egan To: SOLARECLIPSES-Senl200312AULA.COM Date: Sun, 09 Nov 2003 06:24:47

Hi Just to report a (semi) successful eclipse observation from near Houston....

H-Town was overcast so a friend of mine and I decided to go east towards what appeared to be clear skies on the satellite photo. After driving for over an hour.... no clearing! I think that more clouds had formed.... anyway, there were some small clearings (more than in Houston) so we exited the interstate and drove the back roads.

Well we were most interested in the eclipse from about 10 minutes before totality through totality and about 10 minutes after. We said that if we saw it during any of this period the chase would be considered successful. We saw it pretty well through several holes during that period-- never long enough to get a detailed look, but just long enough to make several observations:

1. Quite a pretty sight! The clouds (dare I say) enhanced the eeriness.

2. Much brighter than this past May-- I would put the color as coppery orange... and it had a relatively bright bluish white rim (the part closest to the edge of the umbra-- that was not surprising)

3. It was well worth the chase!!!

Hope all views were successful! Best wishes at TSE '03! Mark Egan astrophotoSenl200312yahoo.com

BTW a little OT (sorry!) but I have to throw this in: all of the sun's recent activity (flares, sunspots, etc.) has been in the mass media and has appeared as a topic in this group. I saw the aurora for the 3rd time from outside of Houston! (10/29; the one caused by the x-17 flare) See my report at:

www.astronomyhouston.org.... see my friend's pics at:

http://www.weatherfriend.com/astronomy/solar/aurora/aurora2003.htm She was 30 feet from me; my pics are similar to hers but I haven't scanned them yet....

TLE successfully observed

From: Robert B Slobins To: "'SOLARECLIPSESSenl200312AULA.COM'" <SOLARECLIPSESSenl200312aula.com> Date: Sun, 09 Nov 2003 00:51:32

I had to escape Fort Wayne, Indiana (again) to view a lunar eclipse in clear skies. This time, we traveled to Michigan.

That we saw aurorae from Fort Wayne two weeks ago is contrary to "industry standard".

The earth's shadow was quite bright, with a wide yellow band inside the umbra, and the penumbra was very difficult to discern after third contact. Evidently, this means that the skies over the southern Indian and Pacific Oceans are rather transparent now. We hope that this will hold in two weeks. Film Monday at 11. cheers/rbs

From: Joel Moskowitz

For a picture from Long Island, see my site: http://homepage.mac.com/joelmoskowitz/PhotoAlbum13.html

From: Jay.M.PasachoffSenl200312williams.edu

I can supply a good report on the lunar eclipse from Williams town, Massachusetts, which is at the upper left of that state. It was actually better than I had been anticipating, with that nice, red moon showing during partial phases. I was surprised at how quickly the partial eclipse was visible after first umbral contact. The weather was clear and cold (sub-freezing). Now I can't wait until the Antarctic eclipse in two weeks. Jay Pasachoff

SETalk

TLE from Tucson

From: Glenn Schneider To: SOLARECLIPSES-Senl200312AULA.COM Date: Sun, 09 Nov 2003 08:30:29

I began watching for the moon, expected to rise in eclipse from Tucson early in twilight over the Rincon mountains conveniently right out my open garage door. This was convenient as I still am feverishly working on finishing the testing of imaging equipment to be used for TSE 2003. So much so, that I didn't plan to photograph this TLE - and actually for what I believe may be the first time - didn't even snap a single picture!

I expected my wife and daughter home from my daughter's piano lesson just as the sky would be getting dark enough to really get a view of the almost totally eclipsed moon as it was just high enough over the mountains. When they came home my wife said "Why didn't you tell us there was a lunar eclipse tonight"? -- "We had to find that out from her piano teacher"?! she exclaimed waving a (properly) accusatory arm around the garage littered littered cameras, gyros, power supplies, computers, optical test targets, etc., but those for the eclipse in two weeks, not the one which had just started. Meaning: "What good is it to have an astronomer in your family, more so an eclipse chaser, if you aren't going to tell us when an eclipse happens HERE".

"Huh, I didn't tell you?" -- My eloquent response. Apparently not, Guilty as charged. I guess the NEXT time we have a TLE two weeks before a remote TSE where I'm running off to the ends of the Earth and leaving the family behind I had better remember to let them know about the event at home!

Once sufficiently chided, the intermittent clouds parted for good at about 6:20 PM MST, and we watched the moon slip out of the umbra and ascend into the sky through egress. All in all a lovely eclipse, for the half of it we saw- though not a very auspicious beginning.

Oh! And I did tell my wife that there is an eclipse on 23 Nov (UT), but somehow... that she already knew (as happily she can then have the garage back to park her car). -GS-

TLE: Northern Great Plains overcast....

From: John Leppert To: SOLARECLIPSES-Senl200312AULA.COM Date: Sun, 09 Nov 2003 13:58:45

Friends, Although we were clear until mid-afternoon, strong southerly winds and warmer air moving northward blanketed our skies in fog and prevented our seeing any of the eclipse. About the only indication that something was amiss occurred when the full moon seemed not to "rise" until around 9 o'clock local time, since it was at that hour that the overcast and fog became very bright (U4 occurred at 9:06 local time). In retrospect, we were blessed with clear skies for the 15 May event, unlike many parts of this country and Canada, and we have only 11 months until the 81-minute eclipse on 28 October (27 October in North America). John Leppert Deneb Observatory

TLE report from Belgium

From: Nicki Mennekens To: SOLARECLIPSES-Senl200312AULA.COM Date: Sun, 09 Nov 2003 08:45:32

Eclipse succesfully observed. Photos soon at http://users.telenet.be/nmenneke/eclips/engels/maan03b_en.html Greetings, Nicki

From: guido gubbels

Last night we had a good vieuw on the lunar eclips from Genk (Belgium). Even during the partial face it became clear that it would be a bright totality. My estimate on the Danjon-scale came at a value of 3.7 during totality Greatings,

From: Chris Malicki

After a clouded out Mercury transit and lunar eclipse in May, the skies cleared up fabulously for Mississauga, Ontario (near Toronto) for Nov. 8. I agree with Gubbels Guido on the Danjon value. I estimated it as 3.5 with a rust-coloured and coppery moon - not as colourful as the red eclipse of Jan. 2000 but still a very pretty sight. Chris Malicki, Mississauga, ON, Canada

Bright Lunar eclipse (L=3 estimated)

From: Wil Carton To: SE <SolarEclipsesSenl200312Aula.com> Date: Sat, 08 Nov 2003 20:18:02

Total eclipsed moon looked like Chinese lantern Our Dutch weather forecast was bad, but last night’s total lunar eclipse was favoured by clear skies here in Castricum near the northwestern coast of Holland. The predicted cloud cover entered and covered the shining Full Moon about 22h o’clock U.T. and made First Umbral Contact (23.33 U.T.) unobservable. But about 0.45 U.T. the circumstances improved rapidly and dramatically and the sky cleared up, so that many winter constellations and the 90% eclipsed moon came into view and remained throughout totality (1.06 – 1.31 U.T.)and the final partial phase. The total eclipse was bright: all lunar maria remained distinctly visible in the brick-red shadow, even to the naked eye. My estimate is L=3 in the Danjon scale, only surpassed by the orange and bluish eclipse of 19 December 1964 with L=4. Wil Carton.

From: b.w.jones

SETalk

Lunar clipse at Milton Keynes, Central England, visible until about 00:45 UT. Umbrally shadowed region of Moon barely coloured and quite dark. Barrie W Jones

Lunar eclipse image from Seattle area

From: Dale Ireland To: "Solar Eclipse List (solar eclipse list)" <SOLARECLIPSESSenl200312AULA.COM> Date: Sun, 09 Nov 2003 17:31:11

http://www.drdale.com/eclipses/lunar.htm

Mid-totality Click on image for a larger version. This image was captured with an inexpensive webcam. We had thin clouds and it was only 5 degrees above the horizon. Dale Ireland 47.7N 123W

Lunar Eclipse - San Diego, California

From: Fred Bruenjes To: SOLARECLIPSES-Senl200312AULA.COM Date: Sun, 09 Nov 2003 17:07:22

Here in San Diego, California we were stuck under an array of drifting clouds, mostly high but with some midlevel stuff. I didn't try driving out from under them because of the wildfire's aftermath (many road signs, rail guards, and utilities are still down all over the county, and certain areas are still closed).

The local horizon at my home AND the clouds kept me from seeing the total phase, and then I got only occasional hazy views of the post-total partial phase. Thus this eclipse was MUCH less impressive than the May lunar. I didn't get a TSE-like "diamond ring" impression at all. Still, it was a good test of my cameras for the upcoming TSE. I have posted my clearest (but still very hazy) photo at the very bottom of this page: http://www.moonglow.net/ccd/pictures/eclipses/index.html Fred Bruenjes

From: Dale Ireland

Fred Do you have equipment and exposure details? Dale

From: Fred Bruenjes

Last night's image was done with a Canon EOS 10D DSLR and Orion Apex 90mm Mak-Cass telescope (1250mm F/13.9), exposure 1.0s at ISO400. Taken at around 6:01pm PST, on a fixed mount.

I consider the software post-processing details to be just as important as physical equipment: Processing in Phase One's Capture One DSLR LE program consisted of -0.4 EV exposure compensation, standard film tone curve, auto white balance (from in-camera sensor), 1.31 gamma, +20% color saturation, then finally a resize, crop, and slight unsharp mask for the web. Fred Bruenjes

Lunar eclipse from Ottawa

From: Bob Morris To: SE from LRM <solareclipsesSenl200312Aula.com> Date: Sun, 09 Nov 2003 20:25:26

Crisp clear night! Perfect eclipse. Bob Morris

Lunar eclipse

From: Jim Low To: Solar Eclipse <SOLARECLIPSESSenl200312AULA.COM> Date: Sun, 09 Nov 2003 23:00:27

For what it's worth, I've placed two of my lunar eclipse pictures on my web site at: http://members.rogers.com/jimlow/astronomy/mooneclipse03/

One is overexposed, but shows stars in the field. Let me know what are real stars and what are specs on the picture.

My camera was mounted on tripod and no guiding. "Old-fashioned" film camera and I scanned the prints. I took 23 pictures during partial and total phase, all at 200mm, all at f5.6, and exposures ranging from 1/250 to 8 seconds. About half are reasonable.

For this eclipse, I was one of about a dozen volunteers from the Toronto Centre of the Royal Astronomical Society of Canada, who set up telescopes and gave comments on the eclipse to the general public, at the David Dunlap Observatory north of Toronto. Jim Low

ISS Lunar Transit During Total Lunar Eclipse

From: Michael Gill To: "SOLARECLIPSESSenl200312AULA.COM" <SOLARECLIPSESSenl200312AULA.COM> Date: Sat, 08 Nov 2003 12:46:09

List, Tom Fly's ISS solar/lunar transit prediction service, is predicting for me a near-miss lunar transit of the ISS between U3 and U4 of the upcoming total lunar eclipse. Tantalisingly, I'll have to relocate ~8km from home to observe this.

Transits of satellites across the Moon or Sun can be observed, but they are brief. The ISS is the biggest thing in Earth-orbit, so it is the best target for this type of opportunity.

If you haven't already signed up to Tom's service (he reports he has 566 subscribers in the northern hemisphere, 45 in the southern)

(Continued on page 23)

SETalk

then check out the following URLs:

http://iss-transit.sourceforge.net
http://iss-transit.sourceforge.net/TransitAlert.html

You might find you have a transit during the partial stages of the lunar eclipse.

To get a feel for what these observations are like, check out John Locker's web page. John has recorded several solar and lunar transits (but none yet during an eclipse):

http://www.satcom.freeserve.co.uk/isstrans.htm

The lunar transit that John recorded on 8-June-2003 is probably the best guideline. For this event the ISS was sunlit (for me it won't be, I'll just get a silhouette across the disc if everything pans out okay).

The ascending node of the ISS currently lies on the night side of the Earth's terminator, so observers in the northern hemisphere are favoured during this eclipse - especially if their latitude is close to the inclination of the ISS (51.6 degrees).

Ron Dantowitz pulled off a video-composite image of an ISS transit during a solar eclipse once - check out Sky & Telescope, April 2001, page 124.

I don't know of any similar occurrences during a lunar eclipse. Although Tom and Rob Matson prepared some predictions for last May's lunar eclipse I didn't hear of any successful observations. I would be pleased to learn of any. Cheers, Michael Gill

From: Bob Morris

www.maporama.com

will give you your latitude and longitude to 4 decimal places from your street address, necessary for the iss predictor to work Bob Morris

From: Michael Gill

List, I was pessimistic about seeing anything of the eclipse last night due to cloud and smoke, but after the partial phases had commenced, the skies cleared. I was able to watch the Moon glide into totality. But around 01:09UT the clouds returned and barring a further two-second glimpse, I got to see no more of totality.

Once the time of U3 had passed, I loaded a 90mm refractor with an 11mm Nagler eyepiece into my car and I headed off (using a GPS) to a point 11.4km away to try and see the ISS transit the partially eclipsed Moon. The eyepiece enabled me to just see all of the lunar disc at a magnification of around x90.

I positioned myself in a car parking section of a residential area for the transit that would occur at 02:48UT. I was about 0.2km from the central line of the transit track. By now it was completely overcast, and I had to use TV satellite dishes to establish directions and work out approximately where the Moon was.

At about 02:39UT the cloud thinned enough to enable me to see the Moon, but that cloud hole quickly disappeared. While I counted down to the time of transit, a police patrol car cruised by at 02:45UT, but to my surprise they didn't seem to think that a person equipped with a telescope under a cloudy sky in a this area warranted further investigation. Perhaps they knew about the eclipse?

Anyhow, as the last three minutes ticked by I realised I wasn't going to get lucky with the clouds, and sure enough the time of transit elapsed with the Moon obscured by low, fast-moving clouds.

Anyhow, I would like to acknowledge the assistance provided to me for this attempt by Tom Fly, both by his alerting service and by the private e-mails and screen snapshots that he sent to me and the encouragement of John Locker.

Roll on November 23 and the total solar eclipse. Cheers, Michael Gill

TLE from Cheshire

Subject: [SEML] TLE from Cheshire From: andrew.whiteSenl200312vanda.demon.co.uk To: solareclipsesSenl200312aula.com Date: Sun, 09 Nov 2003 23:35:20

An account of our exploits in search of the lunar eclipse (plus a few of our pictures) can be found at:

http://www.vanda.demon.co.uk/images/Lunar_eclipse_1103/Lunar_Eclipse_1103.htm Enjoy Val and Andrew White

TLE from Harare, Zimbabwe. And a QUESTION.

From: F.Podmore To: Solar Eclipses Mailing List <solareclipsesSenl200312aula.com> Date: Mon, 10 Nov 2003 15:39:51

Although there were scattered clouds when we went to bed on saturday evening 8 November, at 02:45 Zim time (-UT+2 hours) the sky was beautifully clear (:-)) As the TLE started the Moon looked an almost translucent grey, pale near the edge of the Earth's umbra = upper left for us. At lower right there seemed as if there was a dim glowing dark red light inside the Moon, which brightened and increased in its area, Very gradually. It was a truly beautiful sight - no pictures I'm afraid.

SETalk

And a meteor whizzed past, just missing the Moon, about 10 minutes after the start of totality!

I've been Most impressed by the rapidly growing gallery of eclipse images on www.spaceweather.com.

But WHERE is a link on that webpage for the other galleries they have compiled - e.g. the 7 pages of recent aurora images?? Am I missing something? Francis

PS many thanks to those who responded about the orientation of the Sun's spin axis. I found out that my elderly copy of NORTON's STAR ATLAS has a series of diagrams of the Sun's appearance through the year - page 40

I don't know if it's in the later/latest editions.

From: Robert B Slobins

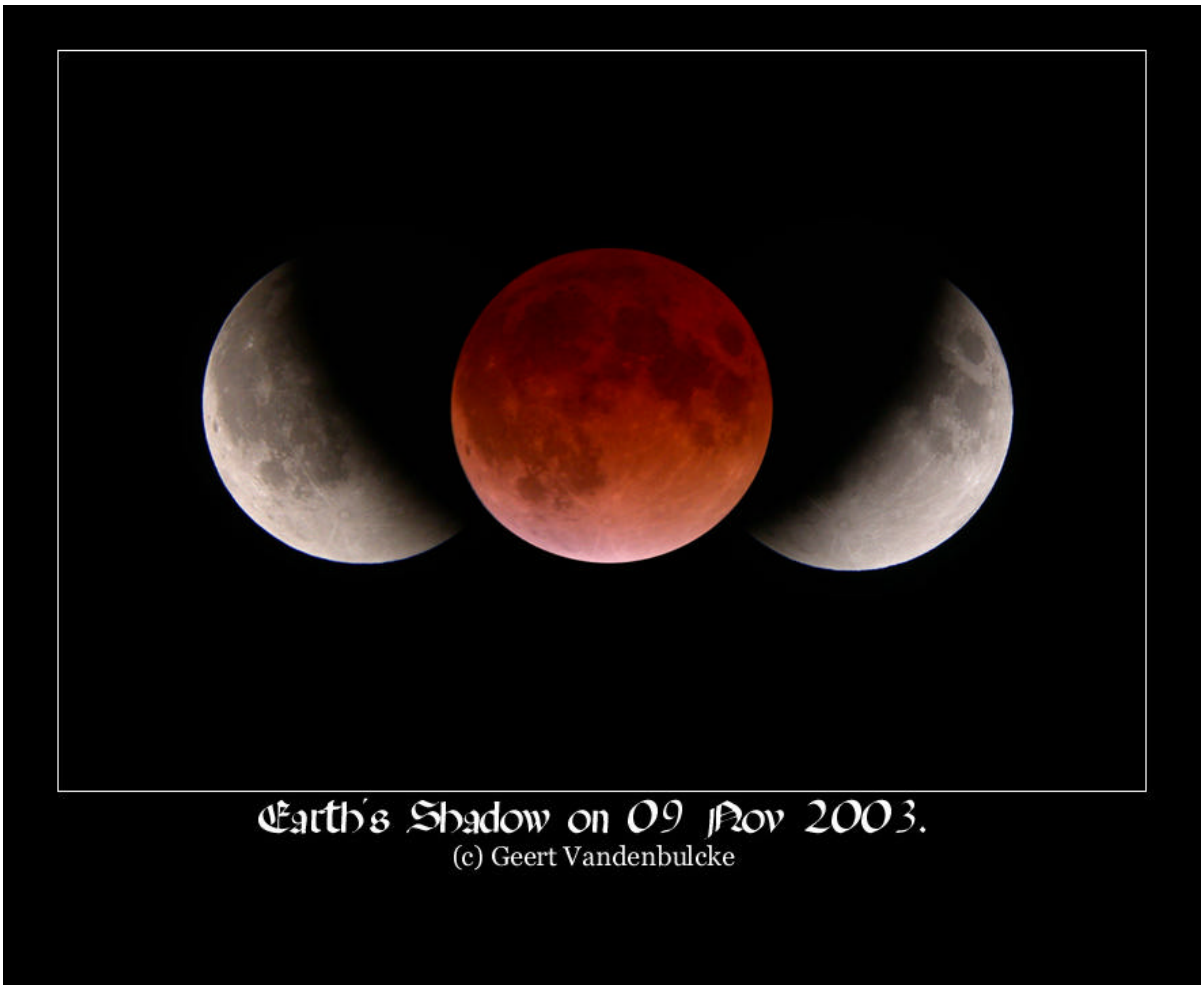
Francis and everybody: www.spaceweather.com has an archive hyper-link. You can get the page for a previous date that would then link to the galleries you want. Just click on the word "Archive".

Of course, maybe the webmaster could create an index of galleries by subject. Let's suggest that. cheers/rbs

TLE

From: Geert Vandenbulcke To: SOLARECLIPSESSenl200312AULA.COM Date: Wed, 12 Nov 2003 15:38:08

Hi all, I posted an image of the 20031109 lunar eclipse, please see http://www.astrosurf.com/amif2/ and follow the link "what's new"... Enjoy,

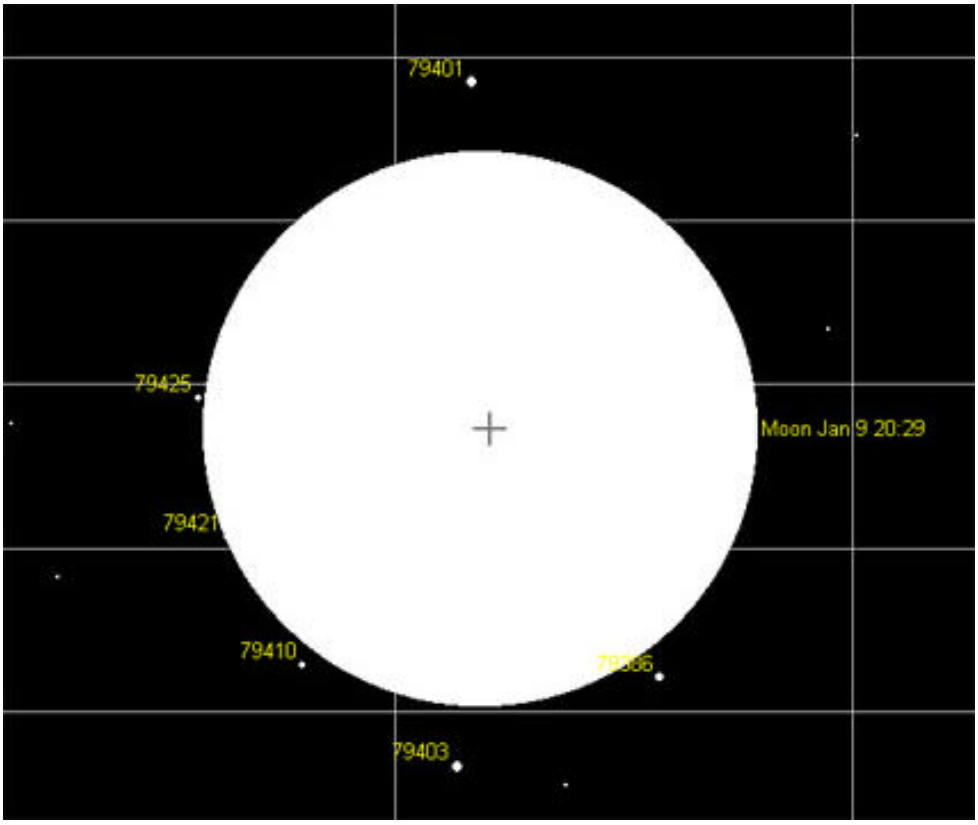


SETalk

Pictures:

1) GVBme-cl09012001e

2) luneclchart



SETalk

Report on the Lunar Eclipse

From: SkywayincSenl200312aol.com To: eclipse-Senl200312hydra.carleton.ca Date: Sun, 09 Nov 2003 21:26:45

I observed the November 8, 2003, eclipse from my driveway in Putnam Valley, New York. I had as my guests, members of my daughter's girl scout troop whom we had invited some weeks before to get a "close-up" view through my telescopes. In addition, during totality, I gave the girls and their parents a quick star-ID (to help with their merit-badge requirement for astronomy) since the sky had darkened sufficiently to see fifth magnitude stars, as well as the Milky Way.

Weather conditions saw some scattered high cloudiness from first umbral contact through the start of totality. Clear conditions prevailed during the 25-minute total phase. A band of high clouds moved in from the south and west after totality and remained through about 02:15 UT/9:15 EST. By the time the Moon moved completely out of the umbra (03:05 UT/10:05 p.m.), skies were perfectly clear ("severe clear").

Because of the high treeline toward the eastern part of my sky, I didn't get a chance to get a good look at the Moon until it was nearly halfway into the umbra (~0:15 UT/7:15 p.m. EST). But it was plainly obvious using both the naked-eye and optical aid that this was rapidly evolving into an exceptionally bright eclipse. That part of the Moon already immersed in shadow was readily evident . . . and a few minutes later, using my 10.1" Dobsonian at 45X, I could see signs of a reddish tinge beginning to appear, glowing like the coils on an electric kitchen range when they just start to heat up.

By 0:45 UT/7:45 p.m. EST, the darkened part of the Moon appeared distinctly orange-red both to the eye and in binoculars and telescopes. Lunar maria were very prominent, as were all of the large craters. I did not attempt any crater timings, but I kept thinking that were I to make such an attempt it might have been rather difficult since the umbra's edge appeared to me much more soft and diffused as opposed to some of the darker eclipses (July and December 1982; December 1992) that I previously observed.

THE TOTAL PHASE
COLOR/DARKNESS

As I noted in an earlier e-mail, this was the brightest eclipse of the twelve total lunars that I have witnessed (going back to December 1964).

On the five-point (0 to 4) scale developed by Andre Danjon, my estimate for this eclipse, was L = 3.5; exactly midway between an L = 3 ("Brick red with a brighter rim to the umbra") and an L = 4 (Very bright copper-red or orange eclipse with a bluish, very bright umbral rim). On the three-point (0 to 2) Willard J. Fisher scale, I gave this a solid grade 2 ("The naked eye sees 'spots' on the eclipsed Moon and the seas and other details can be seen with hand instruments, such as binoculars").

Some minutes before mid-totality (01:19 UT/8:19 p.m. EST), the gradation of light and color across the Moon's disk was quite impressive. The Moon's southern limb appeared a dull grayish-white mixed with a very pale, but still evident bluish coloration, while the rest of the lunar disk (at least 75 percent) displayed a ruddy or coppery hue.

Looking at the Moon just with the naked eye about 5 to 10 minutes after totality ended, reminded me of a view of the planet Mars as might be seen from an approaching spacecraft, complete with a southern polar ice cap.

PHOTOMETRY

Looking at the Moon during mid-totality with 7 x 35 binoculars, but looking through the objective lens (backwards), it appeared somewhat brighter and very similar in color to Mars when that planet was at its peak brightness back in late August. I thus believe that the Moon appeared no fainter than magnitude -3.0 . . . the brightest (in terms of magnitude) of any eclipse that I have seen. However, this estimate was made only from memory; without any appropriate object in the sky to make a suitable comparison with. So it may very well be that I might have underestimated the Moon's brightness, by perhaps as much as a half-magnitude.

THE SHADOW RETREATS

I've never seen the ruddy coloration within the Earth's umbra persist for such a long interval of time . . . Indeed, using a 10.1" Dob at 45x, I caught sight of the last vestige of any red hue at 02:55 UT/9:55 p.m. EST. That was just 10 minutes before the Moon left the umbra! I've never seen anything like that before.

I last caught sight of the penumbra -- With the naked eye: 03:20 UT/10:20 p.m. EST With the 10.1" Dob at 45X: 03:25 UT/10:25 p.m. EST.

Using the Dob, I actually projected the image of the Moon on a white card and looked for the final subtle hints of penumbral shading. -- joe rao

SETalk

Dirigible

From: Jay.M.PasachoffSenl200312williams.edu To: solareclipsesSenl200312aula.com Date: Sun, 09 Nov 2003 23:13:49

I was interested in the photo of the USS Los Angeles dirigible (credited to Naval Historical Center) in the November/December 2003 StarDate (the magazine of the McDonald Observatory), and the comment that it was used to observe the 1925 eclipse. I hadn't heard of that eclipse use before.

Does anybody know more about this matter? Jay Pasachoff

From: Michael Gill

Jay, Check out Patrick's Solar Eclipse Calendar entry for January 25:

http://solareclipsewebpages.users.btopenworld.com/SECalendar_files/SECalendar.PDF

Also, the book "Sky and Ocean Joined: The U.S. Naval Observatory 1830-2000", ISBN 0-521-81599-1, has a passage about the "U.S.S. Los Angeles" and the 1925 eclipse - "possible the only time an eclipse was ever scientifically observed from a dirigible".

There were two cameras used to record the inner and middle parts of the corona, and prominences. Two motion cameras were also carried, one in the cockpit on the top of the ship, and one in the aft engine room to record the approaching and receding shadow. Cheers, Michael Gill

From: Glenn Schneider

It had been reported that a motion picture of the 1925 eclipse was obtained from the airship Los Angeles - but I have never seen it. There is a fabulous recounting of this eclipse, and telling of the 25 aircraft used to observe it (QANTAS and Lan Chile passengers take note) in chapter 10 of Duncan Steel's most enjoyable book: "Eclipse: The Celestial Phenomenon That Changed The Course of History" from National Academies Press. Actually, the whole book is available now ON LINE - and it is a "must read" for everyone on SEML. The section on the airship Los Angeles is specifically on page 225 where the airborne expeditions are described:

http://books.nap.edu/books/030907438X/html/225.html#pagetop

To quote: "The Navy airship USS Los Angeles flew at an altitude of 4,500 feet over Block Island, off the coast of Rhode Island and Connecticut, carrying a party of 19 astronomers plus crew."

but do read the whole chapter on the 1925 eclipse (in my home town), indeed read the whole book!

ADS lists the following: F.B. Littell, Popular Astronomy, 33, 212 (1825) "Total solar Eclipse of JAnuary 25, 1925 from the Navy airship Los Angeles". I do not have a copy of that. -GS-

From: ShivapujaSenl200312aol.com

it seems reasonable, since the craft was at the naval air base in lakehurst, new jersey, about 100km ssw of new york city.

judging from the global path map at fred e's site, that was in or near totality. for a mid-morning event, i suppose the bulk of the ship overhead might not of obscured the view from the gondola.

From: KidinVSSenl200312aol.com

FYI... for those interested in Duncan Steel's book.... I just purchased it on Amazon.com I paid $1.20 plus $3.50 shipping and hand. This is for a NEW hardcover edition.

There are still copies available on Amazon.com. Rick Brown EclipseSafaris

From: Jay.M.PasachoffSenl200312williams.edu

It is too bad that books are available for almost no cost. Note that Duncan Steel didn't get a royalty and the publisher didn't get a fee. The book industry will collapse like the music industry from transactions like this one. Jay Pasachoff

From: Francis Graham

See Graham, F.G. "They Seen it from a Zeppelin" Selenology

Question about wobble in Moon's orbit 4500 years ago

From: Ronald Brashear To: HASTRO-LSenl200312LISTSERV.WVU.EDU Date: Mon, 10 Nov 2003 21:47:33

I am forwarding this question I received from Dr. Gordon Freeman to the H-ASTRO list in hopes that someone may be able to properly answer their question and also that there may be some interest in the site he is studying. Dr. Freeman is not a member of the list group, so please respond to him directly at: k.npSenl200312ualberta.ca Thanks, Ron Brashear

>>>>>>> I am studying a 5000 year old Sun Temple that we dis-

SETalk

covered in southern

Alberta (50.59 deg N, 112.41 deg W) in 1980. I currently have 12,000 photographs of the enormous site (more than 4 square miles) and solar/lunar events there during the last 20 years. The widely dispersed Temple contains an accurate solar calendar that I have dated to 4500 years ago, from Solstice Sun rise and set alignments that are accurate to 0.05 degree. The maximum and minimum rise and set directions of the solstitial Full Moon are also marked approximately. The solstitial Full Moon now oscillates from 8 deg N of the solstitial Sun rise and set alignments to 11 deg south of them. The solstitial Sun alignments were 1.0 deg more extreme 4500 years ago than now. Can you please tell me what were the extremes of the Full Moon's rise and set azimuths 4500 years ago at 51 deg N? People who calculate dates of eclipses in antiquity might have assumed a constant wobble in the Moon's orbit, but that would seem strange, with both a nonconstant rate of change in obliquity and the precession of the Earth's spinning axis (which should also have a nonconstant rate). Best regards, Gordon Freeman http://www.chem.ualberta.ca/faculty/freeman.htm

Report on TLE from Denver

From: JpdowningSenl200312aol.com To: solareclipsewebpagesSenl200312btopenworld.com Date: Sun, 09 Nov 2003 19:33:25

Here in Denver the moon was completely into the umbra at moonrise. I went to Observatory Park where the Denver Astronomical Society held an open house, with members setting up their telescopes, I guess 60 in all. There were several hundred well bundled people there, especially families with children, even a local news channel doing interviews, so the atmosphere was festive.

We had fairly good visibility, though the light from the moon's northern half was nearly colorless, a very faint burnt orange. The rest of the moon looked ashen gray with a fine crescent of whitish silver working its way from the eastern limb to the southern limb over the course of the event.

As the lunar disk emerged from the Earth's shadow to about a third of its diameter, the bright portion seemed wider than the dark protion. Other observers agreed. We concluded that the illusion was probably due to the radiance of the atmosphere near the bright half of the moon, the eye tending to see the whole effect as the lunar disk. I couldn't help seeing figures in the moon's disk, especially at the end when the familiar face of the moon seemed to be wearing a yarmulke.

After only half of the moon's disk got into the penumbra, the ground illumination rose dramatically. I could see my well defined shadow, and also reflective objects such as tripods a hundred feet away. During the total phase, the ambient light was sufficient that I could see forms in the foreground, though I was not able to recognize faces. The landscape, as expected in the low light, was colorless. The brightness of the moon as it returned from shadow was impressive in that normally at sunset, the transition from twilight to moonlight is gradual, but last night it was essentially a moonless night until the dim penumbral light shone on the landscape. Our surroundings by comparison to the absence of moonlight, now seemed bathed in light. As the eclipse progressed, I was never able to see the outer penumbal boundary as it worked its way across the face of the moon, though there was a general brightening. The moon's "sparkle" didn't seem to return until near P4.

'Twas a pretty good day.

For all southbound, TSE chasers, have a great trip to Antarctica- We wish you lots of sunshine. James Downing jpdowningSenl200312aol.com

TLE from France

From: christian viladrich To: SOLARECLIPSES@AULA.COM Date: Wed, 12 Nov 2003 21:35:57

Dear all, Please find some images of the last TLE seen from France : http://perso.club-internet.fr/viladric/astro/ecllun/2003/ecl2003.html

More images will come later (processing takes some time ...) Regards

SETalk

Magnificent Eclipse!

From: P. Clay Sherrod To: Patrick Poitevin <solareclipsewebpagesSenl200312btopenworld.com> Date: Tue, 11 Nov 2003 18:32:22

This is indeed an interesting photo but I do not believe that this is a meteor crossing the moon; the periodicity of the object suggests otherwise and if a combination of time lapse images, the total combined time would be much to long for a meteor transit. Also the double nature of each appearance of the object is entirely repetitious, with the following of the two being always dimmer and within the same spacing as the leading object or bright spot.

I would totally rule out a meteor in this image. Clay

From: Tim Cooper

Hi Mike Can I use your observations in my MNASSA report for the last 2 TLEs? (Report almost finished Auke, assuming you want it for publication)

Your crater times are similar to mine, see attached report. I presume your times were mid feature (?)

I found the eclipse to be pretty bright, L=3.5. Maria were easily detected naked eye, and colours were lots of bright yellow and orange, with a bluish umbral edge in my 8 inch. See also Mauritz Geysers images at http://wwwetacarina.co.za/photo-album/le20031109.htm

Reversed binocular (10x50) magnitude at mid eclipse was +1.2 (using beta Tauri), which translates to a total lunar magnitude of -4.

Trevor Gould had a -6 fireball at 0118UT, at which time I was concentrating on mid eclipse measurements. Drat!

I would appreciate any other Southern African observations soonest. Best Regards Tim

From: NETGO

Hello All The Total Lunar Eclipse of November 9th from Harare, Zimbabwe was magnificent, making up for the "clouding out" of the last one on May 16th. Shading was definitely apparent from 12:55 am, and cloud then rolled in! It was again clear for the beginning of the partial phase, and then cloud rolled in again!

However, by the time the shadow was covering about forty percent of the Moon, the cloud had completely disappeared and stayed away for the rest of the night. I noticed that telescopically, the edge of the umbral shadow was extremely "fuzzy", ranging from a light brown to a deep gray over an distance of about one arc minute with no definite transition point. It was therefore very difficult to ascertain crater timings with any degree of accuracy. I did however get timings for three large or bright fea-

(Continued on page 30)

SETalk

tures during ingress:

Plato: 23:50:34 UT Pytheus: 23:51:31 UT Copernicus: 23:55:18 UT

15cm Reflector f/7 42x Timing using radio signal and GPS handset.

At 3:06 totality was definitely apparent, and the first thing that struck me was that, given the shallow path of the Moon through the umbral shadow, this eclipse was very much darker than I had anticipated. I rated the Danjon value as averaging L= 2 for this eclipse, as opposed to L=4 for the January 9th 2001 event.

Just over one minute into totality a bright meteor was seen by all to pass almost centrally over the Moon! Murray Alexander, placed somewhat further south, captured it on video passing just over the Moon's northern edge. The image below is a time-lapse sequence of every third frame (plus an extra as it crossed the moon).

A rare and spectacular occurrence! Several other meteors were seen, leading me to believe that they were all members of the Southern Taurid meteor shower. The track of the one in the image certainly seems to point approximately back to the radiant of this shower.

During totality, hundreds of stars were visible down to magnitude 6.5 with the unaided eye, with the Pleiades to the north-east of the Moon especially spectacular. I continued to observe until nearly 5 am, when Jupiter high in the north-east was the only other object still visible and the still partially eclipsed Moon sank between two trees, serenaded in its setting by the waking calls of hundreds of birds. The following words kept repeating themselves in my mind:
"The night is gone,
And with the dawn,
Come rays of hope,
That lead us on....."

These are the opening lyrics to "Our Zimbabwe" sung by now-exiled Zimbabwean cricketer and singer Henry Olonga. For a few hours on Sunday morning, our beleaguered nation was able to experience something of beauty again.

The next Total Lunar Eclipse occurs for Zimbabwe in the late evening hours of May 4th 2004. Hopefully, the Moon will share the sky with a bright comet. Comet 2001 Q4 (NEAT) will be hanging in the western sky during totality just two days shy of its closest approach to Earth. If the comet lives up to expectations, that night would be an amazing experience!

All times (unless otherwise noted) are Local Times, UT +2 M. J. R.Begbie

From: Mauritz Geyser

See also images by Koos van Zyl at http://www.pretoria-astronomy.co.za/astrophotography.htm#Moon

Eclipse book

From: solareclipsewebpagesSenl200312btopenworld.com To: SOLARECLIPSESSenl200312aula.com Date: Wed, 12 Nov 2003 22:55:20

>>From: Duncan Steel <duncansteelSenl200312iprimus.com.au> To: janitaSenl200312picknowl.com.au

> Dear Janita, Thanks for the email traffic regarding my book Eclipse.
>
> This may be pertinent to those in the US looking to buy copies cheaply. I have been told that the UK edition (yellow cover, published by Headline) has been made available by various internet sellers in the US, which is contrary to copyright. The proper US edition is that published in 2001 by the Joseph Henry/National Academies Press (black cover). This edition is not only written in American English (spellings and idioms, etc.), but also it has five chapters not in the UK edition, four of them specifically about

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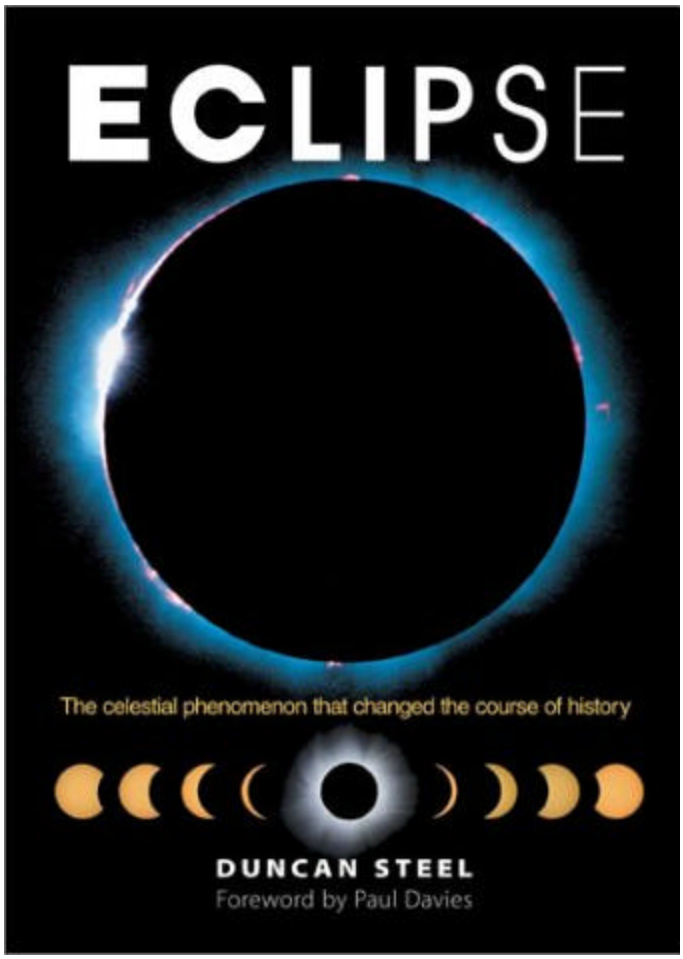
American eclipses. Thus if people in the US buy a UK version on the cheap they will miss the information about the dirigible as used for the 1925 NYC Winter eclipse, and also various other matters that would perhaps be of interest to them. There are also various other matters that appear in the larger US edition and not the UK edition (e.g. your own observation of a selenelion in Adelaide in January 2001).
>
> Please feel free to insert this message into the discussion.
>
> Best regards to all eclipse watchers. Kind regards, Duncan Steel (now back living in Adelaide, South Australia)

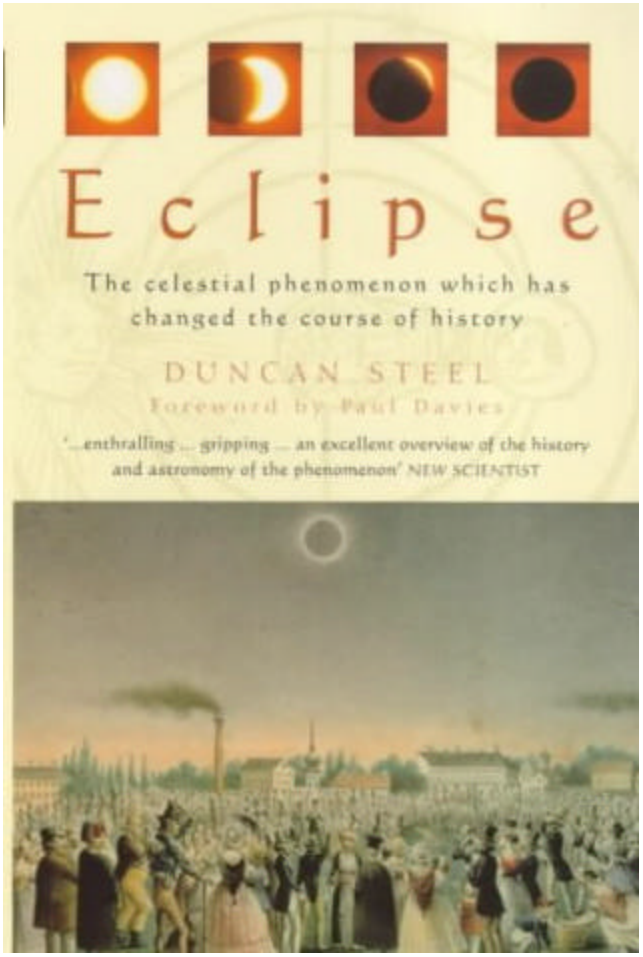
From: KCStarguySenl200312aol.com

I got Duncan Steel's book in the Johannesburg airport coming back from the 2001 eclipse. It's a great book, wealth of information and a great resource for anyone's eclipse library. I think I reviewed it and will try to find out where I put it and send to anyone else you might want the review I wrote. Dr.Eric Flescher (kcstarguySenl200312aol.com)

From: barr derryl

Thanks for the up date regarding the Steel book. I have a copy of the infamous





"Yellow Covered Edition," and last night while trying to find the pages referenced by the various messages regarding observations from the Los Angles, could only reach the conclusion that there had to be a more recent addition. The Steel book, even with the yellow cover, is an informative and enjoyable addition to any eclipse lover's library. However, I shall certainly seek out and purchase the black covered American edition. Only 6 days before I begin my trek to Australia to join the Croydon flight for the 23 Nov eclipse. Certainly recent solar activity should play a major part in determining the shape of the corona during the upcoming eclipse. Will the corona display features more associated with maxima activity, or will we see an evolution toward a more transitional corona that was first reported by some in 2002 in spite of such activity? Can't wait to find out! Regardless, being 0 for 3 so far in 2003, I have high hopes for at least seeing SOMETHING on the Croydon flight. See many of you in Australia in a few days, Derryl Barr

From: Bob Morris

Could someone post the ISBNs of the US and UK editions of the Steel book? Thanks Bob Morris

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From: F.Podmore

>From Google I found

http://books.thepricesearch.com/author/Duncan-Steel

which shows two eclipse-related titles, ISBN 0747273855 (which has a cover like the copy I own) and ISBN 030907438X (which has a joint author of Paul Davies).

Clicking on either title takes you to further details for comparative prices.

I think these are the two editions described by the author in the email from Patrick dated 12 Nov 2003. Francis

From: Michael Gill

UK edition - 0747262845

http://www.amazon.co.uk/exec/obidos/ASIN/0747262845/qid%3D1068733830/202-6070365-0410203

US edition - 030907438X

http://www.amazon.com/exec/obidos/tg/detail/-/030907438X/qid=1068733876/sr=1-1/ref=sr_1_1/103-7492567-4571814?v=glance&s=books Cheers, Michael Gill

Annular Eclipse 31-May-2003: "Natural World", BBC TV

From: Michael Gill To: "SOLARECLIPSESSenl200312AULA.COM" <SOLARECLIPSESSenl200312AULA.COM> Date: Sun, 09 Nov 2003 20:11:05

BBC TV broadcast an episode of Natural World entitled "Moon Power" earlier tonight (9-Nov-2003).

Included in all the discussions and illustrations of the lunar influence on the natural world, was some gorgeous footage of the 31-May-2003 annular eclipse from the Isle of Lewis, Scotland.

Worth looking out for repeat showings. Michael Gill

From: Sheridan Williams

Michael Gill emailed the SEML to say: BBC TV broadcast an episode of Natural World entitled "Moon Power" earlier tonight (9-Nov-2003). Included in all the discussions and illustrations of the lunar influence on the natural world, was some gorgeous footage of the 31-May-2003 annular eclipse from the Isle of Lewis, Scotland.

I have a copy of the eclipse bit which is about 2 minutes long. If anyone would like me to email them a copy please contact me directly, not through the list. Please put 2003 video as the subject otherwise my spam filter will reject it. I will email you a 750k file for use with Windows Media Player. The full AVI file is 220Mb so if you want that I'd have to post it to you on a CD. Best wishes

TLE from Boston, MA

From: AlcovedbaseSenl200312aol.com To: SOLARECLIPSESSenl200312aula.com Date: Mon, 17 Nov 2003 01:42:02

Hi All, I have just posted my pictures of last Saturday's TLE as follows: http://memName Shadow

From: eclipseclatSenl200312comcast.net To: SOLARECLIPSESSenl200312aula.com Date: Thu, 20 Nov 2003 23:13:18

After logging off yesterday, I told my wife, Dori, of Jen & Vic's new birth and new name, Shadow. Her immediate reply was, "Hey! Wait, one of the very first questions was, 'Is it related in any way to eclipses?' We think the answer should have been, "Yes" and Jen should be disqualified. Before I appeal our case to the AULA, we will ask Dave (the other participant in the game for his evaluation) (we knew it started with N through S) Raymond Brooks

bers.aol.com/himenali/astro/TLE112003.html You can also read our impressions. We had much better luck this time (than last May)! Clear skies, Haldun I. Menali http://members.aol.com/astroalcove/index.html

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SEC2004 and links

From: solareclipsewebpagesSenl200312btopenworld.com To: SOLARECLIPSESSenl200312aula.com Date: Sat, 15 Nov 2003 23:27:46

Hi there SEML subscribers, Often I have a look in the WebPages of you all friends SEML subscribers. I feel happy to see the time and work you all spend on communicating about solar eclipses. Sadly for us though, that I do notice that very often there is no link or publicity about the Solar Eclipse Mailing List (SEML) or no link to the international Solar Eclipse Conference (SEC2004) (see http://solareclipsewebpages.users.btopenworld.com/SEC_files/SEC2004.html).

Please note that all services Joanne and me provide (mailing list, newsletter, conferences, etc.) is free of charge to every one of you. It is our hobby and we do like to share and bring you all solar eclipse enthusiasts together. It sounds a bit depressive, but it would be nice, in return for the work we put into it, that at least the mailing list and some publicity about the conference is mentioned in your WebPages (or publications you might have). A small effort in return? After all, the SEML is often the source where you all find use-

Brighter part of lunar eclipse

From: KCStarguySenl200312aol.com To: meteorobsSenl200312atmob.org Date: Sat, 15 Nov 2003 23:27:48

Mark Many times eventhough the eclipse is considered total, there are still hints of bright areas at various parts of the lunar orb. Watching through a webcam in Belgium, I saw that the eclipse was quite dark but reddish in most of the center. However as soon as totality phase was over, I immediately begin to see a sliver of bright area area whitish - yellow. I will be posting my pics of these pics soon . Others can respond to this question too.

Dr.Eric Flescher (kcstarguySenl200312aol.com) webmaster Eric's Black Sun Eclipse website - <ericsblacksuneclipse.com>webmaster, Satori Astronomy website <http://members.aol.com/kcstarguy/blacksun/satoriastronomy.htm>
***
In a message dated 11/14/03 10:36:56 PM, owner-meteorobs-digestSenl200312atmob.org writes:

Date: Fri, 14 Nov 2003 10:36:17 -0800 (PST) From: Mark Fox <unclefireballmtfSenl200312yahoo.com> Subject: (meteorobs) OT (2nd. Try): The November 8, 2003 Lunar Eclipse

NOTE: This post was already sent, but it didn't make it to the list before.

****

November 10, 2003

Greetings Meteor Enthusiasts! The skies were crisp and clear during the eclipse! Thus, I managed to view it through many of its different stages with the naked eye, binoculars, and even with my sister's Bushnell (rotary 340 power) telescope! Despite the many trees surrounding our house, the darkening moon could even be seen from the comfort of indoors too. It was a sight, possibly my first total lunar eclipse.

The sky was enhanced significantly, and became a rather queer sight to actually see so many dim stars so close to the "snuffed" moon. Sadly, I did not see any meteors from the time I was outside ~8:06-29 PM EST (1:06-29 UT) and I did not bother to record any information as in a meteor report. The data one can record for Lunar eclipses is quite new to me.

Nevertheless, I did note some interesting aspects of this eclipse which have turned into questions:

1. I was under the allusion that the recent eclipse was a total one. However, during "totality", I kept noticing that the bottom edge of the moon was brighter than all of the rest, particularly from the bottom left if I remember right. It never seemed to have been completely eclipsed. Is that possible or what was I seeing?

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2. Sometime after 1:10 UT, I peered through the telescope (looking for the first signs of "emergence") at the bottom, bright region mentioned above and noted that the bottom "right" edge seemed to be brighter than the left. What does one make of that? Long, bright, early Leonids! Mark Fox Newaygo, MI USA

Doing Glenn's experiment at an astronomy convention

From: Daniel Fischer To: SOLARECLIPSESSenl200312AULA.COM Date: Wed, 19 Nov 2003 11:00:30

On Oct. 28 Glenn Schneider suggested on this list that one should 'build' a Sun with a Venus in front of it, view it from the proper distance and find out whether you can see the planet in transit with the naked eye or not: Susanne Huettemeister and I have performed that experiment last weekend at Germany's largest annual amateur astronomical convention, the Bochumer Herbsttagung (BoHeTa), following Glenn's suggestions precisely.

142 participants of the meeting took part in the experiment in which I asked them to state whether Venus was 'easy', 'difficult' or 'impossible'. The result was clear: 86% saw Venus in transit easily, 10% saw it with effort and 4% didn't see it at all. Even if one assumes that some who didn't see it simply walked away and didn't tick the box, I think we say now that a majority of people will be able to spot Venus in transit with the help of simple (but good) eclipse filter but no other optical aid.

HOWEVER, they would miss most of the fun because - that's what I learned during the transit of Mercury in May - what makes planetary transits so stunning is the fact that a perfectly circular perfectly black thing is crossing the solar disk where one normally only sees pretty ragged sunspot groups. I suppose with Venus - being 5 times larger in diameter - one could get that stunning impression (which required a telescope in the case of Mercury) even with simple binoculars in projection. But can we/should we/must we advise the public at large on that possibility? Or should we rather warm them to stay away from any optical aid because it could be mis-used? Jay? Daniel Fischer

Here is Glenn's original suggestion, by the way, which we followed. It turned out that the ease with which one could see Venus depends a lot on the contrast: When our 'Sun' was illuminated less well in the afternoon, spotting Venus got harder, even for me (who saw it readily when the real Sun shone on ours).

Date: Sun, 26 Oct 2003 10:29:42 -0700 From: Glenn Schneider <gschneiderSenl200312mac.com> Organization: Steward Observatory

Why not do a simple test?

Cut out a 150mm (appx 6") diameter circle out of white paper (to simulate the disk of the sun), put a 5mm (appx 1/5") diameter black dot black dot on it (to simulate Venus), put that on a large black piece of cardboard (to simulate a dark background - as would be the case with a solar filter). Then stand it up and look at ait face on from a distance of 17 meters (appx. 56 ft.) away.

Do you see the dot?

These proportions are right for the angular scales of the Venus transit. A distance of 17 meters (appx 56 ft.) is "far enough" away to be "at infinity" as far as human eyesight is concerned. You can double of triple everything if you want to better approximate "infinity".

If you want, view it through an orange filter to approximate the bandpass of a chromium solar filter, or a blue one for an aluminum filter, or green for welders glass etc.

That should tell you with a fair degree of reliability if YOU (with the specific characteristics of your eyes) will be able to see Venus transiting or not. Cheers, Glenn Schneider

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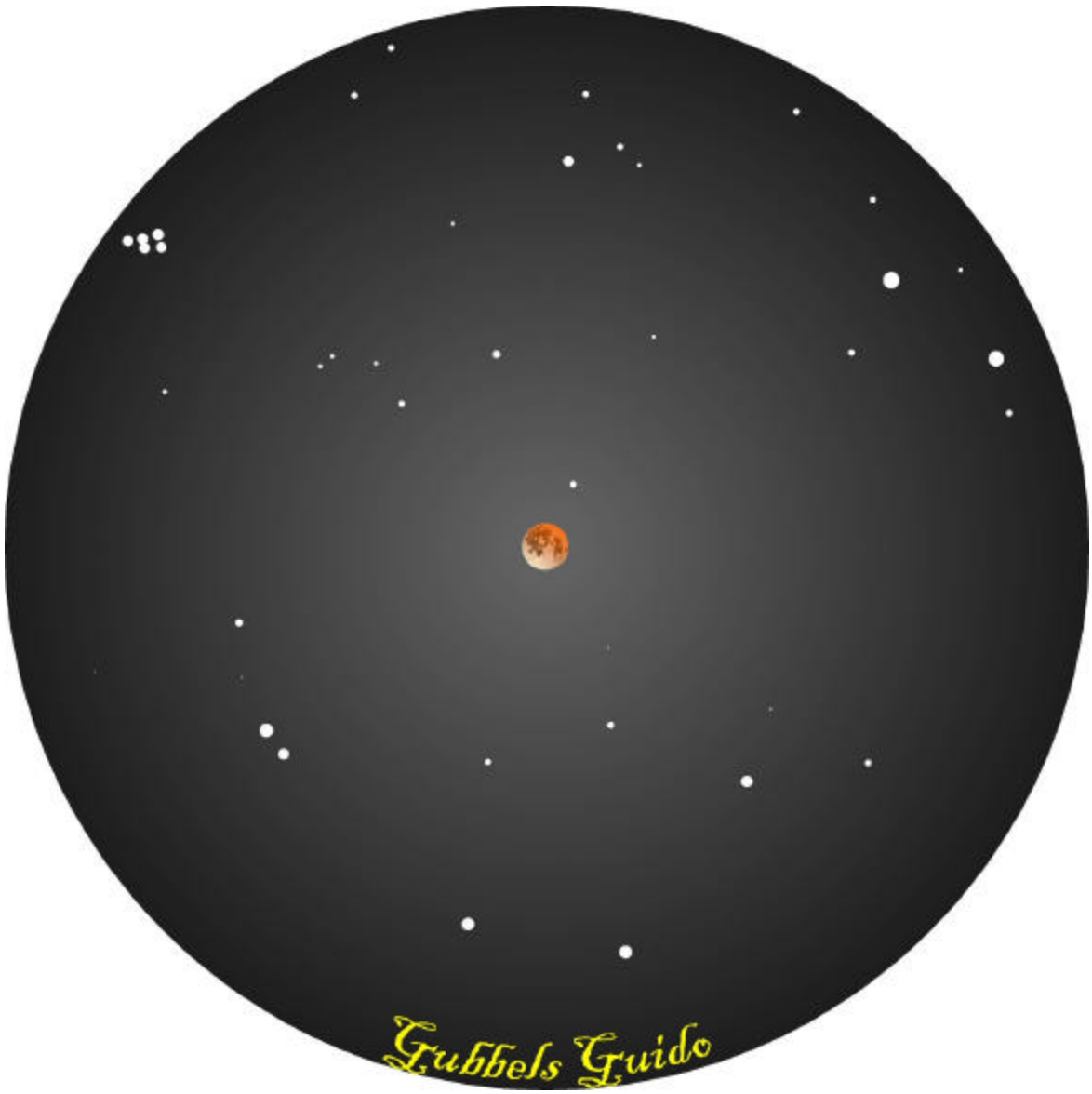
Drawing TLE 8 november

From: guido gubbels To: SOLARLIST <SOLARECLIPSESSenl200312AULA.COM> Date: Wed, 19 Nov 2003 11:34:53

Hello, I made a drawing of the eclipsed moon and the surrounding starfield. The drawing is now availabel on the net at: http://www.vvs.be/afdeling/ashpolaris/ The site is in dutch. Just go to: 'FotoAlbum' topic '8/11/03 Maansverduistering' and choose 'Impressie'.

Greetings and good luck to all the Antarctica travellers, Gubbels Guido Terbeemden 67 3980 Tessenderlo



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Name Shadow

From: eclipseclatSenl200312comcast.net To: SOLARECLIPSESSenl200312aula.com Date: Thu, 20 Nov 2003 23:13:18

After logging off yesterday, I told my wife, Dori, of Jen & Vic's new birth and new name, Shadow. Her immediate reply was, "Hey! Wait, one of the very first questions was, 'Is it related in any way to eclipses?' We think the answer should have been, "Yes" and Jen should be disqualified. Before I appeal our case to the AULA, we will ask Dave (the other participant in the game for his evaluation) (we knew it started with N through S) Raymond Brooks

Moon Sightings

From: eclipseclatSenl200312comcast.net To: SOLARECLIPSESSenl200312aula.com Date: Thu, 20 Nov 2003 23:21:12

Through only a few small clear blue gaps in Tasmania's midday sky yesterday, we searched for the Moon but did not see it. I was clearly worried the Moon had evaporated and there would indeed be no eclipse. FEAR NOT: I found it through equally small clearings this morning shortly after Moonrise and am again hopeful of a another TSE.

Total Lunar Eclipse 9 November 2003

From: Jan Sládeèek To: "'solareclipsewebpagesSenl200312btopenworld.com'" <solareclipsewebpagesSenl200312btopenworld.com> Date: Thu, 13 Nov 2003 10:21:12

Dear Colleagues, I am sending to you some pictures of Total Lunar Eclipse 9 November. Photographed by Digital Camera Olympus C-2100 Ultra Zoom, Time: 01.51 - 02.50 CET (UTC+1) Best Regards, Jan Sladecek

From: Jan Sládeèek

Dear Patrick, thank you for your mail, I am pleased, that you like my pictures of the lunar eclipse, we had clear sky in central Bohemia. .../... Best regards, Jan

SETalk

Aurora Australis active tonight

From: Fraser Farrell To: eclipses <SOLARECLIPSESSenl200312AULA.COM> Date: Thu, 20 Nov 2003 15:47:01

To all, For those of you hoping to see an aurora during totality, here's some hopeful signs.

(1) The 3 big sunspot regions (10484, 10486 & 10488) that caused so much activity & excitement last month are back...

(2) The latest Coronal Mass Ejection launched at us by region 484 is producing some nice aurorae for southern Australia tonight. I've just spent an hour in the back garden, watching auroral columns and rays reaching to 70+ degrees altitude. That doesn't happen very often here!

(3) Regions 486 and 488 returned a bit early, so they should both be near the centre of the solar disc for the eclipse. And well placed to launch more CMEs at us.

I do like that Astronomy Picture Of The Day that shows an aurora above a live volcano. Can our expeditioners top this by capturing an aurora above a black sun?

From: Robert B Slobins

I am afraid that seeing an aurora during totality is unlikely.

People did try to see the aurora in 1972 as the eclipse path crossed the auroral oval. However, the sky is just too bright.

Just how close to twilight are the strongest displays visible? That should give us a clue as to whether or not aurorae can be seen during totality.

On the other hand, perhaps some wide-angle images of the sky *may* show some blue streaks of aurora. But that would require 20 seconds at f/3.5 - 4 with ISO 400 - 800 film, and I wonder of the sky would fog out. cheers/rbs

From: Robert B Slobins

Fraser: I got to see the end of the show seven hours ago.

I suppose that during a long-enough totality, one could discern an aurora that bright. However:

1--What are the odds of this happening?

2--Such an event during totality would be photographically very difficult to capture.

3--The auroral oval is weakest around noon.

4--Who among us would need the extra workload?

cheers/rbs

From: Fraser Farrell <fraserSenl200312trilobytes.com.au>

Robert B Slobins wrote: Just how close to twilight are the strongest displays visible? That should give us a clue as to whether or not aurorae can be seen during totality.

Robert, It got much better and brighter here in the hours before sunrise. The entire southern half of the sky, turned into multicoloured auroral glows & rays & curtains, and bright enough to cast (diffuse) shadows. One of the best I've seen in ~30 years from southern Australia.

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The local bird life was obviously fooled by this false dawn. They were flying about and chirping and calling to each other, long before the -real- dawn was even discernible!

I could see the auroral activity quite easily up until 30 minutes before sunrise - whereupon it disappeared quite suddenly. I reckon this was due to an actual drop in intensity, rather than it being overwhelmed by dawn light.

If there's an aurora this bright during totality, I reckon you will see it. cheers,

From: KidinVSSenl200312aol.com

The only 2 natural events I have witnessed together were in 1998... The Feb 26th TSE. My group of 85 people were in Antigua... and out in the distance was the Montserrat volcano. It was dark enough to see the lave flows glowing from 20 miles away. Rick Brown EclipseSafaris

MoonLore by Rev. Timothy Harley

From: JPvdGiessen To: SOLARECLIPSESSenl200312AULA.COM Date: Fri, 21 Nov 2003 20:15:16

Hey all, On internet (Sacred Texts) is a 'new' book "Moon Lore" by Rev. Timothy Harley, with an interesting chapter with anecdotes about Lunar Eclipses. See http://www.sacred-texts.com/astro/ml/ml17.htm Jan Pieter van de Giessen

Venus transit 1639

From: jan Vandenbruaene To: HASTRO-LSenl200312LISTSERV.WVU.EDU Date: Sat, 22 Nov 2003 09:14:48

Dear List, While reading the fascinating history of the prediction and observation of Jeremiah Horrocks on the transit of Venus in 1639, I wonder why only he and his friend Crabtree saw it. The Belgian astronomer Van Lansberge noticed it in his Tabulae Motuum of 1632, like Horrocks find out, and this work was widespread in Europa.

In his 'A history of Astronoomy from Thales to Kepler', J.L.E. Dreyer claims that " Lansberge's tables probably owed a great deal of the good repute they enjoyed for some time to the circumstance that they by a fluke represented the transit of Venus in 1639 fairly well, while the Rudolphine Tables threw Venus quite off the sun's disk".

That was of course 'a posteriori'. Why was nobody looking for that transit 'a priori'? It was (ok, by a fluke) predicted seven years in advance. Jan Vandenbruaene Flemish Astronomical Society jan.vandenbruaeneSenl200312pandora.be

Images of november lunar eclipse

From: KCStarguySenl200312aol.com SOLARECLIPSESSenl200312aula.com Date: Sat, 22 Nov 2003 22:56:32

I have posted images of the Nov 8 lunar eclipse (no color) at the top link at my website (see below) They were taken with my Harvard project telescope in Boston. There are also links at the same place to two of my latest comets HT50 and T7. Dr. Eric Flescher (kcstarguySenl200312aol.com)

The Transit of Venus and the Quest for the Solar Parallax

From: LARRY KLAES To: HASTRO-LSenl200312LISTSERV.WVU.EDU Date: Mon, 24 Nov 2003 02:16:36

The Transit of Venus and the Quest for the Solar Parallax http://www.dsellers.demon.co.uk/venus/ven_ch_frames.htm

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Missing TSE

From: Mark R. Kidger To: SOLARECLIPSESSenl200312AULA.COM Date: Sun, 23 Nov 2003 23:34:45

Dear All: What are the prospects for the annular eclipse next year that passes over Spain. Madrid is, I believe, on the centre line. What about other major cities like Valencia (which is, I believe, near the southern limit)? I'll almost certainly travel to the Mainland to watch it, even though it will be a rather small annular. Mark

From: Mark R. Kidger

Of course, I meant "2005", not "next year". Sorry!

From: Jean Meeus

The Spanish annular eclipse will not occur next year, but on October 3 of 2005. Moreover, it will not be a "small" annular eclipse, as in Spain the duration of the annular phase will be a little longer than 4 minutes.

Madrid indeed lies close to the central line. Other cities in the path of the annular eclipse are Vigo, Salamanca, Valladolid, Toledo, Valencia, Albacete and Alicante.

If you are interested, I could give some numerical data about the central line in Spain. Jean Meeus

From: Mark R. Kidger

Yes. I was late and got my year wrong! I know that it is a small annular, but that's better than nothing given that I have gone to 2 totals and 1 annular and am still yet to see an eclipse (in one case people just a few kilometres away saw totality).

From: Richard Monk

Mark On my web site "http://homepage.ntlworld.com/rimonk/index.htm" you will find a map of the Iberian peninsular showing the track of this Annular Eclipse. Follow the link to "eclipse pushpins". There are also sets of pushpins for the AutoRoute series of mapping software marking this eclipse paths. Each pin on the centre line has notes about the circumstances at each point. Richard

From: Mark Kidger

Thanks. That's very useful. Mark

From: Jean Meeus

Why do you call it a "small" annular eclipse? Jean

From: Mark Kidger

The Moon shows a small disk, leaving a large annulus of light. Not as spectacular as a near total, but it will still be worth watching.

From: Nicki Mennekens

Markl, On my Eclipse 2005 site, http://users.telenet.be/nmenneke/eclips/engels/eclips05_en.html, information can be found for the best viewing point in Europe, Jývea (the most southeastern point on the center line in Spain). Greetings, Nicki

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Earliest use in English of "anomalistic month"

From: Bob Garfinkle To: HASTRO-LSenl200312LISTSERV.WVU.EDU Date: Mon, 24 Nov 2003 08:18:52

Hello list. The OED states that the earliest usage (in English) of the term "anomalistic month" in astronomy was by Samuel Horsley in his 1767 "Philosophical Transaction" article "A Computation of the Distance of the Sun from the Earth." (pages 179ý185). My question is that I am not sure that this is actually the earliest usage in English of this term. He uses it as if his readers will already know what the term is: "... in the duplicate proportion of the periodic month to the anomalistic month."

Might there be an older source? Any ideas. Please let me and the list know. Thank you. Robert A. Garfinkle, F.R.A.S. 32924 Monrovia Street Union City, CA 94587 USA E-mail: ragarfSenl200312earthlink.net

Antarctica eclipse

From: KCStarguySenl200312aol.com To: SOLARECLIPSES-Senl200312aula.com Date: Tue, 25 Nov 2003 00:24:20

I heard on CNN that something happened with the eclipse in antarctica . I was upstairs listening when I heard that but I could not make what else they. It was really brief and it said something about a base camp but did not sound good. Dr. Eric Flescher

Pictures from the South Pole

From: Chris O'Byrne To: SOLARECLIPSESSenl200312AULA.COM Date: Mon, 24 Nov 2003 14:32:02

Folks, I've uploaded pictures taken at the South Pole during the eclipse to http://www.ecliptomaniacs.com/2003/nov23/spole/ You cannot see the sun, but there is a definite darkening during the eclipse. Looks like they had a good view of the partial eclipse down there - nice blue skies... Chris.

Images of the November 9th TLE from Norway

From: Arne Danielsen To: SOLARECLIPSESSenl200312AULA.COM Date: Mon, 24 Nov 2003 20:11:11

Dear friends, I know that most of you are still out traveling or occupied with processing the results from the TSE in Antarctica. Still I thought I would drop a note and share my imaging result from the November 9th TLE. The weather was absolutely perfect allowing me to relax and enjoy the sight from the balcony of my apartment (usually when there something exciting happening in the sky I end up chasing clear skies with my car). This also allowed me to utilize my main instrument, an 8" f/4 Newton telescope which is permanently set up on the balcony, for taking pictures. This scope has an rather large secondary, which isn't ideal for lunar photo, but the f/4 really helps to cut down on the exposure times!!

You can see some of the resulting images here: http://tinyurl.com/qmm7/astrophoto/lunareclipse/lunareclipse.htm

I've especially happy with this composite image, which I think is a very close resemblance to how it appeared visually. http://tinyurl.com/qmm7/astrophoto/lunareclipse/20031109/D60-4369and4372.htm

I also think this image of how the Moon, over a period of approx 1h19m, moves through Earth shadow and in respect to the starfield turned out quite well: http://tinyurl.com/qmm7/astrophoto/lunareclipse/20031109/D60-4333and4369and4372and4406.htm

Best regards, Arne -- Arne Danielsen Langhussenter 15, 1405 Langhus, Norway mailto:arne.danielsenSenl200312oslo.online.no http://arnedani.home.online.no/ N59ý45'14" E10ý50'38" A115m

ISS transit? (Re: TLE-report online)

From: Marc Weihrauch To: SOLARECLIPSESSenl200312AULA.COM Date: Thu, 27 Nov 2003 13:40:31

Hi Dave, > you know what this is? I heard (maybe incorrectly) that the ISS was to transit the Moon during totality. Could this black mark be it?

that would be too nice to be true. The photo in question was exposed for 16 seconds! That is way too much for the ISS to appear as little black spot. The mark is probably just a little error on the slide :(Cheers Marc

SETalk

Eddington Conference announcement

From: Gale, George To: HASTRO-LSenl200312LISTSERV.WVU.EDU Date: Tue, 25 Nov 2003 04:16:03

> The following is of possible interest to some HOPOI. (Forwarded by Bill Vanderburgh on behalf of Kate Price, the conference organizer.)
>
> Arthur Stanley Eddington - Interdisciplinary Perspectives
>
> A workshop hosted by the Centre for Research in the Arts Social Sciences & Humanities (CRASSH), Cambridge UK
>
> Wednesday 10th - Thursday 11th March 2004
>
> http://www.crassh.cam.ac.uk/events/events2004/eddington.html
>
> This workshop brings together scholars from the history of science, philosophy, literary studies and the history of art, as well as physics and astronomy.
>
> The aims are: to explore Eddington's continuing significance for these various disciplines, to gain a richer appreciation of his life and work, and to explore ways of promoting effective interdisciplinary discussion.
>
> Papers will be circulated in advance and all participants are asked to read these before the workshop. The emphasis will be on structured discussion, and the contribution in discussion of those not supplying a formal paper will form an equally significant component of the workshop.
>
> Contributed papers from: Malcolm Longair, Steven French, Matt Stanley, Gavin Parkinson, Michael Whitworth, Arthur Miller, Robert Smith, Ian Durham, Alan Batten and Kate Price.
>
> Participants with an interest in Eddington, from any discipline, including graduate students, are welcome.
>
> The deadline for registration is 20 January 2004. To get the most out of the workshop format places are limited to 40 people.
>
> For further details and abstracts see the CRASSH webpage,
>
> http://www.crassh.cam.ac.uk/events/events2004/eddington.html
>
> To find out more or to register your interest please contact the convener (Kate Price, email kep26Senl200312cam.ac.uk). -- Dr Kate Price Junior Research Fellow Homerton College Hills Road Cambridge CB2 2PH Telephone: +44 (0)1223 507189 Fax: +44 (0)1223 507120

1886 painting, allegory of Transit of Venus, Paris Observatory

From: Peter Abrahams To: HASTRO-LSenl200312LISTSERV.WVU.EDU Date: Tue, 25 Nov 2003 02:10:07

Is there an image of this painting in a web site or book? By Edmond-Louis Dupain, a painting on the ceiling of the west octagonal room of the Paris observatory, an allegory of the 1882 transit Venus, completed in 1886. It is mentioned, with a small image, on p49, of Norman Thrower, ed. 'Standing on the Shoulders of Giants, a longer view of Newton & Halley.' Berkeley: Univ. California, 1990. thanks Peter

From: Axel Harvey

At http://opserv.obspm.fr/monseign/patrimoine/peintures/plafonds.htm

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there are empty frames with captions referring to two works by Dupain at the Observatory, one of which is about the transit of Venus (the other, dated 1889, is about the discovery of Neptune).

The captions say "Photographie en attente", so I suppose you must wait until the pictures are online.

TLE-report online

From: Marc Weihrauch To: SOLARECLIPSESSenl200312AULA.COM Date: Wed, 26 Nov 2003 22:12:24

Hello everybody, oh dammit, I know I`m late with this. We receive so many wunderful accounts of the Antarctic TSE now, and I`m coming up with something almost three weeks old now. However, I have translated my personal account of the November TLE into English, rescanned the slides (the first scans had ugly artefacts) and added some more pictures. The report can be found at http://astroverein-halle.de/ergebnisse/tle2003_11/tle2003_11_weihrauch_en.html . I would be happy if some of you had a look at it. Cheers Marc

From: Dave Schmahl

Marc, After looking at your website (nice work, by the way), I noticed that your image named 16A.jpg taken at 2:06 has a black mark in the lower right. Do you know what this is? I heard (maybe incorrectly) that the ISS was to transit the Moon during totality. Could this black mark be it? Dave Schmahl Vista, CA.

TSE 2002 link pages?

From: Stig Linander To: solareclipsesSenl200312aula.com Date: Fri, 28 Nov 2003 11:49:25

Hello, The page http://solareclipsewebpages.users.btopenworld.com/SECalendar_files/TSE20021204Links.html has disappeared from the web. Any other TSE 2002 link pages on the web? Best regards, Stig.

From: Luís Miguel Viterbo

Hi Stig (and everyone els e interested), I believe it's http://solareclipsewebpages.users.btopenworld.com/SECalendar_files/20021204.html now.

Whenever a page isn't found I try to go up one level at a time until I find some extant page. In this case, http://solareclipsewebpages.users.btopenworld.com/SECalendar_files is just a list of all the daughter pages, and it was easy to find this link. Cheers, Luís Miguel Viterbo

From: Stig Linander

It isn't. That page is Joanne and Patrick's report from the TSE, not the link page. Best regards, Stig.

From: Michael Gill

The following URL has a lot of 2002 TSE links: http://www.eclipse-reisen.de/2002/links.htm Cheers, Michael Gill

From: Daniel Fischer

Many links to all eclipses, total and annular, back to roughly 1997 can be found via the archive of the Cosmic Mirror at http://www.astro.uni-bonn.de/~dfischer/archive.html - chose the date immediately after the eclipse and look for (often long) link lists. E.g. links about the 2002 TSE are at http://www.astro.uni-bonn.de/~dfischer/mirror/246.html (where the link to http://www.eclipse-reisen.de/2002/berichte.htm will give you even more URLs, all carefully annotated, though in German). Daniel

From: solareclipsewebpagesSenl200312btopenworld.com

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Indeed, we keep only the links of last solar eclipse we observed, not all previous. PP

2012 and 2017 Solar Eclipses

From: Nicki Mennekens To: SOLARECLIPSESSenl200312AULA.COM Date: Wed, 26 Nov 2003 20:30:37

Dear all, As everybody is talking about the coming eclipses after last sunday, I've been looking even more forward. In 2012 and 2017, the United States of America will be directly in the path of an annular and a total solar eclipse. On my site, information about these 2 important events:

Annular eclipse of 2012: http://users.telenet.be/nmenneke/eclips/engels/eclips12_en.html
Total eclipse of 2017: http://users.telenet.be/nmenneke/eclips/engels/eclips17_en.html

Greetings, Nicki

From: Richard Monk

Following on from Nicki's email earlier this week concerning the two solar eclipses visible in the USA next decade. I have put sets of pushpins for these two events on my web page. They will work with Microsoft's "Streets and Trips 2004", and for each event there is a general set covering the complete center line and a second showing much more detail (down to street level).

You can find them on http://homepage.ntlworld.com/rimonk/index.htm, just follow the link to "Eclipse Pushpins". Richard

Transit of Venus Senl200312 History of astronomy at the 203rd AAS Meeting

From: solareclipsewebpagesSenl200312btopenworld.com To: SOLARECLIPSESSenl200312aula.com Date: Fri, 28 Nov 2003 21:53:21

Item 5 ENHA No. 55, Nov. 28, 2003

History of astronomy at the 203rd AAS Meeting

(From: "Elektronische Mitteilungen zur Astronomiegeschichte" Nr. 67, 27. November 2003, Item 3.)

On January 4-8, 2004, the 203rd Meeting of the American Astronomical Society (AAS) will be held in Atlanta, GA, USA. The Historical Astronomy Division (HAD) of the AAS organized the following sessions:

Sunday, January 4, 2004, 2:00-5:00pm Session 1 HAD I: Transit of Venus

Chasing Venus: Putting the Transits of Venus on Exhibition R.S. Brashear (Smithsonian Inst.) Jeremiah Horrocks, The New Astronomy, And The Transit Of Venus W. Applebaum (Illinois Institute of Technology) The American Transit of Venus Expeditions of 1874 and 1882 S.J. Dick (NASA) Explanation of the Black-Drop Effect at Transits of Mercury and the Forthcoming Transit of Venus J.M. Pasachoff (Williams College-Hopkins Obs.), G. Schneider (Steward Obs., U. Az.), L. Golub (Harvard-Smithsonian CfA) David Peck Todd and the transit of 1882: A lover's triangle forms while an astronomer triangulates the distance to the Sun W.P. Sheehan (Independent Scholar) E. E. Barnard and the New Star in the Andromeda Nebula J. Bryan (McDonald Observatory)

Monday, January 5, 2004, 10:00-11:30am Session 28 HAD II

Space Travel is Utter Bilge: Early Ideas on Interplanetary Exploration D.K. Yeomans (JPL/Caltech) The Maximum Duration of Astronomical Incomprehension V.L. Trimble (University of Maryland, College Park) Leslie Peltier, Amateur Astronomer and Observer Extraordinaire B.G. Corbin (U.S. Naval Observatory) The Forgotten History of the 4050 Angstrom Group of C3 B.J. McCall (UC Berkeley) The Clyde W. Tombaugh Papers and the Rio Grande Historical Collections: Preserving the History of Astronomy M.

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Gottwald (New Mexico State University) Challenges of Data Archives R.E.M. Griffin (Dominion Astrophysical Observatory)

Monday, January 5, 2004, 11:40am-12:30pm Session 29 Doggett Prize Lecture

The REAL Caroline Herschel M.A. Hoskin (Fellow, Churchill College, Cambridge, UK)

Monday, January 5, 2004, 2:00-3:30pm Session 35 HAD III

The Latitude and Epoch for the Origin of the Astronomical Lore of Eudoxus B.E. Schaefer (Louisiana S. U.) First Description of Discrete Stars Composing the Milky Way in Thomas Watson's Hekatompathia (1582) E.L. Altschuler (Mt. Sinai School of Medicine), W. Jansen (Independent Scholar) Galileo's Telescopy and Jupiter's Tablet P.D. Usher (Penn State) Lowell's Martian "Canals" in the Light of Modern CCD Imaging C.M. Gaskell (Univ. Nebraska), T.A. Dobbins (ALPO) What Happened to the Amateurs After Professionalization? The Amateurization of Astronomy in Britain and the United States T.R. Williams (Rice University) Remeasuring the Alignment of the Nantucket Meridian Line P.B. Boyce (Maria Mitchell Obs.), A. Davis (SUNY at Plattsburgh and Maria Mitchell Obs.) Satellite Imagery Measures of the Astronomically Aligned Megaliths at Nabta Playa T.G. Brophy (EMCS Consulting), P.A. Rosen (California Institute of Technology)

Contact address for the 203rd AAS Meeting: American Astronomical Society 2000 Florida Avenue, NW, Suite 400 Washington, DC 20009-1231, USA phone 202-328-2010, fax 202-234-2560 e-mail aasSenl200312aas.org

More information on the AAS Meeting including abstracts of papers is available at: http://www.aas.org/meetings/aas203/

For information on HAD see: http://www.aas.org/~had/had.html
[Text compiled from information at http://www.aas.org/meetings/aas203/]

Eclipse 2009

From: solareclipsewebpagesSenl200312btopenworld.com To: SOLARECLIPSESSenl200312aula.com Date: Sun, 30 Nov 2003 11:20:43

>From Thomas Goodey: Dear Group Members: I have written a speculative document which analyzes upcoming solar and lunar eclipses from the point of view of the Allais Eclipse Effect, and I have now put this document upon my website at www.flyingkettle.com/allais/myideas.htm so that it is now available for download. Since this memoir is very much eclipse related, I thought that it would not be irrelevant to notify its availability to this list (although it is still very much a work in progress).

In this connection, I have nowhere seen mentioned the matter of the unparalleled scientific interest inherent in the solar eclipse of 22 July 2009, and I think it ought to be noticed. During this eclipse the gamma will be 0.069; in other words, the Sun-Moon line will pass less than 450 km from the center of the Earth. This is of course extremely close in astronomical terms. I wonder when was the last time such a close pass occurred and when the next will be?

This spectacular eclipse will likely surpass the August 1999 eclipse as the total eclipse seen by the most persons ever, because it passes right through central China. It also may prove to be the most comical eclipse ever! but that is another story... Thomas Goodey

From: Jean Meeus

Concerning the mail of Thomas Goodey :

Yes, at the total solar eclipse of 2009 July 22 the quantity Gamma will be 0.0696. However, that eclipse will occur one Saros after the TSE of 1991 July 11 (the "eclipse of the century"), when Gamma was much smaller, namely -0.0043. In fact, if the Earth were transparent, an observer situated at the Earth's center would have seen a total eclipse. Jean Meeus

From: Glenn Schneider

Sigh... I must be getting old. I so fondly recall the TSE of 30 June 1973 (the saros predecessor of both the above eclipses) with it's

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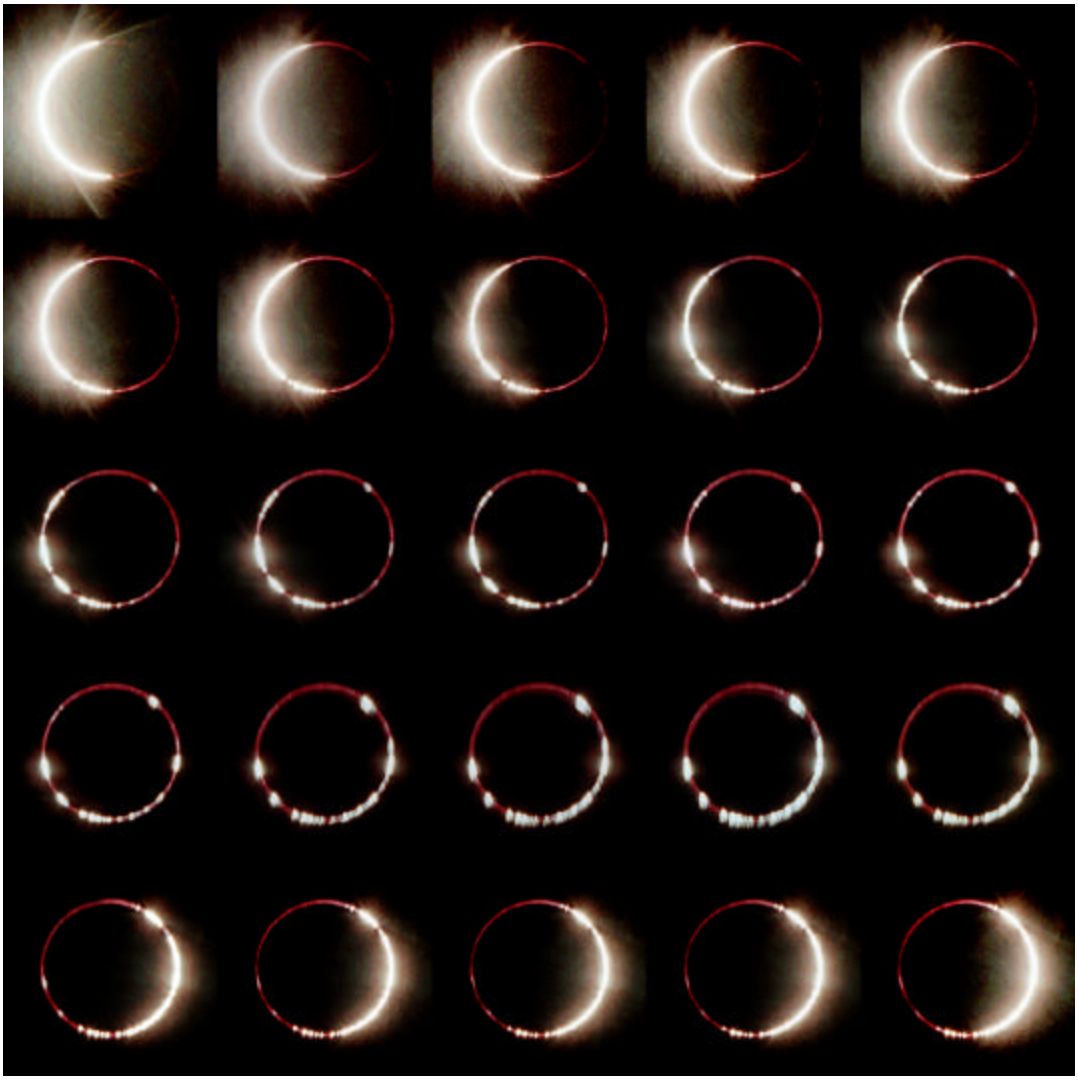
1986 Hybrid?

From: solareclipsewebpagesSenl200312btopenworld.com To: SOLARECLIPSESSenl200312aula.com Date: Tue, 02 Dec 2003 07:38:02

>From Nico: I have a question about te solar eclipse of Oct. 2th 1986, saros number 124. Officially this was a hybrid eclipse, but I remember me that I have ever read a report that these eclipse was not a hybrid one but an annular one. Is that right? If so than these saros, 124, is the onliest saros between the numbers 1 and 180 that there is NOT a hybrid eclipse between a total and an annular eclipse of a certain saros-series. Greetings of Nico from Gouda, the Netherlands.

From: Glenn Schneider

After seeing this eclipse we had debated this endlessly as an intellectual exercise. "Officially"? I am not sure there is an adjudicating body to decide. By the IAU adopted value of k it was total over part of the path , at least at 44,000 ft. But, Fred Espenak argues convincingly (and this eclipse is to the point) that with that a degeneracy exists in eclipses such as this. At the time of the event I do not belive the term "hybrid" was in common use, but annular/total was. For my 2 cents it was most definately NOT an annular eclipse - if annular is taken to mean "ring" (of photosphere). Nor was it a "broken annular" as 24 May 1984 clearly was. But by rigorous "definition", used by many (i.e., instantaneous complete topocentric photospheric extinction) it was not total. I have called this a "tSE" at the point where we observed it (note the lower case "t") or descriptively, and much too wordily a "diamond tiara chromospheric central eclipse".



Unfortunately, to this day, I belive only nine of us saw this event. But the limb phneomenon were captured on film and you can decide for yourself what you would like to call it from those images and from what I have said previously about it on:
http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_86/E1986_MOSAIC.html
and
http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_86/ECLIPSE_86.html
and Fred Espenak's comments linked from there but directly at:
http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_86/ESPENAK_1986_EMAIL.html

Whatever you call it, it was remarkable, anc certainly one of my most memorable eclipses ("t" or "T" SE) - but then... they ALL are. Glenn Schneider

SETalk

References to Guldin and Lansberge

From: Franz Kerschbaum To: HASTRO-LSenl200312LISTSERV.WVU.EDU Date: Tue, 02 Dec 2003 15:40:17

Dear Collegues! Two short questions concerning more detailed references:

1) Recently Lansberges Tabulae Motuum were discused at HASTRO-L in the context of the transit of Venus in 1639. I had a look at our copy but I did not succeed in finding the exact place (page, line) where he had predicted that transit. Could somebody help me? Or was it an ex post finding in his tables?

2) In Guldins "Centro Gravitatis", 1635-1641 the two "Rules of Guldin" are developed. Are there individual places (pages, lines) where they are present in the modern condensed form of rules?

Thanks a lot for your help, Franz Kerschbaum, Vienna Observatory

From: Owen Gingerich

Tables provide the basis for calculating ephemerides, but you won't in general find specific positions calculated except as examples. I had earlier inquired about the supposed greater accuracy of Lansberge (than Kepler) for the transit of Venus, and I think that is probably erroneous. I am in the process of setting up a computer program for the Lansberge tables as well as several forms of the Kepler tables, and eventually I should be able to make a more definit ive statement about this. OWEN GINGERICH

Delta T

From: Jean Meeus To: Patrick Poitevin <solareclipsewebpagesSenl200312btopenworld.com> Date: Tue, 02 Dec 2003 06:57:05

On 2003 November 1, the difference between Dynamical Time and Universal Time was Delta T = 64.55 seconds. Jean Meeus

tle from cheshire Lu-
nar_Eclipse_0136_UT_sml

tle from cheshire Lu-
nar_Eclipse_0155_UT_sml

tle from cheshire Lu-
nar_Eclipse_0223_UT_sml

Pictures by Andrew and Val White

TSE 2003

Eclipse cruise - Kaptain Khlebnikov

From: Jen Winter - ICSTARS Astronomy To: SOLARECLIPSESSenl200312aula.com Date: Wed, 05 Nov 2003 21:09:04

The Ross Sea (where this event took place) is nowhere near the path of the eclipse. jen

At 09:00 AM 11/5/03, you wrote: Jen Winter - ICSTARS Astronomy wrote:
>
> > ...The ice would then become thicker and thicker until the "ice-breaking" capacity of the ship is required to drive further inland...
>
>Speaking of breaking ice -- those now keeping an eye on Antarctic weather may be interested in:
>
>http://www.cnn.com/2003/TECH/science/11/04/iceberg.split.ap/index.html
>
>which was called to my attention by Carter Roberts. -GS-

Report from KK

From: Mike Simmons To: solareclipsesSenl200312Aula.com Date: Sun, 09 Nov 2003 17:40:06

The following report is from Babak Tafreshi, an SEML member on board the Russian icebreaker Kapitan Khlebnikov now in the Indian Ocean on its way to Antarctica for the TSE. He is using a different email address than the one he uses on SEML so is unable to post directly.

Mike Simmons

I'm writing from Kapitan Khlebnikov icebreaker cruising to Antarctaica for the total solar eclipse. We have overcast weather last night and we failed to observed the lunar eclipse, though there were absolutley wonderfull lecture by Fred Espenak about the lunar eclipse and southern skies the day before. So all the eclipse chasers aboard are expecting better weather for our solar eclipse. We are sending daily reports, image and some possible videos to Iran , for use in iranian astronomy magazine website at www.nojum.ir and Iranian eclipse chasing group website www.shadow-chasers.net , unfortunatley mostly in Farsi, but you can enjoy the pictures. We tend to webcast the event from Antarctica, though we are not sure if our inmarsat work with data service even from -70 latitude, we will see. tomorrow all the group will visit exceptional wild life area of Cruzet island in the Antarctica polar front, with 500,000 thousand king penguen residents. Babak Tafreshi and Greetning from others in SEML aboard KK,

Nov 23 Timeline

From: eclipseclatSenl200312comcast.net To: SOLARECLIPSESSenl200312aula.com Date: Wed, 12 Nov 2003 02:44:46

PREFACE

What follows is a detailed descriptive timeline for your enjoyment of the November 23, 2003 total solar eclipse. It employs three different perspectives per below. All times are UT since 3 timezones are crossed in the Croydon/Qantas flight and I am unsure of shiptime for the Khlebnikov. Two topographical sites are chosen, centerline at 22:40 and 22:44 UT, close to expected positions of the people with the Khlebnikov and the Croydon flight, respectively. Coordinates for 22:44 UT are displaced sunward for a flight level (FL) of 38,000 feet. The position of partial phases on the face of the Sun at various sites is described CCW f V or CW f V.

The three perspectives:

1) Solar viewpoint ý as if you were standing on the Sun with a nice warm telescope watching the Moon approach Earth.

2) Earth night-half or back side ý salient locations and particular data if the shadow cone could laser through a clear glass Earth to the night side of Earth. This rear pseudo-path would start 600 miles southeast of the Kerguelen Islands at exactly the same point the shadow contacts Earth on the normal path but instead this path would curve northwest and intersect the Kerguelen Islands, pass 200 miles south of the Crozet and Prince Edward Islands, remaining total throughout. Then loop back around passing well south of the Bouvet Islands ending where the real path ends. This eclipse grazes the bottom of Earth so on the backside of Earth the Sun is only 15.5 degrees below the horizon during greatest eclipse, making for not so dark skies there.

3) Local sky ý what one can see in the sky at locations near the ship and intercept point.

TIMELINE

November 9, 2003 01:18:31 UT Total Lunar Eclipse Moon 252,029 miles distant

TSE 2003

November 9, 2003 09:49 UT Moon at ascending node Moon 252,211 distant

November 10, 2003 12:45 UT Apogee Moon 252,521 miles distant

November 13, 2003 02:22:38.4 UT Mid Eclipse Season

Earth and Sun lined with Moonýs descending node. If an eclipse occurred right now it would be a perfectly central lunar or solar eclipse. Our eclipse occurs 10.9 days later when the Sun is about 11 degrees left of the node, so when the Moon passes in front of the Sun it passes low and the path will have a negative gamma, - 0.964.

November 13, 2003 10:11 UT Moon runs high.

The combination of the Moon ascending above the ecliptic and basically facing Earthýs north pole, presents maximum north declination of positive 27.11 degrees. Ecliptic latitude is only 3.9 degrees.

November 16 20:51:41 UT Moon maximum ecliptic latitude 5.298 deg, splits its nodes.

November 17 04:15 UT Last Quarter

November 23 06:02 Moon at descending node passing through ecliptic plane

November 23 15:00 approx Croydon flight departs Melbourne
Sun is azimuth 165 deg, -30 degrees below horizon
If we could see though the ground, Moon 5 deg left of Sun
Mars will set in west (right side of plane) about an hour after takeoff.
These flight events are dependent on time of departure, actual heading and flight level (FL). At 40,000 feet objects rise/set about 14 minutes early/late versus at ground level.

16:00 Qantas Flight; Jupiter rising azimuth 80, left side, slightly to rear of aircraft

16:01 Sunsets for Khlebnikov, azimuth 201. Half up, half down
Sloping off to left at a shallow angle of 6 degrees to horizon

16:40:22 Penumbra is two penumbral diameters from first contact (P1)

17:15 Qantas Flight; anticipated sunrise azimuth 134, forward left of aircraft
Moon (not visible) lies 3 degrees left of Sun, slightly higher.
Assumed Latitude ý59 S, Longitude 144.6 E

17:19:25 At Intercept Point: Moon due south. Four degrees high at FL380, top just skimming the horizon viewed from ground level. Moon transits south horizon lower than Sun because this descending node eclipse appears as ascending from this location since one would be ýupside downý.

17:32 Khlebnikov local midnight, Sun due south, 2.1 degrees below horizon
Very bright sky.

17:33:59.1 At Intercept Point: precisely local midnight. Sun appears a little more than one solar diameter above the horizon at ground level, about 8 diameters above horizon at FL380.
(All apparitions at intercept are from 38,000 ft unless noted otherwise.)

18:42 At Intercept Point: Mercury due south, 8.5 degrees high.

18:54:55 Penumbra is one penumbral diameter from first contact

19:00 Khlebnikov sees Mercury and Venus sit four degrees to either side of sue south
Each about three degrees above horizon.

(Continued on page 49)

TSE 2003

19:05 Khlebnikov, sun slowly rising, half up, azimuth 158

19:20 At Intercept Point: Venus due south, 8.5 degrees high

20:00 Penumbra 1766 miles from first contact (P1)

Umbra Approaches Earth

With the length of the umbra cone shortening about 1.8 miles every hour and the umbra diameter growing only 0.04 mile in diameter per hour (measured at Earth center distance), the penumbra and umbra approach their contact points on the leading limb of Earth, P1 and U1. It would seem that the umbra diameter should decrease if the cone is decreasing in length but this is offset because the entire cone is slowly moving toward Earth.

The umbra cone is decreasing in length because the Earth/Moon system is moving toward the Sun at 718 mph. The Moon is approaching Earth at 6 mph.)

Looking from the Sun, the Moon would approach Earth moving to the right located midway between Taurus and the Pleaides. The Moon would have a brightness of plus 0.4 magnitude viewed from the distance of the Sun, Earth would be roughly magnitude minus 3.3, depending on actual cloudiness of day-side facing the Sun. The Moon appears very close to Earth at the distance of the Sun, (it never exceeds more than 9 arc-minutes separation during a quarter-moon phase.)

20:07 At Intercept Point: Mars sets at azimuth 242 at FL380

20:21:30 Right edge of penumbra aligned with left limb of Earth

ECLIPSE BEGINS

P1 20:46:05 20.15 S Lat, 127.25 E Long. Center of Moon 5,151 miles left of Earth

400 miles NW of Alice Springs, Australia. First opportunity on Earth to see partially eclipsed sun - moon bites top of sun at local sunrise. This can actually be seen almost a degree west (about 61 miles northwest) of the site indicated in the NASA TP (for a standard atmosphere) due to refraction. For the site indicated, the Sun would simply be about 1.8 diameters above the horizon. If we included non-forecastable atmospheric conditions that can create the green flash effect, then the very farthest location to the west that could witness initial first contact would be as much as another 4 miles west and a bit sooner. But basically everyone along a line from the TP site to that max west point would see contact at nearly the same time - the farthest point west perhaps witnessing contact up to 4 seconds sooner, depending on specific refraction effects. These refractive effects apply to all external and internal contacts.

The penumbra is 4,260 miles in diameter (slightly larger than Earth radius) at time of P1 and contracting very slowly because the Moon is approaching Earth at now only 5 mph. It is not approaching quickly because perigee is less than 3 hours away.

There is no P2 for this oblique eclipse and no southern limit.

20:47:02 First contact Alice Springs Australia, top of Sun. Sun 7 deg high in SE
Six seconds later first contact Ayers Rock basically same apparition

20:51:23 First contact Stuart Hiway, where we viewed TSE Dec 4, 2002.
Sun 12 Deg alt, 17 deg CCW f V

20:56:48 Last place in Australia to witness C1 at sunrise, Albany (SW corner Aust)

21:00:00 Umbra is 3042 miles from first contact. Moon moving its own diameter every 56 minutes.

21:00:37 First contact Melbourne, 23 deg CCW v F, alt 23

(Continued on page 50)

TSE 2003

21:01:05 First contact Narrabeen Bay (Remember ýSurfiný USAý by the Beach Boys? ýYouýll catch ýem surfiný at (inside, outside USA)) Australiaýs Narrabeený
20 miles north of Sydney, NSW Contact 7 Deg CCW f V Sun alt 28 deg, az 97

21:07:40 First contact Hobart, Tasmania, 31 CCW f V, 26 alt

21:09:04 N Limit of Penumbra starts, 7.7 S, 126.5 E Indonesia, CW f V 57 Deg

21:17:04 Center of Moon aligned with left limb of Earth. 2388 miles from U1.

21:24:02 Max eclipse Alice Springs, 0.288 magnitude Sun up 15 deg in SE.

21:26:44 Max eclipse Ayers Rock, 0.352 magnitude Sun up 14 deg in SE

21:32:30 Last place in Australia to witness sunrise, North West Cape, mag 0.430

21:34:49 Max eclipse Stuart Hiway, mag 0.4, CW f V in ESE

21:39:46 First contact at south magnetic pole (away from which compass needles point)
left side of Sun, 26 deg alt, 83 azim

21:40:25 First contact for the continent of Antarctica,
Cape Carr, -66 S, 130.5 E
Sun alt 22 deg, azim 91, 76 Deg CCW f V

21:40:40 First contact Cape Go odenough, Antarctica -66.2 S, 126 E

21:40:56 First contact Cape Poinsett, Antarctica
Sun 15 deg alt, azim 106, 81 CCW f V

21:42:18 Max eclipse Narrabeen, NSW Australia

21:43:20 First contact Christchurch, NZ 12 CCW f V, alt 51, azim 66

21:47:18 First contact Mirny Station, 88 deg CCW f V
21:47:22 Max eclipse Melbourne, 30CW v F, alt 32, azim 92, mag 0.41

21:48:33 Khlebnikov first contact

21:50:51 First contact at intercept point.

21:57:31 Max eclipse Hobart, Tasmania, 25 ccw f v, 36 alt, 85 az, mag 0.458

22:00:00 Umbra 742 miles from landing on Earth

22:05:22 Lake Vostok, 170 x 30 mile liquid lake, 2.5 miles beneath ice sheet
Unfrozen for 15 million years. First contact, 93 CCW f V, alt 18

Essentially this is the same spot as the geomagnetic south pole, the location of the axis of the the centre of the region in the magnetosphere in which the Aurora Australis can be seen.

22:03:08 Last contact Alice Springs. On right side of Sun, Sun 24 deg high

22:08:50 Last contact Ayers Rock at 3 oýclock spot, Sun up 23 deg in SE

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