

Volume 9, Issue 7
SOLAR ECLIPSE NEWSLETTER

July 2004

SOLAR ECLIPSE NEWSLETTER

INDEX

The sole Newsletter dedicated to Solar Eclipses

Date: Wed, 7 Jul 2004 21:04:35 +0100 (BST)

From: "Patrick Poitevin" <solareclipsewebpages@btopenworld.com> View Contact Details

Subject: [SEML] The end and re-start of the Solar Eclipse Mailing List

To: "Solar Eclipse Mailing List" <SOLARECLIPSES@AULA.COM>, "SEWP" <soleclwp@aula.com>, "HASTRO OUT" <HASTRO-L@LISTSERV.WVU.EDU>

Dear all,

When I started with the Solar Eclipse Mailing List in 1997 I never thought or hoped it had a live span that long. I never hoped it was such a success and I never dreamed of bringing so many amateurs and professionals, all solar eclipse enthusiasts, together.

Of course I never thought it would create such an amount of work, such a commitment and what a responsibility. Due to the activities on the Solar Eclipse Mailing List, the Solar Eclipse Newsletter and of course the Solar Eclipse Conferences, I had to postpone or cancel my own observations, my own projects and sit in the background where others were exchanging solar eclipse related topics.

Time has come to handle it over and sit in the front line of discussions, exchanges and observations. My good friend Michael Gill is willing to take over the Solar Eclipse Mailing List. Please subscribe to the mailing list at

SEML-subscribe@yahoogroups.com

We wish Michael all the best and thank him in advance to continue what we have started.

The last issue of the Solar Eclipse Newsletter will be released by the end of this week and we are looking forward for those whom want to continue the archive or data base we started in 1996.

I would like to thank Jan van Gestel, my twin partner of the Solar Eclipse Mailing List for all the work and grief I gave all those years. We were a perfect tandem and of course we remain friends and observers.

Last but not least I wish to thank my lovely wife Joanne whom stood by all the time, in good and in bad times. She was always there for me and was a support which no one can subscribe. Thank you my dearest wife!!!

Let's go on and subscribe to SEML-subscribe@yahoogroups.com and wish Michael a good start.

Talk to you later,

Patrick

Patrick and Joanne Poitevin

solareclipsewebpages@btopenworld.com
<http://solareclipsewebpages.users.btopenworld.com>

Transit of Venus by Derryl Barr in Mykolos (Greece)

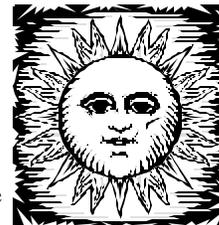


SECalendar



Dear All,

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



July 2004

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

<http://solareclipsewebpages.users.btopenworld.com>

July 01, 1916 Iosif S. Shklovskii, Russian astronomer was born. He researched the corona and proved the temperature of million degrees. (ref. DD 6/99).

July 01, 1943 Birthday of Professor Jay Pasachoff. Asteroid 5100 Pasachoff was named after him. "Pasachoff's broad range of astronomical work has centered on the sun, and especially on studies of solar eclipses."

July 01, 2000 The last occurrence that there were 3 eclipses in one month, and of which two solar eclipses. For July 2000 being on 1st a partial solar eclipse, 16th a total lunar eclipse, and 31st a partial solar eclipse. The next occurrence with a month with 3 eclipses will be December 2206 with a partial solar eclipse on 1st and 30th and a total lunar eclipse on 16th. Ref. Fred Espenak 06/00 SEML.

July 01, 2000 Two duo eclipses in the same calendar month: 1 July and 31 July. The previous duo was 2 and 31 December 1880 and the next one will be 1 and 30 December 2206. A duo is when two solar eclipses occur at an interval of one lunation. Duo's of which one eclipse is not a partial one: Last 19 May 1928 NC total and 17 June 1928 Partial 0,038; Next 7 July 2195 Partial 0.036 and total 5 August 2195. Duo eclipses followed by another duo a half year later: Last 5 Jan 1935 and 3 Feb 1935 followed with 30 Jun 1935 and 30 July 1935; next 24 Apr 2134 and 23 May 2134 followed with 17 Oct 2134 and 11 Nov 2134. Ref. More Mathematical Astronomical Morsels by Jean Meeus.

July 02, 1963 Death of Seth B. Nicholson, American astronomer. Besides the discovery of some Jupiter moons and Minor Planets, his main task was observing the sun. He published for many years the annual reports of sunspots and magnetism of the sun. (ref. DD 6/99).

July 04, 1936 Birthday of Guy Ottewil, writer of the eclipse book Understanding Eclipses and many other astronomical publications.

July 06, 1815 Total solar eclipse on the North Pole. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

July 07, 1339 This was an annular-total eclipse, with the total part of the track finding its way between the Orkney and Shetland Islands without touching either. At this location the track of totality was only 1 km wide, with a duration of 1 second! Presuming that you could position a boat to an accuracy of 1 km, totality must have been a ring of Baily's Beads. (SW-UK Eclipse's)

July 08, 1842 "The hour for the beginning of the eclipse approached. Nearly twenty thousand people, with smoked glasses in hand, examined the radiant globe projected on an azure sky. Scarcely had we, armed with our powerful telescopes, begun to perceive a small indentation on the western limb of the sun, when a great cry, a mingling of twenty thousand different cries, informed us that we had anticipated only by some seconds the observation made with the naked eye by twenty thousand unprepared astronomer. A lively curiosity, emulation and a desire not to be forestalled would seem to have given to their natural sight unusual penetration and power. Between this moment and those that preceded by very little the total disappearance of the sun we did not remark in the countenances of many of the spectators anything that deserves to be related. But when the sun, reduced to a narrow thread, commenced to throw on our horizon a much-enfeebled light, a sort of uneasiness took possession of everyone. Each felt the need of communicat-

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ing his impressions to those who surrounded him: hence a murmuring sound like that of a distant sea after a storm. The noise became louder as the solar crescent was reduced. The crescent at last disappeared, darkness suddenly succeeded the light, and an absolute silence marked this phase of the eclipse so that we clearly heard the pendulum of our astronomical clock. The phenomenon in its magnificence triumphed over the petulance of youth, over the levity that certain men take as a sign of superiority, over the noisy indifference of which soldiers usually make profession. A profound calm reigned in the air; the birds sang no more. After a solemn waiting of about two minutes, transports of joy, frantic applause, saluted with the same accord, the same spontaneity, the reappearance of the first solar rays. A melancholy contemplation, produced by unaccountable feelings, was succeeded by a real and lively satisfaction of which no one thought of checking or moderating the enthusiasm. For the majority of the public the phenomenon was at an end. The other phases of the eclipse had hardly any attentive spectators, apart from devoted to the study of astronomy." Refers to the total solar eclipse in the south of France, 8 July 1842 From: Camille Flammarion, *Popular Astronomy*, 1894. The words are those of François Arago. Reprinted, with permission, from *The Sky: Order and Chaos* by Jean-Pierre Verdet, copyright Gallimard 1987, English Translation copyright Thames and Hudson Ltd, London, and Harry N Abrams, Inc., New York, 1992. Ref FE 01/01

July 08, 1842 Dominique Francois Jean Arago (1786-1853) observed this solar eclipse and attempts that the sun does exist of gas.

July 08, 1842 First attempt to photograph a total eclipse was made by the Austrian astronomer Majocchi. He failed to record totality, though he did succeed in photographing the partial phase.

July 08, 1842 Following anecdote appeared according Dominique Francois Jean Arago (1786-1853) in the *Journal of the Lower Alps*, July 9, 1842: A poor child of the commune of Sieyes was watching her flock when the eclipse commenced. Entirely ignorant of the event which was approaching, she saw with anxiety the sun darken by degrees, for there was no cloud or vapour visible which might account for the phenomenon. When the light disappeared all at once, the poor child, in the height of her terror, began to weep, and call out for help. Her tears were still flowing when the sun sent forth his first ray. Reassured by the aspect, the child crossed her hands, exclaiming in the patois of the province, "O beou Souleou !" (O beautiful Sun !). ref. *History of Physical Astronomy*

July 08, 1842 Francis Baily (1774-1844) UK, at an eclipse in Italy, focuses attention on the corona and prominences and identifies them as part of the Sun's atmosphere.

July 09, 1945 Canadian astronomers, J. F. Heard and P. M. Millman, while in the RCAF, got moderately good photographs of the corona and flash spectrum during this solar eclipse. They were high above the clouds in Bredenburg, Saskatchewan where ground-based astronomers saw nothing of the eclipse. (HASTRO 24/6/97-Peter Broughton)

July 09, 1974 American Satellite OSO 7, Orbiting Solar Observatories, falls back. (ref. DD 7/98)

July 09, 1996 With the satellite SOHO, they discover that solar flares causes sun quakes. (ref. DD 7/98)

July 10, 0028 This two and a half minute eclipse crossed south western Ireland and Cornwall before the Sun set in France shortly afterwards. (SW-UK Eclipse's)

July 10, 1910 Death of German astronomer Johann Gottfried Galle. Besides the discovery of Neptun, he calculated the parallax of the sun from measurements of Minor Planets. (ref. DD 7/99)

July 10, 1972 Chukotka 2509 (1977 NG): Minor planet discovered July 14, 1977 by Nikolaj S. Chernykh at Nauchnyj. Named for a National Area of the R.S.F.S.R., situated in the northeastern part of the USSR. The discoverer participated in an expedition there to observe the 1972 Total Solar Eclipse (MPC 7472). Ref. VK 6/97

July 10, 1983 Minor planet (3222) Liller 1983 NJ. Discovered 1983 July 10 by E. Bowell at Anderson Mesa. Named in honor of William Liller, formerly Robert Wheeler Wilson Professor of Applied Astronomy at Harvard University, on the occasion of his sixtieth birthday. A premier observer, he has made substantial contributions through observations of a broad range of astronomical objects and phenomena: planetary nebulae, minor planets, comets, novae, variable stars, globular clusters, X-ray sources, quasars, solar eclipses and stellar occultations. Now living in Chile, he has in recent years participated in the PROBLICOM survey and has discov-

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ered several novae. During the recent passage of Halley's Comet he was a crucial member of the IHW Island Network. He has been a leader in astronomical education and an important supporter of amateur astronomy. His enthusiastic encouragement has been greatly appreciated by his colleagues and students. (M 12015) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

July 11, 1732 Birth of French astronomer Joseph Jerome le Francois de Lalande (1732-1807). Calculated the distance to the sun in 1771 and being 154,198 million km. (ref. DD 7/98, Rc 1999)

July 11, 1909 Death of Simon Newcomb (1835-1909), American mathematician and astronomer. He used carefully analyzed measurements of stellar and planetary positions to compute motions of the sun, moon, planets, and their satellites. Studied the velocity of light and calculated the distance to the sun. March 12, 1835 Birth of Simon Newcomb (1835-1909) in Wallace, Nova Scotia, Canada. Simon Newcomb died 11 July 1909 in Washington DC. Ref. Bibliography of Astronomers by Paul Luther, 1989.

July 11, 1991 The so called Great Eclipse which was visible in Mexico and Hawaii.

July 12, 1941 Jones, Barrie W. born 1941. Professor of Astronomy at the The Open University of Milton Keynes. Recording and explanation of shadow bands at solar eclipses. Search for pressure waves in the lower troposphere, generated by solar eclipses. Ref. Private correspondence BWJ 07/02.

July 13, 0158 This was the first total eclipse to have passed over London since 1 AD. It provided for them 1 minute of glory. (SW-UK Eclipse's)

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

July 14, 1977 Minor planet (2509) Chukotka 1977 NG. Discovered 1977 July 14 by N. S. Chernykh at Nauchnyj. Named for a National Area of the R.S.F.S.R., situated in the northeastern part of the U.S.S.R. The discoverer participated in an expedition there to observe the 1972 total solar eclipse. (M 7472) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

July 15, 1975 During the nine-day mission launched July 15, 1975, astronauts Thomas P. Stafford, Vance D. Brand and Donald K. Slayton rendezvoused and docked their Apollo spacecraft with the Soyuz 19 spacecraft with cosmonauts Aleksey Leonov and Valeriy Kubasov onboard.

July 16, 0809 "The sun darkened at the beginning of the fifth hour of the day on Tuesday, July 16th, the 29th day of the moon." Refers to a solar eclipse in AD 809. From: The Anglo Saxon Chronicles translated and collated by Anne Savage, CLB Publishing Ltd. Ref FE 01/01

July 16, 1330 A short Eclipse at under 1 minute, but yet another for northern Scotland. The Orkney and Shetland Islands are blessed with more Total Eclipses than anywhere else in the UK. Although this Eclipse did not cross these islands, it came pretty close. The Eclipse track traveled into Holland, Germany, Czechoslovakia, Austria, Hungary, Romania, Bulgaria and sets in Turkey. (SW-UK Eclipse's)

July 16, 2186 Closest approach to maximum possible duration of totality with 7 min 29 sec in the Atlantic Ocean. Maximum theoretical duration is 7 min 31 sec. During the 4th millennium there are only 2 solar eclipses with maximum duration of totality longer than 7 min. In the years 3973 and 3991. There are none in 21st century. Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

July 17, -0187 (188 BC) "Before the new magistrates departed for their provinces, a three-day period of prayer was proclaimed in the name of the College of Decemvirs at all the street-corner shrines because in the daytime at the third hour darkness had covered everything." Probably refers to the solar eclipse of 17 July 188 BC. Livy, Roman. Quoted in Encyclopedia Britannica CD 98.

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July 17, -0187 (188 BC) "Emperor Hui, 7th year, 5th month, day ting-mao, the last day of the month. The Sun was eclipsed; it was almost complete. It was in the beginning of (the lunar lodge) Ch'i-hsing" Refers to a partial solar eclipse of 17 July 188 BC. Pan Ku Han-shu (AD 58-AD76). Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 234.

July 17, 0334 Firmicus (Sicily) is first to report solar prominences, seen during an annular eclipse.

July 17, -0708 (709 BC) "Duke Huan, 3rd year, 7th month, day jen-ch'en, the first day (of the month). The Sun was eclipsed and it was total." Refers to a total solar eclipse of 17 July 709 BC. From: Ch'un-ch'iu, book I (Chinese). Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 226. Stephenson says: "This is the earliest direct allusion to a complete obscuration of the Sun in any civilisation. The recorded date, when reduced to the Julian calendar, agrees exactly with that of a computed solar eclipse." Reference to the same eclipse appears in the Han-shu ('History of the Former Han Dynasty') (Chinese, 1st century AD): ". . . the eclipse threaded centrally through the Sun; above and below it was yellow."

July 17, 1905 Birth of Roderick Oliver Redman. On 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)

July 18, 1860 "At the commencement of the obscuration, the sky was overcast, with heavy masses of cloud in the east, and there was much reason to fear that the celestial phenomenon would not be at all apparent hereabouts. But a brisk gale of wind having scattered the clouds, shortly before six o'clock the sun became visible to the eager gaze of thousands, and again astronomical prediction was verified. The black shadow had eaten its way a considerable distance into the surface of the bright orb, and slowly but steadily the darkness appeared to extend itself over that dazzling surface. What a scrutiny the great change was attracting from all quarters of the earth! What an array of telescopes were eagerly searching the blue vault above during those precious moments!" Refers to a solar eclipse of 18 July 1860, at Upper Fort Garry, Manitoba (outside the path of totality). From: William Coldwell and William Buckingham, Nor'Wester. Reprinted, with permission, from Chasing the Shadow, copyright 1994 by Joel K Harris and Richard L Talcott, by permission of Kalmbach Publishing Co. Ref FE 01/01

July 18, 1860 "But at the moment of totality, all became silent and dumb. Neither a cry nor a rustling, nor even a whisper (was heard), but everywhere there was anxiety and consternation. To everyone the two minutes of the eclipse were like two hours. I do not exaggerate or imagine any of these details. Several people whom I questioned after the eclipse regarding the duration of totality replied that it had lasted for two hours." Refers to a total solar eclipse in Sudan of 18 July 1860. From: M Bey, Comptes Rendus. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 385.

July 18, 1860 First wet plate photographs of an eclipse; they require 1/30 of the exposure time of a daguerreotype.

July 18, 1860 Warren de la Rue (1815-1889), UK and Angelo Secchi (1818-1878), Italy, use photography during a solar eclipse in Spain to demonstrate that prominences (and hence at least that region of the corona) are part of the Sun, not light scattered by the Earth's atmosphere or the edge of the Moon, because the corona looks the same from sides 250 miles apart.

July 18, 1898 The authors, Meeus-Grosjean-Vanderleen, started as close as possible with the 20th century for their Canon Of Solar Eclipses 1898-2510 in 1966. They started with eclipse number 7401 of von Oppolzer's Canon der Finsternisse, which was the solar eclipse of 18 July 1898 and so 600 eclipses could be compared from both Canons.

July 19, 0418 First report of a comet discovered during a solar eclipse, seen by the historian Philostorgius in Asia Minor. Many chronicles do mention this observation (12 western, 3 Byzantine). Philostorgius mentions that the sun was eclipsed at the 8th hour of the day. In his sketch there is a comet. This Total Solar Eclipse was from the Caribbean, Bay of Bengal, north Spain, central Italy, little Asia and ends in the north of India.

July 19, 1975 The Apollo and Soyuz spacecraft undocked at 8:02 am EDT. While the spacecraft were in station-keeping mode, the crews photographed them. The Apollo spacecraft served as an occulting disk, blocking the sun from the Soyuz and simulating a So-

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lar Eclipse, the first man-made Eclipse. Leonov and Kubasov photographed the solar corona as the Apollo backed away from the Soyuz and toward the sun.

July 21, 1979 Minor Planet (4013) Ogiria 1979 OM15. Discovered 1979 July 21 by N. S. Chernykh at Nauchnyj. Named in memory of Maiya Borisovna Ogir' (1933-1991), solar physicist and staff member of the Crimean Astrophysical Observatory for more than 30 years, known for her research on the active processes on the Sun. (M 22500) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

July 21, 1990 Meteorologist Joe Rao was able to coerce American Trans-Air Airlines to alter the course of one of their regularly-scheduled flights in order to be in the right position to experience the total phase of the July 22-21, 1990 total solar eclipse. The eclipse began on Sunday, July 22, with the path of totality passing over Helsinki, Finland. The shadow path then moved across northernmost sections of Russia, then crossed the International Date Line, causing the eclipse date to change to Saturday, July 21. The totality track swept southeast over Alaska's Aleutian Island chain, before reaching its end at a point midway between Honolulu, Hawaii and San Francisco, California. American Trans-Air Flight 403 normally flies from Hawaii to San Francisco on Saturday afternoons. A few weeks in advance of the eclipse, Rao informed the airline that by delaying the flight by 41 minutes out of Honolulu, that Flight 403 would likely be in position to catch the total phase. The airline agreed to make the attempt, allowing most of the 360 persons on board their Lockheed L-1011 jet the opportunity to witness totality. Rao, his wife Renate, and two friends, flew out of New York's JFK airport late on Friday night, July 20 . . . arrived in San Francisco early on Saturday morning for a few hours of sleep, before boarding ATA Flight 402 to Hawaii. They were in Honolulu for 45 minutes before turning around and heading back for San Francisco (encountering the eclipse along the way). After spending the night in San Francisco, they returned to New York the next day, having traveled over 11,000 miles in 46 hours just to see 73 seconds of a total eclipse! Ref. Pers. Corr. Joe Rao.

July 22, 1784 Astronomer Friedrich Wilhelm Bessel (1784-1846) was born in Muiden. Son of a government employee. Friedrich W. Bessel, German astronomer and mathematician determined precession, nutation, aberration and inclination of the ecliptic. Famous for his Bessel elements for the calculation of Solar Eclipses. (ref. DD 7/98, Rc 1999)

July 22, 1990 The Finland-Russia eclipse, which was clouded out for many eclipse chasers.

July 22, 2009 Next total solar eclipses with a totality duration longer than 5 minutes are 22 July 2009 (6m40s), 11 July 2010 (5m20s) and 2 August 2027 (6m23s). Ref. More Mathematical Astronomical Morsels by Jean Meeus; Willmann-Bell, 2002.

July 22, 2028 Christmas Island will get a total solar eclipse on 22 July 2028 with almost 4 minutes of totality. There will be a Partial Solar Eclipse on Christmas Day, December 25, 2038 (mag. of 0.845). On December 26, 2019 there is a partial eclipse of magnitude 0.658 on the same island.

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. This TSE will be the first total solar eclipse in Amsterdam since 17 June 1433. Ref WC 7/01 SEML

July 22, 2381 October 2, 2350, there is a total solar eclipse in Amsterdam at sun altitude of 14 degrees. Annular eclipses in Amsterdam will be on October 2, 2350, March 26, 2639 and May 23, 2878 (the same century as the total solar eclipse). The total solar eclipse of 2 September 2817 was long considered as being the next TSE. Though, with the modern calculation programs Emapwin of Takesako and Wineclips of Scsibrany show that the eclipse of 22 July 2381 Amsterdam is within the path of totality. Ref. Correspondence with Wil Carton September 2003.

July 23, 0594 The Sun was well up (17°) at 6:11 am when totality occurred. On a warm summer's morning it must have got surprisingly cold as totality approached, giving a clue that something unusual was about to happen. At 258 km wide this was an Eclipse with a very wide track and a good duration of over 3 minutes. The Eclipse track traveled into Denmark, Norway, Sweden, Finland, Estonia and Russia. (SW-UK Eclipse's)

July 24, 1853 Birth of Henri Alexandre Deslandres (1853-1948) in Paris, French physicist and astronomer did spectroscopic research. Designed, independent from Hale but at the same time, the spectra helio graph. (ref. DD 7/98, Rc 1999)

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July 25, 6337 Is in Santiago de Compostela, a religion place in Spain, the day July 25 on a Sunday, then the year is called Ano Santo Compostelano. The next central eclipse visible in Santiago de Compostela will be the annular eclipse of 3 October 2005. For a total solar eclipse the pelgrims have to wait till 4 October 2480. Because this is a total eclipse at sunrise, the next favorite will be 30 October 2665. The last total solar eclipse was 16 March 1485. But an eclipse in Santiago de Compostela and in an Ano Santa Compostelano? On 16 februari 2743 there is an annular eclipse. The same year 25 July is on a Sunday which is Ano Santo Compostelano. Maximum is 4 degrees under the horizon. The total solar eclipse of 16 June 1406 was in an Ano Santo Compostelano as well. Between -1000 and 8000 there is only one solar eclipse on a Sunday July 25 and visible in Santiago de Compostela: The partial solar eclipse of Sunday 25 July 6337 with maximum magnitude of 0.328 at 15h23.

July 27, 1801 Birth of Sir George Biddell Airy (1801-1892), British Astronomer and Astronomer Royal from 1835 till 1881, president of the Royal Society from 1871 till 1873. Calculated distance to the sun and observed transit of Venus, etc. (ref. DD 7/98, Rc 1999). Born in Alnwick, Northumberland. Died in "White House," Greenwich of injuries from a fall on 2 January 1892. Ref. The Bibliographical Dictionary of Scientists, edited by David Abbott, 1994.

July 28, 0873 "This solar eclipse was observed by Abu al-'Abbas al-Iranshahri at Nishapur early in the morning on Tuesday the 29th of the month of Ramadan in the year 259 of al-Hijrah . . . (date on the Persian calendar) . . . He mentioned that the Moon's body (i.e. disk) was in the middle of the Sun's body. The light from the remaining uneclipsed portion of the Sun surrounded it (i.e. the Moon). It was clear from this that the Sun's diameter exceeded in view that of the Moon." Refers to an annular eclipse of 28 July AD 873. From: al-Biruni al-Qanun al-Mas'udi (1030). Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 467.

July 28, 1851 "The observations were tolerably successful. although the full beauty of the corona was not seen at Christiania, owing to the prevalence of thin clouds during the totality. The prominences were clearly visible, especially a large hooked protuberance. This remarkable stream of hydrogen gas, rendered incandescent while passing through the heated photosphere of the Sun, attracted the attention of nearly all the observers at the different stations. I succeeded in noting accurately the mean solar times of the beginning of the eclipse, and of the beginning and end of totality. As at Christiania the total darkness lasted only a few seconds more than 2-1/2 minutes, I could only examine in a hurried manner the various phenomena visible in the telescope. So absorbed was I during this short interval that when the limb of the Sun reappeared I could scarcely realize the fact that 2-1/2 minutes had elapsed since the commencement of totality. These were truly exciting moments, and although I had hastily witnessed most of the phenomena, I felt somewhat disappointed that more had not been accomplished. Few can imagine how much I longed for another minute, for what I had witnessed seemed very much like a dream. As a spectacle, those who were not encumbered with telescopic work had the best of it. Several persons in different positions were requested to note the effects of the darkness on the landscape, plants, and animals. I kept my eye devotedly fixed to the eye-piece of the telescope during nearly the whole time of totality. I only removed it in order to obtain a few seconds' glance at the marvellous transformation around me, for the landscape had lost all its natural aspect, being tinted with various shades of colour over the intermixture of land and water. Some of my friends described the appearance, as the darkness gradually crept onwards, as truly awful." Refers to the total solar eclipse of 28 July 1851, as seen from within the northern edge of the path of totality, in Scandinavia. From: Edwin Dunkin, Autobiography, unpublished. Compiled by Peter Hingley, Royal Astronomical Society. Ref FE 01/01

July 28, 1851 First American eclipse expedition to Europe when George Phillips Bond (1825 - 1865) led a team to Scandinavia.

July 28, 1851 Robert Grant and William Swan (UK) and Karl Ludwig von Lottrow (Austria) determine that prominences are part of the Sun because the Moon is seen to cover and uncover them as it moves in front of the Sun.

July 28, 1851 Sir George Biddell Airy (1801-1892) (UK) is the first to describe the Sun's chromosphere: he calls it the sierra, thinking that he is seeing mountains on the Sun, but he is actually seeing small prominences (spicules) that give the chromosphere a jagged appearance. Because of its reddish color, Sir Joseph Norman Lockyer (1836-1920), in 1868, names this layer of the Sun's atmosphere the chromosphere.

July 28, 1851 The first photograph of a total eclipse was taken in 1851 by Berkowski in Königsberg, East Prussia using the 6.25 in Königsberg heliometer and giving an exposure of 24s.

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July 29, -0430 (431 BC) ". . . the sun assumed the shape of a crescent and became full again, and during the eclipse some stars became visible." Thucydides (Greek, c460-400 BC).Refers to an annular solar eclipse of 3 August (29 July) 431 BC. Ref FE 01/01

July 29, -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.

July 29, 1878 Height of search for intra-Mercurial planet Vulcan using eclipses to block the Sun. Several observers claim sightings, but they are never confirmed. The problem is finally resolved by Albert Einstein (1879-1955) in his general theory of relativity in 1916.

July 29, 1878 Possible observation of comet Encke (Johann Franz Encke (1791-1865)) during the eclipse of 29 July 1878 by J.B. Rutherford from Colorado Springs. Besides the comet he also observed Procyon, Regulus, Mercury and Mars with the naked eye and "... feels sure he saw ..." But no other observer did notice the comet. Even not F. Hess, whom specially searched for the comet during this eclipse.

July 29, 1878 Samuel Pierpont Langley (1834-1906), and Cleveland Abbe (US), observing from Pike's Peak in Colorado, and Simon Newcomb (1835-1909) (US) observing from Wyoming, notice coronal streamers extending more than 6 degrees from the Sun along the ecliptic and suggest that this glow is the origin of the zodiacal light.

July 31, 1995 European spacecraft Ulysses passes the northern pole of the Sun at 9,78. (ref. DD 7/98)

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

Best regards,

Patrick and Joanne

solareclipsewebpages@btopenworld.com

<http://solareclipsewebpages.users.btopenworld.com>

SEScannings

Eclipse literature

From: "Dietmar Staps" To: SOLARECLIPSES@AULA.COM Date: Mon, 21 Jun 2004

1. July 2004 German edition National Geographic, page 34 - 67 "Expedition to the Solar Interior" with SOHO, TRACE and swedish solar telescope pictures. cover: fred espenak's corona picture. folder: the new picture of the sun

2. an article about the eclipse 1860 (page 218-221) in the new book "The Life and Science of Leon Foucault" Cambridge University Press 2004, 338 pages

SEDates

Solar Eclipse Conference August 2004

Date: Thu, 17 Jun 2004 From: "Patrick Poitevin" To: "Solar Eclipse Mailing List"

Dear All, Only two months to go!!!

The international Solar Eclipse Conference will take place from 20 to 22 August 2004 at the Open University of Milton Keynes, United Kingdom.

See our webpages for more details:

General WebPages

<http://solareclipsewebpages.users.btopenworld.com/>

SEC2004 WebPages

http://solareclipsewebpages.users.btopenworld.com/SEC_files/SEC2004.html

There are still seats available. Any support or sponsoring is welcome too. Use our webpages for registration and payments.

Drop us a mail if you need further information. Best regards,

SEScannings

SENL Index June 2004

Dear all, Before you are all off to observe the Transit of Venus, please find herewith the Index of the June 2004 issue of the Solar Eclipse Newsletter (SENL). Beside the topic, the page number is listed. Please post your solar eclipse related contributions to us. Thank you.

As you will notice, loads of postings on the Transit. Enjoy!!!

The SENL can be downloaded free of charge. You only need Adobe Acrobat Reader on your computer. For Adobe see

<http://www.adobe.com/products/acrobat/readstep2.html>

.../...

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

<http://solareclipsewebpages.users.btopenworld.com>

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

<http://sunearth.gsfc.nasa.gov/eclipse/SENL/> and the index at

<http://www.mreclipse.com/SENL/SENLinde.htm> with example: SENL0011.pdf

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

Comments and contributions are welcome at solareclipsewebpages@btopenworld.com

And ... keep those solar eclipse related messages coming ... Best Regards, Patrick and Joanne

SEScannings

Eclipse sighting eclipse screen saver software

From: KCStarguy@aol.com Date: Wed, 23 Jun 2004

Eclipse sighting- this software is made for mac only and is an advanced screen saver. I understand why they call it eclipse. More below even if you are not a mac user. Dr. Eric Flescher (kcstarguy@aol.com), Olathe, KS. USA 7 total solar eclipses and counting: webmaster Eric's Black Sun Eclipse website - <<http://members.aol.com/kcstarguy/blacksun/eclipse.htm>.

General: What is Eclipse? - Ambrosia Software, Inc. web board www.ambrosiasw.com/webboard/Forum47/HTML/000002.html - 16k - <nCached - SimilarÂ pages

Operation: How do I use Eclipse? -

Posts: 2855 From:NY Registered: Mar 99 Karma: divine posted 09-20-2000

Eclipse is a lean, mean, 100 percent PowerPC native screen saving machine that works great on 68K Macs as well. To eliminate the problem of extension conflicts, we designed Eclipse as an application so that it retains the benefits of extension-based screen savers while avoiding their propensity to cause problems. After all, a screen saver is supposed to save your screen, not crash your machine. Unlike some other screen savers, Eclipse uses very little memory and processor time to do its job. Thus, Eclipse will never slow down your Macintosh. However, even with Eclipse's svelte form, it offers all of the useful features you could ever want in a screen saver, presented in an elegant and straight-forward user interface. Moreover, Eclipse doesn't merely dim the screen; it displays the current time floating on the screen, graphics (PICTs, JPEGs and GIFs) and QuickTimeâ,ç movies from a folder full of choices. You can select the graphics and movies to be displayed by dropping them into the Eclipse Graphics folder. In addition, Eclipse offers such conveniences as password protection, and you can customize its extensive feature set any way you like.

SETalk

Delta T

Date: Tue, 1 Jun 2004 From: "Jean Meeus" To: "Tom Alderweireldt"

On 2004 May 1, the difference between the uniform Dynamical Time and the Universal Time was Delta T = 64.64 seconds.
Jean Meeus



Hartmann Mask for Focusing?

Date: Fri, 04 Jun 2004 From: "Jay Friedland" To: "SOLARECLIPSES@AULA.COM"

Hi All, Has anyone used a Hartmann mask on either a white light or h-alpha telescope for improving their focus? I'm finalizing my Transit of Venus equipment and I'd really like to improve both the time it takes to focus and the quality of the focus. I'm planning on imaging in both h-alpha and white light with Philips ToUcam 740K webcams.

I used some web resources to put together the masks, but the version I tried seems to really only work well for point sources like stars (and this really doesn't help in h-alpha).

Any suggestions/diagrams/references/data would be greatly appreciated! Thanks and Clear Skies, - Jay - Jay Friedland Likes Shadows...even small round ones :-)
Totals: 1991 Baja, 1994 Bolivia, 1995 Thailand, 1998 Galapagos, 1999 Austria, 2002 Australia, 2003 Antarctica
Annulars: 1992 Catalina Island (clouded out), 1994 Erie, PA, 2002 Puerto Vallarta (mostly clouded)

SETalk

SE 11 januari 688 BC

From: "JPvdGiessen" To: SOLARECLIPSES@AULA.COM Date: Tue, 1 Jun 2004

Hello all, I'm searching for the following information about an eclipse which occurred on 11 januari 688 BC.

Are there any Babylonian or near-east sources which mentions this eclipse, Was it possible that observers in Israel (Jerusalem) saw this eclipse, Sincerly, Jan Pieter van de Giessen

From: "Jean Meeus"

Jan Pieter van de Giessen asked about the solar eclipse of 11 January 688 BC. The correct date is, however, 11 January of the year -688, which is 689 BC.

Indeed there is a difference of 1 between the astronomers' negative years and the BC years used by the historians, as the latter don't consider the year zero.

The solar eclipse of -688 January 11 was annular. Its broad path of annular phase passed over Italy, Greece and Turkey, north of Israel. In Israel the eclipse was a large partial one, with a magnitude larger than 80%. Jean Meeus

From: "Fred Espenak"

For a map showing the path of the solar eclipse of -688 Jan 11, see the NASA "World Atlas Solar Eclipse Paths" is at:

<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas.html>

The actual map which includes the -688 Jan 11 eclipse path is at: <http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas-1/SEatlas-0699.GIF>

The index page for solar eclipse paths for the first millennium BCE is located at: <http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas-1.html>

Similarly, the index page for solar eclipse paths for the first millennium CE is located at: <http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas1.html>

The maps are all 16 color GIF files which offer the advantage of small file size for fast transmission while producing maps at relatively high resolution. Each map is approximately 140 kb and measures 1465 x 1942 pixels. Fred Espenak

Umbra on Antarctica

From: "Evan Zucker" To: SOLARECLIPSES@AULA.COM Date: Tue, 8 Jun 2004

I suspect that many of you have already seen this photo, but for some reason I don't recall ever having seen this great NASA photo of the umbra on Antarctica: http://www.gesource.ac.uk/worldguide/html/image_36.html -- EVAN

Pushing back Maya origins - New discoveries from 2,500-year-old ruins at a site deep in the Guatemalan jungle shed new light on the origins of Maya civilization

Date: Thu, 10 Jun 2004 From: "LARRY KLAES" To: HASTRO-L@LISTSERV.WVU.EDU

Seeing how the Aztecs were so fascinated with Venus, and noting how easy it was to see Venus against the Sun when it was low on the horizon June 8, did they or other Pre-Columbian American cultures record such an event?

Original Message ----- From: Exploration@Vanderbilt<mailto:Exploration@Vanderbilt> The latest discoveries from the 2,500-year-old ruins of a neglected site deep in the Guatemalan jungle are shedding new light on the origins of Maya civilization.

http://exploration.vanderbilt.edu/news/features/maya_origins/news_maya_origins.htm<http://exploration.vanderbilt.edu/news/features/maya_origins/news_maya_origins.htm>

From: "Dr. Chad Hansen"

And does this have any relation to the mythical Black Star of several Pre-Columbian American myths?

From: "LARRY KLAES"

Could you go into detail on this Black Star myth? Thanks. Larry

From: "Dr. Chad Hansen"

One of my sources for this idea is Ray A. Williamson's "Living the Sky", pages 222-30. There, Williamson reports that in the mythos of the Skidee Pawnee the four world-quarter stars are called Yellow Star, Red Star, Big Black Star, and White Star. These four stars are correlated to many aspects of the Pawnee mythos, in particular most relevantly for us to the four beasts who guarded Evening Star, the female star-personification of Venus who stood in the way of creation. Fortunately, Morning Star, the male star-personification who would create the world, conquered these four quarter-guardian stars (among other obstacles) and the union of the Morning and Evening Stars, and the creation of the world, ensued.

(Continued on page 12)

SETalk

(Continued from page 11)

Significantly enough, three of these four colors are the colors of Saturn, Jupiter, and Mars (yellow, white, and red, respectively) as these planets are seen in the night sky. The fourth "color", however, Black, has never before seemed a likely color for any celestial object. Never, that is, before the recent reports of the "Black Venus" (if I may) in the last few days. Admittedly, of course, both the recognition and the naming of just these four colors occurred in an historical sequence determined (as demonstrated by E. O. Wilson and C. J. Lumsden in *Genes, Mind, and Culture*) by epigenetic or sociobiological processes. At the same time, however, I would like to point out that these color/deity correspondences are related to Athony Aveni's classification of the planets (which I mentioned in an earlier posting) into to groups derived from the possibility of opposition to the Sun. For not only the movements and the timings, but the colors of the celestial objects as well contributed a variety of mythical components to sacred narrative. This, in fact, is one reason why the classification:

Mars is the youngest (fastest),

Jupiter the middle-aged, and

Saturn the eldest (slowest).

given in Lloyd Anderson's earlier posting (6/10/2004, 10:06am, CDT), makes sense.

And of course, all of this is connected to the precession argument of Hamlet's Mill (sorry about that), because Saturn, Jupiter, and Mars are the successive rulers (as Grandfather, Father, Son, respectively) of the first three of the four World Ages—Golden, Silver, and Bronze—whose corresponding colors are Yellow, White, and Red. That leaves only Black as the color of the current World Age; but since that is the color of the planet Venus as it transits the Sun (can Mercury been seen this way as well?), and since the Sun is the "day-star" of the current, Iron, World Age (as Helios, for instance, just as the opposition-capable planets are "night-suns"), and (finally, since Venus and Mercury (white and reddish, respectively, by the way) seem to be the twin's of the Sun, this color seems appropriate enough.

There is so much more world mythos derived from the colors of the planets, the stars, and the Sun and Moon (e.g., the four Bacabs of the Mayans, four-quarters guardians with the same four colors), that I could go on and on. But I'm guessing I've already overstayed my welcome. Please forgive the long-winded posting. Cordially, CH

From: ECOLING@AOL.COM

The idea that wars were conducted on dates of Venus first risings was popular for a time, but is now widely doubted. The glyph (verb) probably simply meant "defeated" (another town or etc.), it no longer carried any meaning connected with Venus the planet or god.
Lloyd Anderson Ecological Linguistics

Eclipse calculator for your mobile phone

Date: Thu, 10 Jun 2004 From: "Chris O'Byrne" To: "eclipses"

Folks, I've shrunk the Javascript eclipse calculator so that it fits on your (Java-enabled) mobile phone! For more information, see <http://www.ecliptomaniacs.com/resources/j2me/>

The calculator calculates many of the circumstances of a solar eclipse from a given location. It also provides countdown clocks for the various contacts.

At present, it only knows about the 2002 Dec 04 eclipse (and it uses Fred Espenak's eclipse elements from his eclipse bulletin, so it's results can be directly compared with Fred's). I am close to having it support more eclipses - watch this space.

Please send any bug reports, reports of problems (or, indeed, of successes) and any suggestions for improvement to me privately by email. Thanks, Chris.

From: "Chris O'Byrne"

It's been updated so that it now supports eclipses from 1990 Jan 26 to 2029 Dec 05. Thanks, Chris.

From: "Dale Ireland"

Chris Have you seen the Garmin cf QueT 1620? It is a small GPS module that attaches to a PDA. Wouldn't it be interesting if your software could read the GPS input and produce eclipse circumstances quickly for the current position without having to manually input the values, for observing from a Cruise ship or quick location changes. Just a suggestion for the future perhaps.

From: "Chris O'Byrne"

Dale, If you have a PDA, you should be able to get Java to work on it - see <http://java.sun.com/products/midp4palm/> At present, the "eclipse.prc" link on ecliptomaniacs.com for the Palm version does not work (my foul-up) - it should work by the end of the day today. I tested it on an old Palm that I have lying around and, whereas it works, it's surprisingly slow (much slower than my phone). Maybe it will be quicker with newer Palms.

(Continued on page 13)

SETalk

(Continued from page 12)

Yes, it would be nice to read time and position directly from a CF card, but then there is also the Garmin iQue 3600 - an integrated GPS/PDA unit. I reckon that this hobby is expensive enough as it is without having to fork out too much money for specific hardware combinations so as to answer the question of when will the shadow reach me (especially if that hardware would otherwise not be used much in day-to-day life). Most people have a mobile phone, and many of those phones happen to have Java capability, which is a large part of the reason why I chose that platform to work with. Thanks, Chris.

The very mysterious eclipse of 1654!

Date: Wed, 16 Jun 2004 From: "Bob Morris" To: "SE from LRM"

Do any of our French-speaking friends know about the book "L'Entree de Saturn au Lion: l'eclipse de soleil du 12 Aout 1654" by Elisabeth Labrousee, published by Martinus Nijhoff, The Hague.

I have a photocopy. It was in the University of Ottawa library. It is 113 pages!!

I have tried to work my way through several times with my rudimentary French.

This eclipse seemd to have caused major havoc across Europe.

Since the path of totality is very far east of France, why the great interest by the French?

I would love to know all about this eclipse and why it rated a 110 page book. Has there ever been a 110 page book about any the sociological impact of any other single eclipse? In any language? I think not!

Who will be the first to translate this book or write an English version or summary? Not me.

It is ISBN 90 247 1625X.

If anyone seriously wants to attack this project contact me. Bob Morris

From: "Bob Morris"

First, this book is written in 1974, so it is not in old French.

Using the data I gave, you should be able to get a copy for

free from any university interlibrary loans dept.

Looking at the summary on the back cover I find that the whole thing started with a well-known quote from Pascal:

" ... le droit a ses epoques, l'entree de Saturn au Lion nous marque l'origine d'un tel crime. Plaisante justice qu'une riviere borne! Venitie au deca des Pyrenees, erreur au dela."

The eclipse evoked exceptional anxiety across Europe.

According to the bible, the deluge was 1656 years after the creation. So the "end of time" would be 1656 years after the start of the Christian era!

An anonymous German hiding under the name of a respectable Italian astronomer took this theme to suggest that the eclipse of 1654 was a prologue to the last judgement (the end of the world!) and wrote a pamphlet -- included in the book are repros of the German and French documents.

The tract was translated into French and Dutch and widely circulated.

The book is all about the problems created and the idealogical wars among astronomers, astrologers, and the various religions, Lutherans and Catholics in particualr.

Names mentioned are Gassendi, Jean-Baptist Morin.

Dr. Andreas was the phony astronomer.

So all of Europe was terrified that the eclipse was a harbinger of the end of the world!

Might make a great movie! Most pages of the book are half text and half footnotes, with many references. This is a scholarly work. Bob Morris

From: "Sheridan Williams"

This TSE crossed Scotland,so I would be very interested in a translation. I'd be happy to contribute towards expenses.

From: "Jim Low"

That was an eclipse involved with distaster predictions by Nostradamus. It happened the eclipse was a fairly deep partial in at least northern France (I think totality passed over the northern British Isles), and there was also a partial eclipse of the moon two weeks later -- both visible from Europe. Probably got some interest because of beliefs of the day.

SETalk

The mathematics of solar eclipses

Date: Tue, 22 Jun 2004 From: "Francis Podmore" To: SOLARECLIPSES@AULA.COM

Hello Daniel - I'm currently checking my mailbox and saw your msg below.

I hope you got some help from the SEML - there are Lots of experts on it and Lots of books you could try to get/look at. I just hope some folk have had the time to reply to your message - if you're a bit disappointed at the response, then come back to me, and pls copy the message also to me at fpodmore@yahoo.com as I look at that mailbox more often.

Where are you located? Have you access to good libraries? Have you used the web to try to find books you're looking for?

Bye, Francis Podmore (I live in Zimbabwe and teach physics the the university in Harare)

WANTED eclipse 2000 video

From: "Klipsi" To: SOLARECLIPSES@AULA.COM Date: Mon, 28 Jun 2004

dear friends, I just started a side business (which I hope might become full time ;-)) of selling video and photo to the media,

and things start slowly to roll , see <http://eclipse.span.ch/stockphoto.htm>

now I got a specific request for : video footage of the following eclipses,

21 january 2000 total lunar eclipse
30/31 july 2000 partial solar eclipse

I did webcast both but need some time to search for possible kept video, plus I might want to include more footage, from others, such as YOU.

if YOU have good footage, even just 20 seconds worth, tripodfilmed of any of these two eclipses , and willing to send for me to sell (and I'll share benefits, of course), contact off-list klipsi@bluewin.ch

hang on there, I am still waiting to learn if it is for commercial use or just private (hey maybe that fine gentlemen is on this list to and gets the same message ... ;-)) thanks for your attention. Klipsi

Annular eclipse photos?

From: "Govert Schilling" To: SOLARECLIPSES@AULA.COM
Date: Tue, 29 Jun 2004

Hi all -- For a small Dutch booklet highlighting celestial events in 2005, I'm in search of a nice, scenic photo of an annular solar eclipse (maybe 30 May 2003 Scotland?). It should be in Landscape format, high-resolution, a not-too-small sun, and preferably nice scenery in the image, like foreground/horizon, clouds, a bird or whatever. If you have something like that available, please drop me a note a.s.a.p. at <mailto:mail@govertschilling.nl>, with the image as an attachment. If your photo is useful, it might even make it to the cover of the book. Alas, there's not much budget, so don't expect to become rich... I look forward to hearing from you. --Govert

Full Novo Antarctica eclipse report

Date: Wed, 30 Jun 2004 From: "Fred Bruenjes" To: SOLARECLIPSES@AULA.COM

Fellow eclipse chasers: I have finally finished the full report of my trip to Novo, Antarctica for the 2003 eclipse. This is a free 92 page Adobe PDF "book" that includes photos and a narrative of the entire trip (not just eclipse day). You have my permission to print it out if you prefer to read on paper. Three versions are available:

Full report, high resolution (10.7MB): http://www.moonglow.net/eclipse/2003nov23/antarctica_book_hi.pdf

Full report, low resolution (2.7MB): http://www.moonglow.net/eclipse/2003nov23/antarctica_book_lo.pdf

Eclipse day only, low resolution (350kB): http://www.moonglow.net/eclipse/2003nov23/eclipse_lo.pdf

Fred Bruenjes Ramona, CA <http://www.moonglow.net/eclipse/eclipses.html>

Delta T

Date: Sat, 3 Jul 2004 From: "Jean Meeus"

On 2004 June 1, the difference between Dynamical Time and Universal Time was Delta T = 64.65 seconds. Jean Meeus

TRANSIT OF VENUS

The Venus Files: History Repeats on June 8

Date: Sun, 30 May 2004 From: "LARRY KLAES" To: HASTRO-L@LISTSERV.WVU.EDU

Science/Astronomy:

* The Venus Files: History Repeats on June 8

http://www.space.com/spacewatch/venus_transit_history_040528.html<http://www.space.com/spacewatch/venus_transit_history_040528.html>

Venus will pass in front of the Sun on June 8, and skywatchers in many locations around the world will have their first chance in nearly 122 years to see the planet as a black dot against the solar surface. The event is among the rarest of predictable viewing phenomena.

* Full Moon Not to Blame for Epileptic Seizures

http://www.space.com/scienceastronomy/full_moon_040526.html<http://www.space.com/scienceastronomy/full_moon_040526.html>

The Full Moon has been blamed for many things, most often in error. And now another myth has apparently been cleared. Researchers at the University of South Florida report that the extra gravitational tug exerted during a Full Moon does not influence the frequency of epileptic seizures.

Checking Out Venus, but Not Taking Her Measurements

Date: Mon, 31 May 2004 From: "LARRY KLAES" To: HASTRO-L@LISTSERV.WVU.EDU

By Guy Gugliotta

What a difference 121.5 years make. The last time the planet Venus passed directly between the sun and Earth -- in 1882 -- the Great Powers, as well as upstarts such as the United States, sent scientific teams to the far corners of the globe to observe the event.

Their aim: use the "transit of Venus" to compute the exact distance from Earth to the sun, a problem that had captivated astronomers ever since Aristarchus of Samos made a wildly inaccurate calculation 2,300 years ago. (He did determine -- quite accurately -- that the sun was a long way away.)

In 1882, said NASA Chief Historian Steven J. Dick, "the excitement could be compared to the space race. Any country with an interest in its scientific reputation was involved. It was the thing to do in the 19th century."

On June 8 it happens again. And although astronomers long ago found much better ways of calculating the astronomical unit -- the Earth-to-sun distance, which is reckoned today at 92,955,887.6 miles -- the transit remains an event of great rarity and curiosity.

In the United States, only the last two hours of the six-hour transit will be visible -- and that only in the eastern part of the country, just after dawn. Much of Europe, Africa and Asia, however, will see it all, and astronomy aficionados have mounted numerous expeditions to prime observation spots.

The transit will be visible to the naked eye, but experts caution that looking directly at the sun will cause permanent damage to the eyes. The solution is to project the image with a "pinhole camera" device or to look through a dark filter, either with the eyes alone or with a telescope or binoculars. (For instructions on safely viewing objects crossing the sun, see the Web site skyandtelescope.com/observing/objects/eclipses/article_609_1.asp.)

(Continued on page 16)

TRANSIT OF VENUS

(Continued from page 15)

What observers will see is an unusual alignment of the heavens -- when the geometry of space contrives to put Earth, Venus and the sun all in a row. Observers on Earth will see Venus as a small black dot crossing the face of the sun, like a bug walking across a light bulb.

The great German astronomer Johannes Kepler was the first to predict a transit of Venus -- the one in 1631 -- but he died the year before it occurred. But the next transit -- in 1639 -- was both predicted and witnessed by a young British cleric, Jeremiah Horrocks, the first person known to have observed the phenomenon.

The variable interval between transits -- eight years, 121.5 years, eight years, 105.5 years -- occurs both because Venus orbits the sun more rapidly than does Earth, and because the two planets' orbits depart from the same plane by 3.39 degrees. Most times when Venus passes between Earth and sun, Earth is either too "high" or too "low" for the transit to occur.

Kepler and Horrocks had conducted what at first seemed like little more than an interesting exercise for that ever-more-popular new tool, the telescope. But in 1716, the British astronomer Edmond Halley, of Halley's comet fame, had a more ambitious idea: by tracking Venus during its transit, astronomers could accurately compute the distance from Earth to the sun.

"He wasn't the first to mention it, but he was the first to get noticed," said Ronald Brashear, curator of science and technology rare books at the National Museum of American History's Dibner Library, which recently opened an exhibit on the transit of Venus. "People paid attention to Halley."

Halley's method required at least two astronomers, observing the transit from widely separated places on Earth. Each would record the exact times when Venus crossed the edge of the sun as it began and finished the transit, and then measure the length of the line, or chord, that the planet traced across the face of the sun.

The two observers would see Venus follow parallel but slightly separated tracks across the sun. The same effect occurs when a fixed foreground object, such as a finger held in front of your eyes, appears to change location relative to the background if you look at it first with one eye shut, then the other.

The distance between the two chords can be measured as "arc length," the number of degrees, minutes and seconds of arc encompassed by that distance. The diameter of the sun itself, for example, fills about 32 minutes of arc in a circle of sky, where the whole circle is 360 degrees and each arc degree has 60 minutes.

By the early 17th century, astronomers had determined the relative distances of planets from the sun -- that Venus was roughly seven-tenths (actually 0.72) of the distance of Earth from the sun. What they did not know was the absolute distance in miles or kilometers.

But they could measure the absolute distance between the two Earth observers, and from that they could calculate the absolute distance between the two parallel chords cast by the silhouette of Venus transiting the sun. That solution, in turn, gave scientists the mileage equivalent of the arc-second distance between the chords. With that number in hand, computing Earth's distance to the sun was basic trigonometry.

Simple enough.

Except it wasn't. The sun is so much bigger than Earth "that the [parallel] Venus chords are very close together, and separation is crucial," said astronomer Owen Gingerich of the Harvard-Smithsonian Center for Astrophysics.

Astronomers also had to know the precise times when Venus entered and exited the sun's disk, but this proved impossible: When Venus was near the sun's edge, it appeared to cling to it like water from an eyedropper, then suddenly pop clear.

Because of this "black drop effect," the exact moment of contact could never be discerned. Today astronomers know that the effect is a distortion resulting from the limited size of the telescopes being used, but it played havoc when observers first learned about it in 1761 and again in 1769, when British explorer James Cook diagramed the transit from his observation station in Tahiti.

(Continued on page 17)

TRANSIT OF VENUS

(Continued from page 16)

Scientists hoped for better things in 1874, and nations sent experts all over the world to watch and photograph the event. The United States appropriated \$177,000 for the U.S. Naval Observatory to send seven expeditions to sites ranging from Nagasaki, Japan, to Hobart, Tasmania.

The results were disappointing because of bad weather and the black drop effect, but they improved significantly with better pictures in 1882. By that time, however, scientists were developing better ways to calculate the Earth-sun distance.

Nonetheless, the Naval Observatory's William Harkness persevered with transit calculations until 1894, when he announced that the astronomical unit was 92,797,000 miles with a probable error of 59,700 miles. Close, but not quite.

Would you like to send this article to a friend? Go to <http://www.washingtonpost.com/ac2/wp-dyn/admin/emailfriend?contentId=A2970-2004May30&sent=no&referrer=emailarticle<http://www.washingtonpost.com/ac2/wp-dyn/admin/emailfriend?contentId=A2970-2004May30&sent=no&referrer=emailarticle>>

Venus transit in stereo?

From: "Fraser Farrell" To: "eclipses" Date: Tue, 1 Jun 2004

To all, Is anyone (or any group) doing a -stereo- image or movie of the Venus transit? You would need two very widely separated cameras taking simultaneous shots at pre-arranged times. Then later combining the images as stereo pairs, or as a 3D movie.

Not an original idea, but I think the result of this effort would be both educational and fascinating!

Transit of Venus: Live webcam from Gran Canaria (Canary Islands) by SAROS Group

Date: Wed, 2 Jun 2004 From: "Francisco A. Rodriguez Ramirez" To: SOLARECLIPSES@AULA.COM

Hi all, The home page is <http://live.saros.org> best regards and clear skies Francisco A. Rodriguez Ramirez

From: klipsi@bluewin.ch

howdy, another webcast, from Geneva, <http://eclipse.span.ch/liveshow.htm> or <http://eclipse.span.ch/liveframe.htm>

Tranist of Venus from Canberra, Australia

From: "Darren Osborne" To: SOLARECLIPSES@AULA.COM
Date: Tue, 1 Jun 2004 17:55:26 +1000

Just a quick note to let people know that we (CSIRO and Telstra) are going ahead with a webcast of the Transit of Venus from our headquarters in Canberra.

The address is www.transit.csiro.au

Visitors to the CSIRO transit of Venus website will also find information on history of transits of Venus, as well as demonstrating safe techniques for observing this event. Additional material on the website highlights the role CSIRO plays in astronomy, and the chance for visitors to contribute their own photos and stories from the event.

Please add us to any lists of web links that you have online and drop by next Tuesday to see the start of the transit from 'down under'. Darren

From: "Bevan Harris"

Perth Observatory <http://www.wa.gov.au/perthobs/Venus/venus.html> will also be doing a webcast of the transit with the aid of a Coronado solar scope. Cheers, Bevan

From: "Darren Osborne"

Thanks Bevan I'll add you to our list. Maybe we should swap contact times to calculate the distance to the Sun. Darren

From: "Marc Weihrauch"

Dear Bevan, just to make sure I did not get this wrong: Using a Coronado solar scope for your webcast means that we will see H-alpha-images? Cheers, and good luck for Tuesday! Marc

From: "Bevan Harris"

Hi Marc, Yes. There's a sample BW image on the website at the moment.

Credit where credit is due, the webcast is put together by the Observatory's Technical Director, Arie Verveer, . I'm just drawing attention to it.

A word of caution though, the forecast for T day is for showers. I'm hoping it's more like today... cool, crisp and stunningly clear. Cheers, Bevan

TRANSIT OF VENUS

Reply to Glenn's reply

Date: Wed, 2 Jun 2004 From Friedhelm Dorst To: "Patrick Poitevin"

Hi Glenn, thank You for Your explanation of what You are planning to perform. I indeed misunderstood Your intentions and I am astonished what can be achieved spectroscopically when considering those small effects to be expected ! Let me con- gratulate You and Jay Pasachoff for these ideas !

Now one idea concerning the visibility of the Venusian atmospheric arc opposite of the solar limb during ingress and egress of the transit: The fact of the visibility of this arc through solar filters implies a very steep increase of Venus' stellar magnitude after the decrease since May 2nd and I am eager to know if the SOHO satellite will give some hint on this development during approach to the occulting disc of the observatory's coronagraph. Maybe that this steep increase will evolve only when being a few arc minutes from the sun's limb thus remaining hidden for SOHO's instruments. I expect a similar effect to what can be observed when the rim of a cumulus cloud strongly brightens as soon as the occulted sun is emerging from behind the cloud. Although the composition of Venus' high atmospheric haze and clouds is chemically very different from that of the Earth's atmosphere (when hopefully observed by "areonauts" in 2084 at Earth & moon transit), the physical state (droplets, crystals) might generate a similar effect. Well, much success for Your plans ! Fr

Call for observations during the transit of Venus

From: "Daniel Fischer" Date: Thu, 03 Jun 2004 To: SOLARECLIPSES@AULA.COM

This is an invitation to mail or snail-mail me good images of the whole Sun during the transit, taken at precise quarter-hour intervals (i.e. at 5:30 UTC, 5:45 UTC etc.): I would like to measure the position of Venus relative to one or more sunspot groups, in order to derive the AU in a different manner than was tried photographically in the 19th century. I will be observing from South Africa myself and would appreciate material from any part of the world: Please take full-Sun pictures at the times mentioned and (snail)mail them to me with the precise coordinates of your position. If a publication comes out of this little project, and I sure hope it will, every one participating will be fully credited!

Thanks a lot in advance - and good (weather) luck to all!
Daniel Fischer Im Kottsiefen 10 53639 Koenigswinter Germany dfischer@astro.uni-bonn.de

Venus transit TV coverage

From: "BAA mailing list" To: baalist1@saturn.astronet

=====
BAA electronic circular No. 00152 <http://www.britastro.org/>
=====

The transit of Venus next Tuesday has already generated a great deal of media interest and the BBC is planning a considerable amount of coverage of the event. In addition to the Sky at Night on Sunday night there will be live coverage on the day from several locations in the UK and from Sharm-el-Sheikh in Egypt. The live programs will be hosted by Adam Hart-Davis and more details can be found here:

www.bbc.co.uk/pressoffice/pressreleases/stories/2004/05_may/28/venus.shtml

Here is a summary of the TV coverage on the BBC. In addition to these programmes there will be a number of live spots during "Breakfast Time" on the Tuesday morning.

Saturday 5th June

=====
BBC2 1320-1350OU Stardate - preparations for the event

Monday 7th June (Sunday night)

=====
BBC1 0000-0025 Sky at Night

Tuesday 8th June

=====
BBC1 0950-0955 OU Stardate
BBC1 1200-1215 OU Stardate
BBC2 2320-0020 OU Stardate highlights

From the UK the transit lasts from around 0520-1123 UTC (0620-1223 BST). Full details can be found here: <http://www.transitofvenus2004.org.uk/>

People with average eyesight should be able to see the transit with the naked eye using suitable protection. By now you should have received the June Journal containing a free BAA Solar Viewer. Please read the safety notes included with the Journal before using the viewer.

Observations and images can be sent via email to: venustransit@britastro.org.

These will be forwarded to the BAA transit of Venus coordinator, Peter Macdonald and to the BAA website manager, Callum Potter, for possible inclusion on the website. We also hope to have a preliminary report in the Journal as soon as possible after the event. Good luck with the weather on the 8th! Nick James.

TRANSIT OF VENUS

Three Venus Transits in a Lifetime?

Date: Thu, 3 Jun 2004 From: "Michael Gill" To: solareclipsewebpages@btopenworld.com

Hi Patrick, Rather than post this (below) directly to the SEML I thought I'd let you take a look. If you feel it is appropriate then perhaps you might include it on the SENL? Cheers, Michael

On several occasions I've seen it stated that no one alive has seen a Venus transit, which is borne out by the recent passing of Ramona Trinidad Iglesias-Jordan who was born as recently as 1889:

<http://www.azcentral.com/news/articles/0531OLDEST31-on.html>

However, I was recently alerted to a man who witnessed the "Mirk Monday" eclipse in Scotland in 1652.

Purportedly John Taylor was born in Alston in Cumbria in 1637, so he was alive for the Horrocks/Crabtree transit. If we are to believe the press reports, he did not pass away until 1770!!! If true, there were three Venus transits in his life. This is all the more remarkable because the transit "famine" in his lifetime was 121.5 years, not the 105.5-year interval!

The 1652 TSE is apparently being used in attempts to corroborate his age: <http://news.scotsman.com/scotland.cfm?id=625262004>

Perhaps some youngster will witness the 2004 Venus transit and the 2012 event and still be around for the next transit "season"? Cheers, Michael Gill

Webcast from Iran

From: "Babak A. Tafreshi" To: SOLARECLIPSES@AULA.COM Date: Fri, 4 Jun 2004

Just another webcast for venus transit, Nojum, Iranian magazine of astronomy, will run the live show of the transit on it's website www.nojum.net (in english) and www.nojum.ir (in farsi). There are also other SEML members from US and Europe in our group here in Iran right now. Clear skies for all, Babak

Venus transit from Barcelona

Date: Fri, 4 Jun 2004 From: "Eduard Masana" To: SOLARECLIPSES@AULA.COM

Dear all, another live webcast, this time from Barcelona: <http://venus.am.ub.es> Clear skies, Eduard Masana

Any decent transit weather?

From: "Evan Zucker" To: SOLARECLIPSES@AULA.COM Date: Fri, 4 Jun 2004

Living in one of the few places that will not have any view of Tuesday's transit (southern California), I was planning to fly Monday somewhere in North America east of Oklahoma to view up to 2.5 hours of the transit following sunrise. I intend to wait until late Sunday to choose a destination so that I can pick somewhere with the best weather forecast for Tuesday morning.

The problem is that the current forecast doesn't show ANYWHERE in eastern North America with a clear forecast. (One forecast map is at http://www.weather.com/maps/maptype/tendayforecastusnational/usweatherday5_large.html.) When we get closer to transit time (within about 42 hours) I will also consult the Clear Sky clock (http://cleardarksky.com/csk/index.html#clock_list).

As we all know, weather can be very localized, and so I'm writing to the far-flung members of the SEML (at least those of you who have not already flown off to see the entire transit on other continents) with a request that you contact me privately over the weekend if the Tuesday morning weather forecast where you live is very promising.

As we all know, clouds can be especially troublesome at sunrise (and sunset), and so I'm very wary of going somewhere that has a partly cloudy forecast unless the locals can tell me that partly cloudy there invariably means cloudy later in the day but not at sunrise. (Of course, the locals in Aruba told me that in February 1998, and it ended up raining shortly before totality.) I note that much of the southeast U.S. has a forecast of scattered or occasional thunderstorms, and I was hoping that meant generally clear mornings with possible thunderstorms later in the day.

If anybody else is interested in a quick transit trip like I'm considering, let me know privately and I'll be glad to share my information with you. Southwest Airlines has an unrestricted \$599 roundtrip fare anywhere in the U.S. Other airlines, via sites such as Expedia and Travelocity, may also offer good last-minute deals.

We can now clearly see Venus to the left of the sun in the latest

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TRANSIT OF VENUS

(Continued from page 19)

SOHO LASCO image at <http://sohowww.nascom.nasa.gov/data/realtime/c3/512/>. The sun is nearly void of sunspots in optical light: http://sohowww.nascom.nasa.gov/data/realtime/mdi_igr/512/

I hope Patrick forgives this potential breach of SEML protocol, but I think most SEML members share an interest in the transit. With his permission I would be glad to post any information I receive on the list. In any event, I do have some useful solar eclipse viewing information to share:

I lost all of my eclipse observing equipment -- telescopes, filters, software, and so on -- in the San Diego firestorm last October, and so I bought a used Meade ETX-90AT-UHTC at Scope City yesterday so I would have a portable telescope to take to the transit and any future solar eclipses. (It cost \$430, including scope and tripod carrying cases, and replaces my old Meade 2045, which I originally bought for Halley's Comet in 1985.) Thousand Oaks solar filters are largely sold out across the country in advance of the transit -- even Thousand Oaks themselves is sold out -- but I was lucky to find one yesterday at Woodland Hills Camera & Telescopes, and they sent it to me via overnight delivery. I went to a local welding supply store and bought No. 12, 13 and 14 welding lenses; I figure that the sun at sunrise may be too dim for No. 14 and that a brighter No. 12 or 13 may work better for the first few minutes.

Thanks for your assistance, and thanks to Patrick for his tolerance. Evan Zucker San Diego, California
ez@TotalitySoftware.com (858) 536-8077

Transit of Venus link - update

From: "Carl Koppeschaar" To: solareclipsewebpages@btopenworld.com Date: Sat, 5 Jun 2004

Hoi, Deze hebben jullie nog niet:

<http://www.xs4all.nl/~carlkop/venus/overgang.html>
(Nederlands)

<http://www.xs4all.nl/~carlkop/venus/transit.html>
(Engels)

<http://www.venusvoordezoon.nl> (Nederlands/Engels)

Cheers, Carl

RARE VENUS TRANSIT PUBLIC VIEWING IN PITTSBURGH

Date: Sun, 6 Jun 2004 From: "Glenn A. Walsh" To: HASTRO-L@LISTSERV.WVU.EDU

Friends of the Zeiss P.O. Box 1041 Pittsburgh, Pennsylvania 15230-1041 U.S.A. Telephone: 412-561-7876 Electronic Mail: < friendsofthezeiss@planetarium.cc > Internet Web Site: < <http://www.friendsofthezeiss.org>

NEWS RELEASE

For immediate release: 2004 June 3 For more information -- Glenn A. Walsh: Daytime: EMail < gawalsh@planetarium.cc > Evening: Telephone 412-561-7876

SAFE PUBLIC VIEWING OF RARE ASTRONOMICAL EVENT WITH 8-INCH TELESCOPE AT DUQUESNE INCLINE OBSERVATION DECK

EVENT LAST SEEN IN 1882

Pittsburgh, June 3-- Safe public viewing, using an 8-inch Celestron reflector telescope, of a rare Transit of the Planet Venus across the image of the surface of the Sun, which has not occurred since 1882, will be offered free-of-charge on the outdoor observation deck outside of the Upper Station of The Duquesne Incline on Pittsburgh's Mt. Washington, just after sunrise (best viewing 6:15-7:00 a.m.) on Tuesday, 2004 June 8, *provided clouds do not block the Sun*.

A solar transit of the planet Venus is extremely rare, as it only happens twice, each spaced eight years apart during a period of more than one hundred years! Indeed, only six such events have occurred since the 1609 invention of the astronomical telescope (1631, 1639, 1761, 1769, 1874, and 1882).

The last solar transit of Venus occurred on 1882 Dec. 6. The next one will occur on 2012 June 6. However, after 2012 there will not be another solar transit of Venus until 2117 Dec. 11!

CLICK HERE TO READ THE COMPLETE NEWS RELEASE: < <http://buhlplanetarium4.tripod.com/venustransit/NRVenusTransit3.htm> >
===== gaw - Glenn A. Walsh - Electronic Mail - < gawalsh@planetarium.cc > Author of History Web Sites on the Internet --
* Buhl Planetarium, Pittsburgh: < <http://www.planetarium.cc> >
* Adler Planetarium, Chicago: < <http://adlerplanetarium.tripod.com> >
* Astronomer & Optician John A. Brashear: < <http://johnbrashear.tripod.com> >
* Andrew Carnegie & Carnegie Libraries: < <http://www.andrewcarnegie.cc> >
* Duquesne Incline cable-car railway, Pittsburgh: < <http://www.incline.cc> >

TRANSIT OF VENUS

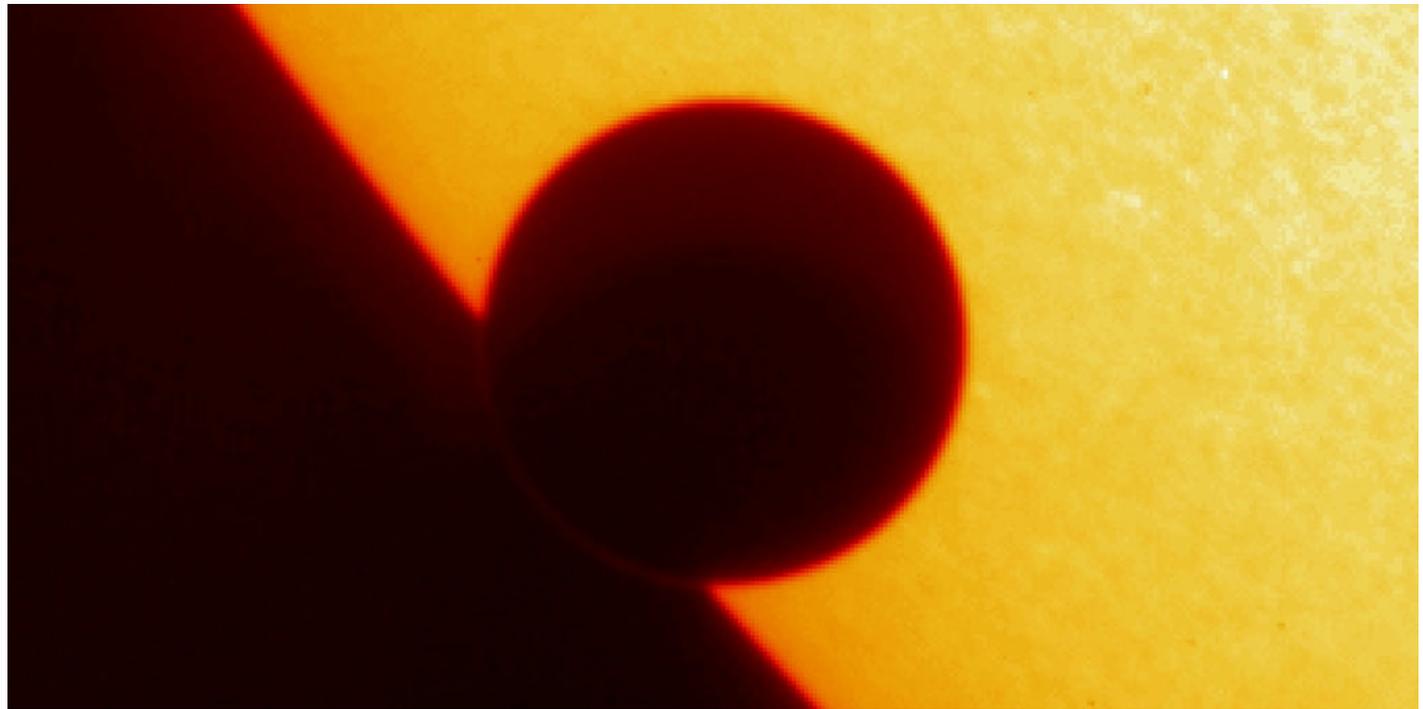
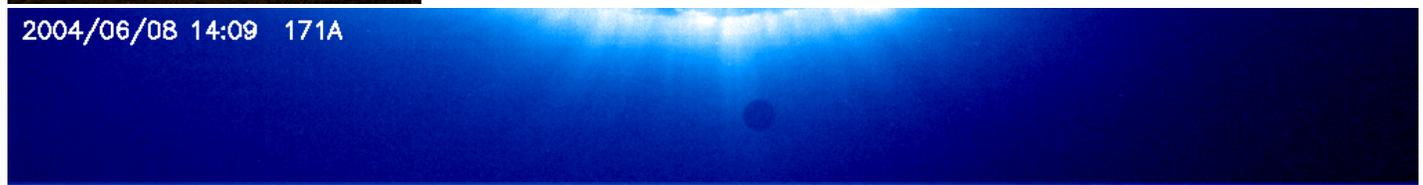
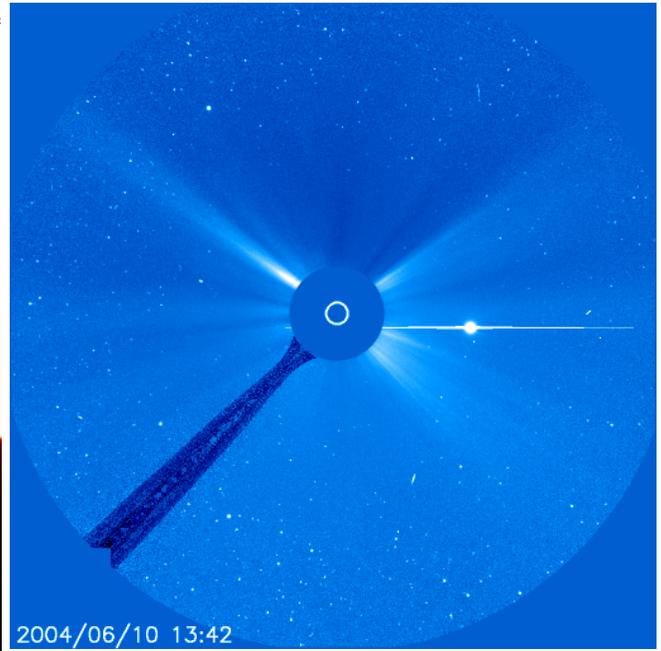
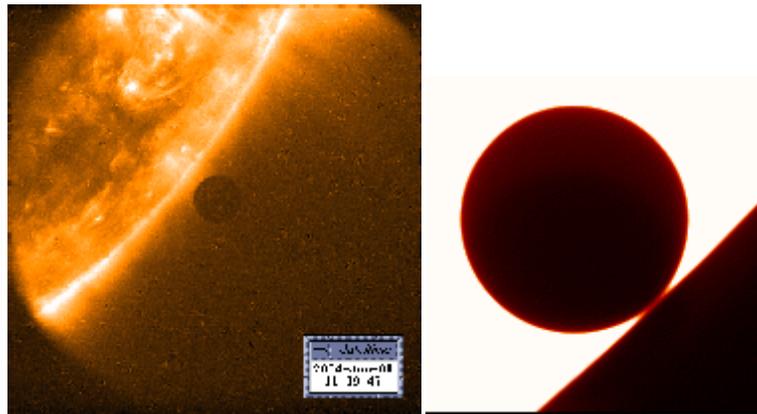
Venus now visible in LASCO C3 coronagraph

Date: Thu, 3 Jun 2004 From: klipsi@bluewin.ch To: SOLARECLIPSES@AULA.COM

<http://sohowww.nascom.nasa.gov/data/realtime-images.html> see the bright light at left edge in LASCO C3 image ? Venus !

From: klipsi@bluewin.ch

<http://sohowww.nascom.nasa.gov/data/realtime/realtime-c2.html>



TRANSIT OF VENUS

Webcasts Venustransit

Date: Mon, 7 Jun 2004 From: "Stefan Krause" To: SOLARECLIPSES@AULA.COM

Dear Members of the SEML, there have been some postings on Webcasts of the upcoming Transit of Venus during the last few days. - We have published a collection of about 60 links to different webcasts on our (German) transit-page. The address is: <http://www.venustransit.de/web.htm#web> . Hopefully, this helps. Clear skies for tomorrow! Stefan Krause

NASA satellite and transit...

From: "John Leppert" To: SOLARECLIPSES@AULA.COM Date: Mon, 7 Jun 2004 20:27:56 -0500

Friends, A couple astronomers are now discussing the Venus transit on the NASA channel. Perhaps the site will be televising the transit? Anyone know? In any case for those of you with a C-band dish, the site may be found on W2 satellite/transponder 9. First contact is 00:12 CDT, less then 4 hours away. John Leppert

From: "Klipsi"

Nasa TV on the web, possible live stream,

http://www.nasa.gov/multimedia/nasatv/MM_NTV_Web.html

http://www.nasa.gov/vision/universe/watchtheskies/venus_transit.html

plus webcast from exploratorium, <http://http.earthcache.net/www.exploratorium.edu/venusEC/webcast.html>

they will webcast the contacts, and have still images in between.

here in Geneva Switzerland, not a cloud in sight, transit to start in less than an hour... Klipsi

Solar eclipse and transit?

From: "Dave Balch To: solaRECLIPSES@AULA.COM Date: Mon, 7 Jun 2004

Here's a question...

Has a total solar eclipse ever occurred during a transit of Venus or Mercury?

Will it ever in the future? Dave

From: "Jean Meeus"

In the June issue of the 'Journal' of the British Astron. Association there will be a paper (by Aldo Vitagliano and me) about "Simultaneous Transits": simultaneous transits of Mercury and Venus, and a transit during a solar eclipse.

I will keep you informed as soon as that article will be published. Jean Meeus

From: "Dave Balch

Fascinating... thank you!

Report from Durban, South Africa

Date: Tue, 8 Jun 2004 From: "Peter Tiedt" To: "SEML (E-mail)"

In a very few words. June is typically one of our sunniest months. Today, 8 June 2004 we had wall to wall cloud for the entire day. Two brief peeks at the sun were granted - but not enough time to align the 'scope.

So - nothing at al for us :-(

From: "Daniel Fischer"

We - i.e. the participants of a conference on galactic bars, plus about 50 school children - had a near-perfect view frm the Pilanesberg National Reserve, missin g only the ingress due to clouds that then moved away. That was a close one. As promised a few days ago, I took pictures eery 15 minuters,

staryinmg at 8:30 (6:30 UTC). If others did the same, pleaser contact me for an exgchnage of data! Daniel Fischer (w/o a possibility oto edit typos ...)

TRANSIT OF VENUS

0.1% annular eclipse of the sun today

Date: Tue, 08 Jun From: Jay.M.Pasachoff@williams.edu
To: solareclipses@aula.com

June 8 7:30 am Greece time = 12:30 am New York time

The sky is completely clear here in Thessaloniki, Greece, where we are set up with the 20-cm refractor and other facilities of the Aristotelian University of Thessaloniki using CCDs from this site and a mountain site 60 km away. The transit begins in less than an hour.

We are Webcasting from <http://www.astro.auth.gr/venus1.html> (click on "live broadcast" or go directly to <http://telescope.astro.auth.gr/telescope2.htm>)

Glenn Schneider joined Joel Moskowitz and Craig Small on Crete. Jay Pasachoff

From: Jay.M.Pasachoff@williams.edu

The current Website for our webcast from the Aristotelian University of Thessaloniki is: www.astro.auth.gr/ where there is a link on the right side to the Venus transit and then "live broadcast" or go directly to telescope.astro.auth.gr/venus_video.htm It continues completely clear here. Jay

No black drop ??

From: "McCann, Stephen" To: "SOLARECLIPSES@AULA.COM" Date: Tue, 8 Jun 2004 08:20:07 +0100

Dear all, Like many others, I'm enjoying the transit at the moment, however at ingress I saw no black drop !! (rather disappointed actually ;-)

I saw a clear separation of the disk of Venus from the edge of the Sun, perhaps with a slight extension of the immediate edge of the sun as the two circles separated (Aurelea - can not remember the spelling correctly).

I wonder if this is because the sun was still quite low from my observation point, after a cool clear night.

I'm using a 8" SCT with a home made off axis Astrobaader filter (giving a filtered 2" aperture). Magnification is about x90.

I may have a digital image of this once I get round to down loading my camera.

Enjoy the rest of the show. Kind regards Stephen McCann Southampton United Kingdom 51 N, ~1.5 W

From: turkey@qatar.net.qa

Hi everybody I agree with Stephen, I was not able to see such an affect. K.alsubai Qatar 25N 51E

From: "John Leppert"

Friends, Here in south-central North Dakota the Venus solar transit -- local sunrise 5:50, 3rd contact 6:07, 4th contact 6:24 --- was really quite spectacular. Noted gorgeous dark green color along one-half of Venus' limb while the other half boiled in shades of dark orange and dark brown. The colors persisted from within the last five minutes prior to 3rd contact and until a few minutes of 4th contact. The individual colors seemed to boil out from the planet's limb and then and roll round and along the limb as it slowly crawled towards the solar limb. Nice but small pair of sunspots as well. Using an 8" Meade SCT, 1000 Oaks filter, 90 power (19 mm Ultra Wide 2" barrel). Had crystal clear skies, calm winds, and a temperature at 43oF (6C). John Leppert

From: KidinVS@aol.com

This is Rick in Valley Stream, NY, about 20 mile from NYC. I was lucky to awaken to a clear, but a bit hazy sunrise with the temp at about 65 degrees F. It was about 06:25 local time before the sun cleared any objects obstructing my view, but the final 45 minutes of the transit were beautiful. I did not see the teardrop effect, and was surprised to see no sunspots visible. I viewed the event with Meade 11x80 binos, which is also my instrument of choice to view total solar eclipses. I also get a very clear image using the solar screen sold by Rainbow Symphony. It is large, provides a large viewing area, and can easily cover the opening of the binos I use. Thanks, Mark at Rainbow for a quality product. I woke my wife up to watch, and after she saw the movement of Venus across the sun, it finally made it easy for her to understand why Venus will now move into the morning sky. I had pointed out Venus to her in the evening sky racing closer to the sun every evening, but she could not grasp the concept until she saw for herself. Its funny how eclipses and transits make the motion of the solar system so much clearer for the average person to understand. How many days till March '06's event???? Rick Brown EclipseSafaris

From: "McCann, Stephen"

Dear all, ...and no black drop at egress for me either.

Hence the sun's elevation is not an issue. Kind regards Stephen McCann

From: "Glenn Schneider"

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TRANSIT OF VENUS

(Continued from page 23)

Thus far it seems other preliminary reports concur with our observations of no black drop. BD was expected only as convolution of PSF (atmosphere [from ground] + instrumental [see our recent ICARUS paper]) but still surprised as so much emphasis in historical literature. Time to investigate in more detail optical properties of instruments used in 1700's and 1800's and seeing conditions from previous expeditions. More later. -GS-

From: "Klaas Wiersema"

Hi all We just had a fantastic venus transit in Amsterdam. The weather was fantastic (though very hot). We all have sunburns to prove it ;-) We saw the transit from beginning to end with a Meade LX90 (8"). We saw a nice little tear-drop at ingress and a very small one at egress (though we're not that sure about the egress one). We had over 400 visitors and a great media coverage. Can't wait for the next one... Klaas Wiersema

From: "Klipsi"

.... I start to wonder whether the black drop only existed with ancient equipment. Maybe today's scopes are too good to show this optical effect. Klipsi

From: mrk@iac.es

It's curious, but I've just received a very high quality animation of ingress from Italy and it shows a black drop.

Question, it is a matter of focal length? People these days use compact, folded telescopes with a rather low f number instead of long focal length refractor. Mark

From: "Govert Schilling"

I read somewhere that an orbiting satellite's view (SOHO's??) of the Mercury transit of last year also showed a black drop effect, suggesting that it is certainly *not* due to the atmosphere of either the Earth or the planet.

When looking at ingress with a pair of binoculars, I thought I could see something that you might call a black drop effect, but looking through larger instruments (of the Sonnenborgh Observatory in Utrecht), nothing like a black drop was seen.

The live webcam images from the Dutch Open Telescope at La Palma were really spectacular! You could easily see Venus move with respect to the sun's granulation.

The sky in the Netherlands has been 100% clear all day. --Govert

Subject: [SEML] Black Drop Survey

May I possibly request the creation of a quick poll on the black drop effect.

If you are willing to take part, I'll collate responses and then report back to this list in a week or so.

Please send emails to my address as above, to save jamming the SEML reflector.

I've quickly chosen the following format so I can sort out the answers.

Ingress	Egress	Instrument/Website	Viewing Method	Place
---------	--------	--------------------	----------------	-------

so for myself, I would send the following email :

No	No	20cm SCT F8	F	UK, 51N, 1.5W
----	----	-------------	---	---------------

or others could be

Yes	No	26cm R F2	P	India, 15N, 43E
No	C	http://www.abcxyz.com		

which also allows comments from people watching webcasts etc.

Please send me a couple of lines, if viewed by more than one method.

Abbreviations

Ingress/Egress

- Yes = Did see Black Drop
- No = Did not see Black Drop
- C = clouded out
- X = not visible

Instrument/Website

Metric Units please for aperture size and focal ratio (if known)

- SCT = Schmidt Cassegrain
- N = Newtonian
- R = Refractor
- E = Naked Eye
- O = Other (please state)

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TRANSIT OF VENUS

(Continued from page 24)

Viewing Method

F = With Filter

P = Projection

A = Atmosphere (mist/fog/smog)

O = Other (please state)

Place

Nearest Town Name & Lat/Long Kind regards Stephen

--

Visit our website at www.roke.co.uk

Roke Manor Research Ltd, Roke Manor, Romsey, Hampshire SO51 0ZN, UK.

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From: Jay.M.Pasachoff@williams.edu

The observation Govert is referring to is the study that I made with Glenn Schneider and Leon Golub of the black drop we detected in observations of the 1999 (not 2003) Mercury transit with the TRACE (NASA's Transition Region and Coronal Explorer) spacecraft. The scientific paper appeared in ICARUS a few months ago and it and some preliminary versions are posted near the bottom of my website at www.transitofvenus.info.

Most of the black drop effect is surely due to instrumental effects, though we showed that there was an additional contribution from the solar limb darkening. We have high-spatial-resolution CCD observations from both Thessaloniki and, for third contact, Williams College in Massachusetts, as well as further TRACE observations, which we will be studying as soon as we can. Maybe we can interpret the additional role of Venus's atmosphere.

While the 20-cm refractor and CCD were imaging, I wanted to see the black drop with my own eyes with equipment more similar to the old equipment, so I watched with a 15-cm (I think) Vixen here in Thessaloniki. I certainly couldn't tell when second contact occurred to a minute or so, and as far as I can tell, that is the black drop effect. We saw third contact only through clouds and I wasn't able to observe closely then for that reason.

Here is my summary: Jay Pasachoff reports from Thessaloniki, Greece

We observed the black drop and almost the entire transit very successfully in completely clear sky at the Observatory of the Aristotelian University of Thessaloniki, Greece. Some clouds came in fifteen minutes before third contact and we got in-and-out views after that. Observers include Bryce Babcock from Williams College, John Seiradakis from the AUTH, and Williams College astrophysics and astronomy students/alumni David Butts, Joseph Gangestad, Owen Westbrook, Alan Cordova, Kayla Gaydosh (visiting summer student from Bryn Mawr), and Robert Wittenmyer (alumnus, now a grad student at U Texas).

My eyeballed observations with a Vixen refractor at second contact showed a minute or so of black drop. I will have to listen to the audiotapes to get the timing. We also have that recorded on CCDs. We used both Apogee and SBIG 2000 CCD's in the course of our observations.

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TRANSIT OF VENUS

(Continued from page 25)

>From Williamstown, Massachusetts, Steven Souza, also of Williams College, observed the end of the transit very well with a 5-inch Carroll spar solar telescope, a V filter, and a Photometrics VersArray CCD. He reports that the observing got better and better as the sun rose higher. He was assisted with the public observing there by Williams College astrophysics majors Ryan Carollo and Lissa Ong.

From: Jay.M.Pasachoff@williams.edu

Possibly, the difference between second and third contacts is psychological. At second contact, one sees what he thinks is Venus going inside the disk but then it takes a minute or so (the "black drop") to be sure. At third contact, Venus is coming from inside, and when it contacts the sun, one thinks it is third contact, whereas it is really merely the beginning of the black drop.

We can test this on the newly existing CCD images. Jay Pasachoff

From: mrk@iac.es

I timed the 3rd and 4th contacts carefully from here on Tenerife. 3rd contact was certainly made very difficult by the black drop". Initially I was viewing at eyepiece through a mylar filter, but as 3rd contact approached it became obvious that the nearby projected solar image had better quality and shifted. It was extremely difficult to tell when contact had been made. At 4th contact the seeing deteriorated slightly and detecting the last indentation in the solar limb was very tough. I stopped my chronometer a few seconds before those around me who were also viewing finished their "has it gone? yes! no! I can see it! No! It's gone!" round.

For what it's worth, I was 14s early in T3 and 36s early on T4 by Fred's predictions for Tenerife. However, I'm pretty sure that nobody was still seeing Venus against the limb more than about 15-20s later than me at T4.

From: "Evan Zucker"

I could have sworn that I saw a black drop when I observed the transit of Mercury in 1999, and that was with the same type of equipment that people used for today's transit. Why would Mercury have a black drop but Venus not?

I was forced to watch today's transit from California on the Internet, and I downloaded several images from webcasts that appear to show a black drop. I can post them on a web page if anybody is interested.

I was surprised and disappointed that none of the U.S. cable news networks bothered to show the beginning of the transit. I guess they thought replaying Reagan stories for the hundredth time was more important. CNN did have a short segment about the transit around 2:50 AM PDT and at 3:55 AM PDT but without any local video. The video feed of the transit was from NASA in Greenwich. NBC's Today show had a very brief mention of the transit at the end of the news highlights around 7:05 AM EDT/PDT, with news anchor Ann Curry making a sarcastic comment about how "spectacular" it was (clearly implying that it wasn't). Evan Zucker San Diego, California

From: "Dale Ireland"

This image is the closest thing to a Black drop I have seen.

<http://www.pyroport.com/gallery/Venus/Hello-Venus.jpg>

I watched it on NASA TV and didn't see one. They switched back and forth between white and Ha light and it was amazing how much difference in contact times there is between the two. Width of the chromosphere I guess. Dale

From: "Brian Garrett"

Greetings all, I found a nice image of the black drop (similar to the link Dale Ireland posted) taken at third contact from Grand Rapids, Michigan. Weird thing was, it's not an astronomy site and I wasn't expecting to find transit pictures there, especially since this

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site isn't updated that often.

At any rate, here's the link: <http://www.leapsecond.com/venus/index.htm> . The black-drop photo is the fifth one down. Brian Garrett

From: "Evan Zucker"

Four of the webcast images I downloaded (from three different webcasts) are at <http://www.evanzucker.com/transit>. They all show the black drop effect to varying degrees. The effect is most obvious on this one: <http://www.evanzucker.com/transit/mst1.jpg> Evan Zucker San Diego, California

From: "Jay Friedland"

Hi all, It was nicely clear in mid-upstate Pennsylvania. Absolutely incredible sunrise with enough extinction to allow about 5 minutes of non-filter viewing - truly a highlight! Our comments on the black drop is mixed. Viewed through a Thousand Oaks white light filter on an ETX-90 using a Philips Toucam 740K webcam and 0.6x teleconverter - YES! Viewed in H-alpha on a Coronado Nearstar also with the same type of webcam - Not really, although we did see a bit of distortion (stretching) between 3rd and 4th contacts. More soon and pictures and movies! - Jay

From: "Jean-Paul GODARD"

Just a little movie (mpg 15Mo). <http://MsEclipse.free.fr/noblackdrop.mpg>

Transit of Venus, from Paris, through an ETX 70AT (Refractor) and direct capture on SONY DCR-PC110 with William optics DCL4337 adapter.

From: "Jean-Paul GODARD"

With the right URL, Just a little movie (mpg 15Mo). <http://MsEclipse.free.fr/noblackdrop.mpg>

Transit of Venus, from Paris, through an ETX 70AT (Refractor) and direct capture on SONY DCR-PC110 with William optics DCL4337 adapter.

Venus Transit from Sydney, Australia

Date: Tue, 08 Jun 2004 To: SOLARECLIPSES@AULA.COM From: "Geoff Sims"

Hi We successfully observed the transit for approx 1.5 hours (1st contact through to sunset) under perfectly clear skies here in Sydney. We (the Macquarie University Astronomy/Physics department) hosted the event on a vacant block of land (soon to be the new Macquarie Observatory) with approx 10 telescopes of various sizes, many projection methods (binocular, telescope, etc), eclipse shades (Venus was EASILY visible to the naked eye), and a projection onto a TV screen. We easily had a couple of hundred visitors of all ages. It was incredible! What was particularly interesting was the atmospheric refraction (I think?) of the sunlight - around one half of the limb of Venus you could see blue, and around the other half you could see red - it really was quite spectacular, and unexpected, for us at least. This effect was only clearly visible during the last 1/2 hour or so before sunset. --Geoff

Venus Transit: Success from my Home in South-West Germany

Date: Tue, 8 Jun 2004 From: Schoppmeyer@kwsoft.de To: solareclipses@aula.com

We had a complete success watching the transit under blue clear skies without any clouds from the beginning to the end very near to my hometown on a small hill. At second contact we saw something like a black drop but at 3rd contact we couldn't see it at all. We had a 4 inch refractor and a C11 stopped down to 4.5 inch off axis. Complete report later. Joerg Schoppmeyer

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Venus Transit from Canberra, Australia

Date: Tue, 8 Jun 2004 From: "Darren Osborne" To: SOLARECLIPSES@AULA.COM

Starting setting up at 7 am (eight hours before first contact), clearing skies. Meade 8 inch arrives at 1 pm - clearish skies, some cloud to the south west. Twenty minutes to first contact, clouded out. Twenty minutes later we did get a glimpse, enough for local television networks to capture a video feed for their news services. But then the last 15 minutes of daylight saw the Sun peak below the cloud band above us and we saw the transit. No first or second contact, so we didn't see a teardrop effect, but we did see it. Our images and video are at <http://www.transit.csiro.au/>.

BTW - we successfully streamed to several tens of thousands of computers. Some couldn't connect. How did anyone else with streams of the transit fare. Now to watch 3rd and 4th contact from Greece. Darren

From: "Dave Balch

I'm in Southern California where we had perfectly clear skies (it was dark, of course, but I just thought you'd like to know!)

I watched the entire ingress on Exploratorium, from a link on NASA's website. This was a live action streaming webcast, rather than still photos updated every thirty seconds or so. It was a normal TV production, with hosts, commentary, etc. Very well done.

They were broadcasting from Greece, where the conditions were perfect, albeit a bit windy which caused the images to shake occasionally. They had two cameras available, one of which had a hydrogen-alpha filter; it was spectacular, as you could clearly see prominences and other solar activity as a backdrop to the silhouette of Venus.

They had a choice of RealMedia or Windows Media streaming formats - I used Windows. I logged in about 9:55pm PDT and got a colorbar screen until 10:00. Their broadcast started at 10:00 and they simply talked about the event, the equipment, the location, the history, etc. until first contact was visible about 10:25 or so. I watched until about 11:00 and had very few problems with the streaming. There were no glitches in the audio at all, but the video froze a couple of times - all in all, pretty impressive.

I don't know how the streaming servers handle a lot of connections, but I did connect to their server relatively early and, if the connections are served in order based on time of connection, that may have had something to do with my success. I don't know how others fared who also connected to this Webcast. Dave

Transit of Venus

Date: Tue, 8 Jun 2004 From: "Bob Morris" To: "SE from LRM"

Ottawa had perfect skies at sunrise, then thin clouds, then no clouds but quite hazy for egress.

Saw egress through ~14" Newtonian -- and no black drop effect! This image was superb.

But, some flattening of Venus during egress!!!! Optical illusion? No explanation. Bob Morris

From: "Matthias Graner"

Despite some clouds, we saw a perfect Transit of Venus. Clear Skies for all four contacts. I saw no black drop either. Why can't a Total Solar Eclipse last for something like six hours?

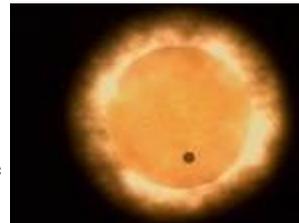
To Rick Brown: Only 659 days. In 2006, we will have to get by with less than four minutes. Cheers, Matthias Graner(near Magdeburg, Germany, looking forward to seeing you all in August at the SEC conference in Milton Keynes)

TRANSIT OF VENUS

Lucky NZ students got to witness the Transit from Horrocks' bedroom

Date: Tue, 8 Jun 2004 From: "LARRY KLAES" To: HASTRO-L@LISTSERV.WVU.EDU

A key viewing location in Britain was Carr House in Much Hoole in northwest England. A telescope was set up in the bedroom where astronomer Jeremiah Horrocks observed the transit for the first time on Nov. 24, 1639.



"It was a bit surreal to be stood here and think this is the spot where Jeremiah Horrocks was when he saw the transit all those years ago," said Riddhi Gupta, 16, one of three New Zealand students who won a competition to come to the event.

<http://www.msnbc.msn.com/id/5157959/><<http://www.msnbc.msn.com/id/5157959/>>

My own story: I was driving up the road this morning circa 5:45 am with the east to my back and kept looking out the side mirror to see if the Sun was showing yet.

Suddenly, there it was, deep red - and I could see the black dot of Venus on the solar disk - without any visual aids! Amazing. I spent the rest of the time parked in a nearby field projecting the Sun's image through my 7x50 binoculars onto a piece of white paper and had my younger son Adam trace the two disks from 6:15 to 7:15 am. I am so glad I saw something that has not happened since 1882 and won't again until 2012, especially with my family.

Here are the first images: http://www.spaceweather.com/venustransit/gallery_08jun04.htm<http://www.spaceweather.com/venustransit/gallery_08jun04.htm> Larry



Venustransit in Iceland

Date: Tue, 8 Jun 2004 From: "Stefan Krause" To: SOLARECLIPSES@AULA.COM Despite some problems with the weather I watched the transit successful near Akureyri (Northern Iceland). My preliminary report (in German) with some pictures is online at <http://www.venustransit.de/reisebericht06.htm> . Greetings from Iceland! Stefan Krause

Preliminar images . Transit of Venus from Gran Canaria (Canary Islands)

Date: Tue, 8 Jun 2004 From: "Francisco A. Rodriguez Ramirez" To: SOLARECLIPSES@AULA.COM Hi all, you can watch the preliminar updates from Gran Canaria by Saros Group <http://live.saros.org> Best Regards Francisco A. Rodriguez Ramirez

TRANSIT OF VENUS

TOV from Halle, Germany

Date: Tue, 08 Jun 2004 From: "Marc Weihrauch" To: solareclipses@aula.com

Dear friends, most parts of Germany reported mainly clear skies during the TOV today, and so do we. The public observation at the local planetarium and the observers at the department of physics had some haze at times, and the final phase was seriously disturbed by clouds. Anyway, virtually the whole event could be seen.

Observing the egress visually through an 8-inch SC I could clearly detect the Black Drop. It looked surprisingly sharp at lower magnification. Venus appeared as a drop first, then turned into an Omega-shape. Not atmosphere could be detected, perhaps due to the haze. I'm very glad we could follow this event in natura. Best regards Marc

From: mrk@iac.es

A lot of lucky people today!

In La Laguna (Tenerife), it clouded up right at the end of the transit and turned into an overcast with persistent drizzle a couple of hours later. We were due a little luck with the weather and today we had it. Mark

Venus disappointing small pin's head during transit

From: "Wil Carton" To: "SE" Date: Tue, 8 Jun 2004

Astronomy friends, Here in the Netherlands weather conditions were perfect during the first 3/4 of the duration of the transit. But the silhouette of Venus was a disappointing small pin's head on the solar disc, a dot that was hardly visible with the unaided eye (through a mylar filter). Only with the magnification of an amateur telescope the image was distinct. Wil Carton, Castricum, Holland

From: "Georg Lenzen"

Well, Wil, what do you expect from something, what has 1/30 the diameter of the solar disk? Concerning the known history of Venus transits, it was a very interesting event to observe! Of course, nothing to compare with a total eclipse, but that was known in before. Cheers, Georg

New York Times coverage...

From: "John Leppert" To: SOLARECLIPSES@AULA.COM Date: Tue, 8 Jun 2004

New York Times currently has a nice piece on the front page of its website along with a large collection of photos showing people all over the world enjoying the event. The last image is quite a spectacular view. <http://www.nytimes.com/> John Leppert

From: "Evan Zucker"

That article is from the AP. I anticipate the Times will have its own article, with at least the local New York angle, later today.

For those of you who have not registered at nytimes.com, and even those who have, all those photos and many more are available at: <http://story.news.yahoo.com/news?tmpl=story&ncid=1756&e=2&u=/040608/481/mosb10306081129>. Click on the link that says "Venus, Earth Align for Historic View."

That final photo is a beauty -- that's exactly the type of view I was hoping to get somewhere in the northeast U.S. today, but the cloud forecasts were not favorable enough for me to justify the overnight trip. Earlier today nytimes.com had a similar photo on the home page with one of Manhattan's East River bridges in front of the rising sun. -- EVAN

TRANSIT OF VENUS

Venus transit...

From: Dribalz@aol.com Date: Tue, 8 Jun 2004 To: SOLARECLIPSES@AULA.COM

What an amazing world we live in...There I was on my comfortable couch in East Northport, Long Island New York. On a laptop computer with a wireless modem watching a webcast from Greece of an event taking place some 93 million miles away...Isn't technology amazing?

Fast forward to the next morning--up at 615am to see if we had a decent sunrise in progress. Yes! The sun was just peaking over the neighbors house. My plan was simple --just a naked eye viewing of the transit till the end from my drive way. But it was not to be, because I couldn't see the planet with my welders shield or the Thousand Oaks solar filter. OK, plan B. Race back to the house, grab my tripod, film camera, 600 mm Sigma telephoto lens, the right angle finder, and solar filter--set it up in 2 minutes flat, turn to the sun, and viola, a beautiful black dot on the face of the sun. Damn, I wish I had some film---going digital lately has drawbacks. Race back into the house and found (believe it or not) 4 rolls of film in an old lead shielded bag. They have probably been in the heat of that closet for 2 years or so. Popped the 200 ASA Kodak Gold in the camera in broad daylight, tossed in 4 new batteries, and click click click, bracketing shots at 1/30-1/250 every 15 minutes or so. Had the film developed at the local drug store, not really expecting any great results, but was surprised with image after perfect image. Later on I will scan them in and try to post them somewhere. Oh, btw, once I saw where Venus was on the face of the sun, the naked eye view with the welders shield became easy to see. Andrew Hans

Venus transit and google

From: Dribalz@aol.com Date: Tue, 8 Jun 2004 To: SOLARECLIPSES@AULA.COM

Quick, before it's gone--www.google.com The 2nd "O" in Google is the transit of Venus, across the face of the Sun. Andrew Hans

From: "Evan Zucker"

And if you click on the word "Google" (or the picture of the transit) it will do a Google search of "venus transit." -- EVAN

Description of Pittsburgh Venus Transit Viewing

Date: Wed, 9 Jun 2004 From: "Francis Graham" To: solareclipses@aula.com

Dear List Although the main metropolitan newspaper did not cover the public transit viewing on top of Mount Washington, the Pitt News, the student newspaper of the University of Pittsburgh, did. Complete story: <http://www.pittnews.com/vnews/display.v/ART/2004/06/09/40c69816bceff> Francis Graham

Lots of photos of VT

From: "Klipsi" To: SOLARECLIPSES@AULA.COM Date: Thu, 10 Jun 2004

a fantastic collection of photos of VT is visible at spaceweather.com, starting at http://science.nasa.gov/spaceweather/venustransit/gallery_08jun04.htm currently 7 pages of images. Several of them also show the atmosphere, or blackdrop. Other show double transit (e.g. with an aircraft, or a great one with a pelikan in Florida , etc. Klipsi

From: "Glenn Schneider"

Thanks for the URL pointer, Olivier, a VERY nice collection is building there. But: >Several of them also show the atmosphere beware not to be "fooled" by gradient edge enhancements due to either JPEG compressions on dyamic -range collapsed data (by, for example median-background subtraction). It will be necessary to understand the pedigree of any images before assessing any atmospheric contributions. We will quantitatively measure that with TRACE. Most interested to know what was/may have been visible from the ground. -GS-

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Venus Transit from the Clare Valley

From: "Fraser Farrell" To: "ASSA-chat" Date: Wed, 9 Jun 2004

To all, Because of the unpromising weather forecast for home on Tuesday, I drove up to the Clare Valley to watch the transit from Justin's observatory there. With all of our respective kids and some friends from the district in attendance.

The near-cloudless winter sky there at midday had, by 2:30pm, evolved some small and scattered cumulus clouds, being blown southwards by a warm breeze. Nice bushwalking weather....but these clouds were hiding the sun about 1/10 of the time. And with the transit scheduled to begin just after 2:38pm local time there was concern that we might miss some of the sights.

Available apparatus to view the transit included:

- Several pairs of eclipse shades (ex rainbow symphony)
- Pieces of #14 welders glass
- 8x40 monocular with full-aperture Baader solar film, on camera tripod.
- 60mm refractor, stopped down to a 30mm f/23, deliberately equipped with Huygens eyepiece, and projecting a 150-200mm diameter solar image. My intent here was to reproduce what Horrox & Crabtree might have witnessed in 1639.
- 114mm f/8 reflector with Baader solar film. This covered two sub-aperture windows, each equivalent to ~25mm circle, positioned at each end of a diameter. This preserved the resolution potential of the telescope without using a lot of Baader film. Magnifications used were 36x and 90x. Hereafter "small reflector"
- 200mm f/6 reflector, also using two sub-aperture Baader solar film windows. Magnifications 46x, 92x, 120x and 240x. Hereafter "big reflector".
- A second 200mm f/6 reflector, equatorial tracking mount, and using a full aperture 1000 Oaks solar filter. This was internally stopped down to 100mm for visual, plus 100mm for a webcam. Hereafter "tracking reflector".
- A third 200mm f/12 reflector, also using full aperture 1000 Oaks filter. Because of its great length we waited until late afternoon to use this, so that we didn't have to climb ladders. Hereafter "long reflector".
- Lots of cameras :-) My eldest son took over 250 digital camera shots, most handheld to the various eyepieces.

Not much to see prior to transit. Two minor sunspot groups, hardly visible except at higher magnifications. In the big reflector I did get an impression of a faint "something", in the expected place just outside the sun's edge, about 10 minutes before first contact. But it could just as easily have been an internal reflection. Sun's edge was focusing well in all instruments.

First contact seems to have been about a minute or so early. I wonder if the ephemerides are using the solid -body- diameter of Venus for transit prediction, with no allowance for the extra diameter caused by its clouds? If not, then about ten different timepieces were all in error by the same amount!

After about 1/3 of Venus had moved onto the sun, its little "bite" had become obvious in the monocular, and could just be glimpsed in eclipse glasses. In the big reflector a faint ring of light could be seen forming around the un-transited fraction of the planet at this time. This ring of backlit Venusian atmosphere brightened noticeably during the next couple of minutes; and by the time 1/2 of Venus was on the sun, it could also be seen in the tracking reflector and the small reflector. Like a little arch bridge, over a ditch in the sun's edge.....an extraordinary sight!

As expected, no sign of this luminous ring/arch in the monocular, or in the refractor's projected image. And unfortunately it doesn't seem to have registered in our unprocessed digital camera images either. Perhaps after some compositing & enhancement?

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As Venus encroached further onto the sun, it remained circular in the larger apertures and higher magnifications. Its boundary already on the sun was noticeably more fuzzy than the edge of the sun - a clear sign of Venusian atmosphere. And the remaining arch of luminous atmosphere gradually sank into the sun's edge as ingress continued. But in the smaller apertures Venus was slowly developing a slight teardrop shape - as though the sun was flowing up the "sides" of the planet toward its not-yet-transiting edge. At this time I specifically compared the view in the small reflector at 90x and the big reflector at 92x; and the big reflector did not show this illusion. I'm certain it's caused by small aperture. May explain a lot of the peculiar descriptions from 1761/69?

But with about one minute to go to second contact, a cloud drifted over the sun. By the time it moved away, Venus was already about half its diameter inside the sun's edge; an ink-black disc showing a slender halo of atmosphere. Colour of halo depending on the solar filter being used. But sadly no Black Drop for us.

It seems the visual acuity of the human eye is better than predicted. Both of our senior citizens found Venus immediately through eclipse shades, without positional hints, and nobody else failed to see it either. I did notice an unspoken preference for the eclipse shades instead of the welders glass, especially among the children.

Returning to the refractor projection, I spent some time unsuccessfully trying to distinguish any sign of the Venusian atmosphere in the projected image. This was about 2 hours before local sunset; and based on my failure I conclude that Horrox & Crabtree had no chance of discovering the Venusian atmosphere in 1639 with their equipment. Our own views before sunset confirmed this conclusion, with refraction-flattened and chromatically aberrated views of a quivering Venus upon the sun. No wonder Horrox & Crabtree measured different diameters.

I was struck by how BLACK a transiting Venus looks, compared to my memories of a transiting Mercury. And far darker than the cores of recent giant sunspots. Almost like someone poked a hole right through the sun to the void on the other side.....

We continued to enjoy the transit views, interrupted by occasional passing clouds, until lengthening tree shadows covered the observatory site about 4:30pm local time. A quick shift of equipment to a neighbouring paddock and the viewing continued until sunset at 5:10pm. During the final half hour or so before sunset, both Venus and the sun developed increasingly refraction-flattened and harder-to-focus outlines.

And Venus showed a very distinct chromatic aberration too: an orange-red upper edge and a green lower edge. Very evident at 200x or more magnifications. This is caused by the Earth's atmosphere, essentially by the same process that (sometimes) creates the Green Flash at sunset. cheers,

From: "Evan Zucker"

I don't know which ephemerides you were using, but some of them show times based upon an observer at Earth's center. The NASA web site says "[t]he contact times at other locations will differ up to plus or minus seven minutes." Perhaps that could account for the discrepancy you found. Evan Zucker San Diego, California

From: "Fraser Farrell"

To all, Answers to three common questions about my transit report.

(1) First Contact Time. As stated previously this appeared to be about a minute earlier than predicted. Yes, I was using - topocentric- coordinates for our observing site, Guide 8's "full precision" for planets, and UTC time. Also cross-checked by doing some predictions for Australian locations listed by Fred Espenak. He was right... ;-)

Various timepieces used, such as computer clocks and wristwatches, had all been synchronised via NTP or WWVH shortwave to UTC time that morning. Expecting them all to be consistently wrong by more than a minute, only a few hours later, is unlikely.

I'm still inclined to the theory that predicted times didn't account for the thickness of the Venusian atmosphere. After all a similar

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problem affects lunar eclipse predictions. But I also recognise that detecting the instant when a solar edge becomes an edge-with-a-tiny-black-dent-in-it is very difficult. Even when you know in advance which part of the solar edge to watch.

Even if this time discrepancy is never explained, it's given me a great demonstration of the difficulties faced by the 18th and 19th century transit observers. As well as their frustrations: our own second contact was concealed by a small cloud!!

(2) Venus colours near sunset. This phenomenon can be explained by considering the sun's image as a set of overlapping and individually coloured discs. All with a little black spot on them. As the sun approaches the horizon for sunset, the "violet" and "blue" images get atmospherically scattered into oblivion; so the sunlight we see is reddened. The remaining colours then get dispersed slightly during atmospheric refraction; shorter wavelengths (greens and yellows) being displaced slightly upwards relative to longer wavelengths (oranges and reds). Nothing to do with Venus - this is Earth's atmosphere doing this.

The silhouette of Venus, being black, does not suffer this colour dispersion itself. What happens is that the -sun's- coloured images get displaced onto it. For example, we get the "green" image showing itself as a green fringe on the sun's upper edge (producing a Green Flash at sunset if we're lucky). It also shows itself as a green fringe on the -lower- edge of the Venus silhouette. Vice versa for the sun's "red" image.

I've read a few reports of similar colour displays from US and Canadian observers, when the transit appeared to them at sunrise. In theory it should also happen during sunrise/sunset Mercury transits, but will be harder to spot because Mercury is much smaller. Exact colours seen will be affected by your solar filter of course.

This colour dispersion of the sun is in addition to the usual near-horizon refractive flattening of objects. Which is why the discs of both Venus and the sun appeared elliptical to us near sunset.

Eldest son got some nice pictures of the coloured and refraction-flattened Venus, by hand holding his digital camera to the eyepieces.

(3) The double aperture setup. This has a number of advantages for observations where there's plenty of light from the target:

(a) It's very easy to find and retain your best possible focus. You have found it when your two overlapping images merge perfectly into one. I had no trouble focusing and viewing at high magnifications during the transit.

This double-aperture trick is also used by many CCD observers to find their exact focus. A cardboard sheet with two holes in it will do, or buy yourself a Kendrick Quik-focus if you don't want to look like a cheapskate ;-)

(b) Your light-gathering power may be reduced to these two small holes, but the -resolution- you get depends only on their separation. If your holes illuminate both ends of your mirror's diameter then you will get its full resolution. Provided the atmosphere cooperates of course.

(c) You get your full resolution without having to use a full aperture solar filter. So your sheet of solar filter film can now protect many telescopes instead of one.

Incidentally, your holes don't need to be perfectly round. Square or rectangular holes also work. And you can use 3 or 4 holes if you like. The total area of your holes needs to be at least the equivalent of a single 50-60mm hole. This will produce a solar image bright enough to be seen at higher magnifications during daytime. So it's not really worthwhile doing this setup on anything below ~80mm aperture.

To get a nice black background and the best possible contrast, be sure to use something opaque to make your holes in. And try to avoid aligning your holes with secondary mirror supports or other obstructions inside your telescope tube.

You can also use this setup (without the solar filters) for the moon and bright double stars. Cheaper than buying a Neutral Density filter, and with the added advantage of focusing assistance. cheers,

TRANSIT OF VENUS

Transit story

Date: Tue, 8 Jun 2004 From: "John M. McMahon" To: HASTRO-L@LISTSERV.WVU.EDU

I trust that this is not overly TAN ...

LARRY KLAES wrote:

> My own story ...

... and mine, from the Town of Tully, NY -- up in the hills about 15 miles south of Syracuse:

I observed the transit of Venus this morning, starting at about 5:40 AM EDT. My location was along a lonely gravel farm road less than a mile from my house. I was at 1900' el with an unobstructed view to the horizon from the N all the way to the S and SW.

It was an absolutely lovely clear and damply mild morning with a gentle sw breeze wafting the aroma of hundreds of acres of freshly cut alfalfa and timothy hay over the entire area. An almost last quarter moon hung high in the south in the brightening blue sky.

The sun had just cleared the NE horizon when I arrived, and the heaviness of the air allowed me to look directly at the red orb without any eye protection. Venus was unmistakably visible on the sw quarter of the disk.

I quickly followed up with a minute or two in my 7x50 binoculars and then allowed myself a few quick looks in my 4.5" reflector at 18X and 26X before the solar disk began to wax piercingly bright ... and I wisely opted for caution.

From that point on, I used the projection method to view the event at 75X, alternating with solar protection glasses for naked-eye viewing.

The slow and stately progress of the Venusian disk was wonderful to watch, even indirectly. As is my observing custom, I made some tape recorded comments along the way.

The event ended at c. 7:25AM EDT ... and I'm glad to say that I did see the so-called "black drop effect" as the dark disk of the planet neared the limb of the Sun.

Like LK I felt/feel very fortunate. Moreover, the combination of the actual visual event, the absolute quietness of the surroundings, the heavy perfume of the drying hay, the swallows, the redwings, the killdeer ... all contributed to one of the finest intellectual and sensual experiences I've ever had. John McMahon Classics Le Moyne College

From: "LARRY KLAES"

I am sure most everyone on this list has spent a good deal of their lives reading and wondering about one of the rarest events in astronomical history - the transit of Venus across the Sun. And yesterday many of us got to witness this for ourselves.

I hope since this is (and we are) now part of astronomical history - and I am sure that a number of people have just joined this list to learn about the past Venus Transit events - that some leeway will be made for others to share in their part of history.

Below is a quote from a Sky & Telescope online news article which reflected much of my feelings, especially on the early part of the transit. No amount of images shown from any previous transit, even the 1882 "movie" of the event, could capture seeing the actual black disk of Venus on a red Sun like I saw. I was so amazed I just pulled right over off the road and got out to view it with binoculars. I was concerned (rightly as it turned out) that the view would be gone as the Sun rose by the time I got to my designated viewing location. I even had a police officer start to pull over to see if I was okay and when he saw that I was holding binoculars and pointing at the Sun, he waved an okay and drove off (I would have gladly showed him the transit if he had stopped, but ah well).

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"I thought I was ready for how this would look, but I wasn't," said S&T senior editor Alan MacRobert, observing with friends from a meadow in the Boston suburbs. "It was so much more powerful. Venus looked just gigantic [in a filtered 8-inch reflector at 50x and 110x]. It was a big black hole punched in the Sun. At times I really had a 3-D impression of a black planet hanging in space between us and the Sun. The whole thing was so clean. Pictures just don't convey it."

http://skyandtelescope.com/news/article_1276_1.asp<http://skyandtelescope.com/news/article_1276_1.asp>

So since we are now part of history (with a major increase of images recording the event), I hope others will share their record of what they saw that day.

And to cap it off, here is that famous quote about wondering what the world will be like and what it will be doing on that once distant day in the year 2004:

"We are now on the eve of the second transit of a pair, after which there will be no other till the twenty-first century of our era has dawned upon the earth, and the June flowers are blooming in 2004.... What will be the state of science when the next transit season arrives God only knows."

- U.S. Naval Observatory astronomer William Harkness, 1882

"WE ARE ALL in the gutter, but some of us are looking at the stars." - Oscar Wilde - Larry

Venus Transit from Mount Washington, Pittsburgh

Date: Wed, 9 Jun 2004 From: "Francis Graham" To: SOLARECLIPSES@AULA.COM

Dear List About 50 people from Pittsburgh attended a public viewing of the Transit of Venus from high atop Mount Washington, a popular city overlook. A Celestron 8, binoculars, and a 6.5-inch f/15 refractor were used to show projected images of the sun to the onlookers, as well as informational discussion of Venus -- its orbit and physical characteristics.

The viewing was sponsored by an organization called the Friends of the Zeiss and also the Duquesne Incline Historical Society. The Incline leases the grounds the public observing was held on, in fact, under the patio, is the machine room of the inclined railway. It is significant because the original machinery of the 1877 Duquesne Incline took many onlookers up Mount Washington to the present transit viewing--and was operating during the time of the previous 1882 transit of Venus!

The Duquesne Incline Historical Society leases and operates the incline from the local government transit authority. So, in an ironic appropriateness, a transit authority owns the land that hosted the public viewing of the transit of Venus.

Although this was a highly successful public showing of the transit of Venus, we were handicapped by a dearth of advance publicity. Although the local metropolitan newspaper sent a reporter to cover the event, no mention of it was made in the next edition, instead, a stock AP report was used. This may be related to the fact that the Friends of the Zeiss tried (unsuccessfully) to save the last prewar operating Zeiss projector system which was in Pittsburgh (but was gutted in 2003), and continues, often against governmental complacency, to try and save other historical items from the wrecking ball. Francis Graham Assistant Prof of Astronomy and Physics Kent State University

Venus atmosphere ring

From: "Dale Ireland" To: "Solar Eclipse List Date: Wed, 9 Jun 2004

A very nice image showing the atmosphere of Venus near third contact may be viewed here.

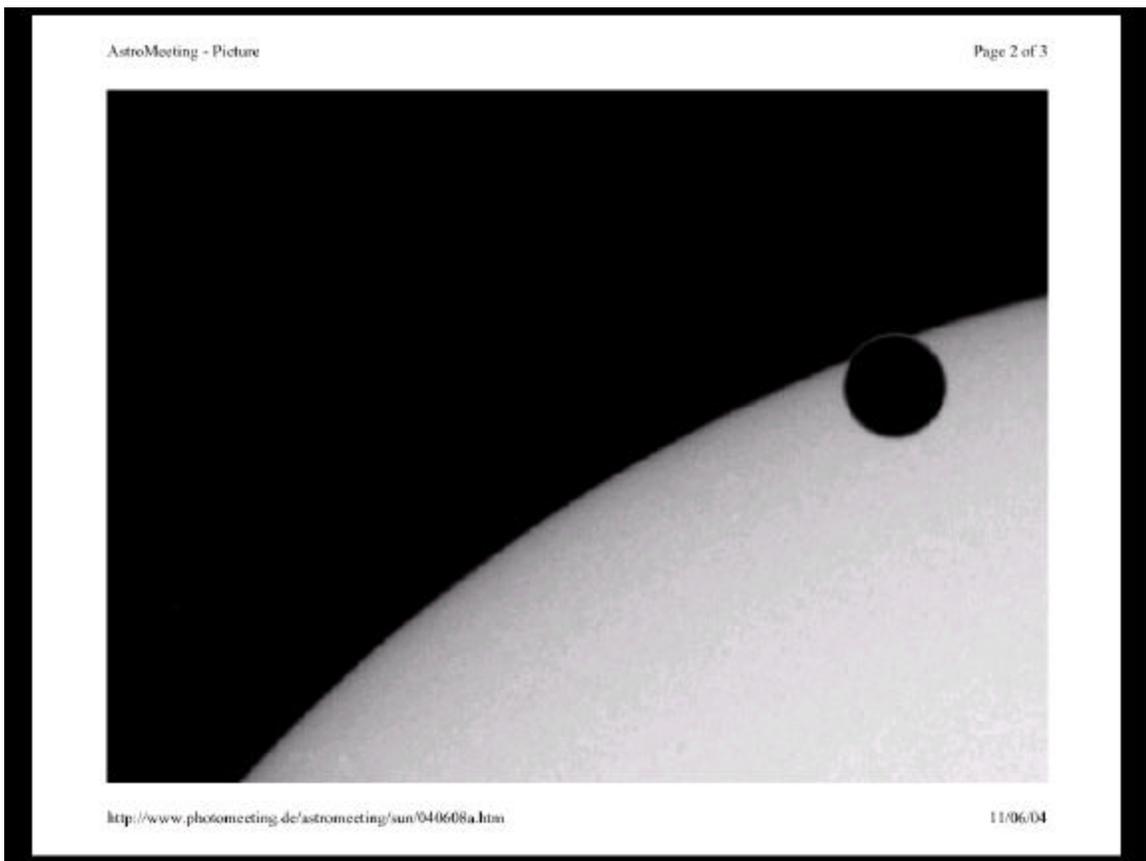
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<http://www.photomeeting.de/astromeeting/sun/040608a.htm>

It combines a 1 second exposure of the planet with a 1/20sec exposure of the Sun taken a moment later. Dale Ireland



Observation of the 1882 Venus Transit from New Zealand

Date: Wed, 9 Jun 2004 From: "LARRY KLAES" To: HASTRO-L@LISTSERV.WVU.EDU

Observation of Transit of Venus in Nelson NZ on 7 December 1882

Everyone now knows that a rare astronomical event occurred on 8 June when the planet Venus passed between the Earth and the Sun. This "Transit of Venus" occurs roughly every 120 years, so before the 8th, no human being now alive had witnessed such an event.

However, it is less known that the previous time that Venus passed across the Sun's face - in 1882 - it was observed in Nelson New Zealand by a local astronomer, Arthur Samuel Atkinson, on behalf of the Royal Society.

The importance of observing such an apparently obscure event is that it enables the distance between the Earth and the Sun to be calculated accurately, and the scale of the Solar System determined. Indeed, this was considered so important in the eighteenth century that the Royal Society sponsored Captain James Cook's first expedition to the Pacific to observe the transit of 3 June 1769.

After this, the next transit was in the late 19th century, when the Royal Society asked "several colonial observers" to observe the event and report back to the Society. Arthur Atkinson was one of these astronomers, and he successfully made his observations on 7 December 1882, using photographic techniques. This was done from a small hut near his house in Nelson. A photograph of Atkinson with his telescope, and two friends who assisted him (including Maurice Richmond on his right), is given here. The handwritten caption reads: "After the Transit". Arthur's house was called Fairfield, and was at one time used as Fell House of Nelson College. The event was described in a book *Born to New Zealand*, a biography of Jane Maria Atkinson [Arthur's wife] by Frances Porter (Allen & Unwin 1989). There it is reported that "A little electric house of zinc has been put up on the knoll & telegraph lines

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connect it to the telegraph office - so that the chronometers of all the observers may be exactly together at the critical moment."

Arthur Atkinson, an amateur astronomer and scientist, practiced law in Nelson where he was also the local MP. Atkinson had previously lived in New Plymouth, where he had set up a newspaper. Arthur (my great uncle) was a brother of Harry Albert Atkinson who was Prime Minister of NZ several times at the end of the 19th century.

Arthur's telescope is still in Nelson, but now operated by the Nelson Science Society for the City Council, at the Atkinson Observatory on the Port Hills. H H Atkinson, 8 June 2004 <http://www.harryatkinson.com/><<http://www.harryatkinson.com/>>

Transit Report

Date: Wed, 9 Jun 2004 From: "Michael Gill" To: "SOLARECLIPSES@AULA.COM"

I observed the transit from the region around Cape Sounian, south Attica, Greece.

After observing the ingress in a clear blue sky, clouds started to arrive from the north about two hours into the transit. I relocated to the end of the peninsula, a few hundred metres from the Temple of Poseidon, where the clouds were disappearing when they encountered the sea air. But the rotation of the Earth brought the Sun's disc uncomfortably close to the clouds once again, so to prevent any interference at egress I relocated a few kilometres to the north about forty minutes before contact 3.

The sight of the disc of Venus encroaching onto the Sun I found to be one of the most exciting of my observing life. I suppose the 121.5-year transit "drought" had a lot to do with it, and seeing an event that I had anticipated since childhood, but I was more excited about this than seeing the effects of (for example) Comet P/Shoemaker-Levy 9 on Jupiter (another once-in-a-lifetime event).

As for the Black Drop – on my flight out of Athens earlier today I had a transit post mortem with Glenn Schneider. The black drop did not look to me to be anything like the renderings of Cook and Green in Tahiti in 1769 that Glenn showed me on his laptop. However, the darkening between planet and the edge of the Sun that TRACE recorded in 1999's Mercury transit was evident to me here and it caused a large time uncertainty for me in estimating the time of contact 2 and contact 3.

I observed ingress and egress in a Coronado telescope (H-alpha) and a 125mm SCT (white light). Four black drops for the price of two! Not content with that (and being easily amused!) I brought the white light scope into and out of focus repeatedly, after ingress was over, to produce my own crude black drops in the eyepiece!

Every single previous occasion that I had looked at Venus I had seen it with varying amounts of phase. Seeing it as a full disc was a real thrill.

I did not see any halos around the planet like Lomonosov but perhaps my equipment/conditions/observing prowess wasn't up to it.

Throughout the transit, I was thinking of past Venus transit expeditions and observers. Previous transit observers took months or years to reach their destination, I was able to make a quick dash across the globe and back by jet. Past observers were often in great peril and some paid the ultimate price – I merely have the discomfort of minor sunburn and insect bites. They had to laboriously find the longitude of their observing site, while I could switch on a GPS unit and have the reading in moments. We really do have things easy. Looking forward to 2012! Michael Gill

Simultaneous transits

Date: Thu, 10 Jun 2004 From: "Jean Meeus" To: "Solar Eclipses"

The June 2004 issue of the 'Journal' of the British Astronomical Association contains the article (by Aldo Vitagliano and myself) on simultaneous transits.

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Simultaneous transits of Mercury and Venus are not possible presently. Remember that transits of Mercury are possible only during the first half of May and during the first half of November. Transits of Venus can take place only during the first half of June and the first half of December.

However, simultaneous transits are possible when the lines of nodes of the two orbits coincide (or almost so). The next two simultaneous transits of Mercury and Venus will occur in the years 69,163 and 224,508.

The article also deals with transits taking place during a solar eclipse. The first next occurrence takes place on July 5 of the year 6757, when a transit of Mercury will occur during a partial lunar eclipse. On April 5 of the year 15232 there will be a total solar eclipse during a transit of Venus.

Persons wishing to obtain a copy of the article as a .PDF file may contact me at the address jmeeus@compuserve.com Jean Meeus

From: mrk@iac.es

Jean: I'd be very interested in a copy of this article if you can send me one. Thank you. Mark

From: "Dale Ireland"

"On April 5 of the year 15232 there will be a total solar eclipse during a transit of Venus."

How accurately can you determine an eclipse that far out considering variations in rotation rate, precession, etc. I mean what is the error range, can you pin it down to an exact minute or within a day?

This is an amazing coincidence. It is the same year my credit card will be paid off if I continue to make the minimum monthly payment. Dale

From: "Dave Balch"

Thank you for that... I'll mark my calendar for the solar eclipse during a Venus transit. I'd hate to miss it! Dave

From: "Jean Meeus"

Dale, Actually, the calculations were made by my co-author, Aldo Vitagliano. He used the method of numerical integration.

Concerning the rotation of the Earth, yes, the error can be large. At this moment the famous quantity "Delta T" cannot be estimated accurately to the nearest minute even for the year 2100 ! Consequently, any estimation of Delta T for the year 15232 might be in error by many HOURS. However, this is not to the point. We cannot tell what region of the Earth will see that eclipse, but we can say with certainty that, at the places where the eclipse will be visible, Venus will be in transit. Regards. Jean

From: "Dale Ireland"

Thank you, After delta T what are the next largest variables? Is the revolution period of the Moon and precession of the Moon's nodes stable enough to predict when the umbra will cross the Earth within a few minutes after 13,000 years? Dale

From: "Jean Meeus"

This is mentioned in the article. The largest possible source of error for the data in Table 2 comes from the tidal acceleration of the Moon. According to Chapront, its present uncertainty is of the order of 0.01 arcsecond/(century*century) or less. This means that the quadratically growing error in the Moon's longitude corresponds to errors in time (of mid-eclipse) of the order of 2 seconds after 1000 years, and 400 seconds (7 minutes) after 14,000 years. Jean Meeus

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From: "Francis Graham"

Dear List, know one ought not to attach too much philosophical meaning to scientific results, but I could not help myself:

Imagine what the world might be like in 69163 and 224508. By the latter year, unless we develop the ecological relationship types the Horseshoe crabs, Ginko trees or Coelacanths have to their environment, human beings as they are now will probably be extinct! By the time of the simultaneous eclipse and transit of Mercury on April 5, 6757, we probably won't be extinct, but no-one will speak most of the languages on Earth today. From 3k years ago we have Coptic, Sanskrit, Chinese, Hebrew and Greek, and even these are so substantially altered so that a speaker from the past of these languages (the last three, at least) would be non-understandable to a present speaker.

I wonder what archaeologists of the future will think Parking Meters are.

A question perhaps more on-topic. It might be possible to glimpse a "near miss" transit of Venus across the SOLAR CORONA during a TSE. That would be an interesting sight: you'd have the atmospheric "ring of light" of an inferior conjunction of Venus against the bluish-white corona. This could also happen if a solar eclipse ended or began right before or after a Transit of Venus was to begin or end. Any of these in historical times or in any future time when humans are likely to still exist? Francis Graham

Transit of Venus: implications?

Date: Thu, 10 Jun 2004 From: "John M. McMahon" To: HASTRO-L@LISTSERV.WVU.EDU

Here's a nice post-transit piece on the intellectual implications of the event:

CSM 6/9/04: "Cosmologists, one transit at a time"

"Now that Venus's moment in the sun ... well, its 6.4 hours of transit ... is over, don't let this much awaited event slip out of your mental orbit.

Truth be told, the black punch-out in the smiley face of our solar system's heat source that millions witnessed on Tuesday is such a simple yet profound image, that I hope it ripens into a much more lasting consideration of humanity's place in the cosmos.

[snip]

Since Einstein's famous equation, physics has become cosmology and cosmology has become physics. By the simple act of watching the image of Venus replicate a moving eye-patch across a giant fireball I trust that cosmologists sprang up all over the world as well."

[snip]

"Seeing this one slice of Venus's orbit pass in front of the Sun easily suggests our own Earth's orbit around the Sun. The more one studies the orbits of planets, the gravitational pull of the Sun, the fact that our solar system acts like a planet in our Milky Way galaxy, and that our galaxy works in turn like a planet around other galaxies, and then again as a cluster of galaxies around other clusters of galaxies, our humanity impels us to stop and ponder our place in it all."

Text: <http://weblogs.csmonitor.com/scitechblog/2004/06/index.html#a0001555928> JMM / LMC

TRANSIT OF VENUS

As Venus Dances Across the Sun, Earth Dwellers See History Unfold

Date: Thu, 10 Jun 2004 From: "LARRY KLAES" To: HASTRO-L@LISTSERV.WVU.EDU

June 9, 2004 By WARREN E. LEARY

WASHINGTON, June 8 - Three dozen people on the roof of the National Museum of American History, and millions of others around the world, witnessed something on Tuesday that no one alive today had ever seen.

"Now, this is an event people will remember," said Dr. David DeVorkin, curator of astronomy at the National Air and Space Museum. "We just saw the transit of Venus."

The guests and staff members of the Smithsonian Institution who clustered before daybreak amid rooftop ducts and machinery shared the view through two telescopes tracking the motion of the small black silhouette of Venus crossing the face of the Sun.

The six-hour crossing was more than two-thirds over when the Sun rose at 5:25, shrouded by morning mist and thin clouds, but the planet could be seen clearly with the naked eye.

For the first time in 122 years, the orbits of Earth and Venus around the Sun were aligned along the same plane so that viewers in much of the world could see the second planet cross in front of our home star.

After two such opportunities in an eight-year interval - the second one will occur on June 6, 2012 - there will not be another for more than a century.

Only five Venus transits, first predicted by the 17th-century German astronomer Johannes Kepler, are known to have been observed - in 1639, 1761, 1769, 1874 and 1882 - though Dr. DeVorkin said it was likely that ancient astronomers in China, Mesopotamia or elsewhere could have witnessed such a rare and subtle event.

In earlier centuries, when measurements of the transit from various places enabled astronomers to calculate the distance from the Earth to the Sun, scientific bragging rights were at stake in the rush to view it. On Tuesday, it was more of a curiosity.

But Dr. Ronald Brashear of the Smithsonian Institution Libraries, curator of "Chasing Venus" exhibitions at the American History Museum and on the Internet, said he was happier seeing the event now than he would have been in the past.

"In some ways I'm pleased it's not of major scientific interest now," he said. "Then I'd be worried about taking measurements and collecting data.

"Now we can see it as a memorable event in scientific history and stand back and enjoy the experience."

Nantucket: A Hole in the Sun

SIASCONSET, Mass. - The Sun rose out of the ocean this morning with Venus clinging to it like a barnacle.

The sight brought cheers from a crowd of about 100 - astronomers, students, residents, visitors, startled tourists who gathered on this Nantucket beach in the gray hours before dawn, armed with a bevy of portable telescopes, binoculars, special goggles and coffee, to greet an apparition last seen anywhere in 1882.

For almost two hours in the caramel light of dawn, the beach party watched what looked like a bullet hole in the Sun, clean and round, work its way slowly toward the edge. It was only at the end that clouds began to intrude, and for half an hour the Sun and Venus played hide and seek.

Then the clouds parted again, long enough for everybody to get a good final glimpse of Venus crossing the Sun's edge, appearing like a black half-circle taken out of the Sun. "Imagine that," said Dr. Dorrit Hoffleit, 97, who was the director of the Maria Mitchell

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Observatory here for 25 years. "We thought it was gone, and it came back."

Then the sliver of Venus slowly melted off the Sun.

After a pause Dr. Vladimir Strel'nitski, the observatory's current director, said, "I think we have to applaud nature."

And they did.

DENNIS OVERBYE

Spain: A Solar Beauty Spot

BARCELONA - Josi Noy, an amateur astronomer, counted himself especially fortunate to live where the passage of Venus across the face of the Sun would be visible in its entirety, and a clear sky was promised.

Up at sunrise, Mr. Noy set up his small telescope at home and caught sight of the dark silhouette of Venus at the first possible moment, at 7:20 a.m. Then, packing his gear, he hurried down to a beach on the Mediterranean Sea, where several dozen other amateurs had gathered with telescopes mounted on tripods.

Mr. Noy carefully placed a filter at the top of the telescope and peered through the eyepiece. Venus had moved, though at an imperceptible pace. At 11 a.m. it seemed fixed like a mole, a beauty spot, on the solar cheek.

"An hour ago, we had some clouds, but now the view is fine, excellent," he said with satisfaction.

Lluís Gsmez, director of the Barcelona planetarium, said the transit was being shown live on Web sites for schools in Spain. At the National Institute of Meteorology here, schoolchildren were watching on a large screen and listening to an astronomer's description.

In the hills behind Barcelona, at the 100-year-old Fabra Observatory, Jorge Nzqez, a professional astronomer, followed the transit's final hour. The Sun's beauty spot had by then shifted to the other cheek. It finally vanished at 1:25 p.m.

Time to go outside and admire the terrestrial vista: the flowering hills, the gleaming city below and the blue sea beyond.

JOHN NOBLE WILFORD

South Africa: Cats in Eclipse

KROMDRAAI - Bill Hollenbach put down his meerkat. He leaned over one of the two eyepieces of his crack Celestron C8 telescope, squinted and uttered a mild but unprintable oath.

"It's a lot bigger than I had ever anticipated," he said, "a lot bigger than Mercury was. This is really something! Ab-so-lute-ly bloody amazing. Have a look! Don't just stand there!"

Mr. Hollenbach had set up two telescopes at the Rhino and Lion Nature Reserve, an hour west of Johannesburg, so that any and all comers - especially, he said, impoverished black children from a nearby school - could see it.

His life passion is astronomy. Now 56 and retired, he has worked at a nuclear power plant and in telecommunications, and enjoys a minor reputation as an inventor. In the 1980's, he helped establish the Cederberg Observatory outside Cape Town. Two years ago, with time on his hands, he came to the Rhino and Lion Reserve, a smallish park that runs a big-cat breeding program and stages educational events for local schools, and found a calling.

On a hillock near the reserve's tourist chalets, Mr. Hollenbach built a wooden observatory with a sliding corrugated-iron roof, and

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began staging exhibits and lectures for visiting students. "It's absolutely amazing, the response of these kids - the eagerness to learn," he said. "I get calls at all hours of the night now - 'Uncle, what's that star? Uncle, what am I seeing now?' "

So on this windy morning, Mr. Hollenbach set up his scopes, played with the reserve's two pet meerkats and its tame impala, and waited for a class from a nearby school. Soon he was mobbed by 500 boys and girls in threadbare navy uniforms, pushing and jostling for a chance to see a rare celestial event, each ending a turn at the eyepiece with a grin almost as big as his own.

MICHAEL WINES

Iraq: Distracted by a Bomb

BAGHDAD - On a hazy morning in Baghdad, more attention went to the latest suicide car bombing, in a town called Baquba, than to the transit of a distant planet across the face of the Sun. The transit began at 9:19 a.m., about an hour and a quarter after the bombing. Two visitors were turned away by security guards near the entrance to the Astronomical Dome in Zawra Park in the upscale Monsur district. The doors to the dome appeared to be chained and locked.

In another part of town, across the Tigris River from Saddam Hussein's former palace - the area now called the green zone and occupied by the United States and its allies - helicopters patrolled the river as a guard on a platform aimlessly pounded an empty water bottle on the top of a concrete blast wall in the gathering heat. A group of journalists and photographers and another guard stood on top of a low building and took turns watching the transit through two pairs of cardboard glasses marked "Transit of Venus: June 8, 2004" that had improbably appeared.

As the Sun rose higher and became more intense, staring at the tiny shadow of Venus for any length of time became gradually less attractive. Around noon, one guard, an AK-47 slung over his right shoulder, saw the planet through the glasses and smiled, revealing damaged teeth. A binocular scan of the surrounding area turned up no other residents who were watching the transit, and few who were outside at all. JAMES GLANZ

<http://www.nytimes.com/2004/06/09/science/09venus.html?ex=1087875697&ei=1&en=1956bfdcb0a354d><<http://www.nytimes.com/2004/06/09/science/09venus.html?ex=1087875697&ei=1&en=1956bfdcb0a354d>>

Venus transit in decimals?

Date: Thu, 10 Jun 2004 From: ECOLING@AOL.COM To: HASTRO-L@LISTSERV.WVU.EDU

What are the average transit intervals, and the maximum and minimum intervals, for each of the three kinds Venus transits?

8 years
105.5 years
121.5 years

Can someone provide much more exact timings, to say three decimal places at least, preferably four places? The "8 years" is actually 8 years less 2 days (approximately), notice that is 8×365.25 less 2, or simply 8×365 using the approximate whole-day year (without going into essentially a third decimal place).

This is of potentially great interest because the Mayan Venus table of the Dresden Codex did a commensuration of cycles of 365, 260, and 584 in a total table of 104×365 , with corrections to restart the Venus cycle earlier at an even multiple of 260 in such a way that it could be kept accurate over endless periods of time (while changing the relation to the 365-day cycle -- three such shown in the Dresden Codex).

I'm not going to *assume* that the Mayans were aware of Venus transits, they are hard to observe, but I don't want to exclude that either. (The Mayan tables account only for ecliptic longitude, not for latitude of Venus relative to the Sun. At least so far as anyone would believe today, I think.) Thanks for any help - Lloyd Anderson Ecological Linguistics

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Venus Transit

Date: Thu, 10 Jun 2004 From: "Gianni Ferrari" To: HASTRO-L@LISTSERV.WVU.EDU

In the period between 1575 and 1700 some great astronomic instruments for the search of some of the fundamental constants for the study of the calendar and of the solar system were built in Italy: they are the great "camera obscura" sundials made inside some cathedrals.

Among the most important we have:

- in S. Maria del Fiore in Florence - 1475 - Paolo dal Pozzo Toscanelli - the oldest
- in S. Petronio in Bologna - 1655 - Gian Domenico Cassini - the most famous in the history of the astronomy
- in S. Maria degli Angeli in Rome - 1702 - Francesco Bianchini - the most beautiful .

These instruments, in which the only optical apparatus is a simple stenopeic hole (or a pin-hole), lost their importance with the development of the optic astronomy and of the telescopes: nowadays they are used only for didactic purposes and for the determination of the noon.

On June 8th 2004 some of these sundials have been used again astronomical instruments to try to observe the Venus transit.

For the first time from their construction all the conditions that have made possible this observation have been verified and for the first time we have had the possibility to see the disk of Venus projected on that of the Sun

The phenomenon has been observed in Florence, in Rome and in the cathedral of Palermo : perhaps also other observers have seen the transit in such a way.

I remind that the possibility to observe the transit of Venus in a "camera obscura" sundial is an event really rare : the transits happen only at long intervals; the event must be visible in a place in which there is one of these sundials; the event must happens in a period near the noon; finally the sky must be clear! :-)

Yesterday in Italy all these conditions have been favourable even if the period of visibility of the phenomenon has been very short.

The times (in UT) for Florence have been the followings:

10h 55m (around) the image of the Sun has become visible on the steps of a side chapel

10h 59m (around) the complete image was on the floor of the church

11h 04m III contact

11h 16m(around) last instant in which I personally have been able to see the image of Venus

11h 24m IV contact

The observation in the cathedral of S. Maria del Fiore in Florence has been organized also with the good offices of the Astrophysical Observatory of Arcetri

In the last 2700 years the phenomenon could be observed only in the years 303, 546, 1040 and yesterday June 8th 2004.

The next favourable transit will be on June 11th 2247

The next transit of Mercury - more frequent but more difficult to observe, also it never observed in a sundial - can be seen only on May 9 th 2016 : in 1607 Kepler tried to observe the transit of Mercury using a hole and a dark room, but he was deceived from a

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great sunspot.

A regard Gianni Ferrari

44° 39' N 10° 55' E

Mailto : gf_merid@virgilio.it

P.S. Also I have seen the Venus disk very clearly to the naked eye, with only the help of a solar filter

See in

http://www.arcetri.astro.it/~ranfagni/venus2004/venere_in_Duomo.gif

http://www.arcetri.astro.it/~ranfagni/venus2004/venus_palermo.jpg

"BLACK DROP" (and the Martian canals and face); my two-cents

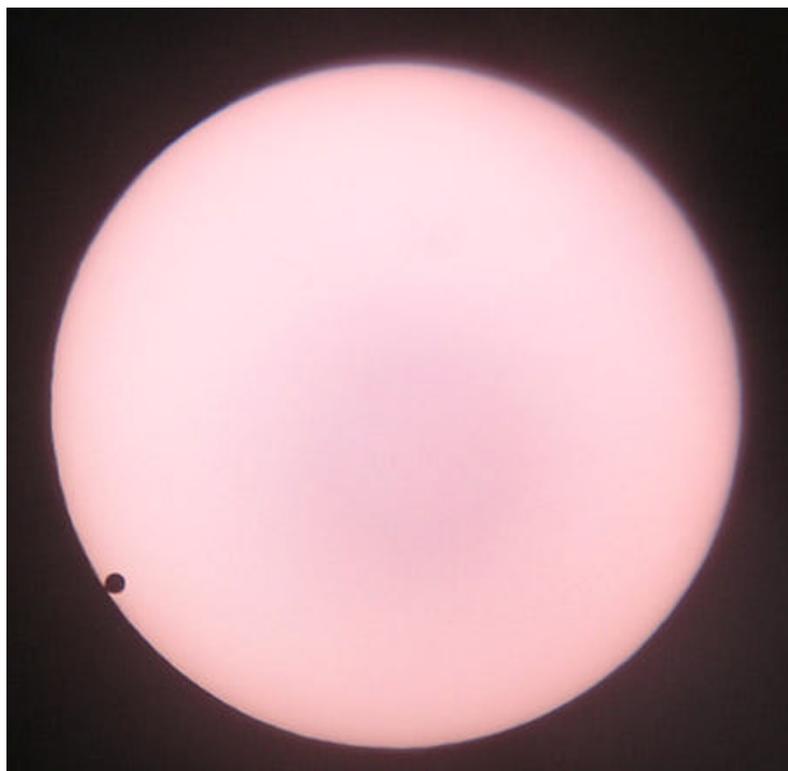
Date: Thu, 10 Jun 2004 From: "Glenn Schneider" To: SOLARECLIPSES@AULA.COM

Govert et al, >From the 1999 TRACE data (white light imaging with 10 resolution elements across 20 detector pixels spanning the disk of Mercury) we concluded that the "Black Drop" effect there was simply due to the instrumental point-spread function (PSF) in convolution with solar limb darkening - i.e., nothing intrinsic. The expectation was similar for ground-based observations, though the PSF from the ground is horribly more complex - and temporally unstable - as it is dominated by atmospheric seeing. We will be analyzing the TRACE data from the 2004 Venus event to see if we can detect a modification to the form of the instrumental(PSF)+limb-darkened "black drop" which one might expect due to refractive effects from the Cytherian atmosphere. Expectation is that would be small, but with enough S/N (with TRACE imagery which was obtained but not yet reduced/analyzed) we should be able to comment upon that.

Reports of ground-based "black drops" from this Venus event (including my own) are predominantly negative. The few which have been reported seem to be mostly from (a) places where the Sun was low in the sky (hence likely worse seeing and a bigger atmospheric seeing disk) and (b) small telescopes.

I believe/suggest we (the collective "we") need to develop a secondary terminology to differentiate between the historical/classical "black drop effect" as it was described/illustrated in the literature, for example see Figures 1 and 2 in: http://nicmosis.as.arizona.edu:8000/PUBLICATIONS/ICARUS_TRANSIT.pdf and, simply, PSF+atmospheric "blurring" (against the solar limb darkened disk back-illuminating Mercury/Venus with possible refractive modification by a Cytherian atmosphere). I fully suspect the sorts of "black drop" morphologies being reported for VENUS 2004 by some are the later, rather than the more complex structures historically reported. It would be VERY interesting to know better (in detail) both the optical properties of the telescopes used and the instantaneous seeing conditions for the Black Drops (no quotes) historically reported.

I suspect (but yet may be proven wrong), when we have a chance to characterize in detail the expected (small) modifications due to



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Cytherian atmospheric refraction the complex "bars" "ligatures", etc. may go the way of the canals and face on Mars. Glenn Schneider Associate Astronomer & NICMOS Project Instrument Scientist Steward Observatory, University of Arizona

From: "Glenn Schneider"

Stephen, I think this would be both interesting, and useful. But may I ask for an augmentation (addition) to the the infuriation you are collecting. It would be VERY good if in addition to reporting on the "Atmosphere" as you have asked, if observing could (if possible) provide seeing estimates. Mist/Fog/Smoke/Clear etc. speak to transparency, but not image quality. The best would be to provide seeing estimates directly in arcseconds (e.g., 1", 2"...) but if that cannot be estimated qualitative may be a helpful guide knowing the aperture of the telescope and air-mass (altitude). The later can be computed, of course, from the lat/long.

I would be very interested in seeing the results of such a "survey". Glenn Schneider

From: Jay.M.Pasachoff@williams.edu

Yes, I agree with the need to define these different types of "black drops." A few people have written about "tear drops," which shows their prejudice about the shape.

I wish I had duplicated Capt Cook's telescope and observed with it. Jay



Venus "brings daylight"

Date: Fri, 11 Jun 2004 From: ECOLING@AOL.COM To: HASTRO-L@LISTSERV.WVU.EDU

Blair Rudes, a specialist in Iroquian languages, responds to the question about the prohibition of the name "brings daylight" as follows.

<<Off hand, my best guess is that [the poster is] mostly right about the reason for the taboo on the name. In pre-Christian beliefs, "he/it-brings-the-day" was the name of a mythical bird that brought language to humankind. Briefly, the legend (which is in Rudes and Crouse, 1987, The Tuscarora Legacy of JNB Hewitt, Canadian Museum of Civilization [out-of-print]) goes that the bird lands in a tree (presumably the Great Tree of Peace -- the symbol of the League of the Iroquois) and begins to sing. As the bird's song falls upon the ears of humans, their language diversifies into many languages. It would appear that this was one of many legends that the missionaries tried to eliminate to make room for Christian legends -- in this case the Tower of Babel legend.>> Best wishes, Lloyd Anderson Ecological Linguistics