

# SOLAR ECLIPSE NEWSLETTER

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**THE SOLAR ECLIPSE  
MAILING LIST IS MAINTAINED BY THE LIST OWNER PATRICK POITEVIN AND WITH THE SUPPORT OF JAN VAN GESTEL**

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**IN THE BODY OF THE MESSAGE TO listserv@Aula.com SUBSCRIBE SOLARECLIPSES name, country.**

### **The Solar Eclipse Mailing List**

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

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

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

## **Solar Eclipse Mailing List**

Dear SENL readers,

Another Solar Eclipse Newsletter hits the screen of your computer. We hope the previous issues were of interest to you.

Africa 2001 is over and many of you do have to make the choice between Africa, the ocean or Australia. At least when you think about the Total Solar Eclipse of 2002. Fred Espenak and Jay Anderson are doing a great job and we all look forward to the next NASA bulletin. See inside for more details.

For those whom are travelling to the Annular Eclipse of December, please contact the association in Costa Rica. We are sure they will help you out with local information.

Please visit their website, which is mentioned in this issue.

In the meanwhile we are settle in our new home. Joanne is very busy with her MSc studies, the kids are back to school and Patrick is having more time to maintain the SEML, expand the SECalendar and tidy up all the Solar Eclipse information he gathered along all those years.

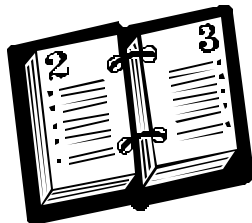
Enjoy this issue. Not that big in number of pages, but nevertheless full of information about solar eclipses and related subjects.

Kindly Regards,

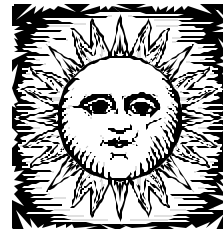
Joanne and Patrick



## ECLIPSE CALENDAR



### AUGUST 2001



From: Patrick Poitevin <patrick\_poitevin@hotmail.com> To: SE Mailing List <SOLARECLIPSES@AULA.COM> Sent: Monday, July 30, 2001 9:06 PM  
Subject: [SE] Solar Eclipse Calendar for August

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

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)



★ T H E ★ N A N T U C K E T ★  
**Maria Mitchell Association**  
ASTRONOMICAL OBSERVATORIES ★ NATURAL SCIENCE MUSEUM ★ SCIENCE LIBRARY ★ MITCHELL HOUSE ★ AQUARIUM

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)

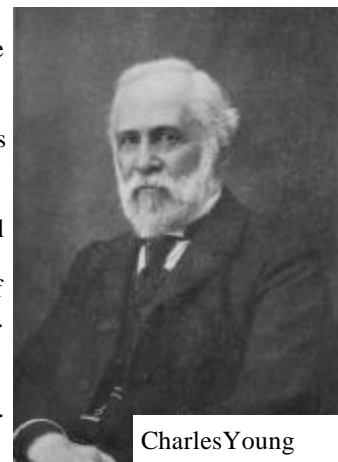
August 02, 2046 Two total solar eclipses at an interval of only 12 lunations (354 days) are possible, such as 12 August 2045 and 2 August 2046 in the Atlantic Ocean off the coast of Brazil. But together with the total solar eclipse of 30 April 2060, this is a trio occurring in a time span shorter than 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) 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 Baily 3115 (1981 PL): Minor planet discovered August 03, 1981 by E. Bowell at Anderson Mesa. Named for Francis Baily (1774-1844), English astronomer and one of the founders of the RAS. During his observation of the Solar Eclipse of 1836 he noticed intrusions of sunlight around the Moon's limb, which have become known as Baily's beads. MPC 10847. Name proposed by the discoverer. (ref. VK 6/97)

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



Charles Young

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)

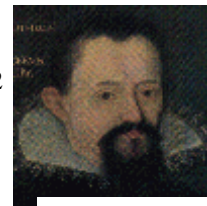
(Continued on page 3)

## ECLIPSE CALENDAR

August 06, 1618 Johannes Kepler determined 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 Fraunhofer lines 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.



Kepler

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 Bengt Edlén (Sweden) as iron that has lost 13 electrons.

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, 1869 In the US town Cincinnati, the last total solar eclipse was in 1395. The next total solar eclipse will be in 3046, 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, 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, 1819 Birth of J. Lane, American physicist and astronomer. Studied the sun: solar physics, temperature and density. (ref. DD 8/98)



George Airy

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.

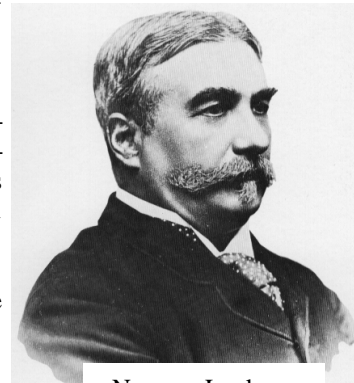
August 11, 1999 Total solar eclipse in Europe and Asia. About 500 million observers are expected in the path of totality. After 1999, for Belgium it was since 17 June 1433 when there was a total solar eclipse.

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 after sunset. The year after, August 2, 2027 total in extreme South of Spain and September 12, 2053 total in extreme South of Spain, September 3, 2081 total in France, South in Germany, Switzerland, Austria, etc., September 23, 2090 total in northern France and the southwestern Belgium at sunset.

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 Fraunhofer lines in the solar spectra and the discontinuous 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 16, 1920 Sir Joseph Norman Lockyer (1836-1920) died August 16th, 1920, at Salcombe Hill, Devon.



Norman Lockyer

(Continued on page 4)

## ECLIPSE CALENDAR

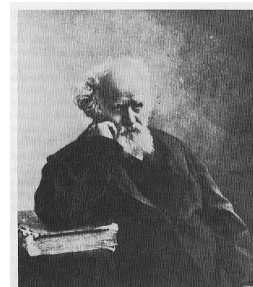
August 16, 1984 Launch of AMPTE, three British satellites which study the solar wind and the interaction with the atmosphere. (ref. DD 8/98)

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

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)

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)



Jules Janssen

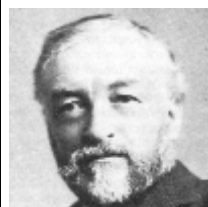
August 19, 1646 Birth of John Flamsteed (1646-1719) who observed the 1715 solar eclipse from Greenwich. (Ref. Rc 1999)

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 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, 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)



Samuel Langley

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

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

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

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 determined 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)

## ECLIPSE CALENDAR

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

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), 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)

August 30, 1981 3123 Dunham 1981 QF. Minor Planet discovered 1981 August 30 by E. Bowell at Anderson Mesa. Named in honor of David W. Dunham, American astronomer and organizer of IOTA. 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

From: Jean Meeus <JMeeus@compuserve.com>

In the Solar Eclipse Calendar for August there is a small error.

August 12, 2026 : total solar eclipse in northern Spain, visible shortly \*before\* sunset, not "after" sunset. (If it were after sunset, it would not be visible!). Jean Meeus



## GENERAL TOPICS

From: J.P. van de Giessen To: jpvdgiessen@gelrevision.nl Sent: Thursday, June 07, 2001 12:25 PM Subject: **Astronomical Book Online**

Dear Visitor of Astronomical Books Online,

Due several problems with my provider, the site Astronomical Books Online, was the last 2 weeks down.

In the meantime I created for your service a mirror-site on <http://sites.netscape.net/jpvdgiessen/> in the next weeks the main-site will move to <http://giessen.fol.nl> with all facilities you have get used to:

- \* About 600 ebooks for free readable
- \* Classified in Scientific and Popular books
- \* And divided in categories like: Astrophysics, Calendars, Cosmology, Deeps Sky, Meteorology, Radio Astronomy, Solar System, Space Technology, Tools, Astronomers, Skylore

I hope you wil enjoy reading the books, and clear skies,

J.P. van de Giessen, Astronomical Books Online www: <http://giessen.fol.nl> email: [astronomy@giessen.fol.nl](mailto:astronomy@giessen.fol.nl)

From: F.Podmore <podmore@science.uz.ac.zw> To: <solareclipses@aula.com> Sent: Saturday, June 02, 2001 1:15 AM Subject: [SE] **Lunar eclipse 5 July simulation**

Does anyone know of a lunar eclipse simulation, like the splendid solar eclipse simulation of Andrew Sinclair (as used on Fred Espenak's website) which can show me what the forthcoming lunar eclispe will look like from Harare?? Thanks in advance for any animation websites or software.

I HOPE you all enjoyed the TSE of 21 June, ESPECIALLY those of you who came to Zimbabwe. As this was my first TSE I thought it was FANTSTIC, relly beautiful, particularly the brilliant whiteness of both diamond rings. Best wishes, Francis

Mid-totality as seen from Gstaad Switzerland



From: Jean Meeus <JMeeus@compuserve.com> Sent: Monday, July 09, 2001 1:17 PM Subject: **Delta T**

On 2001 June 1, the value of Delta T was 64.21 seconds. Jean Meeus

From: Patrick Poitevin <patrick\_poitevin@hotmail.com> To: SE Mailing List <SOLARECLIPSES@AULA.COM> Sent: Thursday, July 12, 2001 9:32 PM Subject: [SE] **Request form the SEML**

Dear All, I need your help: Do reply to me and NOT to the SEML! Does sms-gateway@ip-plus.net or something similar says anything to you? We are getting a message reply from this address. It means that somebody has forwarded his SE messages to another server, mobile phone or whatever. Though, the contact is not existing and our SEML server is getting error messages/auto reply every time there is a SE message. We can not trace down the origin of the message. Please reply me prompt while this is a very annoying but urgent situation. Thank you very much in advance. Best regards, Patrick

## GENERAL TOPICS



From: Kidinvs@aol.com To: SOLARECLIPSES@aula.com Sent: Thursday, July 12, 2001 4:46 PM Subject: [SE] **Happy Anniversary**



I may be off by a day...I just remembered!!! July 11th 1991.... Where were you????

From: Mike Simmons La Paz, Baja California, Mexico. Completely clear skies, hot weather (until near mid-eclipse).  
Mike Simmons

From: Richard Monk Who could forget it?? See you Aug11 in Milton Keynes. Richard Monk

From: <johnleppert@peoplepc.com> Standing in Hawaii under thick cloud in darkness... John Leppert, Bismarck ND

From: Jörg Gerdes <j.gerdes@uni.de> What a great eclipse in San Blas, Nayarit, Mexico! It was my first one. But it was not the last: 1994 Annular - Marocco 1995 Total - India 1998 Total - Curacao 1999 Total - Germany 2001 Total - Sambia See You 2002 in Australia, Jörg

From: Dribalz@aol.com July 11,1991 I was in La Paz, Baja California Sur. I forget the name of the hotel--big red-dish thing. I was positioned on one of the holes of the miniature golf course out on the beach screaming in delight at my first total solar eclipse--6 minutes 27 seconds of the most amazing sight I have ever seen in my life. I was one of the first in my general area to call out shadow bands--I had a big sheet laid out to see them--they were quite easy and may (if my recollection is correct) have been seen as much as 5 minutes before second contact--I will have to check my videotape for that information. I have seen 2 others--Putre, Chile at maybe 13500 feet in November 1994, and the RMS Veendam in the Caribbean for the February 1998 eclipse. None compared to that first one.

I know this is really long range, but I figure my next best shot at seeing one is the 2009 eclipse in China. I'm already saving for it. Andrew Hans

From: Richard Bareford <bareford@yahoo.com> Not all of us. Our group, Explorers Tours, talked its way past the first checkpoint on the Mauna Kea observatory road. At about 7000 feet we set up in a misty landscape of cinder cones and enjoyed the whole spectacle under clear skies. Richard Bareford

From: Dale Ireland <direland@drdale.com> Cabo and La Paz were covered with clouds 2 days ago.

From: Pierre Arpin I was at playa de Los Corchos, 40 km west of Santiago Ixcuintla in Mexico.

The corona was so bright but I had many difficulties to take pictures during totality because the high elevation of the Sun and heavy winds.

From: Vic & Jen Winter, ICSTARS Inc. <icstars@icstars.com> To: <SOLARECLIPSES@AULA.COM> Sent: Saturday, July 14, 2001 8:08 PM Subject: [SE] **Lunar Orientation during Totality?**

Looking for a good way to determine what the relative orientation of how the Moon vs the Sun was during totality with any degree of precision.

ie... I can see a great deal of fluctuation in the lunar limb in my photos between 2 and 4 o'clock.... but is there a resource where I can compare my image to an oriented representation of the lunar limb at this time at this Long & Lat? Clear Skies, Jen

From: <timo.karhula@se.abb.com>

## GENERAL TOPICS

I'm not sure if this is what you are looking for but at

<http://www.chris.obyrne.com/Eclipses/calculator.html>

you can calculate the Position Angles and the Vertex Angles from any geographical site during the eclipse. You just enter your site's latitude, longitude and elevation. Clear Skies, /Timo

From: Carton, WHC <Wil.Carton@corusgroup.com> To: <patrick\_poitevin@hotmail.com> Sent: Friday, July 13, 2001 3:50 PM Subject: **Eclipse of 22 July 2381**

Patrick, Thank you for your eclipse-calendar of July. I read there: July 22, 2381 The maximum theoretical length for a British total eclipse is 5.5 minutes. The eclipse of June 16, 885 lasted for almost 5 minutes and the same will be true for the Scottish total eclipse of 22 July 2381.

Let me tell you, that I recently found that this TSE will be the first total solar eclipse in Amsterdam! (since 17 June 1433). With the eclipse-software Emapwin of Takesako and also with the program Wineclipse of Heinz Scribany, I find the city of Amsterdam lies definitely within the totality belt. But my former computations based on the Meeus-Mucke "Canon of Solar Eclipses" had indicated that Amsterdam was just outside the path, south of the southern limit. I conclude from deviations that I found for this TSE and also for the TSE's of 2135, 2142 and 2151, that the DeltaT estimations together with a slightly different lunar acceleration  $\ddot{n}$  were too high, causing the eastward shift of totalitybelts in that future a lot too high predicted value in the formulae of Meeus-Mucke. And very clear in further future with the TSE of 2 Sept 2817 that I formerly computed from Meeus' "Tables of Moon and Sun" (Leuven, 1962) as the first total solar eclipse in Amsterdam! The Emapwin and Wineclipse are mapping the 2817 totalitybelt far west and south of Amsterdam even Holland: across France!!



The difference is also shown with the TSE's of 2142 and 2151. Calculated from Meeus-Mucke, their northern limits intersect each other on Utrecht, but Emapwin shows that the crossing point is shifted westward to Leiden!. Groeten, Wil Carton.

From: Andis Kaulins <AKaulins@AOL.COM> To: <HASTRO-L@WVNM.WVNET.EDU> Sent: Tuesday, July 10, 2001 2:59 PM Subject: **Solar Eclipses - Absolute Chronology of Egypt**

THE ABSOLUTE CHRONOLOGY of the PHARAOHS by SOLAR ECLIPSES IN EGYPT Copyright © 2001 by Andis Kaulins Reproduction permitted if the copyright notice is retained.

The first original hypothesis presented here is that Pharaohs put their pyramids and tombs on the paths of solar eclipses and that this can be calculated to a day. A second original hypothesis is that the causeways to the pyramids may mark the path of the eclipse in question. A third hypothesis is that these eclipses are "archived" in the hieroglyphs of the Pharaohs as their "name" - e.g. the "shaded" or "eclipsed" object in the hieroglyph of Cheops. Fourth, there is the original hypothesis that the RA or "Sun-Name" of a pharaoh in the cartouche gives the position of the Sun in the heavens and the "AMUN-name" of a pharaoh shows the position of the Moon.

Possibly, the analysis below may also permit astronomers to get an absolutely accurate T-Delta value regarding the change in the rate of the spin of the earth in the last 5000 years (there is dispute about this value among astronomers). To obtain the correct value, I would suggest a combination of approaches to get a properly calibrated Delta T value - ANY of the solar eclipses below can be used to obtain that value for any era - and then of course the remainder must fit into the picture. . If e.g. a Delta T value is adopted which gives a solar eclipse in Egypt on November 19, 2837 BC, then the rest of the eclipses discussed below must also fit into that system and occur on the given dates in Egypt.

Obviously, if what is written below is correct, we will then have a tool for the absolute chronology of reigns of the Pharaohs and the ancient world in the Fertile Crescent - to a day.

Calculations My calculations were made using John Walker's Your Sky - Home Planet at [www.fourmilab.ch](http://www.fourmilab.ch), and the times given are universal time according to Walker's program.

Notes to the Calculations The idea of eclipses as being of such great importance came from a posting to me by ChasInca on Shalmaneser (Solomon-Nezer) and from the internet page of Amir Bey at <http://abey.home.mindspring>.

(Continued on page 9)



## GENERAL TOPICS

com/eclipses.htm who used the following sources -Solar Eclipses of the Ancient Near East, by M. Kudlek and E.H. Mickler. ---The Canon of Solar Eclipses, by J. Meeus and H. Mucke -Solar Fire 4.07, a software program developed by Esoteric Technologies -Lunar Eclipses of the Ancient Near East by M. Kudlek and E. H. Mickler Bey's data of course is subject to verification but - he provides a great graph of the path of the eclipses - and I think that his data will in general be confirmed.

The original idea of the connection of eclipses to the pyramids and to the cartouche hieroglyphs of RA (Sun) and AMUN (Moon) - as names of the Pharaohs - is mine alone. Indeed, all of the 4 initial hypotheses presented above are original to me and no one else.

Indeed, the confluences of reigns with possible eclipse positions has been posted to <http://www.LexiLine.com/lexiline/lexi761.htm> et seq. for a number of years. Bey's website then clinched this analysis for me some months ago.

**THE ECLIPSES AND THEIR PHARAOHS** Here are the major specific eclipses and the Pharaohs to which each applied.

November 19, 2837 BC at 9 a.m. - Solar Eclipse over Egypt at the cross of the ecliptic and the celestial equator at the star Antares viz. Dschubba. This marks the reign of the Pharaoh HETEP-SEKHEMWHY = Manetho's Boethos (Boötes) = he star Dschubba, Arabic - Jabbar, Vedic - ANUradha. The hieroglyph at Sakkara reads Anu-tris (Baltic Andris) = Antares rather than Dschubba. That is why the three main sources differ.

April 1, 2471 BC at 9 a.m. - Solar Eclipse over Egypt at the cross of the ecliptic and the celestial equator at the Pleiades / Aldebaran. Since Kate Spence, Egyptologist at Cambridge, recently put the building of the Great Pyramid to 2467 BC plus or minus 5 years, I had regarded this to have been the event which marked the begin of the Cheops pyramid. However, this was wrong. The April 1, 2471 BC eclipse applied to the "Red Pyramid" (for the red tar Aldebaran) and more northerly of the two pyramids of Snofru.

September 2, 2469 BC - Solar Eclipse at 9 a.m. at Spica in Virgo. This led to the building of the second of the two pyramids of Snofru and the reason that a second one was built was this second eclipse - only 1 & 1/2 years apart - so close in time to the first. It is now easy to determine which of the two Snofru pyramids was built first - about which the scholars have long disputed - the center of the 2469 eclipse was further south, and this is the "Bent Pyramid".

July 25, 2430 BC at 9 a.m. - Solar Eclipse over Egypt at

Zosma (Duh) and Chort at the point of the Summer Solstice. The chambers of the Great Pyramid clearly represent the form of and stars at the back end of Regulus, Leo the Lion, i.e. the Sphinx, and so this eclipse must apply to the Great Pyramid of Cheops - rather than the previous eclipse.

If one looks at the design of the inside of the Great Pyramid carefully, one can (IMO) "see" that Zosma and Chort mark the Queen's and King's Chambers in the Great Pyramid and that the angled "stairs - the great hall" are a line running to Denebola. Of the three great pyramids, Chephren is simply the brother's pyramid to the Sun and Menkaure the pyramid to the Moon - there must have been both solar and lunar eclipses at this time - whereas Cheops is the pyramid to all of the heavens - as I have explained in previous postings.

March 23, 2340 BC at 9 a.m. - Solar Eclipse over Egypt at the crossing of the ecliptic and celestial equator at the Pleiades under the gate of heaven between Auriga and Perseus. This would be the Pyramid of Unas (Latvian Janis, Ena(s) "shade, eclipse", Egyptian On, Sumerian Anu), although the actual hieroglyphs may read VAI-NAg-s "corona", i.e. a coronal eclipse. The priests of ON thus probably took their name from their prediction of eclipses, since UNAS probably = ENAS "eclipses".

December 20, 2289 BC - at 9 a.m. - Solar Eclipse over Egypt in the "boat of Capricorn" and that is the hieroglyph of Merenre (Nemtiemsaf) - "the bird in the eclipse boat".

June 29, 2159 BC - Antef I - Solar Eclipse over Egypt at 9 a.m. exactly at the cross viz. middle of the constellation of Cancer

September 11, 2079 BC - Antef II - Solar Eclipse over Egypt at 9 a.m. exactly at Spica in Virgo - we know this is Antef II rather than Antef III because the "Horus" serech shows a "bushy" hieroglyph - Spica / Virgo.

April 20, 2044 BC - at 9 a.m. - 39th year of Mentuhotep's reign - at 9 a.m. - Solar Eclipse over Egypt at the crossing of the ecliptic and celestial equator at the Pleiades under the gate of heaven between Auriga and Perseus.

September 15, 1884 BC - at 9 a.m. - Amenemhet II (with sons Senwosret II and III) Solar Eclipse over Egypt at 9 a.m. exactly at Spica in Virgo. This was most likely the expedition to the center of the eclipse taken in the 24th year of Amenemhet's reign and the 4th year of Senwosret's concurrent reign. Egyptologists call this an expedition to punish the desert dwellers, but for that it is unlikely that he would take a young son along. This would place the beginning of Amenemhet II's reign at 1908 BC.

*(Continued on page 10)*

## GENERAL TOPICS

December 21, 1741 BC - Antef IV / Sobekhotep IV / Chendjer (These may all be the same king since only Chendjer has a tomb, but all have eclipse hieroglyphs in their names) - Solar Eclipse at 9 a.m. in the Boat of Capricorn, most clearly marked with the eclipse of Chendjer as a darkened circle next to a container-like symbol.

April 16, 1699 BC - Sobekhotep IV Chaneferre - Solar Eclipse at 9 a.m. at the Pleiades and crossing of the ecliptic and the celestial equator underneath the gate to Heaven between Auriga and Perseus. The hieroglyphs mark this as a arrial sun followed by the swallowing windpipe symbol.

According to Artapanus (writing about 300 BC), Chaneferre - i.e. the pharaoh just noted above - was the Pharaoh during whose reign Moses was born. No evidence gives us cause to doubt this historical record. Since Chaneferre apparently ruled only about 10 years, this puts the birth of Moses between 1699 and 1689 BC.

(Aside: IMO Moses is later the first king of the 17th Dynasty of Thebes as Sobek-EMSAf II a name actually written in the hieroglyphs as "MO-SHE" (also known as Sobekhotep VIII or Sechem-re Schedtaui). His story is the same as the story of the Egyptian Sinuhe, a tale found written inter alia on a giant slab - now at Oxford. Since we know that Moses fled Thebes when he was around 40, this puts him in the Eastern Delta Region of Egypt ca. 1650 BC, where his Biblical Midianites are none other than the Hyksos, i.e. the Palestinians (desert dwellers), of whose king Moses takes one daughter as a wife. The 16th Dynasty King known as Anather is then Gideon (quite clearly so readable according to the hieroglyphs as the symbols Hand (GI, IE)-D-N.)

May 9, 1533 BC - Solar Eclipse at 9 a.m. right above the upraised hand of Orion (near Aldebaran) below the gate to heaven between Auriga and Perseus. This is the eclipse of Ahmose shown as a small remaining eclipsed sphere in his hieroglyph. This must have come at the end of his reign, since his hieroglyph appears to be a doubled star (Gemini).

June 1, 1478 BC - Solar Eclipse at 9 a.m. in the "pot-shaped form" of Gemini. This is Amenhotep I the first king to be buried in the Valley of Kings because of the passage of the center of this eclipse across this point - The later Valley of Kings - of Egypt.

May 14, 1338 BC - Solar Eclipse at 9 a.m. at the "upraised arm of Orion" below the gate to heaven between Auriga and Perseus. This is the Pharaoh Amenhotep II.

In the hieroglyph, the upraised arm of Orion is the "staff" of Orion. According to Bey, the eclipse ran from Aphroditopo-

lis 29N25 31E15 to Shtub 27N09 31E14, thus running through ancient Tihna and Deir Tasa, which the Egyptologists in the reign of Amenhotep II (Amenophis II) have transcribed as "the region Tichsi" (Tasa?) - where there was unrest and where Amenhotep took 7 princes as prisoners. This will be the solar eclipse, for the seven were then sacrificed to the Moon. This would have been in the second year of Amenhotep's reign, and the eclipse thus puts his 2nd year of reign in 1338 BC and the start of his reign in 1339 BC.

July 27, 1258 BC - Solar Eclipse at 9 a.m. at Regulus in Leo. This is the coronal eclipse of Amenhotep III celebrated as "sparkling Aton" in the hieroglyphs and applied to Echnaton at the time of his co-regency (ca. age 12), IMO the Biblical King Saul (Latvian SAULe "sun, Sol"), whose hieroglyph clearly shows an eclipsed object. We would expect the eclipse to have passed over Amarna. Echnaton must have seen the eclipse and resurrection of the Sun at the start of his co-regency at the kingly star Regulus to be a particularly great omen and thereafter presented himself as the "Sun King".

August 19, 1157 BC - Solar Eclipse at 9 a.m. near Spica and Virgo. This is Ramses II, IMO the Biblical King Solomon. This solar eclipse is probably mirrored in the story of the Battle of Kadesh, so that the solar eclipse probably took place in the 5th year of Ramses' reign.

Again, the RA or SAULE name is the "sun name" of the king and shows the position of the sun. The AMUN name is the "aMOON name". In the case of Ramses II the hieroglyphs indicate that this was the confluence of both the sun and the moon - an eclipse.

February 14, 1129 BC at 9 a.m. below the back end of Pisces, under Pegasus, the Great Square, in the 29th year of reign of Ramses II and might be what is marked as an "earthquake" (?) at this time at Abu Simbel, which gives the great events of Ramses II reign.

July 31, 1063 BC at 9 a.m. at Zosma in Leo. This is the Pharaoh Siptah, clearly marked with an eclipsed round object in the hieroglyph and perhaps the hieroglyph of Seth-nacht also marked this event.

May 31, 957 BC at 9 a.m. in the "pot" or "well" of Gemini. The pharaoh Herihor

May 22, 948 BC at 9 a.m. above Orion. The pharaoh Pnodjem.

January 27, 932 BC at 9 a.m. at Markab. The pharaoh Ma-

*(Continued on page 11)*

## GENERAL TOPICS

saharta

August 15, 831 BC at 9 a.m. at Denebola in Leo - the end tail star - as in the tail in the hieroglyph of the pharaoh(s) Psus-ennes II and III (IMO the same person). Since ENAS = Latvian "eclipse, shade" and PSUS = Latvian PUS "half", this must have been a "half-eclipse", i.e. a partial eclipse - half the sun.

August 19, 636 BC at 9 a.m. at Denebola in Leo. The pharaoh Tefnacht.

September 21, 582 BC at 9 a.m. at Spica in Virgo. This is an unusual heavenly conjunction because it also involves an occultation of Jupiter, Saturn, and Mercury, so that there were four heavenly "visitors". These four "visitors" are glorified in the monument of the Pharaoh Pianchi. (Pije).

March 28, 517 BC at 9 a.m. at Sheratan in Aries. The pharaoh Taharqa (Aries) going to Tanutamani (Taurus).

December 4, 502 BC at 9 a.m. at Sagittarius. The pharaoh Psammetichus I.

November 24, 493 BC at 9 a.m. at Sagittarius. The pharaoh Psammetichus II.

Andis Kaulins, J.D. Stanford University., FFA Lecturer, University of Trier, Germany

From: Smerillo <Lorenzo.Smerillo@WORLDNET.ATT.NET>

This is very interesting, although I am very perplexed as to why all the eclipses are given at 9 am. feliciter, Lorenzo Smerillo, Biblioteca Nazionale Protocenobio Sublacense (ROMA)

From: Andis Kaulins <AKaulins@AOL.COM>

Lorenzo, Ciao Italia, Walker's program Your Sky - Home Planet has the Moon over Egypt at 9 a.m. for the dates of these eclipses and that time has to be inserted in the time input field in his program - otherwise the Moon is elsewhere for purposes of his graphic representations.

I do not have a more sophisticated program available, so I have added the 9 a.m. so that anyone using Walker's program can duplicate my results and "see" the Moon over Egypt in Walker's graphics. What the actual time may have been within any given day is something which could be calculated only with a sophisticated program not at my disposal.

Given the Delta T problem, we are going to have people who will even allege that these eclipses did not take place over Egypt on the given days at all - but I can say with certainty that such claims - if made - will be erroneous, since the hieroglyphs clearly mark these eclipses - and hence, a Delta T value which does not result in eclipses over Egypt for the dates I have given, will IMO be an incorrect Delta T value. I think Amir Bey has done a great job in his calculations. Thank you for your question. Andis

From: R.H. van Gent <r.h.vangent@PHYS.UU.NL>

Some time ago I answered a query by Sara Gardner on the dangers of using modern computer software in identifying and analysing ancient astronomical records. The recent attempt of Andis Kaulins to re-date the ancient history of Egypt by means of solar eclipses provides a nice example of the various pitfalls one can fall into.

I will not discuss the historical/philological parts of his posting. They sound too ridiculous for words, anyway I am no expert in these matters so I will stick to the astronomy.

Andis Kaulins is probably unaware that he is here following a process that in the past Robert R. Newton has aptly named the 'eclipse game'.

These are the rules:

a) Find an ambiguously stated historical record and convince yourself that it can only refer to a total solar eclipse and nothing else.

b) Make sure that the record cannot be dated chronologically within the nearest half century or so.

c) Find the nearest solar eclipse in time from a calculated list of eclipses that satisfies your interpretation of the record. Preferably pick an eclipse list that is not too specific as to how it was calculated.

d) Date the record with the help of this eclipse and convince historians that the record has now been dated firmly with the help of precise astronomical techniques.

e) Some years later, astronomers will stumble across this record in a historical publication (probably several removes away from the original publication), believe that it has been dated firmly by historical means and determine an improved value of Delta T for that epoch. This Delta T value can then be used to calculate 'improved' eclipse tables for the aid of historians.

*(Continued on page 12)*

## GENERAL TOPICS

It should be obvious that Delta T values inferred in this way are completely meaningless as they will always fall close to the values adopted in the calculation of the eclipse list in step (c). Even if one repeats step (c) with a different list of calculated eclipses (based on different values of Delta T and the lunar acceleration parameter, see below), one is sure to find another suitable eclipse within a few decades or so from one's initial guess of the date.

It cannot be stressed too much that historical dates inferred in this way are completely meaningless unless they can be corroborated by other means.

There is a reason why modern eclipse experts such as Frank Espenak do not provide lunar and solar eclipse tables before 2000 BC as the results would be meaningless due to the gross uncertainty of Delta T at such early epochs. Such lists are only useful in finding dates on which a solar eclipse would be visible from some place on Earth but it is impossible to determine from which region (or for that matter even from which continent) it would have been viewed as total.

Furthermore, it should be realized that a set of Delta T values is intimately connected with a parameter known as the lunar (or tidal) acceleration parameter. Values of this parameter have varied from -22.44 to -26.0 arcsec/cy/cy in the past half century and have a great influence on inferred Delta T values, certainly during the earliest historical periods. One should take care that lunar positions (and eclipse tables) are calculated from a set of Delta T values that is consistent with the lunar acceleration parameter adopted in the lunar ephemeris.

The claim that the eclipse calculations by Kudlek & Mickler appear to be corroborated by programs such as Solar Fire (judging from its maker Esoteric Technologies, I would guess it to be a horoscope program - I would certainly like to hear details about the underlying astrodynamical algorithms) or Homeplanet/Your Sky only indicates that identical (or nearly so) values of Delta T and the lunar acceleration parameter were adopted.

I cannot speak for the program Solar Fire but the last time that I used Homeplanet/Your Sky it could not calculate eclipse circumstances. At the most it will tell you which planets were visible at a certain time (but I would surely not trust it way back into the Pyramid Age).

I have run some simulations on the earliest mentioned eclipse by Amir Bey and Kaulins (the one of 19 November 2837 BC) with the most recent versions of the PC planetarium programs Guide 7.0 and RedShift 4. Both programs claim to be based on the best astrodynamical algorithms available but give wildly differing results.

According to Guide 7.0, the path of totality cuts into Northern Asia from the polar regions, moves over into Northern Afghanistan and ends at sunset in Eastern Tibet. The path of totality was nowhere near Egypt, where at most only a very small partial eclipse would have been visible.

RedShift 4, on the other hand has the path of totality starting near Greenland, moving across the Atlantic Ocean and into the African continent in Mauritania, continuing its path across the Sahara and ending at sunset near the Libyan/Sudanese border. For Egypt, this eclipse would have been sizeable but still nowhere near totality.

Compare these with the calculations of Kudlek & Mickler which have the path of totality running across the Nile Delta in a nearly West to East direction.

Which of both simulations is the more reliable one (or probably it is better to say, least erroneous) is difficult to decide. Red-Shift 4 appears to adopt the ELP lunar theory of Chapront-Touze & Chapront (1991), but does not explicitly state this. This theory is based on a lunar acceleration parameter of either -23.8946 or -25.7376 arcsec/cy/cy, depending on whether they have adopted the original version of 1991 or the modified version of 1997, but at the same time the program uses a Delta T relation by Stephenson & Morrison (1982) that is based on a lunar acceleration parameter of -26.0 arcsec/cy/cy.

Guide 7, which uses the ELP lunar theory of Chapront-Touze & Chapront (1991), also claims to use the Delta T relation of Stephenson & Morrison (1982) but the values that the program outputs are in fact based on a somewhat different relation published in Stephenson & Houlden (1986), though still based on a lunar acceleration parameter of -26.0 arcsec/cy/cy.

*(Continued on page 13)*

## GENERAL TOPICS

Of course, the above example is an extreme case and the discrepancies between the different software programs will become smaller and smaller as one moves to more recent epochs but I would still be very suspicious of any claims made for precisely delineated solar eclipse paths before circa 1000 BC.

Concluding, I cannot say that I am in the least convinced by Andis Kaulin's astronomical re-dating of the ancient history of Egypt by means of his suggested eclipse records. For me his theory already fails in step (a) of the above mentioned 'eclipse game'. I see no reason why every ancient Sun symbol (or even round symbol) should have to refer to a solar eclipse. There may certainly be hidden eclipse records in Egyptian texts and inscriptions but I do not believe them to be found in the names and cartouches of the Egyptian pharaohs.

Sun symbols can mean a lot of things, not all necessarily related to astronomy. The University of Utrecht also uses a solar image in its logo but there is definitely no link with any solar eclipse visible from Utrecht around the date of its founding (though I am sure there will be people in a far distant future who will be tempted to interpret it as such). I am sure that list members can find other examples.

I know that the above arguments will never convince Andis Kaulins, who has already declared that his eclipse identifications and inferred Delta T values are inviolate and absolutely reliable, but I hope some other list members may find them useful. Regards,

From: Patrick Poitevin <patrick\_poitevin@hotmail.com> To: SE Mailing List <SOLARECLIPSES@AULA.COM> Sent: Saturday, July 07, 2001 8:19 PM Subject: [SE] **Speakers at TD2001**

Dear All, If you want to receive the leaflet of Totality Day 2001, 11 August Open University Milton Keynes, England, Please send me a private mail and I will send in Word or PDF. It contains the program and info about the Open University and accomodation.

Guest speakers: Prof. F. Richard Stephenson, Dr. Francisco Diego, Prof. Ken J. H. Phillips

Speakers: Dr. Edward Hanna (England), Assoc Prof. J R Huddle (USA), David A. Hardy (England), Sheridan Williams (England), Barrie Jones (England), Francis Podmore (Zimbabwe)

Further eclipse video's from: Richard Bareford (USA), Joanne Edmonds (England)

If you want to present your experiences, have a poster, want to trade or have leaflets about eclipse trips, please let me know. Best regards, Patrick

From: F.Podmore <podmore@science.uz.ac.zw>

Hello friends, I am wondering if any of you who are planning to attend TD2001 and stay at the hotel Patrick recommends on the TD2001 circular would be willing to share a double room with me, to reduce the cost. I would prefer someone who did not smoke, and male.

Even the special rate of 45 pounds per person per night is a LOT of Zimdollars for me. I intend to stay two nights - Friday and saturday. Or has someone got a better idea? Thanks, Francis (also a male, aged 59, and very well behaved!!)

From: Patrick Poitevin <patrick\_poitevin@hotmail.com>

Dear All, TOTALITY DAY 2001 - 11 August - Open University - Milton Keynes (England)

## GENERAL TOPICS

The Solar Eclipse Mailing List (SEML) and the Solar Eclipse Newsletter (SENL) has been successful as a vehicle in bringing together solar eclipse enthusiasts, professional and amateurs alike. The Solar Eclipse Conference in Antwerp (SEC2000), last year October, was an extension of the electronic contacts and was for sure a success. In two days over 35 lectures had been presented to 155 participants from 22 different countries. The Solar Eclipse Conference will be repeated at non-central eclipse years. The next one will be in 2004 and will be announced as SEC2004. Venue and date will be briefed later.

In continuation of the De Duistere Dag (The Dark Day), which we organized in Belgium since 1995, we want to introduce to you TOTALITY DAY. TOTALITY DAY will be organized after each total solar eclipse. To give the participants the time to evaluate their data, TOTALITY DAY will be one or two months after a total solar eclipse. To avoid confusion with the Solar Eclipse Conference, Totality Day is a one-day meeting. Three main subjects will be lectured and the remaining time of the day will be completed with short lectures and presentations about the last total solar eclipse.

We are pleased to announce that we have been able to arrange TOTALITY DAY 2001. Totality Day 2001 will be on Saturday 11 August 2001 in the Berrill Lecture Theatre of the Open University of Milton Keynes, England. Doors open at 8h00, closing at 20h00 and lectures from 10h00 to 12h00 and from 14h00 to 18h00. At lunchtime, the attendees can bring a pack-lunch. However, we arranged some sandwiches for sale.

The Open University is centrally located in England and has a wonderful theatre that can hold 300 participants. All technical facilities are available for the lectures. There will be large display areas, where everyone can present any interesting collections. This area is also dedicated for trade stands. If you want to present something about the 2001 Total Solar Eclipse, present a poster, or want to trade anything related to solar eclipses, please let us know. Thanks to the Open University of Milton Keynes, more particularly Dr. Barrie Jones, attending TOTALITY DAY 2001 is free of charge. It is necessary to make prior arrangements with us if you wish to make a presentation, lecture, or poster display.

It will be possible to meet from Friday evening. No official solar eclipse activities, though, an informal meeting in Milton Keynes. Saturday night, after Totality Day 2001, as well. No official activity either, though, it is the intention to have dinner together.

I hope you will take this opportunity to bring your 2001 so-

lar eclipse experience over to a broad audience of eclipse chasers. Joanne and myself would be very happy to meet you all. Maybe for some of you again, maybe for some others the first time.

### TOTALITY DAY 2001 - (PRELIMINARY) PROGRAM (VERSION 26JULY)

08h00 Doors open. Entrance Main Reception of Berrill Building (see map below or <http://www.open.ac.uk/maps> )

10h00 Opening TD2001 by Dr. Barrie W. Jones (England)

10h15 Low altitude Central Eclipses and the 2003 Scottish Annular Eclipse by Sheridan Williams (England)

10h35 The best from our Zambian Expedition by Daniel Fischer (Germany)

10h50 Break

11h15 Historical Eclipses and Changes in the Earth's Spin Rate by Prof. F. Richard Stephenson (England)

12h00 Lunch (Berrill Café is open for sandwiches, drinks or pack-lunch)

14h00 Zimbabwe 2001 and eclipse glasses by Dr. Francis Podmore (Zimbabwe)

14h30 Experiments for Students during a Total Solar Eclipse by Assoc. Prof. Jim Huddle (USA)

14h50 Solar Eclipse Weather Effects by Dr. Edward Hanna (England)

15h10 Eclipse video and slide show by Joanne Edmonds (England)

15h20 Video: Eclipse from the Southern Edge by Richard Bareford (USA)

15h25 Video: Shadow Bands and the 2001 Eclipse by Dr. Wolfgang Strickling (Germany)

15h30 Break

16h00 Total Solar Eclipses and Modern Culture by Dr. Francisco Diego (England)

16h45 Eclipses; The Artist's Perspective by David A. Hardy (England)

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## GENERAL TOPICS

*(Continued from page 14)*

17h05 Looking for the Coronal Heating Mechanism with the SECIS instrument by Prof. Ken Phillips (England)

17h50 Closing TD2001 by Joanne Edmonds (England)

20h00 Doors closed

### LOCATION

The Open University has its headquarters at Walton Hall, in Milton Keynes which is midway between London and Birmingham, and Oxford and Cambridge. The OU is sited on the South East side of Milton Keynes. It is close to Junctions 13 and 14 of the M1.

### By Car

From M1, Junction 14: Follow signs for Milton Keynes, taking A509 to first roundabout (Northfield roundabout). Take first left A5130 signposted to Woburn Sands for two miles. At next roundabout (Kingston roundabout) with BP garage on left, take third exit signposted A5/Aylesbury/Dunstable/Walnut Tree/Universities to next roundabout (Walnut Tree). Turn right, then first left for the East entrance to the campus. Main reception is located in the Berrill Building.

From M1, Junction 13: Follow signs for Milton Keynes, taking A421 for 3 1/2 miles to the Kingston roundabout. Take second exit onto Groveway (H9), signposted A5/Aylesbury/Dunstable/Walnut Tree/Universities. At next roundabout (Walnut Tree), turn right, then first left for the East entrance to the campus. Main reception is located in the Berrill Building.

### By Train

The University is about four miles from Milton Keynes Central station, on the London (Euston) to Birmingham line. MK Central is an Intercity stop. Trains are frequent and the journey time from Euston varies between 35-60 minutes.

### Useful telephone numbers

OU Main Switchboard +44 (0)1908 274066

OU Visitor's Reception +44 (0)1908 653000

### ACCOMMODATION

TD2001 has a special rate at the hotel directly across the road of the Open University: Hilton National, Timbold Drive, Kents Hill Park. Phone +44 (0)1908 69 44 33 or fax +44 (0)1908 69 55 33. OU rate £45 a night incl. breakfast (normally £63) and a double room for £65. We will be



there from Friday night to Sunday morning. See also [www.mkweb.co.uk](http://www.mkweb.co.uk) for more info about Milton Keynes (accommodation, transport, leisure, etc.).

Warm regards, Patrick and Joanne

From: Henrik Glintborg <Henrik@tycho.dk>

Hi Anne Marigold - and others

I will also be attending the Totality Day 2001 in Milton Keynes, and have still some t-shirts left from my trip to Zimbabwe with a danish group of 80 people. The t-shirt is black, with a small eclipsed sun with corona on the front and a much bigger on the back, printed in white with a text written on the black disc of the sun (in danish!): Zimbabwe, total solformørkelse, 21. juni 2001 (Zimbabwe, total solar eclipse, June 21. 2001). I know it is in danish, but I also know that many of us are collecting those t-shirts as souvenirs, so if anyone should be interested they can simply mail me. The price is \$13 + postage. I - and many others! - think that the t-shirt is vey nice... :-)

Mail me at: [henrik@tycho.dk](mailto:henrik@tycho.dk)

And to Anne: I could bring one to the conference, if interested. regards, Henrik Glintborg

## GENERAL TOPICS

From: Peter Tiedt <rigel@stars.co.za> To: Solar Eclipse Mailing List <SOLARECLIPSES@AULA.COM> Sent: Friday, July 13, 2001 8:40 PM Subject: [SE] **e-mail down**

My e-mail server was on the coffee over the last 28 hours. If anyone has sent me a mail which bounced, please resubmit. Sorry Patrick - but not my fault ... Thanks, Peter Tiedt

From: Dale Ireland <direland@drdale.com>

I saw a message to you, something about winning the sweepstakes but I didn't notice the address it came from, better check around. Dale

From: Patrick Poitevin <patrick\_poitevin@hotmail.com>

From PP: For all concerned - The archives of the SEML are:

Daily check ups of every message Archive Solar Eclipse Mailing List: [www.astroarchive.com](http://www.astroarchive.com)

Solar Eclipse Newsletter or monthly digest (plus many other solar eclipse related messages)

Solar Eclipse Newsletter (SENL): Browse and read archived SEML messages from <http://www.MrEclipse.com/SENL/SENLinde.htm>

Please do not send repeat message to the entire SEML or avoid non function or link message on the SEML. Best regards, Patrick

From: Onderbeke Julien To: SOLARECLIPSES@AULA.COM Sent: Friday, July 13, 2001 11:37 PM Subject: [SE] **Eclipses and Olympic Games**

TSE and the Olympic Games

Friday 13th of July 2001 the Olympic Games of the year 2008 have been given to Beijing, China. I heard on television that the games should be hold from July 15th (my birthday) until August 1st. If that information is correct, the games will close on the day of the TSE of 2008. That eclipse will have a magnitude of 91 % at Beijing (near sunset). Maybe the last performances (usually the marathon for men) will be hold with an eclipsed sun. Or maybe the solar eclipse will introduce the closing ceremony. Julien Onderbeke

From: Madden.G <iluvex@netacc.net>

I wouldn't touch this with a ten foot pole. madden/rochester

From: Pierre Arpin

This eclipse will be a dress rehearsal for the great solar eclipse of 2009. The path of totality will pass over Shanghai.

From: Johanna Kovitz

Ooh, I'd better do my homework! See below.

Are you still pretty sore and pretty sleep-deprived? Hope re-entry hasn't been too painful.

From: Vic & Jen Winter, ICSTARS Inc. <icstars@icstars.com> To: <SOLARECLIPSES@AULA.COM> Sent: Sunday, July 15, 2001 5:30 AM Subject: [SE] **Green Flash Pix?**

>BTW, how did your green flash pix come out? -- archer

Thanks for reminding me about our Green Flash pix!

We're happy to report that hundreds of observers stationed on the western shore of Madagascar in the Morombe area and camp witnessed a stunning display of Green Flash as the partially eclipsed Sun set over the Mozambique Channel. It was almost as exciting as totality for some of us. - You can't forecast these things!

We have been working on our prominence and corona scans and had placed the Green Flash shots on the back-burner. We scanned some in and discovered a great surprise.

Not only did the scans show a great, cloudless display, but... we captured a silhouette of our mystery ship on the western horizon. We have it posted at: <http://www.icstars.com/Mad/Astro/GreenFlash.html>

Several of us speculated at the source of a bright light in the area of the horizon and wondered if this was a stationary light on the small island or a passing ship slowly moving by. Now we know! I think they were positioned very close to the center-line as well! Has anybody heard of astronomers observing aboard a ship off the West coast of Madagascar?

We will continue to add more Eclipse photos to our site at: <http://www.icstars.com/Mad/index.htm>





## GENERAL TOPICS

From Ron Baalke To: HASTRO list

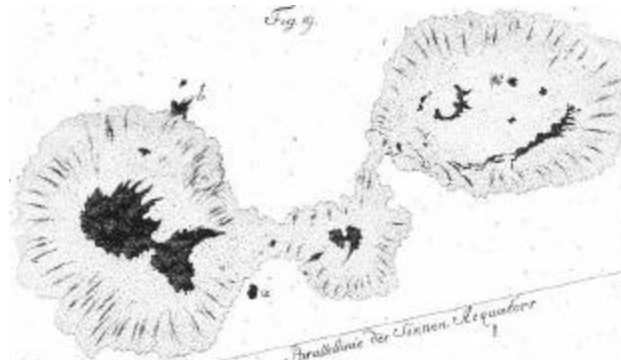
Public Affairs Office University of Warwick Coventry, U.K. Contact: Peter Dunn, Press Officer Public Affairs Office Senate House University of Warwick Coventry, CV4 7AL West Midlands Tel: 024 76 523708 Email: puajjd@admin.warwick.ac.uk

16 July 2001 **Astronomers Find Link between Earliest Illustration of Sunspots** in Medieval Britain and an Observation of Aurora in Medieval Korea

Scientists at the University of Warwick and the University of Durham have linked the very first historical illustration of sunspots, recorded in Medieval England in 1182, with the appearance of the aurora borealis 5 days later in Korea.

Professor F. Richard Stephenson, Department of Physics, University of Durham, was the first astronomer to discuss the earliest known drawing of sunspots, which appears in The Chronicle of John of Worcester and predates the invention of the telescope by almost 500 years. This medieval chronicle, which covers the historical period from earliest times to AD 1140, contains a number of records of celestial phenomena. These include aurorae, comets and meteor showers, as well as eclipses of the Sun and Moon. One of the most interesting of these reports is a description of two sunspots that were seen on 8 December in AD 1128 from Worcester in England. In the manuscript that contains this account, the Latin text is accompanied by a colourful drawing that shows two large sunspots on the face of the Sun. This drawing appears to be the earliest known illustration of sunspots. Sunspots were recorded in China more than 1000 years beforehand but no Chinese drawing depicting discrete solar spots exists until about AD 1400, and no subsequent illustration of sunspots survives until after the invention of the telescope, almost 200 years later.

Dr David M. Willis, Space and Astrophysics Group, Department of Physics, University of Warwick, noted that the scientific importance of this observation of two sunspots on 8 December in AD 1128 is increased by an observation of the aurora borealis (northern lights) recorded in Korea only five days after the sunspots, on 13 December. This observation of a red light in the night-time sky from Songdo (the modern city of Kaesong) was recorded in the Koryo-sa, the official Korean chronicle of the time. A delay of five days is typical of the average time delay between the occurrence of a large sunspot group near the centre of the Sun's face and the subsequent appearance of the aurora bore-



Schreiner sunspot

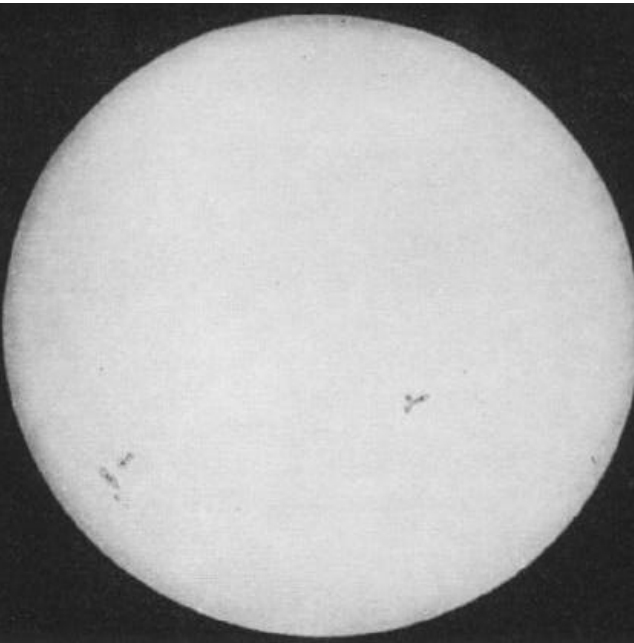
alis in the night sky at relatively low latitudes. Observations of this type help scientists to understand how solar activity has changed during historical time.

For further information contact:

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First Sun Photo



## GENERAL TOPICS

From: Patrick Poitevin <patrick\_poitevin@hotmail.com> To: SE Mailing List <SOLARECLIPSES@AULA.COM> Sent: Monday, July 16, 2001 9:33 PM Subject: [SE] **Lessons to learn**

Dear All, Every solar eclipse has its issues. The SEML as well. The server and SEML Owner suffers every Solar Eclipse with following:

1. Return of SEML mails because of full mailbox
2. Some servers refuses a SEML message because of limitations a week
3. SEML message refused because of server rules, such as call in at least once a week to download messages, etc.
4. About 80 SEML subscribers unsubscribed before the eclipse. Encouraging, though, gives more problems when re-subscribing with another e-mail address, or .. when the SEML does not remember how to subscribe (and contacts the server or Listowner)
5. Last but not least: Over enthusiastic eclipse chasers which lead into non solar eclipse related messages just before the solar eclipse

Please remind the above. But it is necessary to mentions as well that many interesting topics have been posted. The SEML comes over as a big family. Many of you we met during our trip in Zambia and Zimbabwe. It was a pleasure indeed. But to all of the SEML, thank you for your friendship and solar eclipse enthusiasm.

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

From: Michael Gill <eclipsechaser@yahoo.com> To: <SOLARECLIPSES@AULA.COM> Sent: Wednesday, July 18, 2001 3:01 PM Subject: [SE] **Eclipse References**

Eclipse References:

Astronomy Now, August 2001, Volume 15 No.8, ISSN 0951-9726

Pages 23-24, A stunning total eclipse over Africa by Fred Espenak

Page 27, The Zulu war eclipse by Duncan Steele

Michael Gill

From: Michael Gill <eclipsechaser@yahoo.com>

Page 27, The Zulu war eclipse by Duncan Steele(sic) I meant Steel. Michael Gill.



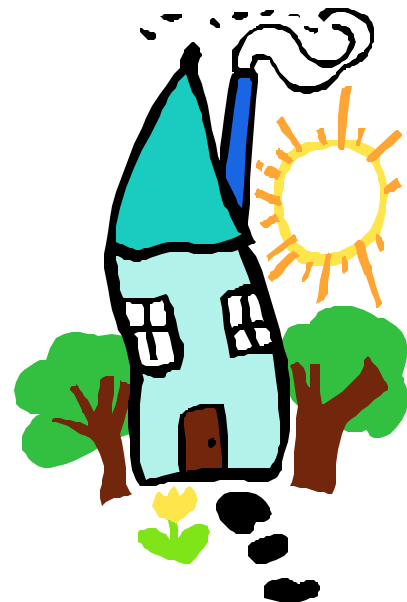
From: Patrick Poitevin <patrick\_poitevin@hotmail.com> To: <SOLARECLIPSES@AULA.COM> Sent: Friday, July 27, 2001 6:13 AM Subject: [SE] **New home address for SEML and SENL**

Dear All, Those who want to snail mail solar eclipse related stuff, please note our new home address:



Patrick Poitevin & Joanne Edmonds  
Hoseley Bank  
Ednaston  
Derbyshire DE6 3AB  
England

Best regards, Patrick & Joanne



## GENERAL TOPICS

From: Donald Watrous <watrous@cs.rutgers.edu> To: <SOLARECLIPSES@AULA.COM> Sent: Monday, July 23, 2001 2:24 AM Subject: [SE] **For your amusement (finger eclipses)**

We were talking about finger/thumb eclipses last week. Coincidentally, last week's puzzle on "Car Talk," a show on National Public Radio here in the States, dealt with the same subject:

Ray: This was sent in by Tony Coley from Raleigh, North Carolina.

Everyone knows that from here on Planet Earth, the moon and sun appear to be about the same size, even though they're not. That is, from our vantage point, they're the same size. Hence we get things like eclipses.

Now, knowing this, you can take the tip of your finger, and, holding it out at arm's length, you can close one eye and block out the sun with the tip of your index finger.

Tom: Like this?

Ray: NO, not that finger! The other finger!

By the way, I wouldn't actually do this. According to Tony's mother, you can go blind if you try this.

But, here's the question: Try this same trick at night and you can't block out the moon.

How come?

This puzzle can be found at <http://cartalk.cars.com/Radio/Puzzler/>

It's answer will be posted there tomorrow. Don

From: Hal Couzens <hal@dneg.com> To: <SOLARECLIPSES@AULA.COM> Sent: Wednesday, August 01, 2001 10:46 AM Subject: [SE] **1835 vs 2001**

Hi All, Does anyone know at what the local circumstances of the eclipse of 1835? And was relation did that eclipse bear to our latest little gem? Same Saros of any other link?

Or at least can someone remind me where this info is posted... Thank you, Hal Couzens

From: Peter Tiedt <Peter.Tiedt@npc-eagle.co.za>

For 1835/11/20  
Saros 130/42  
Duration 4:34.7

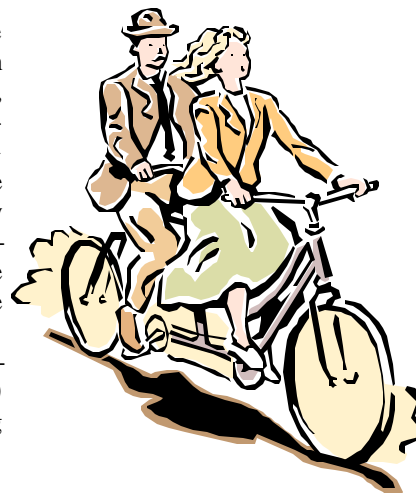
For 2001/6/21  
Saros 127/57  
Duration 4:56.5

I can't see any link. Yell if you want more ...

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

Per Emapwin: Due to time of year the 1835 path is concave north while 2001 is concave south. The paths are tangent or overlapping only from central Zambia to western Mozambique. Southern limit of 1835 never enters Zimbabwe. 1835 totality crosses a slice of west Africa from Senegal to Ivory Coast, then reenters Africa following the Congo/Angola border. It also crosses Madagascar several hundred km. north of the 2001 path.

Similarities are much less than 2002 and 2030, which are somewhat parallel through their entire paths and very close on the Australian end. The African paths are farther apart since 2002 is at descending node and 2030 is at ascending node.



## GENERAL TOPICS

From: Peter Broughton <pbroughton@3WEB.NET> To: <HASTRO-L@WVNM.WVNET.EDU> Sent: Monday, July 16, 2001 11:17 PM Subject: Re: **Time from Jupiter satellites**

> George Huxtable wrote: I'm after a good reference on the details of how time was obtained on land around the world in the late 18th century by observing the satellites of Jupiter. Or some direct advice on that topic from a knowledgeable member of this group.

I am rather tardy in giving my two cents worth on this topic. I guess I was hoping someone else would reply first.

I happened to have some photocopied pages (p.145-162) at hand from the Nautical Almanac for 1800. Here I quote from p. 153:

The Observer, being in a Place whose Longitude is well known, should be settled at his Telescope Three Minutes before the expected Time of an Immersion of the first Satellite; Six or Eight Minutes before that of the second or third Satellites; and a Quarter of an Hour or more before that of the fourth Satellite; chiefly on account of the Uncertainty of their Theories; but if the Longitude of the Place is very uncertain, he must begin to look out for the Eclipse proportionably sooner: Thus if the Longitude of the Place is uncertain to 3 Degrees, answering to 12 Minutes of Time, he ought to fix himself to his Telescope 12 Minutes sooner than is mentioned above. Nevertheless, when he has observed one Eclipse of any Satellite, and thereby found the Error of the Tables, he may allow the same Correction to the Calculations of the Ephemeris for several Months, which will advertise him very nearly of the Time of expecting the Eclipses of the same Satellite, and dispense with his attending so long.

The Immersions signify the Instant of the Disappearance of the Satellite by entering into the Shadow of Jupiter; and the Emergences signify the first Instant of its Appearance at coming out of the same ... [three paragraphs omitted]

It is to be observed that a correspondent Observation of an Eclipse of a Satellite of Jupiter, made under a well known Meridian, is to be preferred to the Calculations of the Ephemeris for comparing with an Observation made in a Meridian whose Longitude is required. ...

As for present day, the Explanatory Supplement to the Astronomical Almanac (1992) p. 349, states "the times [of the phenomena] refer to the center of the disk."

I'll be very interested to learn if there are any other more precise answers to your interesting and important questions. Peter Broughton

From: R.H. van Gent <r.h.vangent@PHYS.UU.NL>

Hi George, You can also find a lot of information on this topic in this relatively late source: W. Chauvenet, *A Manual of Spherical and Practical Astronomy: Embracing the General Problems of Spherical Astronomy, the Special Applications to Nautical Astronomy, and the Theory and Use of Fixed and Portable Astronomical Instruments*, 5th ed. (J.B. Lippincott Co., Philadelphia, 1900), vol. 1, pp. 339-340.

It is too long to copy out completely but Chauvenet gives some practical advice (no worked out examples) such as to preferably use the innermost satellite (Io) as its eclipses (caused by the shadow of Jupiter) occur more frequently and its disappearance is more suddenly than that of the others.

He also notes that the times of disappearance and reappearance of a satellite depend on the power of the telescope used. Chauvenet therefore recommends that both events are timed with the same telescope using the same power and to average the obtained results.

The longitude itself is of course obtained from the difference measured in (mean) local time and the (mean) Greenwich time listed for the event in the 'Ephemeris' (= The American Ephemeris).

Finally Chauvenet notes that the 'Ephemeris' also lists the times of occultation by Jupiter's disk and the times of transit of the satellites as well as their shadows across Jupiter's disk. These are only calculated approximately and should therefore not be used for longitude determination. Best wishes,

From: Herbert Prinz <hprinz@ATTGLOBAL.NET>

Dear Robert and George, The method of averaging disappearance and re-appearance is theoretically sound as long as one is aware of the underlying (but unrealistic?) assumptions of symmetry in the observations. Chauvenet chooses to completely ignore the practical side of the problem.

Eclipses of satellites 1 to 4 typically last from 2 to 4 1/2 hours. More likely than not, atmospheric conditions and/or illumination of the sky will have changed during this interval, often to the extent that only one phenomenon is observable at all.

The personal error differs for disappearing and re-appearing bodies. I, for one, find it easier to watch some-

(Continued on page 21)