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SOLAR ECLIPSE NEWSLETTER

August 2003

SOLAR ECLIPSE NEWSLETTER

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The Solar Eclipse Mailing List

The Solar Eclipse Mailing List (SEML) is an electronic newsgroup dedicated to Solar Eclipses. Published by eclipse chaser Patrick Poitevin.

solareclipsewebpages@btopenworld.com

It is a forum for discussing anything and everything about eclipses.

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

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

The sole Newsletter dedicated to Solar Eclipses

Dear All,

Still catching up on the past busy months. At least this issue is not that late. It is only mid August and we have the Newsletter ready. Joanne and I are still catching up on the house we recently did. In addition, work is not restful either. A lot of travelling for both and I just returned from a 10 day trip in the far east.

Time to start with the registrations for the International Solar Eclipse Conference for next year August 2004. Time to start the update of the WebPages and make the first official announcements. The program is as ready as can be and there is no space for additional speakers. There are still speakers whom want to introduce their papers. Unfortunately we have to leave them on the waiting list and hope we can find a solution to have all speakers a space during the conference.

We also received the video State of Dogs, as a gift from our good friend Derryl Barr. Our book and video library is very large and we have to update our reference list. One day we will have time to do all ...

We also got nice and good recommendations for the newsletter and indirectly for the mailing list. We will change the front and back page of the newsletter next time. It will reduce the size of the file, easier to download and avoid duplication. We also hide the true e-mail addresses of the subscribers or contributors. SPAM and Hackers are everywhere and we can not be careful enough. Thank you to those whom made the recommendations and comments. It is very much appreciated.

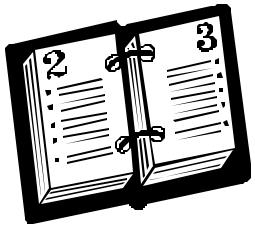
Many of us are ready for the next total solar eclipse. Or by plane or by boat. But it looks like many will witness the eclipse. We are looking forward to see your contribution sin this newsletter. Joanne and I will pass on this one though. But our hearts will be with you. One day we want to observe from the air, and maybe one day from the south pole ...

Cheers,

Joanne and Patrick

Derryl Barr, Joanne and Laura in Scotland

SECalendar



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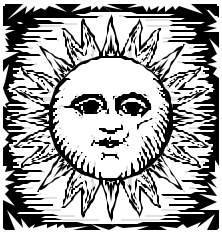

Dear All,

Please find herewith the solar eclipse calendar (SECalendar) for August. 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

August 01, 1818 Birth of Maria O. Mitchell (1818-?), American astronomer. Observer of sunspots, discovered a comet in 1947 and was calculator at the American Nautical Almanac. (ref. DD 7/98)

August 01, 2008 The total solar eclipses of 9 March 1997 and 26 February 1998 were less then 365 days apart. This was the last time two TSE happened in less then a year's time. The next occurance is the two total solar eclipses of 4 December 2002 and 23 November 2003. After that we have the duo TSE year of 1 August 2008 and 22 July 2009, and 22July 2009 and 11 July 2010. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002. Patrick Poitevin observed following similar duo's: 1990-1991, 1991-1992, 1994-1995, 1997-1998. He will miss the duo 2002-2003 because of the missing Antarctic eclipse.

August 02, 1133 "Duke Frederick . . . set fire to the town of Augsburg and killed many of its citizens . . . An eclipse of the Sun occurred on the 4th day before the Nones of August at midday for about an hour, such as is not seen in a thousand years. Eventually the whole sky was dark like night, and stars were seen over almost the whole sky. At length the Sun, emerging from the darkness, appeared like a star, afterwards in the form of a new Moon; finally it assumed its original form." Refers to a total solar eclipse in Augsburg of 2 August 1133. From: Honorii Augustodensis: Summa Totius et Imagine Mundi. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 392.

August 02, 1133 "In the year of the Incarnation of our Lord 1133 . . . on the 4th day before the Nones of August (Aug 2), the 4th day of the week (Wednesday) when the day was declining towards the ninth hour, the Sun in a single moment became as black as pitch, day was turned into night, very many stars were seen, objects on the ground appeared as they usually do at night." Refers to a total solar eclipse in Heilsbronn, Germany, of 2 August 1133. From: Notae Halesbrunnenses. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 392.

August 02, 1133 "In this year King Henry went over sea at Lammas, and the second day as he lay and slept on the ship the day darkened over all lands; and the Sun became as it were a three-night-old Moon, and the stars about it at mid-day. Men were greatly wonder-stricken and were affrighted, and said that a great thing should come thereafter. So it did, for the same year the king died on the following day after St Andrew's Mass-day, Dec 2 in Normandy." The Anglo Saxon Chronicle Refers to the total solar eclipse of 2 August 1133. (Quoted in UK Solar Eclipses from Year 1 by Williams.)

August 02, 1133 "That great eclipse of the Sun occurred on the 4th day before the Nones of August, the 27th day of the Moon, the 13th year of the Indiction. After midday, between the 7th and 8th hours, an eclipse of the Sun was seen in Leo . . . Very many stars were seen near the Sun; the hearts of many were transfixed, despairing of the light. The Sun, as if it did not exist was entirely concealed; for about half an hour it was like night. The face of the world was sad, terrible, black, wonderful." Refers to a total solar eclipse of 2 August 1133. From: Chronicon Magni Presbyterii. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 393.

August 02, 1133 "The elements manifested their sorrow at this great man's [King Henry 1] departure from England. For the Sun on that day at the 6th hour shrouded his glorious face, as the poets say, in hideous darkness, agitating the hearts of men by an eclipse; and on the 6th day of the week early in the morning there was so great an earthquake that the ground appeared absolutely to sink down; an horrid noise being first heard beneath the surface." Refers to the total solar eclipse of 2 August 1133. William of Malmesbury Historia Novella, Lib. i sec.8. Quoted in UK Solar Eclipses from Year 1 by Williams.

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August 02, 1133 The last total solar eclipse at Jerusalem took place on 1133 August 2. The next total solar eclipses will be 2241 August 8, 2548 August 5, and 3275 July 15. There was also a total eclipse on 993 August 20, only 140 years before that of 1133. (ref. ENB013)

August 02, 1880 Greenwich time became civil time for England, Scotland and Wales. (ref. DD 7/98)

August 02, 2046 Two total solar eclipses at an interval of only 12 lunations (354 days) are possible, such as 12 August 2045 and 2 August 2046 in the Atlantic Ocean off the coast of Brazil. But together with the total solar eclipse of 30 April 2060, this is a trio occurring in a time span shorter than 20 year. This is the next trio. The last trio was over a part of Kazakhstan, east of the Aral Sea when the paths of the total eclipses of 21 September 1941, 9 July 1945 and 25 February 1952 passed. In the period 1401 - 30-0 there are 77 trios, each occurring in a time span shorter than 20 year. (Ref. JM 9/99)

August 03, -0430 (431 BC) "The same summer, at the beginning of the new lunar month (the only time by the way at which it appears possible), the Sun was eclipsed after noon. After it had assumed the form of a crescent, and some of the stars had come out, it returned to its natural shape." Refers to an annular solar eclipse of 3 August (29 July) 431 BC. Thucydides (Greek historian, c460-400 BC) History of the Peloponnesian War. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 346, and, in part, in Encyclopaedia Britannica CD 98. Ref FE 01/01.

August 03, -0430 (431 BC) Oldest European record of a verifiable solar eclipse (annular), by the Greek historian Thucydides.

August 03, 1872 Charles A. Young (US) observes a flare on the Sun with a spectroscope; he calls attention to its coincidence with a magnetic storm on Earth.

August 03, 1981 Minor planet (3115) Baily 1981 PL. Discovered 1981 August 3 by E. Bowell at Anderson Mesa. Named for Francis Baily (1774-1844), English astronomer and one of the founders of the Royal Astronomical Society. During his observation of the total solar eclipse of 1836 he noticed intrusions of sunlight around the Moon's limb, which have become known as Baily's beads. (M 10847) Name proposed by the discoverer following a suggestion by B. Hetherington. Baily is also honored by a lunar crater. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

August 03, 1998 First contact with SOHO (ESA) after more then one month silence. Ref. DD. 10/99.

August 05, 0761 Of the 14 summits 8000 meters, only Nanga Parbat witness totality on August 761. It happens again at the total solar eclipses of 10 July 967 and 24 August 2435. Ref PA 6/00

August 05, 1766 Cook 3061 (1982 UB1): Minor planet discovered October 21, 1982 by E. Bowell at Anderson Mesa. Named for James Cook (1728-1779), British circumnavigator and one of the first scientific navigators. He observed the Solar Eclipse of 1766 August 5 from Newfoundland and in 1769 measured the transit of Venus from Tahiti. MPC 10846. Named proposed by the discoverer. (ref. VK 6/97)

August 05, 1766 Eclipse observed southeast of Newfoundland: Eclipse Island (part of Burgeo Islands). Mentioned in the Chronology of Captains James Cooks (1728-1779) travels by Paul Capper. (ref. ENB 8)

August 06, 1618 Johannes Kepler determent the distance to the sun to be 22,5 milj km. (ref. DD 8/98)

August 06, 1766 Birth of William Hyde Wollaston (1766-1828), British Doctor and chemist. He saw in 1802 the Fraunhoferlines in the Solar spectrum but considered it as a limitation of colors. (Ref DD 8/99, Rc 1999)

August 06, 1963 Lost contact with OSO 1, American Orbiting Solar Observatory. Ref DD 10.99.

August 07, 1869 Charles Augustinus Young and William Harkness (US) independently discover a new bright (emission) line in the spectrum of the Sun's corona, never before observed on earth; they ascribe it to a new element and it is named coronium. In 1941, this green line is identified by Bength Edlén (Sweden) as iron that has lost 13 electrons.

August 07, 1869 In the US town Cincinnati, the last total solar eclipse was in 1395. The next total solar eclipse will be in 3046,

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an extremely long period without total solar eclipse. In this period, there are two near misses: 7 August 1869, a near total solar eclipse, magnitude 0.993; and 8 April 2024 an even more near-miss : magnitude 0.996. (ref. JM 7/99)

August 07, 1869 The Baily's beads were first photographed at the eclipse of August 7, 1869 by C. F. Hines and members of the Philadelphia Photographic Corps, observing from Ottumwa, Iowa.

August 07, 1981 Minor planet (3727) Maxhell 1981 PQ. Discovered 1981 August 7 by A. Mrkos at Klet. Named in memory of Maximilian Hell (1720-1792), famous for his determination of the solar parallax from his observations of the transit of Venus in 1769. Appointed director of the Imperial Observatory in Vienna in 1755, he prepared and published an important series of astronomical ephemerides. (M 26424) Name suggested by astronomers at the Astronomical Institute at Tatranská Lomnica. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

August 07, 1985 Landing of STS-51F Challenger. 7 astronauts, Spacelab 2. Five telescopes on board study nearly continuous the sun and other stars. Ref. DD 10/99.

August 08, 2241 The last total solar eclipse at Jerusalem took place on 1133 August 2. The next total solar eclipses will be 2241 August 8, 2548 August 5, and 3275 July 15. And there will be one on 3381 May 16, only 106 years after that of 3275. (Ref. ENB013)

August 09, 0975 "The Sun was eclipsed . . . . Some people say that it was entirely total. During the hours mao and ch'en (some time between 5 and 9 h) it was all gone. It was the colour of ink and without light. All the birds flew about in confusion and the various stars were all visible. There was a general amnesty (on account of the eclipse)." From: Nihon Kiryaku. "At the hour ch'en (7-9 h), the Sun was eclipsed; it was completely total. All under heaven became entirely dark and the stars were all visible." From: Fuso Ryakki. "The Sun was eclipsed; it was all gone. It was like ink and without light. The stars were all visible (or: stars were visible in the daytime)." From: Hyaku Rensho. These three Japanese quotations refer to a total solar eclipse of 9 August AD 975. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, pages 267 and 268.

August 09, 1819 Birth of J. Lane, American physicist and astronomer. Studied the sun: solar physics, temperature and density. (ref. DD 8/98)

August 09, 1896 "If, during the progress of a total [solar] eclipse, the gradually diminishing crescent of the sun is watched, nothing remarkable is seen until very near the moment of its total disappearance. But, as the last ray of sunlight vanishes, a scene of unexampled beauty, grandeur, and impressiveness breaks upon the view. The globe of the moon, black as ink, is seen as if it were hanging in mid-air, surrounded by a crown of soft, silvery light, like that which the old painters used to depict around the heads of saints. Besides this "coronao, tongues of rose-coloured flame of the most fantastic forms shoot out from various points around the edge of the lunar disk. Of these two appearances, the corona was noticed at least as far back as the time of Kepler; indeed, it was not possible for a total eclipse to happen without the spectators seeing it. But it is only within a century that the attention of astronomers has been directed to the rose-coloured flames, although an observation of them was recorded in the Philosophical Transactions nearly two centuries ago. They are known by the several names of "flames," "prominences," and "protruberances."" Simon Newcomb Popular Astronomy 1890 See Exploratorium: Eclipse Expeditions, 1890. Albert Bergman, On Board the Pensacola - The Eclipse Expedition to the West Coast of Africa in A Man Before the Mast, 1890. See Exploratorium: Eclipse Expeditions, 1896. Corona and Coronet: Being a Narrative of the Amherst Eclipse Expedition to Japan, in Mr James's Schooner-Yacht Coronet, to Observe the Sun's Total Obscuration, 9th August, 1896. A particularly evocative account, by Mabel Loomis Todd. Published in 1898. Ref FE 01/01

August 09, 1911 Birth of William Alfred Fowler in Pittsburgh, Pennsylvania. Ref. The Bibliographical Dictionary of Scientists, edited by David Abbott, 1994.

August 09, 1953 Minor planet (1652) Hergé 1953 PA. Discovered 1953 August 9 by S. Arend at Uccle. Named in honor of Georges Remi, better known under his pseudonym Hergé, on the occasion of his seventy-fifth birthday. Considered by many as the father of the comic strip, he created his hero Tintin in 1929. (M 6831) Name proposed by J. Meeus. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. The Tempel of the Sun describes a total solar eclipse. That eclipse refers to the TSE of 1944.

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August 11, 1124 "In the month of August on the 11th day, before the evening service, the Sun began to diminish and perished completely. Great fright and darkness everywhere. And the stars appeared and the Moon (sic). And the Sun began to augment and became full again and everyone in the town was very glad." Refers to a total solar eclipse in Novgorod, Russia, of 11 August 1124. From: Novorodskaya I Letopic. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 391.

August 11, 1835 In 1835, Sir George Biddell Airy (1801-1892) began his 46 year reign as England's Astronomer Royal. Airy is known for his study on solar eclipses.

August 11, 1999 Last total solar eclipse in Europe and Asia. About 500 million observers expected to be in the path of totality. After 1999, for Belgium it was since 17 June 1433 when there was a total solar eclipse.

August 11, 2001 First Totality Day. TD2001 was held in the Open University of Milton Keynes (England) as a continuation of De Duistere Dag (The dark day) which PP organized in Belgium. Speakers at TD2001 were Prof. Ken Phillips, Prof. Richard Stephenson, Dr. Francisco Diego, Ass. Prof. Jim Huddle (US), Dr. Francis Podmore (Zimbabwe), Dr. Edward Hanna, Dr. Barrie Jones, Sheridan Williams, Daniel Fischer (Germany), David Hardy, and Joanne Edmonds. Video's from Richard Bareford (US) and Wolfgang Strickling (Germany). The 75 attendees were from 7 different countries.

August 12, 0603 Last total solar eclipse on Malta. There was a nearly total solar eclipse on 3 June 718, with a magnitude of 0.999. Maybe this eclipse was total when we use a different value of delta T. (Ref. JM 7/99)

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

August 12, 2045 Last trio of total solar eclipses at one place on earth and occurring within a span less then 20 years happened in 1941. The total solar eclipses of 21 September 1941, 9 July 1945 and 25 February 1952 were visible in Kazachstan east of Aral Sea in a span of 10.4 years. The next trio will be in 2045, where there will be total solar eclipses on 12 August 2045, 2 August 2046 and 30 April 2060 visible from the Atlantic Ocean off the coast of brasil in 14.7 years. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

August 13, 1814 Birth of Anders Jonas Angstrom (1814-1874), Swedish astronomer and physicist, pioneer in the spectroscopy and spectra analysis. He found the relation between the fraunhoferlines in the solar spectra and the discontinue spectra of hot gases. Showed some elements in the atmosphere of the sun. Published in 1868 the atlas of the solar spectra. His name is used for the angstrom 10-10m. (ref. DD 8/98, Rc 1999)

August 14, 0733 "In this year Aethelbald captured Somerton; and the Sun was eclipsed, and all the Sun's disc was like a black shield; and Acca was driven from his bishopric." The Anglo Saxon Chronicle.Refers to the annular solar eclipse of 14 August AD 733.(Quoted in UK Solar Eclipses from Year 1 by Williams, and in The Sun in Eclipse by Maunder and Moore, who say it refers to an eclipse of AD716.)

August 14, 0733 "In the year 733 an eclipse of the Sun occurred on the 19th day before the Kalends of September (i.e. Aug 14), about the third hour of the day, with the result that almost the whole of the Sun's disc seemed to be covered by a black and horrid shield." Refers to an annular solar eclipse in northern England of 14 August AD 733. From: Bedae Continuato. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 422.

August 14, 0733 "One year after the Arabs had been driven back across the Pyrenees after the battle of Tours, the Sun was so much darkened on 19th [?] August as to excite universal terror." Refers to the annular eclipse of 14 August AD 733. From: The Chronik der Seuchen. Quoted in UK Solar Eclipses from Year 1 by Williams.

August 14, 1901 Minor Planet (475) Ocllo Discovered 1901 August 14 by D. Stewart at Arequipa. Named by the discov-

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erer for the first Inca queen, by tradition daughter of the Sun. (AN 159, 129 (1902)) This is the first minor planet discovered in South America and also the first discovered in the southern hemisphere. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

August 15, -0309 (310 BC) "Agathocles, who was already at the point of being overtaken and surrounded, gained unhoped for safety as night closed in. On the next day there occurred such an eclipse of the Sun that utter darkness set in and the stars were seen everywhere; wherefore Agathocles' men, believing that the prodigy portended misfortune for them, fell into even greater anxiety about the future. After they had sailed for six days and the same number of nights, just as day was breaking, the fleet of the Carthaginians was unexpectedly seen far away." Refers to a solar eclipse of 15 August 310 BC. From: Diodorus Siculus (Greek historian, 1st century BC), Library of History. Agathocles was a tyrant who had made his escape, with a fleet of sixty ships, from a blockade at Syracuse harbour by the Carthaginians. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 348, and, in part, in Encyclopaedia Britannica CD 98. Ref FE 01/01.

August 16, 1920 Sir Joseph Norman Lockyer (1836-1920) died August 16th, 1920, at Salcombe Hill, Devon. Sir Joseph Norman Lockyer (1836-1920), British physicist and astronomer was born at Rugby on May, 17th 1836 to Mr. Joseph Hooley Lockyer, a lecturer on scientific subjects at Rugby School and his wife Anne Norman. Sir Joseph Norman Lockyer (1836-1920) founded the magazine Nature in 1869. Observed the sun and discovered one unknown line in the spectra: helium. Observed 8 total solar eclipses. Passed away August 16, 1920 in Salcombe Regis, Devon England. Ref. Bibliography of Astronomers by Paul Luther, 1989.

August 16, 1984 Launch of AMPTE, three British satellites which study the solar wind and the interaction with the atmosphere. (ref. DD 8/98)

August 16, 1989 Minor Planet (4713) Steel 1989 QL. Discovered 1989 August 26 by R. H. McNaught at Siding Spring. Named in honor of Duncan Steel, Anglo-Australian astronomer who has conducted research on the origin and evolution of asteroids, comets and meteoroids. In particular, he has shown that several Apollo asteroids are the parents of meteor showers, indicating that these Apollos are likely to be extinct or moribund cometary nuclei. He has also worked extensively on radar observations of the meteoric influx to the atmosphere, planetary impact rates, and the dynamics of small solar system bodies. (M 17982) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. Duncan Steel recently wrote a book about eclipses.

August 17, 1966 Launch of Pioneer 7, American solar satellite. Studied prominences and solar atmosphere. (ref. DD 8/98)

August 18, -0179 (180 BC) "Empress of Kao-tzu, 7th year, first month, day chi-ch'ou, the last day of the month. The Sun was eclipsed; it was total; it was 9 deg in (the lunar lodge) Ying-shih, which represents the interior of the Palace chambers. At that time the (Dowager) Empress of Kao-[tzu] was upset by it and said, 'This is on my account'. The next year it was fulfilled." Pan Ku Han-shu (AD 58-AD76). "On the day chi-ch'ou, the Sun was eclipsed, and it became dark in the daytime. The Empress Dowager was upset by it and her heart was ill at ease. Turning to those around her she said, 'This is on my account.'" Szu-ma Ch'ien Shih-chi Both of these quotations refer to a total solar eclipse of 4 March 181 BC. The Empress died on 18 August 180 BC. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 234.

August 18, 1868 During the eclipse of 18 August 1868 from the Red Sea through India to Malaysia and New Guinea, prominences are first studied with spectroscopes and shown to be composed primarily of hydrogen by James Francis Tennant (1829-1915), UK, John Herschel (1837-1921, UK - son of Sir John Frederick William Herschel 1792-1871, grandson of Sir William Herschel 1738-1822), Pierre Jules Cesar Janssen (1824-1907, France), George Rayet (France), and Norman Pogson (UK/India). All observers did see the spectra for a few moments. Pierre Jules Cesar Janssen (1824-1907) was so fascinated that he looked the next day when there was no eclipse. He saw the bright red line which he saw the day before. It was the first time that a prominence had been observed without an eclipse. A few days later, Sir Joseph Norman Lockyer (1836-1920) did the similar discovery. (ref. HD 1954, Rc 1999)

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August 18, 1868 In his book Les Eclipses de Soleil, M.G. Bigourdan published a sketch of an eclipse of , made by Bullock in Manila and on which a comet like object, starting from the edge of the sun and moon. This sketch is also published in the book of Angelo Secchi (1818-1878), but no other numerous eclipse observer noticed the comet.

August 18, 1868 Pierre Jules Cesar Janssen (1824-1907, France) discovered helium in the spectrum of the Sun during a solar eclipse. (ref. Rc 1999)

August 19, 1646 Birth of John Flamsteed (1646-1719) who observed the 1715 solar eclipse from Greenwich. (Ref. Rc 1999)

August 19, 1887 Dmitri Ivanovich Mendeleeff (1834-1907), Russian. Uses a balloon to ascend above the cloud cover to an altitude of 11.500 feet (3.5 km) to observe an eclipse in Russia.

August 20, 1514 "At the hour of wu (i.e. between 11 and 13 h) the sun was eclipsed. The sky and Earth became dark in the daytime. All the birds flew about in alarm. The domestic animals went into the forest. At the hour of yu (17-19 h) the light came back." From: Fu-ning Chou-chih (local history of Fu-ning county). "At the hour of wu suddenly the Sun was eclipsed; it was total. Stars were seen and it was dark. Objects could not be discerned at arm's length. The domestic animals were alarmed and people were terrified. After one (double-) hour it became light." From: Chiang-hsi (Jiangsi) province. Both of these quotations refer to a total solar eclipse of 20 August 1514. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 261.

August 20, 2004 Next International Solar Eclipse Concerence (SEC2004) will be in the Open University of Milton Keynes, England on August 20 - 21 - 22.

August 21, 1560 Christoph Clavius (1537-1612) witnessed two spectacular Eclipses of the Sun in the space of 7 years. "One of these I observed about midday at Coimbra in Lusitania (Portugal) in the year 1559 (after calculations it was 1560), in which the Moon was placed between my sight and the Sun with the result that it covered the whole Sun for a considerable length of time." (ref. EJ 97)

August 21, 1560 In "Name in the Window" Margaret Demorest proposes that Shakespeare. sonnets, nos 1-109, incorporate a calendar for the years 1501-1609, each sonnet corresponding to a year. The 3 appearances of the word Eclipse have been investigated by Peter Nockolds. "Nativity once in the maine of light, Crawles to maturity, wherewith being crown'd, Crooked eclipses gainst his glory fight." An Eclipse was indeed Partial. (ref. ENB012)

August 21, 1977 Minor Planet (4010) Nikol'skij 1977 QJ2. Discovered 1977 August 21 by N. S. Chernykh at Nauchnyj. Named in memory of Gennadij Mikhajlovich Nikol'skij (1929-1982), Soviet astronomer, known for his research on the sun and the solar corona and as a codiscoverer of the solar wind. (M 19695) Obituaries published in Zemlya Vselennaya, No. 3, p. 33-34 (1983); Properties and interactions of interplanetary dust, p. XXIII-XXIV (1985). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

August 21, 2017 Next total solar eclipse in the USA. The southern part of Illinois will have 2 total solar eclipses in a time span of only 7 years. The next total solar eclipse after this one will be on 8 April 2024. (Ref. JM 9/99). Thereafter the next total solar eclipse is on 30 March 2033. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

August 22, 1834 Birth of Samuel Pierpont Langley (1834-1906), American astronomer and physicist. Developed a bolometer and determent the value of the solar constant. (ref. DD 8/98, Rc 1999)

August 22, 1906 Minor Planet (754) Malabar Discovered 1906 August 22 by A. Kopff at Heidelberg. Named in remembrance of the Dutch-German solar eclipse expedition to Christmas Island in 1922. Malabar is a city and mountain on Java. (I. van Houten-Groeneveld; B. Hidayat) The naming is described in AN 218, 253 (1923): "Aus Anlass der holländisch-deutschen Sonnenfinsternis-Expedition nach Christmas Island wurde der Planet der Niederländisch-Indischen Sternkundigen-Vereinigung zur Benennung überlassen als Zeichen des Dankes für die der Expedition zuteil

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gewordene Förderung. Herr K. A. R. Bosscha auf Malabar (Java), der Vorsitzende der Vereinigung, erteilte ihm den Namen." Bosscha and his friend Kerkhoven determined that after their death a great part of their capital should be put into a fund to serve astronomy in the Netherlands and Indonesia. In 1954 the Kerkhoven-Bosscha-Fund was established in Leiden. In the course of the years this fund has grown and helps today the Dutch and Indonesian astronomy in many ways. Bosscha dedicated the name to the Malabar mountain, 40 km south of the city of Bandung, location of his beautifully cultivated tea plantations. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

August 22, 2408 At a spot in the Sea of Okhotsk there will be 4 total solar eclipses in a span of 15,6 years. The total solar eclipses are 22 August 2408, 10 April 2415, 13 August 2417 and 31 march 2424. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

August 25, 1997 Launch of Advanced Composition Explorer (US) for solar study and study of the composition of solar-wind. (ref. DD 08/98)

August 25, 2929 An eclipse season without a solar eclipse, but a fictive eclipse on 25 August 2929 followed by 17 July 2930. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

August 26, 1718 A region in the southwestern Pacific Ocean did not had a solar eclipse for 20.86 years, between the solar eclipse of 15 October 1697 and 26 August 1718. One saros later, no solar eclipse was seen between 27 October 1715 and 5 September 1736. A period of again 20.86 years. The region is in the southern Indian Ocean. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

August 26, 1865 Death of Johann Franz Encke (1791-1865), German astronomer. Studied the comet with the same name, discovered the gap in the A-ring of Saturn and determent an accurate value of the solar parallax. The Royal Society mentioned the death to be 26 or 28 August 1865. (ref. DD 8/98, Rc 1999)

August 26, 1962 Launch of Mariner 2 (US). Passed Venus and discovered solar wind. (ref. DD 8/98)

August 27, 1998 The Minor Planet Circulars published following on March 18, 2003: (14120) Espenak = 1998 QJ54 Discovered 1998 August 27 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station. Fred Espenak Jr. (b. 1952), of NASA Goddard Space Flight Center, is widely recognized for his calculations of solar eclipses, his magnificent maps of these phenomena and his book 'Totality: Eclipses of the Sun'. Ref. SENL April 2003.

August 28, 0360 "It was almost total and was in Chueh. Whenever an eclipse covers a small portion of the Sun the calamity it brings will be relatively small, but when it covers a large portion of the Sun the consequences will be much more serious. Chueh forms the 'Celestial Entrance', and hence misfortune would fall upon the Head of State - the next year the Emperor died." Refers to a solar eclipse of 28 August AD 360. From: Chin-shu ('History of the Chin Dynasty', Chinese). Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, pages 232 and 241.

August 29, 1886 Bettina 250: Minor planet discovered 1885 September 3 by Johann Palisa at Vienna. Named for Baroness Bettina von Rothschild of the Austrian plutocratic family. In Observator, Vol 8 p 63 (1885) the following info was published: "Herr Palisa, being desirous to raise funds for his intended expedition to observe the Total Solar Eclipse of August 29, 1886 will sell the right naming the minor planet N°244 for 50 English Pounds"... (ref. VK 97)

August 30, 1844 Death of Francis Baily (1774-1844) in London, British amateur astronomer. Co-founder of the Royal Astronomical Society, of which he was president for years. Described the after him called Baily's beads. (ref. DD 8/98, Rc 1999). Born in Newbury Berkshire, 28 April 1774. Ref. The Bibliographical Dictionary of Scientists, edited by David Abbott, 1994.

August 30, 1905 In "Chasing Eclipses" by Rebecca R. Joslin (Walton Ad-vertising and Printing, 1929).Spain. "Then as the moon moved slowly on, and off, the sun faintly pierced the cloud and lighted the earth and life returned. But we

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hardly had time to draw a breath, when suddenly we were enveloped by a palpable presence, inky black, and clammy cold, that held us paralyzed and breathless in its grasp, then shook us loose, and leaped off over the city and above the bay, and with ever and ever increasing swiftness and incredible speed swept over the Mediterranean and disappeared in the east-ern horizon. Shivering from its icy embrace, the seized with a superstitious terror, we gasped, "What was That?" Had the terrible Horsemen of the Apocalypse been riding over the city, and had we stood in their pathway? Had the An-gel of Death held us in his arms for a moment, and then, as our time had not yet come, thrown us off for a little longer stay on earth? The look of consternation on M's face lingered for an instant, and then suddenly changed to one of radiant joy, as the triu m-phant reply rang out, "That was the Shadow of the Moon!" Ref. SENL 02.02

August 30, 1981 Minor planet (3123) Dunham 1981 QF2. Discovered 1981 August 30 by E. Bowell at Anderson Mesa. Named in honor of David W. Dunham, American astronomer and organizer of the International Occultation Timing As-sociation. Dunham has played a cardinal role in collecting and analyzing occultation observations, particularly those in-volving asteroids and grazing occultations by the Moon. In addition, he has stimulated many observers to make accurate and useful timings of occultation phenomena. (M 10847) Name proposed by the discoverer following suggestions by E. Goffin and P. L. Dombrowski. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. Dunham studies de diameter of the sun by his grazing (central) solar eclipses.

August 30, 1991 Launch of the Japanese solar mission Yohkoh (Solar-A). Study of prominences and other processes in roentgen and UV. (ref. DD 8/98)

August 31, 1821 Birth of Hermann L. F. von Helmholtz, Du. physiologist, doctor and physicist. In 1834 he mentioned that the contraction of material the cause was of energy on the sun. He calculated that the sun could remain for 15 mil years if it contracted 60 m per year. (Ref DD 08/99)

August 31, 1932 G.G. Cillie (UK) and Donald H. Menzel (US) uses eclipse spectra to show that the Sun's corona has a higher temperature (faster atomic motion) than the photosphere. Confirmed, with much higher temperature, by Roderick Oliver Redman (1905-1975) during an eclipse in South Africa on October 1, 1940. (ref Rc 1999)

August 31, 1979 Comet Howard-Koomur-Michiels collapsed on the sun. (ref. DD 8/98)

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

Best regards, Patrick and Joanne

solareclipsewebpagesSENL200308btopenworld.com
http://solareclipsewebpages.users.btopenworld.com

SECalendar for August - Israel

From: Joan Griffith To: HASTRO-LSENL200308LISTSERV.WVU.EDU Date: Sun, 27 Jul 2003 04:35:56

Hi, How Can you tell what kind of eclipse will occur, or can you? For example, the amazing total eclipse that lasted an hour in 1133 and was seen from England to Jerusalem mentioned in the email. It says the next such eclipse will be in (2241?). Joan

From: Patrick Poitevin

The 1133 solar eclipse was total in the current boundaries of the country Israel. It is until 2241 when there is a total solar eclipse again in Israel.

A total solar eclipse does not last an hour in totality. Darkness can be noticed for about an hour, but that is including the partial phases before and after totality. Best regards, Patrick

SECalendar

SECalendar - M. Mitchell death date

From: corbin.brendaSENL200308usno.navy.mil To: solareclipsewebpagesSENL200308btopenworld.com Date: Mon, 28 Jul 2003 18:28:24

Hello Patrick, Maria Mitchell died in 1889.

>August 01, 1818 Birth of Maria O. Mitchell (1818-?), American astronomer. Observer of sunspots, discovered a >comet in 1947 and was calculator at the American Nautical Almanac. (ref. DD 7/98) All the best... Brenda - Brenda G. Corbin, Librarian Phone: 202/762-1463 U. S. Naval Observatory Fax: 202/762-1083 3450 Massachusetts Ave., N.W. Washington, D.C. 20392-5420 e-mail:corbin.brendaSENL200308usno.navy.mil USNO Library Home Page: http://www.usno.navy.mil/library/ Direct link to online catalog: http://moon.usno.navy.mil/urania.htm

From: Bob Garfinkle

Hi List, Maria Mitchell gained fame for her discovery of a comet in 1847, not 1947 as Patrick Poitevin wrote in his message of July 26, 2003. Her comet is Comet 1847 VI, discovered on October 2, 1847 (Universal Time). The discovery magnitude was 6.0. Take care. Robert A. Garfinkle, F.R.A.S. 32924 Monrovia Street Union City, CA 94587 USA E-mail: ragarfSENL200308earthlink.net

From: AlcovedbaseSENL200308aol.com

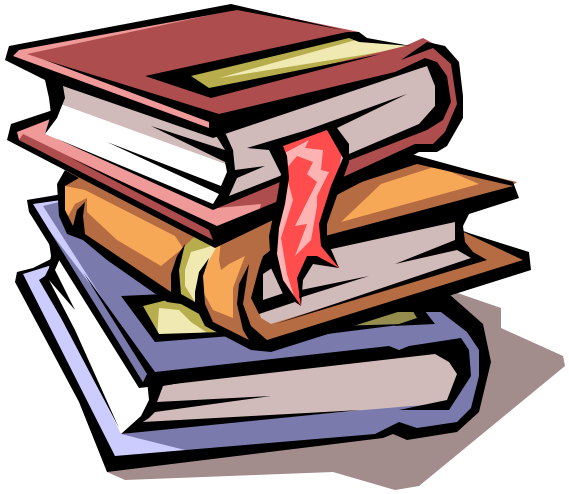
Hi Patrick, Maybe you can remember my sending you almost the same message last year in August. Being primarily an accomplished variable star observer, I was more than surprised to find a "?" for the date of passing away for Maria Mitchell on your calendar (once again this year). As you can see from several links I have provided below, Mitchell who was one of the most famous American scientists of the 19th century and the first female professor of astronomy in the US, was born on August 1, 1818, on the island of Nantucket in Massachusetts. She died in Lynn, MA on June 28, 1889.

The following website includes a brief biography, transcripts of newspaper articles about her trip to Colorado for the eclipse of 1878, and a chapter from her journals: Maria Mitchell: Life, Letters, and Journals: http://physicsandastronomy.vassar.edu/mariamitchell/

Maria Mitchell Association through the Maria Mitchell Astronomical Observatory on the island of Nantucket honors this remarkable scientist by providing research opportunities to numerous variable star astronomers.

More information on M.Mitchell can be found at:
http://www.mmo.org
http://cannon.sfsu.edu/~gmarcy/cswa/history/mitchell.html
http://www.lucidcafe.com/library/95aug/mitchell.html
http://www.lkwdpl.org/wihohio/mitchell.htm
http://www.lkwdpl.org/wihohio/mitc-mar.htm
http://www.astr.ua.edu/4000WS/MITCHELL.html
http://www.fablevision.com/northstar/favorite/mmitchell.html

Clear skies! Haldun I. Menali Amateur Astronomer, Investment Banker Boston, MA Member and Observer; ATMoB, AAVSO, AFOEV, BAA http://members.aol.com/astroalcove/index.html



SEScannings

Solar Eclipse Newsletter June and July 2004 ONLINE

From: solareclipsewebpagesSENL200308btopenworld.com To: SOLARECLIPSESSENL200308aula.com Date: Thu, 31 Jul 2003 21:49:09

Dear All, With delay, the Solar Eclipse Newsletter June and July 2003 are on line. See our webpages at

http://solareclipsewebpages.users.btopenworld.com/SENL_files/SENL.html

The newsletters are also available on the webpages of Mr.Eclipse Fred Espenak/NASA at

See: http://www.MrEclipse.com/SENL/SENLinde.htm

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

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

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

Delta T

From: Jean Meeus Date: Thu, 03 Jul 2003 20:43:47

On 2003 June 1, the difference between the uniform Dynamical Time and the Universal Time was Delta T = 64.56 seconds. This is an increase of only 0.14 second since 2002 June 1. Jean Meeus

From: Jean Meeus Date: Sat, 02 Aug 2003 05:55:46

On 2003 July 1, the difference Delta T between the uniform Dynamical Time and the Unib-versal Time was 64.55 seconds. Jean Meeus

They refused

From: KCStarguySENL200308aol.com To: SOLARECLIPSES-SENL200308aula.com Date: Wed, 02

Refused to get out of bed- out my.

I had just finished visiting Magnificent Victoria Falls in 2001 a couple days or so before the eclipse. While browsing curio shops, I ran into a couple and their two kids who were going on a safari in a few days,

I told them about the eclipse which they did not know about. I tried to convince them it would be great for the kids to see a total and to make some changes to their plans around the eclipse. They were hesitant and I doubt they borrowed my advice. Meanwhile two people (on my tape) confessed that unknowingly that they moved to the edge of the eclipse path in 1999 and saw only 1 or 2 seconds of totality. Sacra Bleu (is that how you spell it?)

A guy aboard the Canberra after the eclipse was shouting, "well you should have woken me up." Oh my

From: Carter Roberts

As I heard the story on the Canberra, a crewman forgot to wake that guy up. The other 1867 of us passengers saw it. Carter Roberts

From: Michel-Andre LEVY

Precisely : sacrebleu. Quite old-fashioned ... Michel-Andre Levy

SETalk

New Scientist article

From: Janita V Hill To: SOLARECLIPSES-SENL200308AULA.COM Date: Wed, 02 Jul 2003 15:27:20

Dear all, This is in a recent issue of the "New Scientist" magazine, which is perhaps the English equivalent of "Scientific American." "Inside Science" liftout section 1 - 4 pp 21st June 2003. "Celestial fire" (part of article copied here)

"Overlying this is 3000 kilometres of CHROMOSPHERE. Against the glare of the photosphere, the faint, rose-tinted chromosphere is invisible without special filters, but it becomes visible during total solar eclipses. (Looking directly at the sun without such filters, even during an eclipse, can permanently damage eyesight.) The characteristic red glow is emitted by excited hydrogen atoms in this hot, diffuse layer."

I am a bit worried about their explanation on chromosphere and eye damage. To me it reads as if the chromosphere is only visible during total solar eclipses, (as the pink bits on the edge), and suggests that even looking at this any time during a total eclipse can permanently damage sight. How do you read it? Incorrect? Or just sloppily worded? These liftout sections are intended for senior school students, I believe. "New Scientist" prides itself on 'getting it right'. cheers, Janita Hill

Extended explanation, (but not whole article) "The sun can be divided into distinct regions. The CORE hosts nuclear reactions and its radius is about 200,000 kilometres, roughly a quarter of the sun's total radius. At roughly 15 million kelvin, it's easily the hottest region. Overlying it is the calm RADIATIVE zone, where the dominant mechanism of outward energy transfer is radiation rather than convenction. Photons have to battle through this opaque zone, continually absorbed and re-emmitted. The radiative zone extends to about 70% of the sun's radius. Beyond it lies the CONVECTIVE zone. Here it is cool enough for a few heavy nuclei to capture eletrons, which allows them to block the energy flow more efficiently than bare nuclei. As a result, the pent-up energy sets up vast convection currents. These transport energy in the outer 29% of the solar interior.

A "Shell" of gas called the PHOTOSPHERE surrounds the convective zone. It may be a mere 500 kilometres thick, and is the region where the sun becomes transparent to radiation. It produces the light we see, and gives the sun the appearance of being a round ball rather than a much larger, diffuse cloud with no edge - which is what is actually is. Gas in the photosphere is very thin: its pressure is only a ten-thousandth of the Earth's atmosspheric pressure at sea level. (5,800 kelvin) (Sunspots - slightly cooler, 1000 degrees less, and darker than surrounding photosphere because strong magnetic fields suppress convection from hotter layers beneath. Overlying this is 3000 kilometres of CHROMOSPHERE. Against the glare of the photosphere, the faint, rose-tinted chromosphere is invisible without special filters, but it becomes visible during total solar eclipses. (Looking directly at the sun without such filters, even during an eclipse, can permanently damage eyesight.) The characteristic red glow is emitted by excited hydrogen atoms in this hot, diffuse layer. (10,000 kelvin) Last but not least comes the CORONA, also only visible during a total eclipse. this very rarefied ionised gas reaches 2 million kelvin - so hot it emits X-0rays. The corona merges seamlessly with the solar wind, an outflow of energetic particles that blows past the Earth and beyond. So the sun, having no edge, can't be said to have a surface at all."

From: Mike Simmons

Janita, I read it as you do -- warning observers not to look at the Sun without "special filters" at any time. They don't say if "even during an eclipse" includes totality or not but by that omission it seems to imply that totality is included, especially since they are referring to observing the chromosphere during the total phase. I think it's wrong and misleading rather than just sloppy. Mike Simmons

From: George Madden

It is, at the very least, a highly ambiguous statement. I would regard this as extremely poor writing irrespective of the source. That it comes from a 'science' magazine only makes it more egregious.

In following the Joe Cali thread, I find myself falling back on the "personal responsibility" angle. Here Janita provides more reason to take this position. High schoolers reading this (assuming they CAN read -- in the States that would be in serious question), will likely come away with a false impression and perhaps miss out on one of the more captivating stages of a TSE. Then too, they will probably repeat this false counsel sometime during their lifetimes if not corrected at some point.

Today I watched the setting sun at about 00:30 UTC with

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naked eyes. There was haze and a beautiful thunderstorm just to the south that added wonderful drama to the rare and 'ominous' lighting of the entire scene. I gladly took this 'risk' upon myself and was dearly rewarded for doing so. I don't need the solar police or anyone else denying me such pleasures. They are my eyes and I will decide whether to chance losing my sight. So far, so good. I've been looking at the sun more or less recklessly for 56 years and they only problems I have are nearsightedness and an inability to locate my blind spot without a lot of effort.

Janita, I thank you for this clip and suggest you draw the attention of the editors of "New Scientist" to the error they are propagating here. Best wishes, George Madden

From: Jay.M.PasachoffSENL200308williams.edu

Janita V Hill sent me her nice letter to New Scientist. I had already sent the following. It is my experience that letters have to be pretty short to be accepted, and even what I have below is longer than they may like. Perhaps I should have pointed out that they cited my book Nearest Star at the end of the article. I'd be pleased if Janita's letter or mine or one of the others gets used. One of the comments in my letter--about the importance of having accurate information given out by the government--pertains also to another thread on this Mailing List in recent days. I think that we shouldn't let false statements get by without challenge, and that it is not only us umbraphiles who need the right information. Incidentally, today I received the first copy of my new book: The Complete Idiot's Guide to the Sun, or, shall I say, "The Sun," in the series of [over 600] "Complete Idiot's Guides." For those of you who don't know, the series is a competition for the "...for Dummmies" books that is also very popular. See www.solarcorona.net/sun. Needless to say, there is extensive coverage of eclipses as well as of space-based and ground-based solar astronomy. Jay Pasachoff

From: Janita V Hill

Thank you Jay Pasachoff for your wonderfully succinct letter to New Scientist. I am relieved to read that you had independently already picked up on the error. I will look forward to scanning my future "New Scientist" issues to see how the editors react. Whilst the solar eclipse line has been replete with samples of media and governmental nonsense on eclipse viewing, it is important that this influential science magazine is correct. I hadn't intended my lengthy letter to be published; only to stir the editors to correct their statement. cheers, and thank you again, Janita

P.S: I hope the "Complete Idiot's Guide to the Sun" makes it to 'down under' distributors, as a lot of "Complete Idiot's Guides" have done. It would be a fun book for amateur astronomical societies to have in their libraries. And even better, with such a title, to be able to quote slabs from to wayward tabloid media and government departments in the

Worm Index Solar Eclipse Newsletter for April 2003

From: Stig Linander To: solareclipsesSENL200308aula.com Date: Thu, 03 Jul 2003 07:48:11

If you too rcvd a msg with this subject: [SEML] Index Solar Eclipse Newsletter for April 2003 from: solareclipsewebpagesSENL200308astrax.hannover.sgh-net.de take care, it shows all signs of being a worm ("virus"). Best regards, Stig.

From: Dave Schmahl

What signs make you think this is a worm??

From: klipsiSENL200308bluewin.ch

here in Switzerland it was blocked by my server's filter. Bugbear virus. Klipsi

From: solareclipsewebpagesSENL200308btopenworld.com

As mentioned in the SEML rules, do not send messages to the entire list about virus issues, etc. Please keep those mails private. Send your comments to me and not to the whole list. Keep messages solar eclipse related. Thank you for your understanding. Best regards,

Eclipses from Ancient Babylonia

From: Henry Zee To: HASTRO-LSENL200308LISTSERV.WVU.EDU Date: Wed, 09 Jul 2003 06:57:55

Last month (June 13, 2003) Hermann Hunger noted that "Eclipses from Ancient Babylonia" by Peter Huber and Salvo de Meis was about to appear. Does the publication have an ETA (estimated time of arrival)? Henry Zee Caeno

New web adress

From: Josep Masalles To: SOLARECLIPSES-SENL200308AULA.COM Date: Fri, 11 Jul 2003 18:34:58

Hi all, My new web address of eclipses is http://www.ictisp.com/~jmasalle/ Best regards Josep Masalles

SETalk

Delta T explained

From: bradley Skene To: HASTRO-LSENL200308LISTSERV.WVU.EDU Date: Fri, 04 Jul 2003 18:39:46

I wish you would explain even Delta T even more simply. I was aware that the earth's rotation was slowing due tot he tidal effect you described, but thought that the effect was so small it was not measurable over historical time. But what you say below seems to say (or I misunderstandard becuase of my ignorance of modern mathematical science) either that the day was fours hours shorter in Ptolemy's time, or that calcualtions of the path of an eclipse in that period would have to be adjusted by four hours. Either way the differnce seems huge! Could you explain further? Bradley Skene

>Dear Joan, I am quite aware that transient events like catastrophic impacts of celestial objects on Earth can happen. But I do not hold it in accordance to our present status of the knowledge of natural laws that gigantic comets are spewn out from Jupiter, travel to the inner Solar System and then become a planet, as is the teaching of Velikowski. And I believe that also further advances in our knowledge of the natural laws will not change this. (I apologize to Ari, that I thought he was thinking in this direction.)

Catastrophism had a hard time for a very long time. After the acceptance of the ideas of Charles Lyell's uniformitarianism (Principles of Geology in the early 19th century) by most of the geologists and paleontologists, it took up to the Science article of L.W. Alvarez, W. Alvarez, F. Asaro, H.V. Michel Science 208 (1980) 1095 on "Extraterrestrial Cause for the Cretaceous Tertiary Extinction" for a renaissance of "catastrophism". The geologist was W. Alvarez. He placed his father as lead author, because he hoped that Science would not dare to reject a paper of a physics Nobel Laureate. There had been many young geologists without such a father.

And, the Delta T is a complex question, but one can give a short version:

Due to the tides, there is a permanent movement of huge amounts of water in the oceans. This causes friction, and friction is the transformation of directed movement to thermal movement, that is the Earth loses permanently tiny amounts of its rotational energy, it spins slower. Up to the last century, the units of time, the second, were derived from the rotation of the Earth, which over long time spans slows down, so that the day gets longer, and one needs a definition of the second independent of the rotation of the Earth. The first step was the ephemeride second derived basically from the movements of all the planets. In the 1960's, this was replaced by atomic clocks. And the Delta T is more or less the difference between time defined by atomic clocks and the actual rotation of the Earth. In short times, the difference is small. But it grows quadratical with time, and the difference is already some hours for the time of Ptolemy, about 8 hours for 700 BC, and would be around 9 hours for 1313 BCE. The path of totality of a solar eclipse is very roughly displaced by Delta T/24 times 360 in geographical longuitude. The Delta T is a complex function of time and can only be determined from historical astronomical observations. This has been achieved only recently, so that all older calculations of historical eclipses are of no use. I repeat, very simplified. Regards Bernd Pfeiffer

From: Bob Garfinkle

Hi List, Can someone give a simple explanation of what "delta-T" is in regards to calculating eclipse events? Is it the difference in the interval of time between terrestrial dynamical time (TDT) and Universal Time (UT) or something else?

Or does it have to do with the difference in the length of the day (Earth's rotation or spin rate) between today and ancient times?

You do not have to go into all of the mathematics involved, just what is it? Thanks. Bob Garfinkle

From: Bill McClain

Imagine a clock that is slow 1 minute per day. After 30 days it is off considerably more than 30 minutues, because the error accumulates.

Over several thousands of years, a tiny fraction of a second of rotational slowing per year amounts to several hours of difference in the orientation of the Earth. -Bill

From: bradley Skene

Yes, I understand that, but my difficulty comes from the implication of the original post that days were, when measured using the length of the second now commonly employed, 20 hours long in the Roman period, and only 15 hours long in the bronze age. If that were the case you would only have to go back a few tens of thousands of years to get day lengths of less than one hour, which can't possibly be true; the effect must be much slower, surely.

> I wish you would explain even Delta T even more simply.

(Continued on page 15)

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Imagine a clock that is slow 1 minute per day. After 30 days it is off considerably more than 30 minutues, because the error accumulates.

Over several thousands of years, a tiny fraction of a second of rotational slowing per year amounts to several hours of difference in the orientation of the Earth. -Bill

From: Axel Harvey

A brief intervention, certain to be unsatisfying: it's not that the day was four hours shorter in Ptolemy's time, but that the accumulated result of the discrepancy between solar (i.e. natural rotation) time and atomic time will, over many centuries, amount to several hours as might appear on the faces of two clocks running at the two different rates.

A member of this list has an excellent web page on the subject: http://www.phys.uu.nl/~vgent/astro/deltatime.htm

It contains an elegant delta-T calculator. One of the problems with delta-T is that it varies around a general rate in a way that is not quite predictable. Another problem is that there is no agreement about the formula that should be used to approximate it. According to the van Gent calculator, for the year 1 C.E. the "spread" between the two extreme formulas (there are several in between) is 46 minutes. For 1000 B.C.E. the spread is one hour and 24 minutes.

As for basic explanation, we should hear from a physicist.

From: Tom Peters

Yes, the rotation period of the Earth itself has increased by about 1.7 ms every century (average over the past 27 centuries or so for which there are observations). So 33 centuries ago the mean solar day therefore was about 0.056s shorter than today, or about 23h59m59.944s. Now compared to an atomic clock which counts days of 24h00m00.00s, the accumulated difference would be about 365.25*3300*0.056 = 67500s, or about 0.78 days. This means that if the Earth hadn't slowed down, the Greenwich meridian would have rotated ahead of its current position by about 360*0.78=281 degrees (Eastward). If the Moon happens to throw its shadow on the Earth, it now would hit the surface 281 deg. East of where you would have expected it if you predicted the eclipse 33 centuries ago.

We work the other way round, towards the past, but the concept remains the same: eclipses get observed way off from where you would predict them if the Earth hadn't slowed down.

The situation is much more complicated than I explained here. Because the RATE of slowing down of the Earth is approximately linear, the ACCUMULATED difference - Delta-T - develops quadratically, and not linearly like I did in my example. Worse, the Earth slows down because of the drag of the tides, but these are raised by the Moon, which gets tugged along by this very same tidal bulge - so it gets accelerated. Energy gets dissipated as heat, but total momentum remains conserved. If the spin momentum of the Earth decreases, then the orbital momentum of the Moon must increase accordingly. Even worse, the Moon stays in orbit and Kepler's laws require that it then moves away from the Earth (about 3.8 cm per century), but in that higher orbit its angular velocity is smaller - so its apparent motion across the sky becomes SLOWER.

All that can be taken account of in eclipse computations.

But worst of all, the Earth's rotation is also changing because of other causes. The largest effect seems to be a rebounce of the polar regions from being depressed by the ice masses of the last ice age. Mass now is re-distributed to the polar regions, so closer to the rotation axis. Therefore the moment of inertia becomes smaller, and to conserve total angular momentum, the rotation rate must increase. So there is also a force accelerating the Earth's rotation, but its effect is decaying exponentially over the centuries. The size of the effect can be measured to some degree of accuracy, but when it comes to integrating that to figure out how much it contributes to Delta-T in the remote past, the uncertainties get very big.

In any case, a simple quadratic expression will not accurately fit observations, which is one of the reasons why you find so many different formulae.

Is that enough physics for you?

See http://www.wikipedia.org/wiki/Tidal_acceleration and also http://www.wikipedia.org/wiki/Delta-T

The main researcher on this topic is F. Richard Stephenson, professor in Newcastle. His definative paper is:

F.R. Stephenson, L.V. Morrison (1995): "Long-term fluctuations in the Earth's rotation: 700 BC to AD 1990". Phil. Trans. Royal Soc. London Ser.A, pp.165..202 .

He also wrote a book on it: F.R. Stephenson (1997): "Historical Eclipses and Earth's Rotation". Cambridge Univ.Press. ISBN ? Dr A.R (Tom) Peters

From: Dr. B. Pfeiffer

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SETalk

Dear listmembers, yesterday evening I had to stop reading the mails, as I went to the monthly gathering of the Mainz stargazers. Fortunately, much of the problems related to the concept of Delta T have been explained during my absence. Some time ago I wanted to prepare a short expose for our stargazers association on the use of historical eclipses for chronology, but then decided to speak more on the problem of determination of the spinning down of the Earth's rotation. http://www.kernchemie.uni-mainz.de/~pfeiffer/aag/mt/mt1.htm (Prepared in a very short time, no guarantee for errors and so on!)

The search for material was quite difficult, as there are historical nomenclatures. Formerly (partly up till now), one has to search for the "secular acceleration of the Moon", starting with E. Halley: Phil. Trans. R. Soc. Lond. 19 (1695) 106. The results are expressed as an acceleration parameter a" (?). This is still used by the Moscow "New Chronology" group based on the work of R.R. Newton (my experience!). Fortunately, Prof. Stephenson sent me some reprints, so that I could present up-to-date results expressed in length-of-the-day units. Search in the ADS data base yielded some abstracts of Kevin D. Pang, who (as other researchers) has extended the range of eclipse studies to about 2000 BC from chinese sources. His formula for Delta T is in accordance to one of Stephenson. As an exemple, for a solar eclipse on May 6 1302 BC he finds a Delta T of 7h 20 m with an uncertainty of 20 m.

So there is now the possibility to roughly calculate eclipses of the time around 1300 BC. In a demo -version of SkyMap Pro (which has a formula for Delta T built in) I find a partial solar eclipse at Alexandria (near the land of Goshen), but not for June 23 1312 BC, but for June 24 1312 BC.

(By the way, Ari, somewhere in the Bible (it's a long time that I have not looked into it, but some other members ought to find out easily) is said that the consecration of the temple of Salomon took place 485 years after the Exodus, so much earlier than your year 3112.) Regards Bernd Pfeiffer

Ancient values for mean month

From: Ari Belenkiy To: HASTRO-LSENL200308LISTSERV.WVU.EDU Date: Thu, 03 Jul 2003 23:53:05

Bernd: right, it is helpful to ask questions before making an opinion.

The date of Exodus was suggested by E. Mahler (an astronomer, Bernd) using Opolzer's canon (sic) and whose Handbuch on Chronologie printed in Leipzig in 1916 you might have a unique pleasure to read.

Mahler found a total eclipse which was seen in Egypt proper (middle) while seen as partial in the land of Goshen (in the north).

In fact, this finding corroborated a major Jewish year count which gives 1000 years between Exodus and beginning of the Selucide Era (312 BC).

So I have to correct my previous message pointing to the eclipse considered as the 9th plague as a first historically recorded solar eclipse- 40 years before the one needed by Rawlins.

As for as the sun's standstill is concerned - right, things sometimes are mixed and have to be disentangled. It is scientist's task to make conjectures. I believe that the moon was almost in its opposition - therefore appeared on the sky in full shape immediately after sunset and this way 'lengthened" the day time. Ari Belenkiy

iginal Message --From: Dr. B. Pfeiffer

Dear Ari, can you cite at least one non-biblical source for the legendary exodus? And how did you determine a precise date as 1313 BC? For me personally(!) as a natural scientist the standstill of the sun is mythology, not an observation on which to built scientific theories. In my personal view this is Velikovskian nonsense. As I said, my personal opinion, you might follow different ideas. Regards Bernd

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From: Ari Belenkiy

Dear Nick: honestly, I do not give much credit to the book of Jubilees and alike. Would Abraham really versed in astronomy we would see in the Torah a sextant and not only sheeeeeeeeeeep.

I made a much more modest conjecture: could Jews observe and recorded ECLIPSES at the time when all others DID NOT? Eclipses - and only eclipses of the 13th cent BC - what is necessary for Rawlins's theory - he emphasized that several times. Ari

From: Gent van R.H.

Hi Ari, Eduard Mahler's eclipse calculations were performed more than a century ago and cannot be relied on anymore. The concept of Delta-T (a crucial factor in delineating the exact paths of ancient solar eclipses) was then still unknown.

Even now we do not have reliable estimates for the values of Delta-T before c. 800 BC.

Mahler's identification of the "Exodus eclipse" (assuming there was one of course) was published in:

Eduard Mahler, "Astronomische Untersuchungen ?ber in hebr?ischen Schriften erw?hnte Finsternisse", _Sitzungsberichte der kaiserlichen Akademie der Wissenschaften zu Wien_, Band 92 (1885).

I remember having seen a similar article in a German Egyptological journal around the same time but I do not have the exact reference now.

Mahler could not have found his Exodus eclipse in Oppolzer's well-known canon of lunar & solar eclipses as this work was published in 1887 and only extends backwards to c. 1100 BC.

Given the uncertainty in the date of Exodus (assuming that that it was based on history and not on myth) and the uncertainty in calculating solar eclipse paths so far back into the past, you can always find a eclipse that will appear to "agree" with your theory.

From: Michael L. Gorodetsky

Dear Ari, According to EmapWin none of the eclipses in 1313BC was visible in total phase in Egypt.
Jan.10 - Central America,
Jul. 5 - Australia
Dec.30 - South Africa

Better is eclipse of Jun.23 in1312BC, but total phase was still significantly more nothern. These calculations even now due to some uncertainty of Delta T can not be very precise for such distant times, but you definately can not rely on Ginzel's calculations. All theories based on attempts to fit some solar eclipse are usually very shaky as you can nearly always find another eclipse especially if you have large enough margins and no additional information.

From: Joan Griffith

"Mahler found a total eclipse which was seen in Egypt proper (middle) while seen as partial in the land of Goshen (in the north).z'

An eclipse might account for a few minutes of darkness, but what about the rest of the 3 days of darkness? If you can solve that one, then you will assist numerous people who would have an eclipse lasting 3 hours or more at the time of Jesus' crucifixion in the 30s CE, despite the fact that no solar eclipse has been found to occur at that time. Not that they haven't looked for one quite diligently.

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Your comment about a standstill (I presume you mean Joshua's long day) and the moon continuing the day obscures what the 9th plague actually was. Joan

From: Joan Griffith

Ari, It has been posited that smoke from the mighty volcanic eruption that destroyed the Greek island of Thera may have provided such a lengthy darkness. This was said to have spewed rocks as far as Egypt.

The latest excavations at Avaris, in northern Egypt, by the Austrian archeologist, Prof. Manfred Bietak, shed new light on reports about Joseph and Moses from the Bible. Bietak found innumerable pumice stones strewn all over Avaris, a royal town near "Bar Yussef," as Joseph's channel is still called today. Avaris, whose palace was covered with bull and labrynth motifs, was suddenly deserted by its Canaanite population around 1500 BC, shortly before the Hyksos took power. The pumice stones of Avaris almost certainly fell from the volcanic eruption of Thiathera on the island of Santorini. It may be supposed that they could be the plague of hail stones that fell on Egypt after the flight of the Israelites. [from: http://www.calendersign.ric.at/en/astro-myths/power_of_eclipse/]

[If Avaris was an Israelite city, then obviously it was not Canaanite. JG]

From: joannecoSENL200308MAINE.RR.COM

The New Kingdon, beginning with reign of Ahmose is dated to 1552 BCE. So the time the Hyksos were defeated is nearly a century after the dating of Thera's eruption. Many of the details of the plagues in Exodus are quite similar to events that occurred in the contest between magicians in the Demotic Setna story, "The Letter," which, in my opinion, supports the story of Exodus being a fictional account that was written centuries after it supposedly occurred. Joanne Conman

From: Ari Belenkiy

Hi Robert: Thanks for clarifications. I quoted by memory. I also was unaware about problems with delta-T deep back into history.

Do you claim, by the way, that Mahler's eclipse is in odds with Oppolzer? Ari Belenkiy

From: Ari Belenkiy

Dear Michael: I think one more constraint on the eclipse has to be applied: early Spring.

The precise year is less essential, though I would prefer to find the one around 1312 BC.

By the way, Garstang, an archeologist, made independent suggestion on time of conquering Jericho - around 1400 BC. Ari Belenkiy

From: Ari Belenkiy

Joanne: Honestly, I share the view of Sir Isaac Newton that all "Egyptian dynasties" are fictional (at least, before Sheshonk).

I may change my mind if you point out to the record of eclipses observed by "ancient egyptians".

Of course, an account of Exodus was written much later and surely it is partly fictional - my point is that it tells us about events occured in the 13 cent BC. Ari Belenkiy

From: Bill McClain

It is the accumulated difference between an absolute time scale and terrestrial "civil" clocks. It is caused by the variable rate of the Earth's rotation, which is (very) gradually slowing. With modern techniques astronomical events of the past and future can be calculated with great accuracy; the largest amount of uncertainly is how the Earth was (or will be) oriented at the time of the event. -Bill

From: Bob Garfinkle

Hi Bill, Thank you and to the others who supplied definitions while I was composing my original query. I remembered that it had something to do with the variable rate in the Earth's rotation.

Take care. Robert A. Garfinkle, F.R.A.S.

From: Dr. B. Pfeiffer

Dear all, as far as I know, Avaris has been the capital of the Hyksos. So far as I remember, the Hyksos are counted as the 15th and 16th egyptian dynasties in a time of transition from the Middle to the New Empire, from about 1780 BCE to about 1650 BCE. Archaeological work, not only from Prof. Bietak in Avaris but also in smaller Hyksos settlements in the eastern part of the Nile delta, clearly shows that the Hyksos had a material culture closely related to the Syro-Palestinian region.

On the other hand, the dating of the volcanic eruption of

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Santorin/Thera is still under debate, but one theory relates the eruption to a series of tiny tree rings in Irish oak trees as well as acidic layers in the Greenland ice cores. The tree ring dating would indicate to the time between autumn 1628 BCE and spring 1627 BCE.

The archaelogical work of Prof. Biatek as well as a german team proofed that Avaris is at the same place as the later town Pi-Ramses, which is cited in the Bible as the place from which the Exodus started.

If the defeat of the Hyksos by the later Pharaoh Amoses, founder of the 17th dynasty, is somehow related to the Exodus, I do not know.

As fas as I know, there are no egyptian documents mentioning the presence of syro-palestinian groups around 1313 BCE. Regards Bernd Pfeiffer

From: Dr. B. Pfeiffer Tel.: 06131/3925317

Dear listmembers! As Passah (as well as the derived Easter) is just after a full Moon, there cannot occur a solar eclipse, and evidently, one did not found one.

But another question to the learned scholars: I remember to have read that Johannis de Sacro Bosco in his textbook Tractatus (Libellum?) de sphera explained the by celestial mechanics impossible solar eclipse as a devine intervention overruling natural laws (in my modern words). Is this correct, or was it another author as Gerard of Cremona? Regards Bernd Pfeiffer

From: Dr. B. Pfeiffer Tel.: 06131/3925317

Dear Joanne, thanks for the rectification of the date. I should have had a quick look with GOOGLE prior to posting from memory. Regards Bernd Pfeiffer

From: Michael L. Gorodetsky

No, I am talking about enormous number of egyptian documents and inscriptions that have been read since deciphering. I have nothing against Septuagint in principle but 1. it is not contemprorary and 2. It is not very clear concerning egyptian history.

I am not claiming anyting as I am not egyptologist. However, yes, Manetho list as a whole is more or less confirmed, though it could be not so linear, and it is a convenient backbone. Egyptian kinglists except Manetho do exist in papyri and in inscriptions. Egyptian chronology is also more or less confirmed by physical dating methods (the margin is not more than 100-200 years). As for eclipses - not all civilizations according to their culture were interested by celestial events in the same way. This I can say firmly, as I've spent collecting eclipse records a lot of time. And I can return you the questions - what unequivocal descriptions of solar eclipses you know from ancient jews? (http://hbar.phys.msu.ru/gorm/eclipse.htm)

3. As far as I know there are no such unequivocal confirmations. Can you suggest at least a biblical kinglist?

Kinglists

From: Ari Belenkiy To: HASTRO-LSENL200308LISTSERV.WVU.EDU Date: Wed, 09 Jul 2003 10:18:48

Dear Michael:

I have two objections and two remarks.

1. The "kinglist" can be written only after the reign of the last king.

2. The Books of Kings and Chronicles are two separate "Israeli kinglists". You can view them as independent verifications.

3. We also discussed Septuagint as a reliable chronicle of the Israeli state, not - the Egyptian.

4. Look how I put a question about Jewish eclipse observations: Rawlins proved theoretically existence of eclipse records of the 13 cent BC. Following a long-standing tradition he looks for them in the Babylonian temple. MY point was that there are some evidences on the surface if instead we look for well-known biblical events (which according Jewish tradition occurred in the 13 cent BC). Ari Belenkiy

From: Dr. B. Pfeiffer

Dear Ari you wrote "...biblical events (which according to Jewish tradition occurred in the 13th Cen. BC)."

Would you, please, be so kind to tell persons not raised in Jewish tradition some more information on the origin of this tradition dating the Exodus via an eclipse to 1312 BC?

I tried to get some information on the web, but there seems to be many Jewish traditions dating the Exodus at quite different times.

In http://www.dangoor.co/TheScribe40.pdf Naim Dangoor says that many people believe that the Exodus took place in

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Anno Mundi 2448 (corresponding to 1312 BC), but that others favour 1236 BC.

On the other hand I found a web-page http://www.doig.net/OT_Chronology.htm in which Kenneth F. Doig says, that is wrong, that even the (often cited) 485 years prior to the temple of Salomo is wrong. He wants to prove that the correct date is 1552 BC.

And this was the result of some minutes search only.

Could it be possible, that, already long ago, a rabbi (as an example) well instructed in astronomy has calculated back the solar eclipse of June 1312 BC? There are such examples in relating astronomy with chronology. Regards Bernd Pfeiffer

From: Michael L. Gorodetsky

Dear Ari,

AB> 1. The "kinglist" can be written only after the reign of the last king.

Strange claim. For example famous canon of kings from Ptolemy's Handy Tables was compliled during emperor Antoninus but roman emperors have been many times added to this list later by copyists. Known Egyptian tablets with king-lists were also compiled long before the last pharaoh.

AB> 2. The Books of Kings and Chronicles are two separate "Israeli kinglists". You can view them as independent verifications.

I can't. I was asking about archeological witnesses.

AB> 3. We also discussed Septuagint as a reliable chronicle of the Israeli state, not - the Egyptian.

To say that it is reliable you need to synchronize it somehow with Egyptian or Babylonian chronology which are indeed more or less reliable at least for the first millenium BC due to archeology and physical dating methods. Or to find some absolute independent confirmation. Eclipse can not be a confirmation, until you have unequivocal description of it with clear date or some description making it unique. As I understand, Babylonian synchronism does exist for the Babylonian captivity but not for the time Exodus.

AB> 4. Look how I put a question about Jewish eclipse observations: Rawlins proved theoretically existence of eclipse records of the 13 cent BC.

I can't say that it is provement. But the idea is interesting.

AB> Following a long-standing tradition he looks for them in the Babylonian temple. MY point was that there are some evidences on the surface if instead we look for well-known biblical events (which according Jewish tradition occurred in the 13 cent BC).

I don't see any evidences there. First I don't see a description of eclipse in Septuagint and second I don't know anything about a single observation of ancient Jewish eclipse.

From: Ari Belenkiy

Michael and Bernd: let me restate on where I stand.

1. True - there is no archeological Hebrew Kinglist (a tablet with engraven names). However, as far as I know, there was no archeological disclaimer of any event described in the Bible.

R.Newton says that all Babylonian chronology based on Ptolemy's Kinglist has to be reconsidered.

2. Jewish rabbinical chronology is flawed with errors. The major is "missing 165 years" during Persian rule. (Apologets are claiming that the list of Persian kings was trippled by error of ancient historians and there were no three Dariuses and three Artaxerxes but one and one).

3. I said that there is Jewish tradition of 1,000 years elapsed between Exodus and Era Alexandri (not confirmed by any independent source except Mahler's eclipse) and that the "sunstill" described in the book of Joshua can be viewed as the first historically recorded interest toward celestial (sun+moon) phenomena. That's it. Ari

From: Joan Griffith

Ari, What do you mean: Jewish rabbinical chronology is flawed with errors. The major is "missing 165 years" during Persian rule.

How do they lose 165 years? or, how is it known that they have lost the 165 years? I have not heard of this before.

Joan Good judgment comes from experience, and a lot of that comes from bad judgment. - Will Rogers

From: Michael L. Gorodetsky

Dear Ari, again the same trap for you.

AB> R.Newton says that all Babylonian chronology based

(Continued on page 21)

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on Ptolemy's Kinglist has to be reconsidered.

R.Newton lived long before excavations and deciphering of Babylonian clay tablets - there are hundreds of thousands of them. His kinglist (which is actually not his) is confirmed by astronomical diaries including vast amounts of eclipses (practically complete lists from 750BC).

AB> 3. I said that there is Jewish tradition of 1,000 years elapsed between Exodus and Era Alexandri (not confirmed by any independent source except Mahler's eclipse) and that the "sunstill" described in the book of Joshua can be viewed as the first historically recorded interest toward celestial (sun+moon) phenomena.

I don't know such celestial phenomena which are described in the book of Joshua. It is not "historically recorded" as there are no chronological details which allow to verify this interpretation. And it definitely not the first recorded interest toward celestial phenomena as old Babylonian cuneiform Omina Enuma Anu Enlil give much more examples which are much more clear (lunar eclipse of 3/9/2302BC as an example). Chinese dated astronomical records from the third-second millenium BC on oracle bones also exist.

See K.D.Pang et al. Astronomical Dating and Statistical Analysis of Ancient Eclipse Data. In History of Oriental Astronomy, Proc. of the 23-d, Gen. Ass. IAU in Kyoto in Aug. 1997, Kluwer, 2002.

From: Gary D Thompson

Hi Michael. The treatment of lunar eclipses and associated omina in the series Enuma Anu Enlil are controversial regarding interpretation. It has been pointed out that some of these third millennium lunar eclipses can not have occurred as reported and the associated omina have probably more to do with historical tradition about the third millennium than historical fact. A summary discussion of the issues is contained in Mesopotamian Astrology: An Introduction to Babylonian and Assyrian Celestial Divination by Ulla Koch- Westenholz (1995). Regards, Gary Thompson

From: Michael L. Gorodetsky

I can easily agree that many of these descriptions are arguable and, that other datings and interpretations are possible, and that some authors try to find more information in them than they content, but these are definately astronomical descriptions much more clear than Joshua stopping sun.

From: Nicholas Campion

Dear Michael, Do you have Robert Newton's dates? I think you might be confusing him with Isaac Newton. Nick Campion

From: Ari Belenkiy

Michael: Nick was ahead of me to point out to your possible error. I talked about Robert Newton's claim that almost all eclipses in Ptolemaic kinglist are forgery.

He adds that after the year 603 BC the list is likely OK but not before. There only two independent verifications of those eclipse records - the cuneiforms for 37 of Nebuchadnezar and 7 of Cambiz.

As for the rest - I was a bit overheated in my polemics - surely the Bible contains almost nothing to make a scientific-like claim but... all the major holidays were related to the moon (full or new). Ari

From: Michael L. Gorodetsky

Ari, I am sorry that I was not attentive, as before we were talking about I.Newton. With Robert Newton there is another story. He based his opinion uncritically on the "expertize" of Jehovah's Witnesses.

"Newton was unaware of the fact that ”Ptolemy’s Canon” was not composed by Claudius Ptolemy. He was not an historian and he was not an expert on Babylonian chronology. He also admits in his work that he has not studied sources other than Ptolemy for the years prior to Nebuchadnezzar. (The Crime of Claudius Ptolemy, p. 375) He explains that his thoughts on the relations between chronology and the work of Ptolemy were influenced by a Mr. Philip G. Couture of Santee, California! In the Preface of his book he states: ”I thank Mr. Philip G. Couture of Santee, California for correspondence which led me to understand some of the relations between chronology and the work of Ptolemy.” . (The Crime of Claudius Ptolemy, p. XIV) The same Mr. Couture also induced Dr. Newton to reject the Assyrian eponym canon in his work, The Moon’s Acceleration and Its Physical Origins. (See Vol. 1, 1979, p. 189) What Newton evidently did not know was that Mr. Couture was and still is one of Jehovah’s Witnesses, and that some of the chronological arguments he passed on to Newton were taken from the Watch Tower Society’s Bible dictionary, Aid to Bible Understanding. These arguments were not only aimed at supporting the chronology of the Watch Tower Society, but they are also demonstrably untenable!" http://www.607v587.com/webpage%2010.htm

From: Ari Belenkiy

SETalk

Michael: this fact (about foreign influences on R.Newton) was unknown to me. It is true that sometimes such influence has a strong impact on conclusions.

Still, Robert Newton's arguments are purely logical - the list of eclipses and planetary positions in Ptolemaic kinglist is forgery.

Newton gives then a clear argument that the list of eclipses by itself has in fact a very little correlation with the list of kings - you can add or delete several names without being caught.

Coming back to your argument that Ptolemaic kinglist was a crown of a long series of lists, where next ones were augmentations of previous - then it is upon you to show the series pre-Ptolemaic kinglists. Here was my major point - before being written down such a list can be a matter of hearsay only (like, say, the Bible). Ari

Subject: Re: [HASTRO-L] Kinglists
From: Michael L. Gorodetsky

Dear Ari, There is no list of eclipses and planetary positions in Ptolemeaic kinglist. They are even given in different books of Ptolemy. In this way there is no logic in Robert Newton's arguments. Moreover this kinglist as they say is not Ptolemaic. And I can not ree that Babylonian eclipses are forgeries of Ptolemy. I've reproduced the method of calculation of eclipses from the Almagest and his theory does not coinside remarkably with all the descriptions, only in rare cases. At the same time the descriptions are in rather good agreement with the modern theory. Ptolemy could manipulate with figures a bit but to say that he invented these descriptions is nonsence. See also article: J.Steele, A Re-analysis of the Eclipse Observations in Ptolemy's Almagest, Centaurus 42, 89-108, 2000;

1999 TSE

From: Gerard M Foley To: SOLARECLIPSESSENL200308AULA.COM Date: Fri, 11 Jul 2003 04:29:18

Looking through my files I have found an image file, a version of which is here:

http://foley.ultinet.net/~gerry/eclipse/dkfr.jpg

I am certain that the picture was taken in the Black Sea during totality of the TSE of 11 August, 1999. Unhappily I do not know what camera, lens, film or exposure was used. The sun is obviously highly overexposed. It seems most likely that the image shows a 33 x 50 degree portion of the sky, but this is just a guess.

If anyone can confirm or refute the idea that images of stars and planets appear, I would be most happy to hear. Since this is not likely to be of any general interest, responses might best be off list.

The ship was at 43 deg 06 min North, 29 deg 41 min East, and totality was at 1113 UT. The sun and moon at that time were approximately R.A. 09h23m dec +15d19m. Gerry

July eclipses in history

From: Evan Zucker To: SOLARECLIPSESSENL200308AULA.COM Date: Thu, 10 Jul 2003 19:36:13

I'm sure I'm not the only one who always thinks fondly this week in July of the 10 July 72 and 11 July 91 total solar eclipses. Many of us had much better luck in 1991 than in 1972 (unless you were in Hawaii in 1991). I was clouded out in Cap-Chat along with Glenn Schneider and the other members of the Amateur Observer Society in 1972. We caught a bare glimpse of the thin crescent 30 seconds before totality. Joe Rao was just down the road, where that small break in the clouds allowed him to catch a bare glimpse of totality. 1991, of course, was the most recent of The Big Ones, although 1955 and 1973 were bigger (well, longer). The skies were crystal clear over San Jose del Cabo. The only difficulty was a sore neck from looking at the eclipsed sun nearly directly overhead. -- EVAN

From: Mike Simmons

...for over six minutes! I was in La Paz, having gone to bed under clouds the night before but awakening to a clear sky. Mike Simmons

SETalk

From: Chris Malicki

Or unless you were in Santiago, Baja California right the centreline where clouds obscured the entire eclipse of 1991 except for inner corona and prominences. Of the 9 totals I've seen, Baja California, 1991 was the only one where clouds covered the sun during the entire eclipse. Chris Malicki http://webhome.idirect.com/~kmalicki

From: DribalzSENL200308aol.com

July 11, 1991, was my first total solar eclipse, and what an auspicious start. We had 6 minutes and 27 seconds from La Paz, Baja California Sur. Like Evan said, we had sore necks afterwards, but the photos and videos came out OK for my first rather amateurish effort. I still get chills and goosebumps watching the videos of that event. Hard to believe it was 12 years ago. Since then I saw the 94 annular from El Paso, the 94 TSE from Putre, Chile (I was the one who woke up eclipse day so messed up from the altitude-about 11150 feet that I really didn't want to get out of bed), and the 98 eclipse at sea in the Caribbean on board the Veendam. Hopefully Turkey is next. Andrew

From: KCStarguySENL200308aol.com

I was lucky to see anything from Mazatlan on the beach. A little island off the beach set up some currents in the air . Saw some corona in and out and the darkening so it was not a total wash out. It was a miserable week in Mazatlan. Should have gone south or to Cabo. Still kick myself for that one. I had better luck in 1972,73,79,98,99 and 2001. Dr.Eric Flescher

"**Eclipses During 2004"**

From: Fred Espenak To: SOLARECLIPSES-SENL200308AULA.COM Date: Fri, 11 Jul 2003 21:01:00

"Eclipses During 2004" Two partial solar and two total lunar eclipses occur in 2004 as follows:

2004 Apr 19: Partial Solar Eclipse
2004 May 04: Total Lunar Eclipse
2004 Oct 14: Partial Solar Eclipse
2004 Oct 28: Total Lunar Eclipse

I have recently completed my annual contribution on eclipses "Eclipses During 2004" for the Observer's Handbook 2004 of the Royal Astronomical Society of Canada. The article covers predictions for all eclipses which are summarized in a series of diagrams. World maps show the regions of visibility for each eclipse. The lunar eclipse diagrams also include the path of the Moon through Earth's shadows. Contact times for each principal phase are tabulated along with the magnitudes and geocentric coordinates of the Sun and Moon at greatest eclipse. Path coordinates and local circumstances from major cities are listed for the two solar eclipses. Finally, prediction timings for major lunar craters are presented for each lunar eclipse.

Although the article will not be published until fall 2003, it is now available from my NASA eclipse web site. The URL is:

http://sunearth.gsfc.nasa.gov/eclipse/OH/OH2004.html

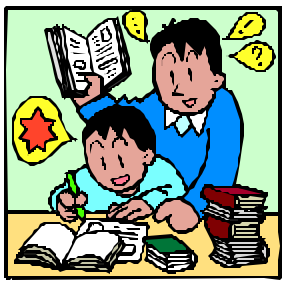
Please let me know if you find any errors or broken links.

Special thanks to National Space Club summer intern Lauren Williams for her valuable assistance in adapting this article for the web. - Fred Espenak

TSE on Mars ?

Date: Mon, 21 Jul 2003 17:28:49 +0200 From: Gessner <gessnerSENL200308easynet.fr> To: <eclipseSENL200308hydra.carleton.ca>

I'm reading in a french magazine, Phobos is near enough to Mars to cover the sun completely, provoking a TSE. They even mention one on august 26, 1999. Trying to figure it out (with my very limited mathematical skills), I found, that Phobos can NOT cover the sun for an observer standing on Mars. Could anyone please explain? Thank you Nicolas Gessner gessnerSENL200308easynet.fr



SETalk

Sacrobosco -- machina mundi

From: Steve McCluskey To: HASTRO-LSENL200308LISTSERV.WVU.EDU Date: Fri, 04 Jul 2003 18:37:30

At 06:06 PM 7/4/2003 +0100, you wrote: But another question to the learned scholars: I remember to have read that Johannis de Sacro Bosco in his textbook Tractatus (Libellum?) de sphera explained the by celestial mechanics impossible solar eclipse as a devine intervention overruling natural laws (in my modern words). Is this correct, or was it another author as Gerard of Cremona?

It's Sacrobosco; the concluding paragraph of his Sphaera follows:

ECLIPSE DURING THE PASSION MIRACULOUS. -- From the aforesaid it is also evident that, when the sun was eclipsed during the Passion and the same Passion occurred at full moon, that eclipse was not natural -- nay, it was miraculous and contrary to nature, since a solar eclipse ought to occur at new moon or thereabouts. On which account Dionysius the Areopagite is reported to have said during the same Passion, "Either the God of nature suffers, or the mechanism of the universe is dissolved."

This is from Lynn Thorndike's translation of Sacrobosco, which I found on the web at http://www.esotericarchives.com/solomon/sphere.htm .

It is significant that Sacrobosco uses the term machina mundi to describe the universe. It doesn't conform to the stereotype of Thirteenth century thought. Steve McCluskey

From: David Iadevaia

Regarding the 3 days of darkness during the time of the cruxifiction...could it not have been a figurative description of the mood of the disiplines in that the "light of the world" had been extinquished? It is curious that we find it easier to accept that the natural order of nature can be turned upside down than it is to accept a more rational explanation which doesn't require the laws of celestial mechanics to be suspended...????? Why do we like fairy tales so much????? David Iadevaia

From: Dr. B. Pfeiffer

Dear Prof. McCluskey, thanks for the link. I really have to take some time to visit the town library of Mainz, where they have an uncomplete editon of SacroBosco printed 1545 in Wittenberg. Regards Bernd Pfeiffer

From: Gary D Thompson

Hi David. Not 3 days of darkness but 3 hours (from the sixth hour (i.e., noon) to the ninth hour). For an interpretation of the crucifixion story within the chaoskampf typology of the Old Testament (where darkness or night is strongly associated with the forces of chaos) see: "The Crucifixion as Chaoskampf" by Dominic Rudman (Biblica, Volume 84, 2003, Pages 102-107). Regards, Gary Thompson

From: David Iadevaia

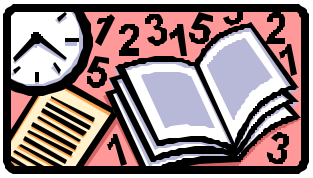
oops!!! 3 hours, 3 days..what's the difference???? solar eclipses don't last that long...unless he was crucified at night...than you have a lunar eclipse which would fit in nicely with a full moon at passover...and the approximate length of darkness stated...

From: Roberto de Andrade Martins

I would like to point out that some authors attempted to find NATURAL explanations for the phenomenon. Cecco d'Ascoli's commentary on Sacrobosco, written around 1300, presented several different opinions (see Thorndike, pp. 409-411): (a) the darkness could have been produced by a comet between the Sun and the Earth; (b) or by a stone called "elitropia" that produces vapours that render things invisible; (c) or by the interposition of Venus and Mercury. After eliminating those suggestions, Cecco concluded that there was indeed a miraculous eclipse. See also a similar discussion that appeared in a 16th century translation of Sacrobosco:

SACROBOSCO, Johannes de. La sphera de Iuã de Sacro Bosco nueua y fielmente traduzida de latin en romance. Por Rodrigo Saenz de Santayana y Spinosa. Con vna exposicion del mismo, dirigida al serenissimo y excellentissimo infante don Iuan de Austria, hijo del inuictissimo Cesar Carlo Quinto. Valladolid: Por Adrian Ghemart, a costa de Pedro de Corcuera, 1568. [the discussion can be found at fol. 78r - fol. 78v]

This shows that some authors did not accept without discussion the miracle, but attempted to find natural explanations. It seems that Medieval and Renaissance authors were not as blind and addicted to the religious explanation as one might think. Roberto Martins



SETalk

Back to eclipses

From: Ari Belenkiy To: HASTRO-LSENL200308LISTSERV.WVU.EDU Date: Fri, 11 Jul 2003 18:23:18

Michael: May I conclude that you don't know any intermediate, pre-Ptolemaic kinglist?

Further: You are saying that Ptolemaic eclipses basicly fit well to the modern theory which in turn depends ... on Ptolemaic eclipses! How else you can compute Delta T? Only adjusting it (probably averaging?) to all known eclipses. I imagine that eclipses from AlMagest force this parameter jump as wild cat and - they - disprove any attempts to make it smooth or even monotonic..

Further: Can you point out to what is incorrect in Robert Newton's Crime and why?

I will look in Steel's paper you suggested - many thanks - how did you find it in Moscow? Ari

From: Axel Harvey

But Delta-T has not been monotonic even in historical times. See the tables of observed values since 1620 at http://www.phys.uu.nl/~vgent/astro/deltatime.htm

From: Tom Peters

This is not true. For instance F.R. Stephenson does not use a single eclipse record from Ptolemy as a data point in his studies (just uses them for comparison with the results from contemporary original Babylonian and Chinese records). See for instance his popular account in Scientific American 247(4), 154..163, October 1982 ; or his definitive paper (with L.V.Morrison) in Phil.Trans.R.Soc. London A 351, 165..202 (1995).

Moreover, these historical results are fully consistent with present-day observations of the Earth-Moon dynamics using Lunar and (artificial) Satellite Laser ranging, which are analysed using detailed models of the rotation of Earth and Moon, their shape and deformations (tidal and otherwise), and their gravitational interaction.

The observed tidal accelaration of the Moon is (-25.858 +/- 0.003)"/cy^2 (Chapront et al. Astron.Astrophys. 387,700..709 (2003); http://simbad.u-strasbg.fr/cgi-bin/cdsbib?2002A%26A...387..700C). >From the models of the Earth-Moon coupling, this implies a quadratic term in Delta-T of about +42 s/cy^2. There is also a non-tidal component accelerating the Earth due to the decrease in its polar flattening. The currently observed rate is consistent with the overall accumulation of Delta-T derived from historical records.

So when I model Delta-T with a quadratic and exponential term based on present-day observations, I find a value for Delta-T in 1300 BC of about +16 hours with an error of about 2 hours. Around the begin of the era, I find Delta-T = 3.0 +/- 0.4 hours. Stephenson and Morrison provide a smoothed value (spline-curve fit to observations) of 10600 s = 2.94 hours.

So it is very well possible to compute eclipses for classical times quite independent of Ptolemy's accounts.

From: Ari Belenkiy

Thanks for the reference. It looks like several periodic (with different periods) functions are in the game. Would Ptolemy have not falsiified some data we would be in a good position to uncover them.

It is interesting whether some radical effects (say, Tunguska meteor of 1908 or earthquake which destroyed Lisbon in 1755) influence Delta-T in predictable way? Ari Belenkiy

From: Joan Griffith

I have just read that today's Delta T is .05. How does that relate to hours & minutes in past years? Joan

From: Tom Peters

On Sun, 13 Jul 2003, Joan Griffith wrote:

> I have just read that today's Delta T is .05.

In what units? See: http://hpiers.obspm.fr/eoppc/bul/bulb/bulletinb.dat column "UT1R-TAI"; tomorrows (predicted) value is -32.365063 s, compute Delta-T = 32.184 - -32.365063 = +64.549063 s. (the constant 32.184 has this exact value by definition).

> How does that relate to hours & minutes in past years?

See:
http://www.phys.uu.nl/~vgent/astro/deltatime.htm
http://www.wikipedia.org/wiki/Delta-T

From: Tom Peters

> So when I model Delta-T with a quadratic and exponen-

(Continued on page 26)

SETalk

tial term based on present-day observations, I find a value for Delta-T in 1300 BC of about +16 hours with an error of about 2 hours.

Duh. I shouldn't do this by hand. My formula gives for -1300: +8.5 +/- 1.1 hours.

From: Michael L. Gorodetsky

Dear Ari,

>Michael: May I conclude that you don't know any intermediate, pre -Ptolemaic kinglist?

No you may not. What do you mean by that?

>Further: You are saying that Ptolemaic eclipses basicly fit well to the modern theory which in turn depends ... on Ptolemaic eclipses!

Absolutely wrong! Modern therory does not depend on Ptolemaic eclipses who gave you such a strange idea?

>How else you can compute Delta T?

Because we have hundreds of other eclipses recorded on clay tablets and very accurate chineese descriptions. Moreover, we may neglect fluctuations of Delta T at all and use only purely parabolic dependence still with a good agreement.

>Only adjusting it (probably averaging?) to all known eclipses. I imagine that eclipses from AlMagest force this parameter jump as wild cat and - they - disprove any attempts to make it smooth or even monotonic..

Your imagination leads you too far away from truth. This parameter was assumed purely parabolic for this time basing on independent research. The fluctuations of the time of eclipses are of the order of precision of babylonian estimates of time. See The Accuracy of Eclipse Times Measured by the Babylonians", J.M.Steele, F.R.Stephenson, L.V.Morrison, JHA, XXVIII, p.337.

>Further: Can you point out to what is incorrect in Robert Newton's Crime and why?

I can point easily several mistakes of R.Newton here (for example he errs in calculation of equinoxes and syzygies) but at the same time this book contains a lot of intreresting observations. But I don't want to raise the discussion of R.Newton here as usually this discussions are too hot. I want to stay neutral.

>I will look in Steel's paper you suggested - many thanks - how did you find it in Moscow?

Moscow is not the place where white bears are walking down the streets. But what I can't find here I can find in libraries all over the world.

From: Ari Belenkiy

Michael:

1. I meant the same thing which you demanded for an Israeli kinglist - a stella with names engraved in chronological order. Can you show such a stella with Assyrian-Babylonian kinglist?

2. On Robert van Gent's site I saw several formulas for Delta T, their coefficients are changing every ten years. The same OLS method is used (right?) so why are they changing? New data?

3. I am curious about R.Newton's claim about Ptolemy's 28 hour mistake in determination of 132 autumnal equinox - is 28

(Continued on page 27)

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correct?

4. You are right - my memory betrayed me - white bears walk down St Petersburg streets:) How long ago did Centaurus appear in Moscow? Can I reach its 2000 issues thru the web? Ari

From: Steve McCluskey

I am forwarding the following message from Hermann Hunger, who is away from his usual account. Steve McCluskey

>To: History of Astronomy Discussion Group <HASTRO-LSENL200308LISTSERV.WVU.EDU> From: Hermann Hunger <Hermann.HungerSENL200308mailbox.univie.ac.at> Subject: Re: Back to eclipses
>
>>1. I meant the same thing which you demanded for an Israeli kinglist - a stela with names engraved in chronological order. Can you show such a stela with Assyrian-Babylonian kinglist?
>
>For instance: I. J. Gelb, Two Assyrian King Lists: Journal of Near Eastern Studies 13 (1954) 209-230.
>
>Comprehensive treatment, including translations, of these and other king lists from Mesopotamia: A. K. Grayson, article "Koenigslisten" (in English) in: D. O. Edzard et al. (ed.), Reallexikon der Assyriologie, vol. 6, p. 86-135 (Berlin/New York 1980-1983). Hermann Hunger Institut fuer Orientalistik University of Vienna>

From: Michael L. Gorodetsky

Dear Ari,

>1. I meant the same thing which you demanded for an Israeli kinglist - a stella with names engraved in chronological order. Can you show such a stella with Assyrian-Babylonian kinglist?

Other more knowledgeable in this area members of the list gave you references already. If this and also hundreds of thousands of clay tablets are not enough for you, may be street of Procession made of giant stones has some weight with sign on each: "I am Nebuchadnezzar, king of Babylon, son of Nabopolassar, king of Babylon. I paved with stone plates this road of processions from Shadu to the temple of Great Marduk. Our lord Marduk give us ethernal life"? The name of Nebuchadnezzar is also on on infinite number of bricks. Do you have something of the kind for Israelian kings? For persian period there is famous Behistun inscription of Darius, inscription of Xerxes etc. Specialists can give you much more.

>2. On Robert van Gent's site I saw several formulas for Delta T, their coefficients are changing every ten years. The same OLS method is used (right?) so why are they changing? New data?

Just plot all these formulas where they are defined and see the differences. They are changing because 1. you can use infinite number of curves to estimate the data 2. Indeed new data are taken into account. Stephenson uses splines for his curve fitting and these splines are changing a bit with every his publication.

>3. I am curious about R.Newton's claim about Ptolemy's 28 hour mistake in determination of 132 autumnal equinox - is 28 correct?

No it is incorrect. The error is even more. It is 32 hours for this case according to Britton. The errors of the order of several hours are also present in other R.Newton's calculations of equinoxes and solstices. Autumn equinoxes of R.Newton are nearly 4.5 hours later than Britton's and spring equinox is 7 hours earlier. And it is very strange that R.Newton could not perform the calculations properly. Due to possible difference of the estimate of Delta T the error of calculation can not be more than half an hour. The error of Ptolemy is large but not exeptionally large and it is buried in the core of Hipparchian solar theory. Even if Ptolemy noticed this difference, it was not so easy for him to correct it without remaking all his basis. There is a lot of publications on this subject.

(Continued on page 28)

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>4. You are right - my memory betrayed me - white bears walk down St Petersburg streets:) How long ago did Centaurus appear in Moscow? Can I reach its 2000 issues thru the web?

Yes if your institution has subscription you can get 2000+ issues of Centaurus through the web.

http://ejournals.ebsco.com/info/EJSTitles.asp?PageNo=2

As you can read russian, I can recommend you the following texts:
http://fatus.chat.ru/newton.html
http://fatus.chat.ru/moon.html
http://hbar.phys.msu.ru/gorm/fomenko/referat/referat6.htm

"2004 Transit of Venus"

From: Fred Espenak To: SOLARECLIPSESSENL200308AULA.COM Date: Fri, 11 Jul 2003 21:05:34

I have recently completed a paper titled "2004 Transit of Venus" for the Observer's Handbook 2004 of the Royal Astronomical Society of Canada. The paper features a map showing the global visibility as well as Venus's path across the Sun. Several tables give local circumstances for major cities around the world.

Although the article will not be published until fall 2003, it is now available from my NASA eclipse web site. The URL is:

http://sunearth.gsfc.nasa.gov/eclipse/OH/transit04.html

Please let me know if you find any errors or broken links.

Special thanks to National Space Club summer intern Lauren Williams for her valuable assistance in adapting this article for the web. - Fred Espenak

From: Pawel Max Maksym

"2004 Transit of Venus" I'm going to participate it that with all astronomers and amateur astronomers from Department of Position and Occultations of Polish Association of Amateur Astronomers. We (staf of Lodz Astronomical Observatory) will make an internet transmision of this event. It was also possible to see last eclipse and transit of Mercury on our web page: www.planetarium.toya.net.pl Starry Sky for all of You !!! Pawel Maksym

Classpath problem (Stamatis Karbounarakis)

Date: Tue, 29 Jul 2003 17:07:37 +0300 (EEST) From: Stamatis Karbounarakis <karvounSENL200308ics.forth.gr> To: <eclipseSENL200308hydra.carleton.ca>

Hello. I am beginner in eclipse and I have the following classpath problem. I had a jar file in my java build path and I changed it with a different version. Even though when I navigate my jars with the package explorer I see that is the right one, when I use the content assist, the methods that appear are those of the previous version. In some sense the build path is not "refreshed". Is there anything I could do for this? Thanx! Stamatis

Lunar Eclipses

From: bradley Skene To: HASTRO-LSENL200308LISTSERV.WVU.EDU Date: Fri, 18 Jul 2003 02:54:31

I am sure this question will seem elementary to some, but I hope someone on this list can help me anyway.

One of the fragments of Democritus (unfortunately I don't have the reference to hand) claims that old Greek legends about

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Thessalian witches 'drawing down the moon' meant that the women in question were able to predict the occurrence of Lunar Eclipses, and used this knowledge to overawe the ignorant masses into believing that their spells were responsible for the moon being blotted out.

I have three questions relevant to this:

1). When was it first possible to predict lunar eclipses? For example, were the Babylonians able to make these predictions?

2). Who was the first Greek astronomer that we can reliably say could predict lunar eclipses?

3). Is it conceivable that this fragment could actually attest that Democritus, or at least others in Democritus' time, could predict lunar eclipses?

I would be especially grateful for any relevant bibliography anyone could suggest. Thanks, Bradely Skene

From: Franz Krojer

Hi Bradley, first it is necessary to consider that "prediction of eclipses" has different meanings.

When speaking about modern eclipse predictions, the times, locations and magnitudes of any eclipse can be predicted very exactly for many centuries.

But in earlier times, "prediction of an eclipse" can simply mean, that a person knew that a solar eclipse happens only at new moon and a lunar eclipse only at full moon. (See for example Aristarch about Thales, "P Oxy 3710", a papyrus from which I have only the German translation.)

Moreover, a person could knew, that always when a solar eclipse occured, at the next full moon the chance is much higher to see a lunar eclipse, or when a lunar eclipse occured, at the next new moon the chance is much higher to see a solar eclipse. And that eclipses only happen in a rhythm of circa half a year.

(See, as an example, the eclipses for 2003 and 2004:
http://sunearth.gsfc.nasa.gov/eclipse/OH/OH2003.html
http://sunearth.gsfc.nasa.gov/eclipse/OH/OH2004.html)

In later times the Babylonians, Greeks etc. knew of longer rhythms (for example "Saros"), had a greater database of observed eclipses and used better mathematical methods, so that their predictions had greater chances. (But were not exactly in the today's sense.)

Therefore, if an ancient text indicates only that, for example, a Democritus predicted lunar eclipses, I would say: yes, he could predict eclipses with some impressive chance. Bye Franz Krojer http://www.negation.info/differenz

2017

From: Dale Ireland To: "Solar Eclipse List (solar eclipse list)" <SOLARECLIPSESSENL200308aula.com> Date: Fri, 11 Jul 2003 23:03:51

Hello I am looking for path info for the 2017 total eclipse in the U.S. Specifically between 115W and 125W. Path limit coordinates and centerline coordinates and times, Sun alt/Az, etc. I can't find them on Fred's site.. Too early I guess. Dale

From: Robert B Slobins

Dr Pasachoff: I hate to tell you this, but the 2017 eclipse will cross Wyoming, not Colorado. cheers/rbs

SETalk

From: Jay.M.PasachoffSENL200308williams.edu

I don't have the details, but here is a general list of locations, from my new book, "The Complete Idiot's Guide to the Sun," just published (http://www.solarcorona.net/sun).

"On August 21, 2017 (one saros later than the eclipse that crossed Europe in 1999), totality will start in the north Pacific Ocean. It will hit land at northern Washington and cross central Idaho, mid-Colorado, mid-Nebraska, northern Missouri, southernmost Illinois, western Kentucky, middle Tennessee, southwestern North Carolina, and the heart of South Carolina. Maximum totality of 2 minutes and 40 seconds will occur in Kentucky; the eclipse will exceed 2 minutes all along the center line in the United States." Jay Pasachoff

From: barr derryl

Although somewhat east of your designated site locations, I can confirm that the 2017 August 21 eclipse will pass in an almost perfect diagonal across the state of Nebraska. According to the data presented in Guy Otwell's "The Astronomical Companion," probabilities of observing the eclipse unabated of atmospheric interference lies in the 52-56 percent range across most of this spectrum. My own observations from my home 2 miles south of North Platte, Nebraska (41/07/100/46), confirm this general range for unobstructed skies, but suggest that with slightly cloudy and hazy conditions the probability rises to between 60 and 65 percent. Depending upon the exact value of Delta T at the time of the eclipse, the duration from my own backyard will be in the 1 minute 19 seconds - 21 seconds range. If I decide to observe the eclipse from home I will probably extend "home" to include the area around Stapleton, Nebraska, a small ranching community northward and close to the central line of the eclipse. Also the Sand Hills region, where Stapleton is located, should have slightly better skies than areas in the Platte Valley. I will update the List with conditions and probabilities as gleaned from my data gathered on and around the eclipse date since 1995 at the end of August. With this said, it appears that the best locations will be in far western Wyoming, Idaho, and eastern Oregon where probabilities of cloud free observing vary from 63- 69% (again according to Otwell, as cited above)

From: Klipsi

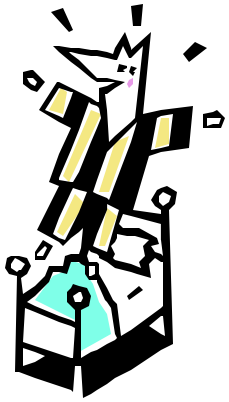
hi Dale,

http://sunearth.gsfc.nasa.gov/eclipse/SEmap/SEmapNA/TSENorAm2001.gif

http://sunearth.gsfc.nasa.gov/eclipse/SEpath/SEpath2001/SE2017Aug21T.html

http://s unearth.gsfc.nasa.gov/eclipse/SEplot/SEplot2001/SE2017Aug21T.gif

http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas3/SE2001-25T-2.GIF



cheers, Klipsi

From: KCStarguySENL200308aol.com

The eclipse path will strike through or very close to St.Joseph, MO where I was stormchasing a couple nights ago. It is about an hour or so from KC area. I find it a little funny that we are talking about weather conditions for an eclipse that will not occur for 14 years! Dr.Eric Flescher

From: Dale Ireland

Hello Thank you for all the response. Peter opened my eyes to the fact that the freeware program Occult which we use for Lunar and asteroidal occultation predictions also does eclipse limits and that worked fine. We live just north of the path and I already have friends asking me if their homes or summer places are in the path. Especially the A.R.G.O. astrophotography site in the high desert north of Bend Oregon. Dale

(Continued on page 31)

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From: Egan Mark

Since we're on the topic of way-in-the future eclipses, and since "July 11" has been a recent topic, I'll throw in my 2 cents:

July 11 eclipses: I saw 7/11/1991 as a 60% or so partial from Houston (I didn't know any better at the time) but it was one of the two things that got me into astronomy....

And I am QUITE looking forward to being on a cruise ship near Tahiti on July 11, 2010.....

for 7/11/2010 satellite photos of the Pacific, see:

http://www.sat.dundee.ac.uk/pdus/WV/2003071118 30WV2_g.jpg (18:30 U.T.)

http://www.sat.dundee.ac.uk/pdus/WV/2003071121 30WV2_g.jpg (21:30 U.T.)

I might be able to get my family and friends to go to this one-- it's in the South Pacific. :-)

Regarding 2017, I've already told my friends and family "You will be with me in Casper, Wyoming on August 21, 2017....." They won't have a choice that time.... C.U. at the next one.... Mark!!!!!

From: Joseph Cali

Fred has maps and coordinates for eclipses decades into the future on the Sunearth site. Go to the 10 year tables of eclipses on the solar eclipse site. Choose the decade. Each eclipse has two hyperlinks. The date links to a global map and the saros links to a table of coordinates. Joe Cali

Flat Earth

From: Roberto de Andrade Martins To: HASTRO-LSENL200308LISTSERV.WVU.EDU Date: Tue, 29 Jul 2003 15:53:09

Aristotle's well known empirical arguments for a spherical Earth appear in "On the heavens", book II, capter 14, available online (for instance: http://classics.mit.edu/Aristotle/heavens.2.ii.html). The main part of his argument is this (Translated by J. L. Stocks):

"The evidence of the senses further corroborates this. How else would eclipses of the moon show segments shaped as we see them? As it is, the shapes which the moon itself each month shows are of every kind straight, gibbous, and concave-but in eclipses the outline is always curved: and, since it is the interposition of the earth that makes the eclipse, the form of this line will be caused by the form of the earth's surface, which is therefore spherical. Again, our observations of the stars make it evident, not only that the earth is circular, but also that it is a circle of no great size. For quite a small change of position to south or north causes a manifest alteration of the horizon. There is much change, I mean, in the stars which are overhead, and the stars seen are different, as one moves northward or southward. Indeed there are some stars seen in Egypt and in the neighbourhood of Cyprus which are not seen in the northerly regions; and stars, which in the north are never beyond the range of observation, in those regions rise and set. All of which goes to show not only that the earth is circular in shape, but also that it is a sphere of no great size: for otherwise the effect of so slight a change of place would not be quickly apparent. Hence one should not be too sure of the incredibility of the view of those who conceive that there is continuity between the parts about the pillars of Hercules and the parts about India, and that in this way the ocean is one. As further evidence in favour of this they quote the case of elephants, a species occurring in each of these extreme regions, suggesting that the common characteristic of these extremes is explained by their continuity. Also, those mathematicians who try to calculate the size of the earth's circumference arrive at the figure 400,000 stades. This indicates not only that the earth's mass is spherical in shape, but also that as compared with the stars it is not of great size." Roberto Martins

Steve McCluskey wrote:

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> At 01:15 AM 7/29/2003 +0300, Ari Belenkiy wrote: Steve: I asked two specific questions.
> >
> >First was about direct antique references to the arguments suggested by Newton.. Not later than 1st cent AD - Plutarch? Earlier?
>
> It's clearly discussed at various places in Aristotle's work; he's one of the earliest sources for many of the arguments you mentioned. In his De Caelo he discusses the changing position of stars as one moves from south to north. I recall that he also discussed the changing appearance of a ship on the horizon and the shape of eclipses, but I don't have references at hand. I imagine the classicists on the list can cite chapter and verse for us. A good secondary source is G. E. R. Lloyd's Aristotle, The Growth and Structure of His Thought. Of course he also advanced physical arguments that we'd no longer accept without serious modification, but the idea of a spherical earth certainly became common knowledge shortly after his time.

Solar Eclipse 31 May 2003

From: Markús Sveinn Markússon To: solareclipsewebpagesSENL200308btopenworld.com Date: Sun, 13 Jul 2003 02:41:08

Hi. I have visited your website http://solareclipsewebpages.users.btopenworld.com/

and found that you might be interested in pictures from the 31 May 2003 solar eclipse.

They are displayed at my website http://www.simnet.is/markussm Thank you, Markus Sveinn Markusson

SETalk

More eclipse news from Durness.

From: Katherine Low To: SOLARECLIPSESSENL200308AULA.COM Date: Sun, 06 Jul 2003 22:14:59

Dear members of the Solar Eclipse newslist, I have managed to scan the slides from the annular eclipse of 31-May-2003 observed from Durness, Scotland. Please have a look at my on-line album www.picturetrail.com/krisdelcourte and have a look at the latest album 'Scotland 2003' (or the South Africa 2002 one if you did not have the opportunity yet to look at my 4-Dec 2002 pictures). This eclipse in Scotland I took photos with 2 cameras: one was mounted on a 300 mm Nikkor lens f 4.0 (working diafragma was f 8.0). These are the photos with some people on a further cliff in the foreground. The other camera was on a small refractor telescope, 76 mm lens diameter, focal distance 910 mm (f 12).

For the sake of completeness I have also included the already earlier sent eclipse story below. Happy viewing.Kris Delcourte

SE May 31st 2003 - Light variations

From: Felix Verbelen To: SOLARECLIPSESSENL200308aula.com Date: Thu, 31 Jul 2003 13:48:31

In Belgium, the solar eclipse on May 31st, 2003 was only partial and the maximum phase (89%) occured just minutes before sunrise. It was unclear how the morning twilight would be affected. Automatic recordings were performed on eclipse day as well as during previous days. Results can be found at http://user.online.be/felixverbelen/se20030531.pdf (36 Kbytes - pdf format) Regards. Felix Verbelen

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Eclipse November 2003 : Croydons Final Brochure

From: Jörg Schoppmeyer To: "SOLARECLIPSES (E-Mail)" <SOLARECLIPSESSENL200308AULA.COM> Date: Mon, 07 Jul 2003 17:54:00

I' ve received 8 parts as jpegs. To print them out I had to scale them down and now the quality is very bad. Couldn't they generate a simple pdf ? Joerg

From: Christiaan

I received it as well. Hard to read, even though the jpegs are quite large. A pdf would have been better, indeed. For some reason, the invoice sent to me on the same day was a 4.5 Mb-sized Excell-file... don't have a clue why that file should be that big. Being dutch, I dont like the fact that the advance payment I made (about AUD 363.-, earlier this year) has been changed intu US$ 200,- (which is worth about AUD 300.- nowadays... I guess there are better ways to spend 60 Australian dollars..) groeten, Christiaan

From: Starfield Scientific

I spoke to Croydon Travel today and they said that all their seats are booked out. I would recommend confirming this yourselves though. Regards David Finlay

NASA Web Site for TSE 2003

From: Fred Espenak To: SOLARECLIPSESSENL200308AULA.COM Date: Thu, 17 Jul 2003 20:16:22

I've just updated the NASA web site on the Total Solar Eclipse of 2003 Nov. 23. The web site includes high and low resolution versions of maps appearing in the NASA publication TP 2002-211618 "Annular and Total Solar Eclipses of 2003". Web site now features most of the NASA 2003 publication text including Jay Anderson's summary of weather prospects.

The site also includes tables of Besselian elements, geographic coordinates of the path of umbral shadow, physical ephemeris of the umbra, topocentric limb profile corrections, and local circumstances for many cities. Most of these tables are taken directly out of the NASA 2003 eclipse publication.

The address of the 2003 Total Solar Eclipse web site is:

http://sunearth.gsfc.nasa.gov/eclipse/TSE2003/TSE2003.html

Special thanks to National Space Club summer intern Lauren Williams for her valuable assistance in converting the 2003 eclipse bulletin into html format for the web.

Please contact me about any typos, corrections or suggestions. - Fred Espenak

NHK-TV Solar Eclipse

From: Dale Ireland To: "Solar Eclipse List (solar eclipse list)" <SOLARECLIPSESSENL200308aula.com> Date: Thu, 31 Jul 2003 04:35:54

Hello List I received this request today and I am forwarding it to the list. Some of you probably received it directly. Respond to the address below. Dale Ireland

Original Message--From: yuhong koh [mailto:hkohSENL200308earthlink.net]

Dear Mr. Ireland, My name is Hiro Koh and I am a researcher at NHK-TV, a Japanese public broadcasting system. NHK is currently preparing for a live coverage of the November solar eclipse over Antarctica. In its preparation, we are requesting help from many eclipse experts around the world. We are searching for any records or stories from past observations of a solar eclipse above Antarctica. We are in search of field notes, diaries, letters, photos or even just stories. It could be an annular or total eclipse. If you have any insight into this matter, your help is greatly appreciated. For example, if you of anyone who saw or any story about an observation of the 1985 solar eclipse near Antarctica, please let me know. Thank you Hiro Koh NHK, Project Antarctica

From: yuhong koh <hkohSENL200308earthlink.net>

Dear folks, My name is Hiro Koh and I am researcher at NHK-TV, a Japanese public broadcasting system. I came across your correspondence in an internet search and wanted to ask for your help. NHK is currently preparing for a live coverage of the total solar eclipse over Antarctica in November. In its preparation we are searching for any records or stories of past Antarctic solar eclipses observed from the Antarctic. We are looking for diaries, letters, field notes, photos, sketches, or even just stories from an observa-

tion. We cordially request for your insight. For instance, do you know of anyone who saw or heard any stories of the 1985 solar eclipse over Antarctica? We sincerely appreciate your help. Hiro Koh NHK, Project Antarctica

From: Gessner <gessnerSENL200308easynet.fr>

Dear Hiro Koh-san, I recommend that you also contact olivier.staigerSENL200308span.ch

I don't know if Olivier has any records you are looking for, but he is a very energetic, inventive and successful eclipse chaser. To prepare for the November 2003 Antarctic eclipse, he took a South Africa - Australia flight on November 23, 2002 (last year). He might have interesting and unexpected contributions for your NHK project, perhaps he would be a valuable member of your team.

I was in Antarctica in January and was thrilled watching the sun go from right to left, seeing Orion upside down, etc. , you can really see and feel you are at the "bottom" of the Globe. Your NHK audience will love this "bonus" added to the eclipse. I wish you all the best for your project. Nicolas Gessner

From: NinaSandySENL200308aol.com

I second the motion - you ought to get Olivier to be your narrator - if he's not already taken! And I hope there wil be a way for people in USA to access your station here. Honored to be included in the group, Elwood E. "Sandy" Sanders, Jr.

Croydon/QANTAS 23 November 2003 Eclipse Flight

From: Glenn Schneider To: SOLARECLIPSESSENL200308AULA.COM Date: Tue, 29 Jul 2003 19:20:35

All, First, I apologize for my delay in replies to the many of you who have contacted me personally for information over the last few weeks in regard to the Cryodon/QANTAS eclipse flight, and for this and for this "group", reply through SEML as well. I have just returned from Sydney, Australia where my time was engaged at the 25th General Assembly meeting of the International Astronomical Union, and my email access was spotty at best most of that time. This trip was on the heels of a couple of weeks of personal (family related) travel, and now that I have returned to Tucson, and today to work, my phone-, e-, and snail- mailboxes are percolating over. I will fully endeavor to get through them all in the next few days, with personal replies as appropriate. I thought I would first generally report on a couple of items regarding the Croydon/QANTAS eclipse flight. I beg Pat's P.'s indulgence for the use of the SEML email exploder here as all may not be interested, but based on my email box, I suspect a significant fraction are...

While in Sydney (during an off time from the IAU meeting) I had met as planned first with Cpt. John Dennis and Cpt. Peter Elston of QANTAS, and at a separate meeting with Phil Asker and Gayle Brown (with Jay Pasachoff in attendence) of Croydon travel.

For those who don't know, John is the senior B747-400 check captain for QANTAS airlines, and likely has more flight hours in the 747-400 than just about anybody still flying today. John will be the pilot in command of our eclipse flight, and I have had the privilege of working with him during the past year in defining the flight requirements and plan for our eclipse flight. Peter, who is a check and training captain for the QANTAS 737 fleet will not be crewing on our flight, but he is an ardent amateur astronomer, and will be on our flight thus adding an additional and valuable level of continuity in communication between eclipse chasers and flight crew. I apologize to both of them here if I have mis-represented or understated their professional credentials which are quite significant, or their affability which is equally substantial and to which I am grateful.

During a "working dinner" with John and Peter (with Joe Cali, whom many of you know also in attendence) we reviewed the current status of the fight preparations, requirements, and many technical aspects of its plan and execution. In a nutshell the detailed planning for assuring a successful eclipse intercept and observation to the highest degree possible seems to be reaching a significant level of maturity, and no significant "open" items appear to remain. The requirements and interfaces seems to be well understood from both the flight and eclipse aspects.

Following that John had arranged for three hours of time on the Boeing 747-400 simulator at QANTAS facility in Sydney where we "dry ran" the eclipse intercept with the highest degree of fidelity possible save for the actual flight itself. Being in this simulator, a multi-point actuated "room" fully emulating the 747 flight deck, avionics, hydraulics, etc. under real-time

closed-loop control via in-flight simulation software is just about as close to actual flight as you can possibly get, and is used for pilot training and check out. I will eventually put some photographs of my own on my web site, but for the moment please do see:

http://anthonyjhicks.com/ajh/media.nsf/albumview!OpenView&Count=999&RestrictToCategory=flightsimulator

This went extremely well, even better than I had hoped. The procedural entry of the in-situ computed totality run target way-points into the 747 Flight Management system, and the cross-checked confirmatory read-back during the flight subject to differential corrections was verified. From the perspective of the navigational uncertainties due to wind, precision and com-mandable granularity of the FMS, etc., we achieved second contact, mid-eclipse, and third contact aggregate accuracies of +/- 300 meters in position, and +/- 4 seconds of time. This more than met the "minimum" targeting goal of +/- 1nM and +/- 10s, and is well within any significant margin of tolerance given the width and relative velocity of the umbral shadow.

We did identify a few minor enhancements to be made to the EFLIGHT software which would make operations even smoother, and those have now been implemented. For those interested I have updated the on-line EFLIGHT documentation to reflect the post-sumulation updates which are now being evaluated for use in flight. See:

http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/EFLIGHT/EFLIGHT.html (be sure to flush your browser cache and reload if you have visited that page recently).

To mitigate the risk of an in-flight computer (laptop, not flight system - which is fully redundant) failure, (a) a second EFLIGHT loaded computer will be taken on the flight, (b) a series of "pre-computed" waypoint tables, tiling the full range of possible flight altitudes and ground speeds has been compiled and could be used "as is". See: http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_03/CROYDON_WAYPOINT_TABLE.pdf

I am currently compiling a flight procedures document for the entry onto and execution of the totality run, to serve as a de-tailed "checklist" in flight. This will be iterated with, and after review, approved by John, so there will be no "surprises" in flight.

My meeting with Phil and Gayle, covering some of the less technical aspects of the flight, went equally well. One of the most important things I came away with was an unqualified re-assurance that the charter is a "go", and there was no hesi-tancy in that. The sunside window seats (for eclipse viewing) are essentially fully committed. Phil indicated there were one or two in question, as there were a couple of possible cancellations or reshuffling between the biz and coach cabins, but the expectation is that the eclipse windows will be filled. Anyone interested in joining now should not assume that it is fully subscribed, though it is very close to that (and indeed may be by the time you read this). In any event, if you are interested and have not yet committed you should contact Phil Asker ASAP to get the current status. It is also my understanding that some "siteseeing" (non-eclipse) seats are still available, but not many (I won't quote a number as that is diminishing quickly), so the concept of cost-reduction of an "eclipse only" flight for shared use of the aircraft seems to be effective. It is quite likely that all site-seeing seats (or very nearly so) will also be filled.

With regard to seating, it is also my understanding that except for a few early requests, specific seats have not yet been assigned. IF you are planning to share a window with a specific "partner" in an adjacent seat, in either coach or biz class, you should contact Gayle Brown ASAP as she will be working on the seating arrangements very soon (if not already).

Additionally, I noted to Gayle that the emergency exit, which on the B747-400 are not located next to seats but in"empty" spaces separating sections of seats, have perfectly usable windows - but these, it appears, had not be allocated or committed. One or may MAY be used by the crew or Croydon staff, but one or more MAY be available. If the "seats" with windows are fully subscribed you may want to ask Gayle about the status of the exit door windows.

Just a couple of other notes/observations. As Croydon had advised the flight will now leave from Melbourne rather than Perth. This change was dictated by the seemingly un-related fact that the Rugby World Cup (http://www.rugby2003.com.au/) is being held in Sydney, with the FINAL to be held on 22 November. Shortly thereafter, as QANTAS perceives, tens of thousands of Rugby fans will be migrating home, internationally, from Sydney - and the use and scheduling of their aircraft will be at a premium. How is that for poor planning, didn't the Rugby folks consult the astronomers first? For those who haven't caught on to this (like many of us Americans) , the Rugby World Cup is a *BIG* event to which the SuperBowl or "World" Series do not measure up. In the original concept a launch of the eclipse flight from Perth would have reduced the time in flight to the Antarctic and added a bit more in-flight

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margin for the eclipse intercept. However, that would would have taken the aircraft out of service for other use for a much longer time, since it would have to be ferried to/from Sydney to Perth. As the impact of the World Cup exodus became apparent to QANTAS, this became unacceptable, and if it could be considered - would have driven the price up very significantly. This is what Phil was up against, and in large part securing the use of the aircraft in the face of that, was what had delayed the final dissemination of pricing information. Hence, the idle speculations (on SEML) of price "gouging" by QANTAS due to the eclipse were unfounded - this charter is a blip on their global scheduling radar screen - the World Cup is a splash. The relative cost increase over the anticipated pricing seems, after a relocation of the flight to Melbourne, has been due to the unfortunate (for us) decline in the US Dollar relative to the Australian dollar. This hit home to me over the last couple of weeks while I was in Sydney. Everything was "much cheaper" when I was in Australia in December 2002 for the TSE then. Of course, that was because the dollar was stronger. Pitty I did not deposit funds in an Australian bank when I was there, then I would not feel the price increase.

To briefly address a few specific questions:
- We will have video from the flight deck fed to the cabin video system.
- We will have air-to-air and air-to-ground voice communication from the flight deck during the flight (i.e., to the LanChile flight and [to be arranged] ground/ship based expeditions.
- We do NOT yet have real-time internet connectivity, but are investigating the possibility (though that may not come to be).
- Use of the "usual" electronic equipment in flight (computers, cameras, PDAs, etc.), except during take-off and before landing (and during the eclipse!) is fine (but also as usual no cell phones, transmitters, etc.)
- We *WILL* be subjected to security screening before boarding, so plan for that in any packaging of equipment you will be bringing on board (make it easy to be schecked).
- Cabin overhead and reading lights will be disabled during the totality run. So, bring a small (RED FILTERED) flashlight if you think you will need one.
- We will be bringing rolls of black tape, to tape over camera flash units (for the sightseers as well). Anyone using a flash in the cabin during totality will be ejected from the airc raft (well, maybe not, but they will certainly be persona non-grata).
- The specific aircraft to be used will be selected prior to the flight based upon its maintenance and readiness schedule (John indicates the "very best" aircraft will be selected - as is the case for all Antarctic flight), and it will go on a special "watch list" three days before the flight - where any open maintenance items are tracked and attended to.

For additional information see: http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_03/FAQ_747.html

which will grow as I get other (frequent) questions.

I am sure I have forgotten to say much I intended to here, but in closing I have been quite reassured by my meetings with the QANTAS and Croydon and our flight simulation exercise that with only 4 months to go until EDAY things are moving along nicely. It seems all that can be done is in the pipeline, and with no unforeseen events we are looking very good for the flight. Then question then becomes, what will we do for an encore?

Finally, let me apologize in advance for any delay to replies from this email, as I am still trying to catch up with ones already in the queue. Cheers, Glenn Schneider http://gschneiderSENL200308mac.com

From: Rybrks1SENL200308cs.com

Glenn; Thanks for all the work. Dori and I look forward to it. We have reserved and entire Business Class row...should be fun. Cheers. Ray Brooks

From: Glenn Schneider

One additional item I had forgotten to mention earlier today. For those looking at planning their use of viewing or photographic equipment on the QANTAS B747-400, I have placed section 2 of the Boeing document D6-5826-1 (747-400 Airplane Characteristics, December 2002) on my server as a PDF document at: http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_03/BOEING_747_SPECS/7474sec2.pdf

This section contains relatively detailed drawings of the physical configuration of the aircraft interior and exterior This may be of help in understanding what equipment can be (or cannot be) readily used in different seats in the airplane, and what constraints this may put on "sharing" access to sun-side windows. Glenn Schneider http://nicmosis.as.arizona.edu:8000

TSE 2003

QF 64: Joburg -> Sydney Flight *STATUS*

From: Glenn Schneider To: SOLARECLIPSESSENL200308AULA.COM Date: Fri, 01 Aug 2003 17:14:25

All, In recent weeks I have received a number of off-line emails (and also seen continuing discussion through SEML) on QF 64 as a possible serendipitous avenue for observing the 23 Nov 2003 TSE. I should say that after a significant investment in time studying the issue, with Cpt. Peter Hunter as the cognizant pilot from QANTAS, we had put the idea to bed in December 2002 because it was high risk and low probability. The major issues came down to two: (1) Flights out of Joburg are often delayed due to security and ATC issues beyond the control of QANTAS, but also (2) because of density-altitude take-off limitations the aircraft cannot fly at its max GROSS weight (equipment+PAX+fuel+cargo). For those wanting more detail on this see pages 55-57 and 66-71 of:: http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_03/BOEING_747_SPECS/7474sec3.pdf (pages 55-57 and 66-71).

Regarding (2), the history of this flight is such that it will have a full or nearly so load, and given normal windage, flight distance, etc., it does not take off with full tanks. It IS of course within safety margins with reserves - but you don't every want to plan to use those reserves (that is not what they are there for), but there is not enough fuel for what many think of as a "small diversion" to allow the intercept. So, it is not just a cost or scheduling issue as I have seen mostly discussed here.

Given the degree of interest, I had re-opened a dialog with Cpt. Peter Hunter of QANTAS with whom I was working last year on evaluating that possibility, even though we had terminated perusing that in December given the reason he outlined in the email I append below, in favor of the dedicated QANTAS charter. This, I know, will be disappointing, but it is as had expected. You may note Peter did not say "impossible", but I think you will see the unlikely confluence of conditions arising which would enable an attempt at this has a very low probability. If there are any big gamblers on SEML you may still elect to take your chances, but it would be quite a long shot.

I believe that the exchange below will speak for itself, so I am appending it here without further commentary as to the "technical feasibility". My hope here, also, is to prevent a lot of individuals from "pinging" QANTAS separately about this, re-asking the same question. They do have limited resources and I have gratefully tapped many of them, some fairly extensively over the past year (mostly time of their pilots, John Dennis, John Black, Peter Hunter and Peter Elston, all of whom have been enormously helpful, forthright, and enthusiastic) over the past year in arranging and investigating both the Antarctic charter and the QF 64 question, in hopes of coordinating the desires of this "community" without unduely burdoning them with replicated effort.

In his Peter's he specifically mentioned 3 executed QA 64 flights (closely centered on 23 Nov 2002) which were examined in detail to see if the generally expected potential problems (1) and/or (2) would have been limiting factors on these proxy flights to 23 Nov 2003. Without further commentary, I append our most recent email exchange (with some personal items excised, but none germane to the issue). Glenn Schneider

Peter, Thank you very much for your rapid rely to my last email. ...

I fully understand the constraints imposed on the evaluation of a possible "serendipitous" eclipse viewing opportunity for QF 64, and have indeed reviewed all of our long history of past emails - most importantly your previous analysis and conclusions which you have so well summarized here. I must say (unfortunately) I do concur, but as the interest has been rising, I did feel the necessity of raising the question one last time.

Let's stay in touch. If you do end up in command of QF 64 on eclipse day I shall hope for the very unlikely confluence of probabilities which might let you attempt a go at at, but given all you appropriately say, I won't hold my breath. Cheers, GS -

Peter Hunter wrote: Glen, No sweat about my falling out of the loop for a while. I also took 3 month's long service leave from March of this year.

Yes, I still have all of the documentation from the QFA64 exercise last year, where we studied 3 actual flights on the week in question as they actually occurred, using real conditions.

The conclusion I reached was that it would require a considerable slice of luck for a viewing to take place.

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Joanne & Patrick

The sole Newsletter dedicated to Solar Eclipses

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The main problem is the combination of elevation and temperature at JNB means the aircraft can never takeoff at its usual maximum take off weight (structural limit). Rather it is performance limited on takeoff to much less than that.

Qantas reviews, a while in advance, using staistical JNB data, what they think the max takeoff weight will be for each day. Using statistical route winds they then also estimate the required flight fuel+reserves to SYD. They then come up with a max payload for each day, and sell seats+freight to bright the a/c up to that weight.

The result is when the Captain fronts up an hour ahead of departure, he rarely has the option to load much extra gas for any 'diversion' en-route.

So the possibility of viewing the eclipse on a QFA64 is very much defined by the chance that, on the day, the 'minimum flight time track' as defined by the wind structure over the entire JNB-SYD route, will pass very close in location and timing to the eclipse track because:

(a) there is not much spare gas for sideways diversions to pick up the elcipse track
(b) there is not much spare gas to either speed up or hold for long en-route, to compensate for timing problems

and anyway (c) not much spare gas to allow manoeuvring to turn & fly along the eclipse track to allow preparation time for 'shooting' and viewing

See earlier e-mails for my discussions of the variability of the 'min time track' between the 3 days we studied in the same week last year...

Another difficulty: if the eclipse track and min-time-flight-track co-incided nicely, our timing could be destroyed by a 'missing' passenger at boarding time, a delay at the takeoff point etc etc. The charter will have enough pad built in to take care of this, but not so on QFA64...

Having said all of the above, if it appears possible I won't be on the charter I would be trying to be on the QFA64. I would be prepared for any fortunate coincidences, but suspect a "straight-through" pass on an easterly track might be the best we could manage, which would be great for anyone on the flight deck :-)

I can't in all honesty recommend it as a gamble worthwhile for keen viewers who have failed to get on the two charters and are using QFA64 as their last alternate... at a cost of many $$$$ Peter.