

SOLAR ECLIPSE NEWSLETTER

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The Solar Eclipse Mailing List

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

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

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

The sole Newsletter dedicated to Solar Eclipses

Dear Friends,

Another month passed. And only a month to go before many of us will go to the annular solar eclipse. We hope to meet you all there of course. Do not forget: The evening of 9 June in the Hard Rock Café in Puerto Vallarta. Be there!

The Solar Eclipse WebPages are launched as well. All our activities are listed. Information about the Solar Eclipse Mailing List, the Solar Eclipse Newsletter, Totality Day and the Solar Eclipse Conference. Of course up to date status of all of those and its statistics. The SECalendar in its total and the complete index of the SENL. Last but not least all links ever published in the SENL for eclipses in general, astronomy, but as well the next solar eclipses. Let us know what you think about it and have a look at:

<http://www.j.w.edmonds.btinternet.co.uk/>

In this issue also another Eclipse CV. Joe Cali of Australia was willing to open his eclipse heart. We hope to get all eclipse chasers in this SENL.

Of course everybody's mind is set on the next total solar eclipse. Preparations are done for nearly everybody. The amount of messages shows as well. It looks like it was calmer this month.

To taste a little the view of totality, below a picture of the Bolivia eclipse taken by PP in Sevaruyo on 3 November 1994.

All the best,

Patrick and Joanne

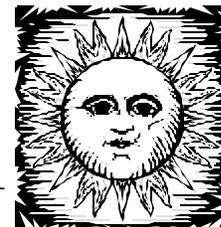


SECalendar



Dear All,

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



MAY 2002

May 01, 0664 "In this year the Sun was eclipsed on the 5th of the Nones of May; and Earcenbryht, the King of the Kentish people died and Ecgbryht his son succeeded to the Kingdom." Refers to the total solar eclipse of 1 May AD 664. From: The Anglo Saxon Chronicles. Ref SW Solar Eclipses from Year 1.

May 01, 1185 "On the first day of the month of May, on the day of the Saint Prophet Jeremiah, on Wednesday, during the evening service, there was a sign in the Sun. It became very dark, even the stars could be seen; it seemed to men as if everything were green, and the Sun became like a crescent of the Moon, from the horns of which a glow similar to that of red-hoot charcoals was emanating. It was terrible to see this sign of the Lord." From: Lavrentievskaya Letopis. "On the first day of the month of May, during the ringing of the bells for the evening service, there was a sign in the Sun. It became very dark for an hour or longer and the stars were visible and to men everything seemed as if it were green. The Sun became like a crescent of the new Moon and from its horns a glow like a roasting fire was coming forth and it was terrible to see the sign of the Lord. Then the Sun cleared and we were happy again." From: Novgorodskaya II Letopis Both of these quotations refer to a total solar eclipse in Novgorod, Russia, of 1 May 1185. Ref. FRS 1997, page 395.

May 01, 1952 Minor planet (3428) Roberts 1952 JH. Discovered 1952 May 1 at the Goethe Link Observatory at Brooklyn, Indiana. Named in memory of Walter Orr Roberts (1915-1990), from 1960 to 1970 the founding director of the National Center for Atmospheric Research. In the early 1940s he established the Harvard College Observatory's Fremont Pass Station (which later became the University of Colorado's High Altitude Observatory), where he made solar observations with the first coronagraph in the western hemisphere. His interests soon broadened from solar physics to climatic research in general, and he served as president (and later president emeritus) of the University Corporation for Atmospheric Research. His final major activity was the Greenhouse Glasnost project between scientists in the U.S. and the U.S.S.R. (M 16885) Name proposed by F. K. Edmondson. Obituaries published in Bill. Am. Astron. Soc., Vol. 24, No. 4, p. 1331-1332 (1992); Q.J.R. Astron. Soc., Vol. 33, No. 1, p. 35-37 (1992). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

May 03, -1374 (1375 BC) Syria: A clay tablet found at that site notes that "the day of the New Moon in the month of (Apr-May) was put to shame. The sun went down with Mars in attendance. This means the overlord will be attacked by his vassals." Ulysses 3/97" But: "was put to shame" was also translated as "on the sixth" (day) and again differently by others. "went down" is the same word as that used for "to set". Ref. ENB013. This is no solar eclipse, although mentioned by several references. (Reprinted, from Chasing the Shadow, copyright 1994 by Joel K Harris and Richard L Talcott, by permission of Kalmbach Publishing Co. Also appears in Total Eclipses of the Sun by Zirker. In Guide to the Sun, Phillips says that this might refer to the eclipse of 1223 BC.) Ref. SENL July 1999, FE 01/01.

May 03, 1715 "A few seconds before the sun was all hid, there discovered itself round the moon a luminous ring about a digit, or perhaps a tenth part of the moon's diameter, in breadth. It was of a pale whiteness, or rather pearl-colour, seeming to me a little tinged with the colors of the iris, and to be concentric with the moon." Refers to a total solar eclipse of 3 May 1715. From: Edmund Halley. Ref. Popular Astronomy by Newcomb, and in UK Solar Eclipses from Year 1 by Williams.

May 03, 1715 Edmond Halley (1656-1742 or 1743) England, during an eclipse in England, is the first to report the phenomenon later known as Baily's Beads; also notes bright red prominences and the east-west asymmetry in the corona, which he attributes to an atmosphere on the Moon or Sun. Halley observed from London (John Flamsteed (1646-1719) observed from Greenwich).

May 03, 1715 Probably the first map of a path of totality, drawn by the English astronomer Edmond Halley (1656-1742 or 1743). On a copper plate he engraved the totally paths of the total solar eclipses of 3 May 1715 and 11 May 1724. On top of the map, the date 22 April 1705 (i.o. 3 May) is mentioned, but that is because the Gregorian Calendar in England was introduced in 1751.

(Continued on page 3)

SECalendar

May 03, 1769 "It will be Eclipse first, the rest nowhere." Dennis O'Kelly (at Epsom, 3 May 1769) (Quoted in The Penguin Dictionary of Quotations by Cohen and Cohen. In UK Solar Eclipses from Year 1, Sheridan Williams says: "One of the world's most successful racehorses was born around the time of this [annular eclipse of 1 April 1764] and was named Eclipse. The Eclipse Stakes, named after that horse, are still run today, and the horse of the year awards in the U.S. are called Eclipse Awards after him.")

May 03, 1880 Death of Jonathan H. Lane, American physics and astronomer. Studied temperature and physics of the Sun and density of Sungas.

May 03, 1981 Hess 2844 (1981 JP): Minor planet discovered May 03, 1981 by Edward L.G. Bowell at Anderson Mesa. Named in honor of Frederick Hess, Prof. of natural sciences at the State Univ. of NY at Fort Schuyler and long time lecturer at the Hayden Planetarium-American Museum in NYC. Hess has directed a number of Solar Eclipse expedition and has accumulated more than 30 min in the shadow of the Moon. MPC 9215. Name proposed by the discoverer. Ref. VK6/97

May 05, 0840 "In the third year of the Indiction, the Sun was hidden from this world and stars appeared in the sky as if it were midnight, on the third day before the Nones of May (May 5) during the Litanies of Our Lord. There was great distress, and while the people beheld it, many thought that this age would last no longer. But while they were contemplating these simple things, the Sun shone again and trembling as it were began to escape from its former shade." Refers to a total solar eclipse of 5 May AD 840. From: Andreas Bergomatis Chronicon. Ref. FRS 1997, page 387.

May 05, 1361 " Chih-cheng reign period, 21st year, 4th month, day hsin-szu, the first day of the month. As the Sun was about to sink (i.e. set) suddenly it lost its light. It took the shape of a plantain leaf. The sky was as dark as night and the stars were shining brightly. For a short time (literally: for the duration of a meal), the sky became bright again. Then in a short time (the light) disappeared once more." Refers to a total solar eclipse of 5 May 1361. From: Sung-chiang Fu-chih (History of the town of Sung-chiang, south-west of Shanghai). Ref. FRS 1997, page 259.

May 06, 1883 Carolina 235: Minor planet discovered 1883 November 28 by Johann Palisa at Vienna. Named for an atoll of the Line Islands, 450 miles northwest of Papeete, Tahiti, where the discoverer observed the Total Solar Eclipse of May 6, 1883. Palisa observed the solar neighborhood in order to find an intra-Mercurian planet. BAJ CIR 218. Ref. VK 6/97

May 06, 1883 Oceana 224: Minor planet discovered 1882 March 30 by Johann Palisa at Vienna. Named for the Pacific Ocean. The discoverer communicated from Honolulu on return from the solar eclipse expedition of May 6, 1883 that Governor von Des-sarts of Tahiti has named this planet. BAJ CIR 210 (1883). Ref. VK 6/97

May 07, 1819 Birth of Otto Wilhelm von Struve (1819-1905) in Dorpat, Russian astronomer. Discovered 547 double stars, studied rings of Saturn and parallax of the Sun.

May 09, 1988 Minor planet (4899) Candace 1988 JU. Discovered 1988 May 9 by C. S. Shoemaker and E. M. Shoemaker at Palomar. Named for Candace P. Kohl, American chemist and a leading investigator of ancient solar activity through analysis of solar cosmic-ray-produced nuclides in lunar samples. She has also contributed importantly in the development of techniques for dating surface exposure of materials on the earth from cosmic-ray-produced nuclides. Through her popular lectures on meteorites, the moon and the solar system, Kohl has reached a wide audience ranging from primary-school children to high-school students and the lay community. (M 25443) Citation provided by K. Nishiizumi at the request of the discoverers. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

May 11, 1904 Minor Planet (536) Merapi Discovered 1904 May 11 by G. H. Peters at Washington. Named after a mountain in west central Sumatra, site of the U.S. Naval Observatory and other expeditions to the total solar eclipse of May 17, 1901. It gives off smoke more or less continuously and the name means "with fire". It should not to be confused with the nearby active volcano of the same name in central Java. The discoverer was a member of the eclipse expedition. (H 57) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

May 11, 1916 Death of Karl Schwarzschild, German astronomer. Explained the difference in light intensity of the edge of the Sun in 1906.

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May 11, 1924 Birth of Antony Hewish, British physicist and astronomer. Studied Solarwind. Got Nobelprice of physics in 1974.

May 11, 1956 Death of Walter S. Adams, American astronomer. Studied spectra of Sunspots and stars.

May 12, 1706 An English ship captain named Stannyan, on vacation in Switzerland, reports a reddish streak (chromosphere? prominence?) along the rim of the Sun as the eclipse becomes total.

May 12, 1706 If Duillier's account is to be trusted, the Moon's shadow was first seen in its swift approach. (ref. Total E of the S, Todd, 1894). "This was also the occasion when, if DUILLIER'S account is to be trusted, the Moon's shadow was first seen in its swift approach." (p 110)

May 13, 1733 As per (Sir) Patrick Moore, Guinness Book of Astronomy (1983), the shadow bands have been reported for the first time by H. Goldschmidt in 1820. The description is also mentioned in the book of Mabel Todd, Total Eclipses of the Sun, 1894. But during the total solar eclipse of 13 May 1733 (2 May 1733 Julian date), observations have been coordinated and collected by Celsius. The eclipse was visible in the north of Europe. In Forsheim, Sweden, the duration was a little more then 3 minutes. The Transactions of the Royal Society of Sweden do have the most physical nature observations of a solar eclipse of that time and before. Edmond Halley (1656-1742 or 1743) was the only whom noted a physical observation during the eclipse of 1715. Rydhenius, pastor of Forshem noted following: when the sun was about to lose his light, and also when he was about to recover it, he emitted rays that undulated like the aurora borealis, and were of a fiery red color. At the same eclipse, the pastor of Flo noted: towards the total obscuration stars were visible, and also a singular fluctuation in the air. (ref. History of Physical Astronomy)

May 13, 1733 Birger Wassenius (Sweden), observing an eclipse near Göteborg, is the first to report prominences visible to the unaided eye; he attributes them to the Moon.

May 13, 1733 The first person who makes mention of earthshine during totality is Bigerus Vassenius the Swedish astronomer. In the account of that eclipse which he transmitted to the royal Society, he asserts that with the telescope of 21 feet focal length, he perceived several of the principal spots on the moon during the total obscuration. Ferrer also states, that during the total eclipse of 1806, the irregularities of the moon's surface were plainly discernible. (ref. History of Physical Astronomy).

May 14, 1230 "On the 14th May, which was the Tuesday in Rogation Week, the unusual eclipse of the Sun took place very early in the morning, immediately after sunrise; and it became so dark that the labourers, who had commenced their morning's work, were obliged to leave it, and returned again to their beds to sleep; but in about an hour's time, to the astonishment of many, the Sun regained its usual brightness." Refers to the total solar eclipse of 14 May 1230. From: Rogerus de Wendover, Flores Historiarum, vol. ii. p.235. Ref. FRS 1997, 425.

May 14, 1973 Launch of Skylab, American spaceship. Got 3 times visitors of each time 3 astronauts. Research of the sun.

May 14, 1991 Minor Planet 5381) Sekhmet 1991 JY. Discovered 1991 May 14 by C. S. Shoemaker at Palomar. The daughter of the Egyptian god Ra and wife of Ptah {see planets (2100) and (5011), respectively}, Sekhmet was a lion-headed sun goddess. Her role was that as defender of the divine order, not as creator of it. Her title was the "Mighty One", and she was a fierce goddess of war and strife and bringer of destruction to the enemies of Ra. She was considered the Eye of Ra, representing the scorching, destructive power of the sun. (M 24917) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

May 15, 1836 Francis Baily (1774-1844) UK, during an annular eclipse in Scotland, calls attention to the brief bright beads of light that appear close to totality as the Sun's disk is blocked except for the sunlight streaming through lunar valleys along the limb. This phenomenon becomes known as Baily's Beads.

May 15, 1921 First record of Aurora Borealis observation during day time? Aurora have been seen in New Zealand and surrounding islands. September 18, 1941, in the north, Michigan, Aurora Borealis have been reordered during daytime. (ref. SaT 3/1954 and 12/1953)

SECalendar

May 17, 1836 Sir Joseph Norman Lockyer (1836-1920), British physicist and astronomer was born at Rugby on May, 17th 1836 to Mr. Joseph Hooley Lockyer, a lecturer on scientific subjects at Rugby School and his wife Anne Norman. Sir Joseph Norman Lockyer (1836-1920) founded the magazine Nature in 1869. Observed the sun and discovered one unknown line in the spectra: helium. Observed 8 total solar eclipses.

May 17, 1882 A comet is discovered and photographed by Sir Arthur Schuster (1851-1934), Germany/UK, during an eclipse in Egypt: first time a comet discovered in this way has been photographed. The Total Solar Eclipse had been observed by Sir Joseph Norman Lockyer (1836-1920), Ranard and Schuster from England, Tacchini from Italy, Trépied, Thollon and Puiseux from France. Observation from Sohag at the Nile.

May 18, -0602 (603 Bc) ". . . there was war between the Lydians and the Medes five years. . . . They were still warring with equal success, when it chanced, at an encounter which happened in the sixth year, that during the battle the day turned to night. Thales of Miletus had foretold this loss of daylight to the Ionians, fixing it within the year in which the change did indeed happen. So when the Lydians and Medes saw the day turned to night, they ceased from fighting, and both were the more zealous to make peace." Probably refers to the total solar eclipse of 28 May 585 BC in Asia Minor. Herodotus, (c485-c420 BC) History I, 74. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 242. Also in Greek Astronomy by Heath, and in Total Eclipses of the Sun, by Zirker, and referred to in The Fontana History of Astronomy and Cosmology by North. The Encyclopaedia Britannica CD 98 says that this eclipse must have been predicted by means of the Saros and the eclipse of 18 May 603 BC. Ref FE 01/01

May 18, 1901 Merapi 536: Minor planet discovered 1904 May 11 by G. H. Peters at Washington. Named after a mountain in west central Sumatra, site of the U.S. Naval Obs and other expeditions to the Solar Eclipse of May 18, 1901. It gives off smoke more or less continuously and the name means "with fire". The discoverer was a member of the Eclipse expedition. Ref. VK 6/97

May 18, 1901 Rainbow observed during the total solar eclipse on Mauritius. Early in the morning the eclipse was accompanied by a rainbow. It was unearthly, containing a bright pink line, a spectrum of the sun's chromosphere. (ref. The Understanding of eclipses, Ottewell, 1991)

May 19, 1985 Dr. Rudolf Gulyaev, once made attempt to carry out photographic observation of the partial solar eclipse below the horizon (May 19, 1985). He put the task to estimate how much the sky brightness at the horizon is reduced during the eclipse occurring under the horizon. Maximum eclipse magnitude was about 0.8 by the Sun altitude of minus 3 degrees. The observations were made at elevation more than 2000 meters above the sea level (Mondy, near Irkutsk, Siberia). Regretfully, the sky was cloudy above the horizon, however there were small gaps between the clouds. Visually, it seemed that the sky above the horizon (towards the Sun) was more dark than at zenith on the contrary to normal conditions prior the sunrise. (ref. personal mail 7/98)

May 20, 1903 Minor planet (510) Mabella Discovered 1903 May 20 by R. S. Dugan at Heidelberg. Named by the discoverer in honor of Mabel Loomis Todd, daughter of the mathematician and astronomer Elias Loomis. She was the wife of David P. Todd {see planet (511)}, the discoverer's professor of astronomy at Amherst College. (H 55) See the remark for planet (497). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. Her books about eclipses are well known.

May 20, 1947 George Van Biesbroeck did observe a comet the day of the total solar eclipse of May 20, 1947. The comet was of magnitude 4 to 5. Several sources do mention as he observed this comet during the eclipse. This is wrong. He observed the comet on the morning of eclipse day, before dawn.



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May 22, 0133 Solar eclipse which is the nearest with Whitsunday (25 May 133). A solar eclipse can never be on Whitsunday. Easter is on a Sunday, 21 days after full moon. Whitsunday is 49 days after Easter. The age of the moon can only be between 5 to 11 days, or short before first quarter of short before full moon. On Whitsunday, or on Easter there will never be a solar eclipse. Whitsunday of 133 is only 3 days after new moon, or the solar eclipse of 22 May 133.

May 22, 1724 Giacomo Filippo Maraldi (Italy/France) concludes that the corona is part of the Sun because the Moon traverses the corona during an eclipse.

May 23, 1221 "On the first day of the fifth month (May 23), at noon, the Sun was eclipsed and it was total. All the stars were therefore seen. A short while later the brightness returned. At that time we were on the southern bank of the river. The eclipse (began) at the south-west and (the Sun) reappeared from the north-east. At that place it is cool in the morning and warm in the evening; there are many yellow flowers among the grass. The river flows to the north-east. On both banks there are many tall willows. The Mongols use them to make their tents. [Later] (Ch'ang-ch'un) asked (an astronomer) about the solar eclipse on the first day of the month (May 23). The man replied: 'Here the Sun was eclipsed up to 7 fen (6/10) at the hour of ch'en (7-9 h)'. The Master continued, 'When we were by the Lu-chu Ho (Kerulen River), during the hour wu (11-13 h) the Sun was seen totally eclipsed and also south-west of Chin-shan the people there said that the eclipse occurred at the hour szu (9-11 h) and reached 7 fen. At each of these three places it was seen differently. According to the commentary on the Ch'un-ch'iu by K'ung Ying-ta, when the body (of the Moon) covers the Sun, then there will be a solar eclipse. Now I presume that we must have been directly beneath it; hence we observed the eclipse to be total. On the other hand, those people on the sides (of the shadow) were further away and hence (their view) gradually became different. This is similar to screening a lamp with a fan. In the shadow of the fan there is no light or brightness. Further away from the sides (of the fan) then the light of the lamp gradually becomes greater.'" Refers to a total solar eclipse of 23 May 1221. From: Ch'ang-ch'un Chen-jen Tao-ts'ang('The Journey of the Adept Ch'ang-ch'un to the West'). Ref. FRS 1997, page 254.

May 25, 1267 "At that time the Moon obscured the Sun when it was in the 4th part (degree) of Gemini, at the 3rd hour before midday on the 25th day of May in the year 6775 (AD 1267). It was a total eclipse of about 12 digits or points. Also, such darkness arose over the Earth at the time of mid-eclipse that many stars appeared. No doubt this portended the very great and destructive calamities which were soon to be vented on the Romans by the Turks." Refers to a solar eclipse in Constantinople of 25 May 1267. From: Nicephori Gregorae Byzantinae Historiae. Ref. FRS 1997, page 404.

May 25, 2142 Next total solar eclipse in Ostend, Belgium. The last total solar eclipse took place more than 11 centuries ago, 29 September 878. But only 9 years later, on 14 June 2151, there will be another one. Ref. JM 9/99.

May 27, -0668 (669 BC) "If the Sun at its rising is like a crescent and wears a crown like the Moon: the king will capture his enemy's land; evil will leave the land, and (the land) will experience good . . ." Refers to a solar eclipse of 27 May 669 BC. Rasil the older, Babylonian scribe to the king. FRS 1997, page 125.

May 28, -0584 (585 BC) ". . . there was war between the Lydians and the Medes five years. . . They were still warring with equal success, when it chanced, at an encounter which happened in the sixth year, that during the battle the day turned to night. Thales of Miletus had foretold this loss of daylight to the Ionians, fixing it within the year in which the change did indeed happen. So when the Lydians and Medes saw the day turned to night, they ceased from fighting, and both were the more zealous to make peace." Probably refers to the total solar eclipse of 28 May 585 BC in Asia Minor. Herodotus, (c485-c420 BC) History I, 74. Ref. FRS 1997, page 242. The Encyclopaedia Britannica CD 98 says that this eclipse must have been predicted by means of the Saros and the eclipse of 18 May 603 BC.

May 28, -0584 (585 BC) A total eclipse in the midst of a battle between the Lydians and Medes scares both sides; hostilities are suspended, according to the Greek historian Herodotus (several other dates are possible).

May 28, -0584 (585 BC) The first known prediction was made by the Greek philosopher Thales, who forecast the



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eclipse of May 28, 585 BC (by year, day, place, time?). This occurred at sunset in the Mediterranean area, and is said to have put an end to a battle between the forces of King Alyattes of the Lydians and King Cyaxares of the Medes. It was in the midst of their battle and scared both sides. Ref. ENB013

May 28, 1900 ". . . the semi-darkness, for there was no real blackness, came on suddenly, and during totality, computed to last 1m 28s., everything terrestrial took on a cold iron hue, altogether different from the gloom of evening. The distant town and more distant mountains were almost blotted out from view, whilst in the heavens above round the moon's black disk, as if by the touch of a magician's wand, there flashed out the corona in grandeur of form and of pearly whiteness. Mercury, too, in close proximity, shone with the brilliance of a miniature sun, and enveloping the whole was a halo of soft white light; a spectacle whose unique beauty words fail utterly to describe." Refers to a total solar eclipse at Naval-moral, Spain, of 28 May 1900. From: T Weir, a member of the British Astronomical Association eclipse expedition. Ref JH and RT Chasing the Shadow.

May 28, 1900 Total Solar eclipse where Mercury is very close or touching the corona or only 7 radii from the eclipsed sun. For a Mercury corona transit you have to wait till 3269 and 3853. (ref. ENB 9/1998)

May 28, 2291 Regarding the reoccurrence of eclipses observable from the same location on a 300 year cycle, but looking in to this, one finds that eclipses 6 saros numbers higher, and 6 to 7 series numbers higher are frequently visible at the same location. One might be total and the others partial, but still visible from the same location. The path of the 2291 May 28 total eclipse of saros 142 nearly duplicates that of 1991 July 11 saros 136 eclipse over the Baja and mainland Mexico. More interesting is the fact that it too will be a Great eclipse in that it will be more than 6 minutes in duration. DB 09/01

May 29, 1919 Albert Einstein (1879-1955) predicted that light passing the Sun would be bent a certain amount by the object's gravitational field. The Solar Eclipse of this date gave the light from the stars in Hyades were bent by the gravity of the Sun according to Einstein's theory. Thus Einstein was propelled into permanent and worldwide celebrity. Prediction of Einstein confirmed by Eddington, Cottingham, Crommelin and Davidson.

May 29, 1919 Arthur S. Eddington (UK) and Co-workers, (Cottingham, Crommelin and Davidson) observing a total solar eclipse from Principe, an island W of Africa and Sobral, NE coast of Brazil, confirm then bending of starlight by gravity as predicted by Einstein in his general theory of relativity. Pictures of the stars near the sun compared with star pictures months later.

May 30, 1903 Minor planet (511) Davida Discovered 1903 May 30 by R. S. Dugan at Heidelberg. Named by the discoverer in honor of David P. Todd (1855-1939), professor of astronomy and director of the Amherst College Observatory (1881-1920). (H 55) See the remark for planet (497). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. David Todd was the husband of Mabel Todd, who wrote books about solar eclipses. David also draw a painting of a solar eclipse.

May 31, 1921 Death of John Herschel. During the eclipse of 18 August 1868 from the Red Sea through India to Malaysia and New Guinea, prominences are first studied with spectroscopes and shown to be composed primarily of hydrogen by James Francis Tennant (1829-1915), UK, John Herschel (1837-1921, UK - son of Sir John Frederick William Herschel 1792-1871, grandson of Sir William Herschel 1738-1822), Jules Pierre Jules Cesar Janssen (1824-1907, France), George Rayet (France), and Norman Pogson (UK/India). (Ref Rc 1999)

May 31, 2003 Some central eclipses are so extreme, so they do not have a northern or southern limit. An example is the annular eclipse of 31 May 2003.

See as well <http://www.j.w.edmonds.btinternet.co.uk> for the complete SECalendar.

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



SECalendar

SECalendar April - Titanic eclipse

From : Evan Zucker <ez@AbacusTotality.com> To : SOLARECLIPSES@AULA.COM Date : Wed, 03 Apr 2002

April 17, 1912 Previous central solar eclipse in Belgium, prior to 1999. This eclipse of April 17, 1912 was annular (nearly total) in Belgium. The line of centrality went just west of Paris. The weather in Paris and London (and also surrounding areas) was absolutely perfect. This may have been, in 1912, the most observed eclipse in history. In a major Paris newspaper, an observer likened one phase of the eclipse to <an engagement ring>. Since an engagement ring traditionally has diamonds, unless anyone can find an earlier reference, this is the very first eclipse at which what we now know as Baily's Beads were liked to <diamonds>. Ref Bob Morris 04/01 SEML

This near-total annular eclipse was probably a welcome distraction from the news that had broken just two days before: the Titanic sank early on the morning of April 15, 1912. -- EVAN

From : Bob Morris <morris@sce.carleton.ca>

Yes, I have written in articles which appeared in the Ottawa Citizen in 1998 and 1999 that the eclipse displaced Titanic from the news somewhat on April 17.

One example: on April 16, Trafalgar Square was full of people seeking news from nearby Oceanic House, headquarters of White Star Line.

The next day, Trafalgar Square (in fact most open areas of London and Paris) was full of eclipse observers. Pictures of sea captains in London observing the partial phases through sextants appeared in one newspaper!

I argued that the news of the upcoming eclipse (in the Times, and in the Nautical Almanac, delivered on board Titanic a year before the eclipse) should have made the Captain especially aware that he would have no moon in the evening sky for the week of the voyage given that he sailed April 10.

"No moon" to illuminate hazardous icebergs was cited by Lt. Lightoller at the hearings as the prime cause of the sinking. (Well, the start of a chain of events which lead to the sinking.)

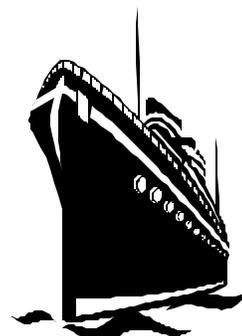
In fact, the Broadway musical Titanic contains a song "No moon"! If Patrick permits, I could post the lyrics to this song.
Bob Morris

From : Michael Gill <eclipsechaser@yahoo.com>

Bob, Patrick and Joanne have the lyrics listed (from your message to the SEML) on the SENL for May 2001, Vol.6, Issue 5, Page 9: <http://sunearth.gsfc.nasa.gov/eclipse/SENL/SENL200105A.pdf> Michael Gill

From : Bob Morris <morris@sce.carleton.ca>

No moon
No wind
Nothing to spy things by
No wave
No swell
No line where sea meets sky
Stillness
Darkness
Can't see a thing says I
No reflection
Not a shadow



(Continued on page 9)

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Not a glint of light
Meets the eye...

And we go sailing
Sailing
Ever westward on the sea
We go sailing
Ever on
Go we...



>From "Titanic" A New Musical, by Peter Stone and Maury Yeston.

From : Bob Morris <morris@sce.carleton.ca>

Those familiar with my postings will remember that I have written two articles (Ottawa Citizen) about the April 17, 1912 eclipse, which occurred only 2 days after the Titanic disaster.

I have also written about the 1925 eclipse in New York, and the 1961 Italy eclipse, which can be seen in the film Barabba, which is just now out on DVD.

During these forays into "historical forensics" (looking at original accounts in contemporary newspapers), I made an amazing discovery: I have shown that the two reasons given in every historical account, and repeated in the film, for Titanic speeding through a field of icebergs are nonsense.

Namely that the Captain wanted to break her sister ship Olympic's crossing record, and he also wanted to make a big newspaper splash by arriving in New York on Tuesday night as opposed to the scheduled Wednesday morning.

I have written a 900 word article on this and it may be published on the 90th anniversary of Titanic next week (April 15). I am still in negotiation on this.

Whether or not it gets published, I would like to post on this group on April 15, with Patrick's permission, for two reasons:

- 1) I would like to expose its arguments to this learned group so that they might tear it apart, or agree, whichever is the case.
- 2) More important, given that I have demolished the reasons offered for the Titanic speeding, I also will offer my new conclusion for its speeding, which *is* related to the April 17, 1912 solar eclipse!

BTW, given the observing conditions -- perfect skies in London and Paris -- and the eclipse 99.9% total in Paris and 92% total in London, there is little doubt that this was the first urban solar eclipse in history.

In fact, more people probably observed it than observed the 1925 New York eclipse.

The whole population of England and western Europe were watching.

If one checks the National Geographic 1888-1988 index, one finds NG reports on eclipses in weird and wonderful exotic places during the first half of the 20th century, but no account of an eclipse observed by millions in the 2 largest cities of the western world at the turn of the century! Bob Morris

From : Rayabrooks2@cs.com

Bob Morris <morris@sce.carleton.ca> wrote: In fact, the Broadway musical Titanic contains a song "No moon"!

(Continued on page 10)

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Regarding no moon for Titanic:

I made this point when the movie came out (then a few months later in Aruba for the TSE we happened to be near the California which sank on the island's north end...that was the ship nearest the Titanic that ignored the new white type of flare)

Difficulty in seeing an iceberg :

THE SKY BRIGHTNESS IS ROUGHLY EQUAL TO TEN STARS THE BRIGHTNESS OF SIRIUS WHICH IS ABOUT MAG -4.0 OR 4000 TIMES DIMMER THAN A FULL MOON

VENUS IS ABOUT MAG -4.0 So having Venus in sky doubles sky brightness Having Jupiter in sky increases sky brightness 1.36 times, same for Mars when it is brightest Saturn increases brightness only 1.03 times Winter sky is probably brighter than summer sky with Sirius, Capella, Procyon etc

Jupiter was only about 5 degrees above the horizon in front of the ship, Mars about twice that high and behind but only mag +1.3, so no real contribution by Mars. And of course no new moon. When you read how many ice warnings they had, it was pure wrecklessness. They should have done what everyone else did that night and normally did back then during a new moon with ice.....YOU STOP TILL DAWN. Hydrogen and stupidity were apparently abundant in the cosmos in 1912. Ray Brooks

From : Evan Zucker <ez@AbacusTotality.com>

At 03:11 PM 4/4/2002, Ray wrote: Hydrogen and stupidity were apparently abundant in the cosmos in 1912.

Alas, I'm afraid they both still are in the 21st century. -- EVAN

From : Jay.M.Pasachoff@williams.edu

I ran across the following site that lists songs about the Moon: <http://www.moonlightsys.com/themoon/song.html> Jay Pasachoff

From : Michael Gill <eclipsechaser@yahoo.com>

Hi Ray, I believe there is some confusion between the ship off the coast of Aruba ('California') and the ship of 'Titanic' infamy ('Californian').

I gather the 'Californian' (aka 'Mystery Ship') of Titanic fame was torpedoed off Cape Matapan, Greece in World War I.

I believe the vessel in Aruban waters went down before 1912 and therefore could not have anything to do with the Titanic sinking. Clear skies, Michael Gill

From : Rayabrooks2@cs.com

Bob Morris has definitely piqued my interest with the Titanic speeding being related to the imminent eclipse 2 days later. I am looking forward to his article next week.

Curious this discussion comes now because the subject eclipse is part of saros 137 which many of us hope to see June 10 in Puerto Vallarta. Interesting Saros, ten totals, then 6 hybrids, 4 annulars than back to 3 hybrids (unusual) then 32 annulars, PV is fourth in this last batch of 32. The 1912 eclipse was annular for approx 80 percent of its path. It transitioned to total near the Canary Islands and back to annular after crossing Spain, Bay of Biscay and entering France. No wonder people associated eclipses with impending doom.

(Continued on page 11)

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Pat, I will be brief since this is non-eclipsical. The iceberg was only 4 to 10 times more massive than the Titanic. Had they plowed headlong directly into the berg rather than glance off, and we assume all the energy had gone into damaging the ship and no energy into damaging the iceberg, it would have been equivalent to picking up the ship by the stern and dropping it on its bow from a height of only 18 to 20 feet in terms of how much damage would have occurred to the bow. Depending on how one assumes failure regimes of the material and configuration, actual deformation energy loss by the ice and wave energy, not much of the bow would have been damaged. It would not have come anywhere near close to sinking from hull damage (assuming they would have again ordered the watertight compartments closed). The resulting combined mass would have a speed of 4 to 7 fps, depending on assumed berg mass.

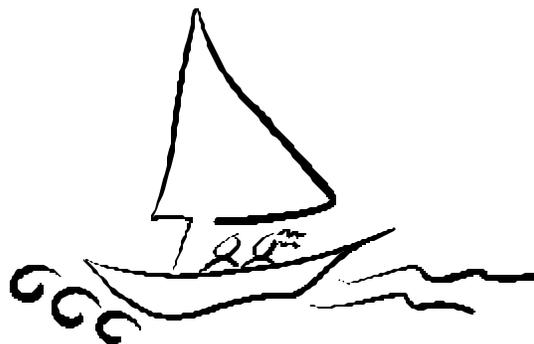
In fact, two days earlier the French liner, Niagara, did exactly that, direct impact at nearly the same speed in the very same icefield and made it to port without any loss of life. Ray Brooks

From : "Joel M. Moskowitz, M.D." <moskowi@attglobal.net>

As appropriate to our passion, my favorite is "Moonshadow" by Cat Stevens.

From : Pierre Arpin <parpin@videotron.ca>

An other one : Moon Over Naples, an instrumental by Burt Kampfert
I know several moon songs in french too.



From : Pierre Arpin <parpin@videotron.ca>

A traditional one : Au Clair de la Lune An other one : Le Soleil a rendez-vous avec la Lune An old one : Un clair de lune a Maubeuge (also a movie) La Lune d'automne from Michel Rivard, a local interpret. The lyrics are on this page : <http://site.ifrance.com/leparolier/textes/lalunedautomne.htm>

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

This thread reminds me of 30 May 1984. As I was driving around the Carolinas, a Charlotte radio station, among others, was devoting the whole day to sun and moon songs. --Robert B Slobins

From : "Cliff Turk" <cliffturk@yebo.co.za>

Thanks Pierre, I know "Au Claire de la Lune," but this is the first I have heard of "Le Soleil a rendez-vous avec la Lune" which sounds very topical for an eclipse list. I am sure Patrick will be agreeable to the words of this one being passed on to all of us. Cliff Turk

From : Alyn Kelley <alyn@well.com>

I had the pleasure of helping to write (and sing) a rather lovely song about eclipses: http://artists.mp3s.com/artist_song/1849/1849468.html "Porch Swing Torch Song", by Drew Pearce and The Scattering Blue, Alyn

From : jdighaye@t-online.de (Jean-Luc L. J. DIGHAYE)

Hi, I'll be brief since this point is not directly related to solar eclipses. Ray Brooks's estimate of sky brightness seems very low. Mattila et al. (1) made a compilation of sky brightness measurements (airglow only) at high altitude observatories. Average is 21.6 mag per square arcsec in the V-band which translates to -7.0 mag for a sky hemisphere. Starlight contribution may reach -6 mag. Add planets, zodiacal light (or at least gegenschein), diffuse galactic light and cosmic light and you get the typical night sky luminance of 0.001 candela per square meter. That's about 100 times dimmer than moonlight, not 4000 times. (Not enough, yet, to safely go full steam ahead ;-)) (1) Astron. Astrophys. Suppl. Ser. 119,

(Continued on page 12)

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153-170 (1996) P.S.: if you have other estimates of if you want to discuss further please contact me off-forum. Thanks, Jean-Luc (jdighaye@eurastro.de)

> THE SKY BRIGHTNESS IS ROUGHLY EQUAL TO TEN STARS THE BRIGHTNESS OF SIRIUS WHICH IS ABOUT MAG -4.0 OR 4000 TIMES DIMMER THAN A FULL MOON VENUS IS ABOUT MAG -4.0 So having Venus in sky doubles sky brightness Having Jupiter in sky increases sky brightness 1.36 times, same for Mars when it is brightest Saturn increases brightness only 1.03 times Winter sky is probably brighter than summer sky with Sirius, Capella, Procyon etc

From : Rayabrooks2@cs.com

Yes, I should have been more clear about the brightness figures..this was only for light from stars down to magnitude +10 and does not include natural sky glow from zodiacal light, nebula, Milky Way etc.

I have often shown others how Venus and Jupiter cast a definite shadow on just your hand at a very dark site and the Milky Way can also cast one if you use a white background. I was not adding the Milky Way because I am familiar that at that latitude & time of year/night the Milky Way is basically down, all around the horizon...favorite time to seek gegenschein (which I am successful at only about 50% of the time...I don't even bother trying at the "wrong" time)

So again, not all nights are created equal in terms of darkness. An astronomer could have been able to advise the captain this was an extra dark night compared to others. Ray Brooks

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

For those going to the sunrise point of a total solar eclipse, may I suggest "Dawn", by Frankie Valli and The Four Seasons. The first line is "Dawn, go away I'm no good for you". --Robert B Slobins

From : Jay.M.Pasachoff@williams.edu

The Harvard composer Bernard Rands has a set of pieces called "Song of the Sun," "Song of the Moon," and "Song of the Eclipse" (the titles are actually in Italian). A CD is available. Jay Pasachoff

From : Dorjenyma@aol.com

Le Soleil a rendez-vous avec la Lune is a song of Charles Trenet, a famous french singer who passed away last year. The lyrics are quite interesting although it doesn't really speaks about an eclipse. I will try to send it to the list very soon. Khristophe

From : Pierre Arpin <parpin@videotron.ca>

Le Soleil a rendez-vous avec la Lune is a song of Charles Trenet, a famous french singer who passed away last year. The lyrics are quite interesting although it doesn't really speaks about an eclipse. I will try to send it to the list very soon. Khristophe

Here are the lyrics I found on a web site :

Le soleil et la lune Par: Trenet Charles (Charles Trenet) 1939 (WMA)

1. Sur le toit de l'hôtel où je vis avec toi

Quand j'attends ta venue mon amie
Que la nuit fait chanter plus fort et mieux que moi
Tous les chats tous les chat tous les chats
Que dit-on sur les toits que répètent les voix



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De ces chats de ces chats qui s'ennuient
Des chansons que je sais que je traduis pour toi
Les voici les voici les voilà...
{Refrain:}
Le soleil a rendez-vous avec la lune
Mais la lune n'est pas là et le soleil l'attend
Ici-bas souvent chacun pour sa chacune
Chacun doit en faire autant
La lune est là, la lune est là
La lune est là, mais le soleil ne la voit pas
Pour la trouver il faut la nuit
Il faut la nuit mais le soleil ne le sait pas et toujours luit
Le soleil a rendez-vous avec la lune
Mais la lune n'est pas là et le soleil l'attend
Papa dit qu'il a vu ça lui...

2. Des savants avertis par la pluie et le vent
Annonçaient un jour la fin du monde
Les journaux commentaient en termes émouvants
Les avis les aveux des savants
Bien des gens affolés demandaient aux agents
Si le monde était pris dans la ronde
C'est alors que docteurs savants et professeurs
Entonnèrent subito tous en chœur
{Refrain}

3. Philosophes écoutez cette phrase est pour vous
Le bonheur est un astre volage
Qui s'enfuit à l'appel de bien des rendez-vous
Il s'efface il se meurt devant nous
Quand on croit qu'il est loin il est là tout près de vous



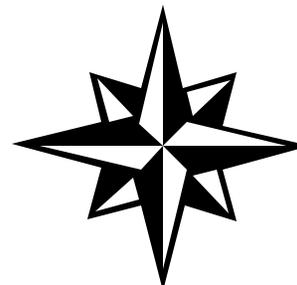
Il voyage il voyage il voyage
Puis il part il revient il s'en va n'importe où
Cherchez-le il est un peu partout...

From : Jay.M.Pasachoff@williams.edu

Bernard Rands's piece "Canti dell'eclisse"

was recorded by the Philadelphia Orchestra, New World Records 80392-2. (701 Seventh Ave, New York, NY 10036, phone 1 212 302 0460. It is 30 min 22 sec long.

His Canti del Sole and Canti Lunatici was recorded on CRI CD 591. Jay Pasachoff



SEDates

SEDates - PPARC Advanced Summer School in Solar Astrophysics

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com> To : SOLARECLIPSES@AULA.COM Date : Thu, 18 Apr

PPARC Advanced Summer School in Solar Astrophysics

>From Robert William Walsh <rwwalsh@uclan.ac.uk> 09 Apr 2002

A NEW VIEW OF THE SUN: THEORY AND OBSERVATIONS

A PPARC Advanced Summer School in Solar Astrophysics at the Centre for Astrophysics, University of Central Lancashire, Preston, Lancashire, UK

Monday 2nd to Friday 6th September 2002

Web Address: <http://www.uclan.ac.uk/advsumsch> Email : AdvSumSch@uclan.ac.uk

Aim of Summer School

We are in an unprecedented era in solar physics research at this present time. Several space-based observatories (YOHKOH, SOHO and TRACE and now HESSI) as well as sophisticated computer modelling continue to revolutionise our understanding of our closest star. In combining these high resolution observations with comprehensive theoretical studies, it is now possible to provide an unparalleled insight into the underlying mechanisms operating from the solar interior through to the solar atmosphere and out into the solar wind.

The school is aimed primarily at PhD students entering second year or beyond; however, it will also be useful for young post-docs or those changing discipline. It has the objective of bringing together these complementary avenues of research to educate observers about fundamental theoretical concepts as well as inform theorists about the latest solar observations.

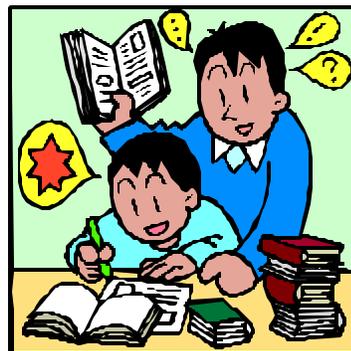
Funding

Limited funding is available for PPARC supported delegates on a first come basis. Details of costs for non-PPARC delegates (300 UK pounds, or 500 Euros, which includes all course material, accommodation and food) can be found at the website along with all necessary registration information.

Topics Covered

A detailed lecture programme is near completion. Topics to be covered include lectures on:

- * Introduction to Solar Magnetohydrodynamics
- * Coronal Structures through the Solar Cycle: Observations
- * Coronal Structures through the Solar Cycle: Theory
- * Helioseismology
- * MHD Waves
- * The Enigma of Coronal Heating: Theory
- * The Enigma of Coronal Heating: Observations
- * Magnetoconvection and the Solar Dynamo
- * Advances in Solar Spectroscopy
- * Coronal Holes and the Solar Wind
- * Coronal Mass Ejections
- * Solar Flares
- * Future Missions in Solar Astrophysics



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Participants are encouraged to submit titles for short 10-15 minutes presentations to be given on one day of the summer school.

Further information can be found at the school website <http://www.uclan.ac.uk/advsumsch>

We look forward to welcoming you to Preston.

The Local Organising Committee: Robert Walsh (Course Director), Barbara Bromage, Zaharenia Romeou, Gordon Bromage

SEDates - The CUREA summer program at Mt. Wilson Observatory

From Mike Simmons Date 18 March 2002

I thought there might be some SEML members with students that might be interested in the following summer program. Pass it on or post it as you like. SEML members feel free to write to me at eclipse99@mwoa.org for information if you wish. I've been on the staff for this program the past two years and will probably be there again this year.

The CUREA summer program at Mt. Wilson Observatory

The Consortium for Undergraduate Research and Education in Astronomy (CUREA) will repeat its highly successful program at Mount Wilson Observatory for the 13th time, from August 12 - 24, 2002. The program is aimed at undergraduate physics and astronomy majors, with junior or senior standing, who are considering a career in science or science teaching. Staff and students will pursue a short on-site course in astrophysics and observational astronomy using facilities at Mount Wilson, mainly the Snow Horizontal Solar Telescope, its associated high-resolution spectrograph, a unique atomic-beam solar oscillation spectrometer, a 16-inch Meade LX200 Schmidt-Cassegrain telescope with a CCD camera and SBIG stellar spectrograph, and the historic 60-inch reflector, used by Harlowe Shapley to discover the size of the Milky Way Galaxy.

Mount Wilson Observatory is the home of a group of telescopes that have, for many decades, made important contributions to astronomy. The Snow Telescope was the first major solar telescope in the world and the first telescope to be installed on Mount Wilson when G. E. Hale founded the Observatory. The 100-inch telescope was used by Edwin Hubble to discover the expansion of the Universe. The 60-inch telescope for many years explored how other stars that look like the sun also behave like the sun in its 22-year-long magnetic activity cycle. The 150-foot and 60-foot solar tower telescopes are still in daily use to study the magnetic field and atmospheric motions of the Sun. Following the early tradition of Michelson and interferometry at Mount Wilson, a group of scientists from the University of California at Berkeley has built an interferometer for very high angular resolution studies of bright stars at infrared wavelengths, and the Center for High Angular Resolution Astronomy interferometer is currently being built at Mt. Wilson.

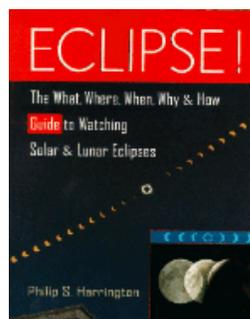
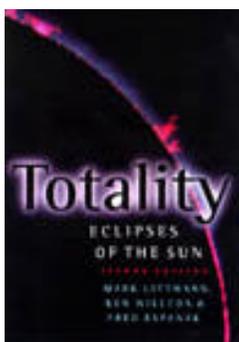
The CUREA program will emphasize how our present understanding of the Sun has been achieved and how it relates to the astrophysics of all stars. The emphasis will be on hands-on experience with the horizontal solar telescope and the other instruments. Attention will be devoted to many observable solar phenomena, such as sunspots, granulation, limb darkening, important spectral lines, Zeeman splitting of solar lines, the measurement of solar rotation using the Doppler shift of a spectral line, and observation of the solar 5-minute oscillations. Nighttime observing will extend to celestial objects such as the Moon, planets, variable stars, clusters, galaxies and other deep-sky objects. Students will learn how to process CCD images and spectra from the 16" telescope. Discussions led by staff members will deal with topics in astrophysics as well as the design and use of the available telescopes and their accessories. During the second week of the program, each student will work on a special project she or he has chosen.

Additional activities will include an introduction to ongoing Mount Wilson research projects, short presentations on important contemporary and historical astronomical topics, as well as special lectures by distinguished astronomers, tours of research facilities on the mountain, and field trips to JPL, Cal Tech and Palomar Observatory. The tuition fee of

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\$1550 covers all expenses during the two weeks including room and board on the mountain. College credit through Northwestern University for the program may be available-- please inquire if you are interested in college credit.

For more information, see <http://parvati.astro.northwestern.edu/curea/> or contact: Dr. Michael Faison, Dearborn Observatory, Northwestern University, Evanston, IL 60208. E-mail: m-faison@northwestern.edu, phone: 847-491-4568. The application deadline for the 2002 program is June 1, and applications are available online at <http://parvati.astro.northwestern.edu/curea/apply.html>. Mike Simmons



SETalk


IAU Eclipse Web Sites

From Jay.M.Pasachoff@williams.edu 18 Mar 2002

I can announce the new Web site for the Program Group on Public Education at the Time of Eclipses of Commission 46 on Astronomy Education and Development of the IAU. It is <http://www.eclipses.info>. The public's attention is drawn to astronomy for a few days around the times of partial, annular, or total eclipses, and one can try to educate the public not only about eclipse viewing safety but also about a variety of astronomical topics.

The site has a link to the Web site for the IAU Working Group on Solar Eclipses at http://www.williams.edu/astronomy/iau_eclipses. These sites include links to Fred Espenak's and to other materials about observing eclipses, information for the public about eclipses and about safe viewing of them, links to solar Web sites, links to and descriptions of past expeditions, and a place for current experimenters to coordinate their plans for expeditions to future eclipses.

We may have some joint facilities available in Messina, South Africa, for the 4 December 2002 total solar eclipse and can coordinate in Ceduna, Australia, as well. Jay M. Pasachoff, Chair eclipse@williams.edu


Delta T

From : Jean Meeus <JMeeus@compuserve.com>
Date : Wed, 3 Apr 2002 04:42:14 -0500

On 2002 March 1, the value of Delta T (the difference between the uniform Dynamical Time and the Universal Time) was 64.34 seconds.

The International Earth Rotation Service (IERS) announces that no leap second will be introduced in UTC on 2002 June 30. Jean Meeus


Costa Rica report from Matthias Graner (Germany)

I have seen the annular eclipse last year in Costa Rica. I was there with my wife and our five-year-old daughter. We went to Nosara beach on eclipse day. At about noon it started to rain very heavily. Two hours later, it didn't get any better, so I decided to take our chances. We took the car and drove in the direction of Nicoya. More than one hour of dirt road and then on the paved road.

At about ten minutes before first contact, there were at least some holes in the clouds visible. We found a small road off the main road, where we could observe the phase between first and second contact for about twenty minutes. But it was getting more and more cloudy, so we hit the road again.

Around 4:00 p.m. - thirty minutes until second contact - we drove through Nosara. The road from Nosara to Liberia is in a very good condition, and I could drive somewhat faster (thank god there were no policemen in sight). My wife later told me that I did drive very fast! About 10 - 15 miles in the direction of Liberia, the weather became pretty good, and no more mountains were blocking the view of the sun. We found a small village where we could observe second and third contact in almost perfect condition (a very large hole in the clouds). People in the village were probably somewhat amused about the strange family from Germany, but they were very friendly - although neither my wife nor I do speak any Spanish. - Our daughter was more interested in playing with the local kids than looking at the sun ...

So, we were VERY VERY lucky - before sunset it started to rain again. When we came back to Nosara several hours later, we were told that there was almost no visibility at all.

PS: The town we drove through was of course NICOYA and then we took the road from Nicoya to Liberia ...



SETalk

Static Low Cloud

From : "Martin A Cragg" <martin@macragg.org.uk> To : <solareclipses@Aula.com> Date : Wed, 3 Apr 2002

Hello, I'm new to this forum so forgive me if this is old hat.

We were in Normandy (Lyons La Foret) for the August '99 eclipse and, for much of the morning, there was intermittent static low cloud cover in the valley in which we were camping. We could see the sun much of the time but, as totality approached, we realised we were going to miss it. There had been blue sky visible all morning above the valley sides and a quick calculation based on estimated cloud height of < 1000 metres and blue sky angle of 45Deg meant that we should be in the clear only 1 km to the north. We all piled into the car with minutes to go and the guess was right! It was our first total eclipse observation, so the fact that there was no time to set up the camera tripod was an advantage - we could just drink in and experience this awesome phenomenon without distraction. Those who stayed behind missed it. The moral is clear - if you can see blue sky, head for it, it may not be that far away! May you all have clear skies, Martin Cragg

From : Evan Zucker <ez@AbacusTotality.com>

> We all piled into the car with minutes to go and the guess was right!

Congratulations! That was a wise move and reflected good knowledge of trigonometry.

> It was our first total eclipse observation, so the fact that there was no time to set up the camera tripod was an advantage - we could just drink in and experience this awesome phenomenon without distraction.

You're absolutely right that was an advantage. I think the most common mistake first-timers make is to be preoccupied with photography. A few snapshots is OK, but just watching it is best. I always take a 4" telescope, but only to look through, not for photography.

> Those who stayed behind missed it. The moral is clear - if you can see blue sky, head for it, it may not be that far away!

Provided, of course, that you have transportation and that roads go in that direction (or you're on a boat). Evan H. Zucker San Diego, California

**Solar Eclipses without the Moon**

From : Rayabrooks2@cs.com To : SOLARECLIPSES@aula.com Date : Wed, 3 Apr 2002 22:16:54 EST

In Patrick's Solar Eclipse Calendar last month was the following about the Surveyor III spacecraft on the moon:

"Because the spacecraft tilted, a view of the earth was visible (which was not foreseen). The lunar eclipse of 24 April 1967 was video filmed. Surveyor III, and Jet Propulsion Lab scientists saw a beautiful scintillating ring of sunlight, refracted through the Earth's atmosphere. Very colorful and splendid. The halo was broken into beads."

For the Nov 3 1994 TSE I saw a similar apparition in Bolivia but using Venus not the Earth. Here is a copy of my report to Fred Espenak a week after the eclipse (which we never published.)

November 12 1994

Dear Fred: I was surprised that no one else was making a big deal about Venus being so close for this eclipse (about 5 degrees separation). The TSE was only 14 hours after Venus inferior conjunction. Some canned astronomy software programs illustrate Venus "thinning out" to invisibility when it comes within 6 ϕ of the sun and so I planned to lock my telescope on Venus prior to second contact to "see what I might see."

Ten days before conjunction the horns of Venus seemed to elongate near the poles and I even surmised that it might appear as a semicircle on eclipse day. I briefly considered telescope photos of Venus for eclipse day but that would have eliminated time for our eyes in the telescope. At \$20 per second of viewing I was against it. What a dope!

When totality began I started screaming, "Look at Venus!! Look at Venus!!" My wife looked through the eyepiece saying, "I can't see it!". I centered the image. She looked again, "I can't see it!" She was seeing Venus but thought it was the eclipsed sun. That's almost exactly what it looked like.

The crescent of Venus had grown to a full circle of white light. It was absolutely beautiful. The one-fourth section of the circle facing away from the sun was a thinner line of white light along the limb but just as bright as the three-quarter circle; it was lined outward with a very, very bright thin red line like an horizon after sunset. (5 ϕ is equivalent to 20 minutes time after sunset here on Earth.) There were also speckles of red where the 1/4 circle met the 3/4 circle

(Continued on page 19)

SETalk

and some isolated speckles on the outside edge the 3/4 circle. It was vivid. It was definitely not chromatic aberration. It was, I surmise, what Earth would appear from the moon during a lunar eclipse if it were 100% cloud covered.

There was a halo around all of this from approx. 1 Venus radius out caused by the high thin cirrus above us. Caught up in the freneticism of the eclipse I defaulted to viewing the sun for the second half of totality. In the two weeks following the eclipse I have occasional pangs of regret for not changing oculars and spending the rest of the eclipse on Venus. It was that striking.

The magnification was 40X in a Meade 2045. Venus was 61.7" actual and appeared as 41' in the eyepiece or about 30% larger than the moon naked eye. I only hope someone has good magnified photos of this that they send to the astronomy publications.

(No one did have magnified views of it. I looked at TSE's for the next 30 years, none have an inferior Venus that close to the sun. Mar 30 2033 in Alaska has Venus about 20 degrees separation. It was as if I was looking at the solar system embodied within the classic posters in the 1950's showing all the planets circling the sun. It has ranked with a TSE in life value for me.) Ray Brooks

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com>

I observed that eclipse as well from the Alti Plano in Bolivia (Sevaruyo) but did not report the same observation. Because Venus was so incredible close, I took the time during totality, spotting it in the C90. I saw Venus as a big, but very small crescent. I even took a picture of it in focal length. Maybe the magnification I used was not sufficient? Best regards, Patrick

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

I was at that eclipse and photographed the Venus/Eclipse conjunction together with Jupiter. However, I edited out Jupiter as the composition was not strong. The result is a strip image with the eclipse on one side and Venus 5 degrees away on the other.

I am sure that most of the observers with me (Travelbug) were concentrating on the eclipse rather than Venus. At Altiplano altitudes and on the time schedule most of the people had, setting up a telescope would not have been such a good idea.

Also, with Venus 5 degrees from the sun, it is possible to make a daylight observation with proper precautions. I recall doing this with an 8" Alvan Clark telescope in high

school; we had the dome cover up the sun. --Robert B Slobins

From : Rayabrooks2@cs.com

Robert B Slobins wrote: Also, with Venus 5 degrees from the sun, it is possible to make a daylight observation with proper precautions.

June 13 1996 at 11am local time I saw Venus 4.6 degrees from the sun in my 4 inch Meade under extremely steady and dark blue skies. The "elongation of the horns" about Venus exceeding 180 degrees of arc was quite plain. I am confident that June 2004 for the Venus transit, because there are so many more eyes with telescopes than a hundred years ago and because there should be some excellent skies in various places around the globe a few days before and after the transit, there should be some good photos near sunrise/sunset during that weeklong timeframe that will show 3/4 circles of light about Venus.

I am very surprised Patrick did not see it with his C90. Trying to recall 8 years ago, I would think anyone that had magnification over roughly 20x would have witnessed it. My wife and I independently sketched it after the eclipse and the renditions were essentially identical in form.

It was so pretty that I regretted days later not switching oculars mid-eclipse and zooming in more on Venus. I never thought something could distract me during a TSE.

It sort of consumed me for a few months thinking of how to see other Venus inferior passes by occulting the sun with a disc, view from outer space, mountain top, etc.

Here are some notable inferior passes near a TSE

Inferior passes near a Total Solar Eclipse
 Jul 19 1860 (11 hours earlier), TSE Jul 18 1860, sep 5.3 degrees
 Nov 2 1994 (14 hours earlier), TSE Nov 3 1994, sep 5.3 degrees
 Aug 4 2055, TSE Jul 24, separation is about 17 degrees
 May 20 2068, TSE May 31, sep 16 degrees
 Oct 04 2090, TSE Sep 23, sep 19 degrees
 May 05 2068, TSE May 14, sep 13 degrees
 Feb 20 2129, TSE Feb 18, sep 10 degrees

How can put a note in a bottle and alert future eclipse nuts of various particulars for TSE's hundreds of years from now? Ray Brooks

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com>

(Continued on page 20)

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com>

Ray wrote: I am very surprised Patrick did not see it with his C90. Trying to recall 8 years ago, I would think anyone that had magnification over roughly 20x would have witnessed it. My wife and I independently sketched it after the eclipse and the renditions were essentially identical in form.

I regret as well that I did not observe. It must have been the fact that those years I used to observe the solar eclipses through the clear flint glass finder of the Olympus OM1 camera, attached focal to the C90. I observed a few times, the same way and without problems, the surface of the moon, but must have missed the extended Venus horns due to the smaller image.

Since a few years, I am using the C90 visual only and we run a Sony Digital x25 parallel to both C90's. It leaves us maximum visual observation during the events. PP



Total eclipse image with Mercury in superior conjunction



From : "Olivier \"Klipsi\" Staiger" <klipsi@bluewin.ch> To : <SOLARECLIPSES@AULA.COM>
Date : Sat, 6 Apr 2002 07:09:54 +0200



right now Mercury is passing superior conjunction, and we can see it during the permanent total eclipse as seen from Soho's coronagraphs, Lasco C2 and C3 at <http://sohowww.nascom.nasa.gov/data/realtime-images.html> Klipsi



Toys for Heliocentrics

From : Assoc Prof J R Huddle <huddle@usna.edu> To : SOLARECLIPSES@AULA.COM Date : Wed, 3 Apr 20

1. Foveon X3 digital camera: Recent SEML traffic about protecting film from x rays reminded me that I'd read a story in the 25 March 2002 Newsweek ("The Film of Tomorrow", page 50) about a new kind of hi-resolution digital camera which, to quote, "starts the doomsday clock for traditional emulsion film". The current standard in digital cameras is a mosaic structure in which each pixel responds to only one color, red, green or blue. This structure wastes pixels; clearly, it would be better if each pixel could respond to all colors. That's what the new Foveon X3 does. Light detectors are stacked, blue on top of green on top of red, so each pixel is itself a composite of all three colors - it sounds to me like this effectively increases the resolution by a factor of three, though I'm no expert. The article goes on: "The first X3 product will be a high-end camera, but you can expect consumer models by next year. If all goes well, within two or three years, you won't consider buying a digital camera without a sticker affirming that an X3 chip is inside." Apparently, "professional-quality hybrid camera-camcorders" are in early stages of development. The article gave no hint as to how much this is going to cost.

2. Vernier Software and Technology is about to release (on 31 May 2002) new Data Pro software that will allow you to control a Vernier LabPro smart interface with a Palm PDA. I have been using the first-generation Texas Instruments (TI) CBL ("Calculator Based Laboratory") interface since 1998 to record light levels and atmospheric data - temperature, humidity, barometric pressure and CO2 - during solar eclipses. I've enjoyed the CBL since it is controlled by a TI graphing calculator, so you don't need to haul a laptop with you. LabPro represents a second generation of this type of interface, developed by Vernier in cooperation with TI. The LabPro can record data from four sensors (the old CBL can only take three) and can be controlled by a calculator, by a desktop or laptop computer, or now, by a Palm handheld computer. LabPro can also handle 30 times more data than the CBL. I use LabPros in my teaching lab, and until now, the only reason I have not used them for eclipses is that no calculator can handle as much data as LabPro can acquire. But as I understand it, you can program the LabPro with your PDA, then disconnect LabPro from PDA while LabPro takes its data. After the experiment is over, you reconnect, download the data from LabPro to PDA, view your data in graphical or spreadsheet form, and then, once you get home, download the data from the PDA to your computer for analysis and printing. This means you can take several LabPros, each with its own set of sensors,

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but you only need one PDA! Each CBL requires its own calculator, so this development represents a huge saving in both weight and volume. The LabPro costs about US\$ 220, sensors are about \$50 to \$70 each (although the CO2 sensor is \$261 and needs an external battery because it draws lots of current) the Data Pro software is \$52, including the cable, and a brand-new Palm m125 is \$200 list, or a little less on eBay. Unfortunately, versions of Data Pro for handheld computers other than Palm won't be ready for a while. Vernier's web site is www.vernier.com.

3. Thermochron. This is an instrument old-time list subscribers will remember hearing me rave about. For newer members of SEML, this is a diabolically clever instrument about 17 mm in diameter by 6 mm thick that can be used to measure temperatures during an eclipse. You connect it to a computer's serial port using a special "Blue Dot" hardware for programming and to download the data. The cleverness is that you can program the device several days before you leave home, and you don't need to take a computer with you. After programming, the device will wake up at the appointed minute, take 2048 temperature measurements, and then wait until you reconnect it to the computer and download the data. The price has gone up a little bit; they now cost US\$ 14.39 each. You also need a fob, or holder, \$ 0.92 each. You only need one set of Blue Dot Receptor and serial port adapter, total of \$ 15.00, no matter how many thermochrons you have. Bum me out, but this is Dallas Semiconductor's best seller, so they are always out of stock. The backlog is currently 12 weeks; if you want to use them in southern Africa or in Australia, you need to order them now. More info at www.ibutton.com, or e-mail me off the list at huddle@usna.edu, about Thermochrons, CBL, LabPro or ANYTHING - eclipse stuff is much more fun than work! Best regards, Jim Huddle

PS: I just finished reading a little book about Isaac Newton, in which the author refers to "Aristarchus the Heliocentric, 310-230 B.C.," which is where I got the inspiration for the name "helioECcentric".

From : Fred Bruenjes <fred@moonglow.net>

> 1. Foveon X3 digital camera: The article gave no hint as to how much this is going to cost.

It will cost around US\$3000, and be available later this year. I do see some problems with the camera. First, it's brand new technology and nobody knows what the quirks or growing pains will be. Also, the first SLR type camera will be made by Sigma and how many of us have or want Sigma-mount lenses? The camera only goes up to ISO/ASA 400, compared to 1000 or 1600 and higher in comparable cameras. The camera will use only a proprietary file format which will make it quite awkward until new software is written for it. The technology is amazing but I would recommend that folks sit out the first round of X3 cameras.

I'm in the market for a new camera and have been following the amazing developments in digital SLRs pretty closely. There are four pro/semi-pro DSLR cameras in various stages of introduction right now, see this page for a detailed comparison:

<http://www.dpreview.com/news/0202/02022309fourdslrs.asp>

These things have really come a long way, and I think that the writing is on the wall for 35mm film (for general use anyway). In a picture-quality shootout between the *previous* generation of one of these cameras and 35mm Fuji Provia 100F film, the digital camera won!

http://www.luminous-landscape.com/d30_vs_film.htm

These digital cameras have a lot to offer the eclipse chaser. Besides the boost in picture quality, you never have to worry about x-rays or incompetent photo labs. You can immediately see whether a shot was under- or over-exposed. Pictures can be electronically duplicated immediately after the eclipse as a safety precaution. You can get many hundreds of pictures on a digital film cartridge, so there is no longer a 24 or 36 exposure barrier near totality. For those of us doing digital compositing anyway, shooting in digital cuts out the need for scanning film. When shooting in RAW format, you have a "digital negative" from which you can easily tweak the exposure, white balance, sharpness, contrast or many other things after the fact. The Canon D60 (and possibly others) can output a file with a perfectly *linear* light sensitivity, which should be really nice for multi-exposure coronal composites. Not to mention the fact that digital cameras can capture up to double the dynamic range of film (so potentially only half as many exposures are needed to capture the corona from brightest to darkest). I could go on

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and on... can you tell that I'm excited?

One of the downsides is the cost of the body, which will be US\$2000 to US\$3000 in this new bunch of cameras. But if you are an avid shooter you should make up the cost in less than a year because there are no film or developing costs (and you only print the good shots). Another problem with the new digital cameras is that the sensor "film" size is smaller: instead of 24x36mm they are more like 22x15mm. This has two repercussions: 1) You get a totally free boost towards the telephoto end: a 50mm lens on one of these digital cameras has the same field of view as 75mm lens on a 35mm camera. 2) Conversely, it's really hard to do wide angle: to match a 20mm lens on a 35mm camera you would need a 14mm lens on these cameras! For eclipse photographers like us, this means that our current scopes and lenses may have focal lengths that are too long! I don't expect this "multiplier" problem to be solved any time soon, unless one is willing to pay over US \$5000. There are some other quirks, like limits on how many pictures you can take in a short burst, and exposures longer than 30 seconds are probably out of the question (except for the Canon D60 which has stunning low light performance compared to any other digicam).

I have decided to buy the Canon D60. It hit store shelves last week, while the other three cameras won't be available until after the June eclipse. It is selling for US\$2000-\$2200 but may fall as low as US\$1800 in the bare-body configuration this summer. I would highly recommend the following review to anyone considering this camera:

<http://www.dpreview.com/reviews/canoneosd60/default.asp>

For those with Nikkor lenses, Nikon will be introducing the D100 in June or July, a camera which is very similar to the Canon D60. This is an exciting time in photography! Clear skies, Fred Bruenjes Ramona, CA <http://www.moonglow.net/ccd/pictures/eclipses/>

From : Evan Zucker <ez@AbacusTotality.com>

At 11:59 PM 4/3/2002, Fred wrote: These digital cameras have a lot to offer the eclipse chaser.

Great analysis of digital vs. film cameras. I especially liked that link to the photographer who did a detailed side-by-side comparison.

The only significant issue I think you omitted was the inability to shoot slides with digital cameras. I began shooting 35mm SLR slides over 30 years ago. I switched back to prints for several years after I got married for family snapshots, but I realized that I missed the experience of seeing the large colorful photos projected onto a screen and so I switched back to slides.

So far as I know, the closest you can get to slides with a digital camera is to get the appropriate hardware to enable you to view the photos on a TV set (perhaps an HDTV). This is probably more convenient than using a slide projector, but it's not nearly as impressive. (I say this without ever having seen this done on an HDTV screen.)

I love the advantages of digital cameras, but I don't know if I'm willing to give up slides for the privilege. Evan H. Zucker San Diego, California

From : Mike Simmons <msimm@ucla.edu>

I suspect HDTV will give a spectacular display based on what I've seen from high-res digital sources played on them in the stores but I have not seen this done either. For larger display the projectors that display what's shown on the computer monitor are the answer. Not a cheap answer, though, with prices starting at above \$1000 US for low-res units. But prices are dropping very quickly as these become standard for presentations at many meetings. Mike Simmons

From : "Jean-Paul GODARD" <jean-paul.godard@noos.fr>

> I love the advantages of digital cameras, but I don't know if I'm willing to give up slides for the privilege. Evan H.

(Continued on page 23)

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Zucker San Diego, California

Hopefully, you can use these wonderful device designed for video projection from a PC.... I recently used a PC and a video projector during a presentation in my astronomy club... The result was very nice for the "slideshow" of fixed images and really acceptable for the projection of a DV film.

Just try it, you'll like it... Cordialement, jean-paul. godard@noos.fr

From : "Odille Esmonde-Morgan & Warwick Lawson" <analog6@ozemail.com.au>

Fred, When pics are projected from a computer using one of those projectors they use for presentations (sorry, I don't know their proper name, but they look like a slide projector without the carousel) the images are just as good as slides. You sometimes have to adjust the contrast/brightness for scenery, but this should not apply to eclipse shots. Odille

From : Mike Simmons <msimm@ucla.edu>

One more option for digital shots is making slides from the digital images. I do this at work with graphs and other presentation material. I don't know the cost of the equipment, though (the service bureaus are too expensive for this to be done on a regular basis. Also, I've done this only with line drawings and other simple images, not with photographs that would require very accurate translation to film. The results with the source images I've had have been excellent, though. The device is very easy to use. It installs as an alternative printer and you just print from your software to the device. It then exposes the film you've loaded into it with the images you've "printed". If you've ever sent a fax from a computer then the process is similar. This also allows you to pick and choose which images you'll spend money on for film and processing. Again, I don't know the cost. Mike Simmons

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

Evan et al: I spoke on aurorae to my astronomy club in January. A fellow member assembled the illustrations which were displayed on an Apple 17-inch flat panel screen.

Although I have serious reservations with the LCD screens for critical imaging work, the "slide show" was a hit. I would suggest to anyone who misses slides to get an Apple 22 or 23-inch cinema display. Such a display is only USD 2000-3000. It may also be possible to have images projected on large screen TV's or projected by projection TV's

You can also get slides made from digital files by service bureaus.

I totally dislike slides, especially for eclipse photography. The latitude is lousy. As far as I am concerned, it is best to have the slide made from a properly processed print. -- Robert B Slobins

From : Evan Zucker <ez@AbacusTotality.com>

At 11:22 AM 4/4/2002, Jean-Paul wrote: Hopefully, you can use these wonderful device designed for video projection from a PC.... I recently used a PC and a video projector during a presentation in my astronomy club... The result was very nice for the "slideshow" of fixed images and really acceptable for the projection of a DV film.

Thanks for the suggestion. Several other people contacted me privately about this, but none of them had seen the quality of digital photos projected via an LCD projector.

I suspect that the photos would look even better projected through an HDTV, and a quick check of prices shows that HDTVs cost about the same as good LCD projectors (although they're a lot better):

<http://www.epinions.com/elec-Video-Televisions-All-HDTV>
<http://www.pcmag.com/article/0,2997,s=1889&a=24052,00.asp>

Both cost an order of magnitude more than a good Carousel slide projector (which I already own), just as a high quality digital SLR (like the Canon D30 or D60) costs far more than a comparable film camera. Digital "slides" aren't exactly priced for the consumer market yet. Of course, there isn't much of a consumer slide market-- nearly all consumers shoot prints, and most of the pros who shoot slides probably don't project them -- and so I'm not expecting those prices to plummet any time soon.

Has anybody tried this with an HDTV? Evan H. Zucker San Diego, California

From : Evan Zucker



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Cameras

From : "Andrew Wells" <andrew@wellinghall.force9.co.uk> To : "Solar Eclipses" <SOLARECLIPSES@AULA.COM> Date : Sat, 6 Apr 2002 14:34:51 +0100

Hello, We are considering buying either a digital camera or a SLR. Does anyone have any opinion on which might be better for photographing eclipses, please? Are there any particular features we should look out for? Thanks, Andrew

From : KCStarguy@aol.com

Andrew, It depends on what you want to do with your pictures. If you ultimately want prints then you need to consider several more factors.

I was most astounded with the quality of my digital pictures of the eclipse (published in Astronomy magazine in October) and Victoria Falls.

If you want to take close ups and use regular lenses, cameras will a lot more.

I have a kodak 290 that I shot with but there are newer models of all sorts out there now with greater resolution. But it does a fine job and frankly have not show with minolta since. In Africa, I took only my digital and each night I downloaded all the pics to my computer and wiped the memory cards clean.

I am beginning to write up the advantages of each reg camera versus digital for a course I am teaching but it won't be done for a couple of weeks. I would be pleased to send a copy or tell the url where I post it at when I finish.

One things I would recommend if you want a digital for astrophotography. I don't have the ability to change the ISO settings which I wish I had and ultimately might get another camera. Also Make sure if you buy one that it will take high quality jpeg. I bought the kodak (now discontinued but still great) as it could do tiff as well which is how I shot the eclipse pictures. But they take up a lot of room.

Even with my camera at iso 100 , I managed to take pictures of the Ikeya-Zhang comet recently and even the constellation Orion and other star patterns.

I have shot eclipses with both types of cameras as well with camcorders. Some of the camcorders also now have megapixel cameras (the canon zr25 that I just got saved megapixel pictures to a memory card but in the past I have heard the qualities are not as good . I can elaborate more - just ask more questions.

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

A digital camera would be great as long as you are not planning on prints bigger than 8X10. The digital camera has the big advantage of letting you see exactly what you are going to get in the final image while film requires estimating from past experience, luck and lots of bracketing. Digital has a dynamic range similar to film now. You need a digital camera that has manual control, f/stop and shutter speed. It has to be a camera that allows you to change these variables in real time, not by going to menu of preferences, you must be able to make the changes quickly and view them on the screen. My Olympus 2020 does all this but it lacks sufficient zoom on its own. You would need to couple it to a small scope. There are various web pages describing how to do it and hardware available. You could also accomplish most of this by getting a digital camcorder that saves snapshots but the resolution may be much less than a still camera. Dale

From : Mike Simmons <msimm@ucla.edu>

Some digital cameras now have sufficient resolution for prints larger than 8x10. Camera bodies that accept the same interchangeable lenses used on film cameras are also available so the same telephoto lens you might use for eclipse photography on film can be used. With the smaller size of the CCD or CMOS chips compared to 35mm film the images fill more of the frame so the focal length equivalent is longer, e.g., a 200mm lens used on a Canon D60 results in an image size the same as a 320mm lens used on a 35mm camera. BUT these cameras are still quite expensive. Canon and Nikon have pro/amateur bodies available starting at \$2000 US. Mike Simmons

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

Hi Mike, The rule I use is, it takes 3 to 4 dots to define a colored pixel so if you print at 1500dpi you can accurately print 300-500 pixels per inch. A 10X8 print would be 5,000 pixels wide. In reality a 2000 pixel wide image is acceptable at 10X8 but just barely because not every adjacent pixel has a different color value, especially in eclipse photos. Not too many digicams are 5,000 pixels wide. Dale



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Moon songs, non eclipse watches and political dooms

From : "Patrick Poitevin" <patrick_poitevin@hotmail.com>
To : SOLARECLIPSES@AULA.COM Date : Sun, 07 Apr

Dear All, May I remind you for keeping the SEML solar eclipse related. Many of you might not have returned the Questionnaire (see below), but the SEML rules should be known. Moon song messages, watches, which after all are not solar eclipse related, and political messages about dooms, should be avoided. As all of you might have noticed, they carry on and on. It looks like everybody has somewhere something. Please avoid these carry on messages and keep it on topic. If doubt, send me first a message.

For those who did not return (private mail please) the Questionnaire, please do.

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

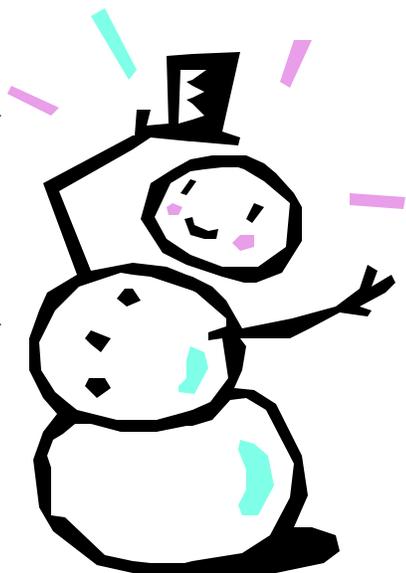
The Solar Eclipse Mailing List

.../...

Snowboard Design

From : "Crocker, Tony (FSA)" <Tony.Crocker@transamerica.com> To : " ' SOLARECLIPSES@AULA.COM ' " <SOLARECLIPSES@AULA.COM> Date : Mon, 8 Apr

I spent last weekend skiing at Mammoth Mt., Calif, and yesterday on the ski rack outside Canyon Lodge I noticed 2 of the snowboards rented by that facility. The middle of the snowboard shows a large photograph of the lunar landscape with a starry sky in background. Below the large photo is a small picture of a full moon as observed from earth. Above the large photo is a small picture of the diamond ring phase of a solar eclipse.

**Eclipse watches**

From : "Olivier \"Klipsi\" Staiger" <klipsi@bluewin.ch>
To : <SOLARECLIPSES@AULA.COM> Date : Sat, 6 Apr 2002 06:55:41 +0200

greetings from Geneva, the world capital of luxury watches. right now in Basel is the international watch fair. Next week we have in Geneva another international fair on luxury watches .

so, these days, there are lots of ads in the newspapers, or even special magazines, about rare watches.

and among these, several wonderful watches with Moon-phases, etc.

one model I saw is named Moon-Sun.

another named Moon-Sky

and, a few years ago , someone showed me an electronic watch (Casio ? not sure) which had all solar eclipses computed for the next 20 years or so, and it also showed the positions of the planets during these eclipses. has anybody on this list seen that one ?

the magazine Bilan, www.bilan.ch , will have a special issue next wednesday, I believe, about luxury. Luxury watches will have a large part of the story, and no doubt you will see some nice photos of watches with moon-phases. (luxury car rental will also be presented, including the company where I work, www.prc.ch ;-)

have a nice weekend ! Klipsi

From : Evan Zucker <ez@AbacusTotality.com>

and, a few years ago , someone showed me an electronic watch (Casio ? not sure) which had all solar eclipses computed for the next 20 years or so, and it also showed the positions of the planets during these eclipses. has anybody on this list seen that one ?

I remember seeing a watch like that, but I can't find it on the Web or at <http://www.casio.com/watches>. I would guess it's been discontinued. I don't see it at ebay either.

From : Assoc Prof J R Huddle <huddle@usna.edu>

There is a company called "wind and Weather" that sells a "Solar/Lunar Watch" for US\$ 249. From their home page, <http://www.windandweather.com/>, enter "solar/lunar" in

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the search window on the left and then click on "go". This watch does not appear to do eclipses or planets.

On the other hand, there are planetarium programs for PDAs and handheld computers - not as capable as the software for full-sized computers, of course, but I have enjoyed using a program called "Planetarium" for Palm OS machines. You can download it from <http://www.palmgear.com/> for US\$ 24.00. From www.palmgear.com, click on "software" and then, under the "Science" list in the software index, click on "Astronomy". While "Planetarium" doesn't do eclipses, I found it useful for general stargazing at night in Zimbabwe and Botswana last June. There are a few other planetarium programs available, including "2sky 2.3" and "Star Pilot Plus v3.34," but I have not tried them. Neither have I tried Piero Massimino's program, "Solar and Lunar Eclipses 1.1" which is \$10.00. (I think Piero is an SEML member, but I'm not sure of that.) Jim Huddle

From : Bob Morris <morris@sce.carleton.ca>

The Casio Forester "Fish in Time" FT-200 watch, with illuminated display, gives, besides time (12 or 24 hour mode), date, and three letter day of week:

1) An analog symbol indicating phase of moon (8 possible symbols)

2) The phase of the moon in digital format xx.x (i.e., to a tenth of a day)

At 5:19 pm est today it read 24.2.

3) Sunrise and sunset time within 5 minutes of actual times.

4) A visual display "hour angle of the moon." (See the manual.)

You input the year, the date, the day of the week, the time, your latitude and longitude to the nearest degree, and the difference between your time and GMT. e.g., EST is -5. EDT is -4.

If you don't move, you only have to adjust the "delta GMT" and time for DST twice a year.

While it doesn't predict eclipses, no person who has the least interest in the night sky should be without this ~\$40 treasure.

Fred Espenak can attest to that!

The other feature I use most is a stop watch, to time parking meters. (How can you afford eclipse expeditions if you get parking tickets?)

In many watches, setting and using a timer is a pain. In this watch, it is a snap. Bob Morris

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

OK... so.. the alarm on your eclipse watch goes off.. you slap yourself on the forehead real hard, "Oh Man.. not again..."

From : Evan Zucker <ez@AbacusTotality.com>

> The Casio Forester "Fish in Time" FT-200 watch, with illuminated display, gives, besides time (12 or 24 hour mode), date, and three letter day of week:

That is a pretty cool watch. Details are at <http://www.casio.com/watches/product.cfm?section=3&market=0&product=3401>. You can also buy it there for \$44.99.

The Forester series also has some other cool watches, such as this digital compass, thermometer, altimeter and barometer: <http://www.casio.com/watches/product.cfm?section=3&market=0&product=26>

Here's a list of all the Forester watches: <http://www.casio.com/watches/section.cfm?section=3&market=0> -- EVAN

From : Evan Zucker <ez@AbacusTotality.com>

> There is a company called "wind and Weather" that sells a "Solar/Lunar Watch" for US\$ 249. From their home page, <http://www.windandweather.com/>, enter "solar/lunar" in the search window on the left and then click on "go". This watch does not appear to do eclipses or planets.

This is called the Yes watch: <http://www.yeswatch.com>. My wife bought it for me from Wind and Weather for Christmas 2000. You are correct that it does not do eclipses or planets, just the moon, sun, length of day, and seasons. As you noted, it's quite expensive (by my standards, although perhaps not to those folks who don't think twice about dropping \$2,000 for a digital camera).

While it's definitely unique and quite a conversation piece, it has several significant drawbacks that preclude me from wearing it:

1. It's very thick, bulky and heavy.

2. While it does have some great astro features, it doesn't do one important thing very well: tell you what time it is. The watch has

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only a 24-hour hand -- no minute or second hands. It does have a digital display of the current time, but it's relatively small and faint and therefore hard to read, especially when the hour hand obscures the time display between 10:00 AM and 2:00 PM.

3. As with some other high-tech items, it is not user friendly. I'm a former fighter pilot and can operate all sorts of contraptions, but I have long been biased against watches and other devices that are non-intuitive and depend upon obscure combinations of 4 unlabeled buttons. In other words, I can't remember which buttons to press how many times to get it to do all the cool things it can do. -- EVAN

From : Jay.M.Pasachoff@williams.edu

My favorite watch was one I bought some years ago: the "Stonehenge watch." This pocket watch has, in molded silver plastic, a model of Stonehenge that can be used as a sundial. I reproduce a picture of it in the archaeoastronomy section of my text (though the picture doesn't appear at the book's Web site at www.solarcorona.net).

The advertising piece for it says, "Stonehenge: 5,000 years old and still ticking! At last, you can predict an eclipse and tell the local apparent time with this beautiful pocket time piece. Delight your more erudite friends and amaze your Druid neighbors." I think it isn't for sale any more. Jay Pasachoff

From : Donald Watrous <watrous@cs.rutgers.edu>

Is this it? <http://www.stonehengewatch.com/> Don

From : Jay.M.Pasachoff@williams.edu

Yes, that's the watch I am writing about--and it claims to predict eclipses! Jay

SENL April on line

From : FRED ESPENAK <u32fe@lepvox.gsfc.nasa.gov>
To : SOLARECLIPSES@AULA.COM, eclipse@hydra.carleton.ca Date : Wed, 10 Apr 2002 10:49:05 -0400

Joanne Poitevin has prepared a new issue of the SENL (Solar Eclipse Newsletter) for the month of April 2002. You'll find some honeymoon photos too!

All issues are online in pdf format and can be accessed via the SENL index page of MrEclipse.com: <http://www.mreclipse.com/SENL/SENLinde.htm>

Other recent issues currently linked from the above page include:

SENL - July 2001 (Special A) (1.2 MB pdf file*)
SENL - July 2001 (Special B) (0.7 MB pdf file*)
SENL - July 2001 (Special C) (0.7 MB pdf file*)
SENL - August 2001 (Part A) (1.0 MB pdf file*)
SENL - August 2001 (Part B) (0.6 MB pdf file*)
SENL - September 2001 (Part A) (1.0 MB pdf file*)
SENL - September 2001 (Part B) (1.0 MB pdf file*)
SENL - October 2001 (1.0 MB pdf file*)
SENL - November 2001 (Part A) (0.7 MB pdf file*)
SENL - November 2001 (Part A) (0.8 MB pdf file*)
SENL - December 2001 (1.3 MB pdf file*)

SENL - January 2002 (Part A) (0.7 MB pdf file*)
SENL - January 2002 (Part B) (1.3 MB pdf file*)
SENL - February 2002 (1.2 MB pdf file*)
SENL - March 2002 (Part A) (0.7 MB pdf file*)
SENL - March 2002 (Part B) (0.8 MB pdf file*)
SENL - April 2002 (1.1 MB pdf file*)

Note that all these files are in Adobe pdf format and can only be read with Adobe Acrobat Reader. This software is free and can be downloaded from Adobe's web site (<http://www.adobe.com/>).

Thanks for the hard work Joanne! - Fred Espenak



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JPL Historical photo of the month - Surveyor 3

From : Ron Baalke <baalke@ZAGAMI.JPL.NASA.GOV> To : HASTRO-L@WVNVM.WVNET.EDU Date : Wed, 10 Apr 2002 10:01:21 -0700

<http://beacon-archives.jpl.nasa.gov/Histphotos/hpom/HistPhoto.htm>

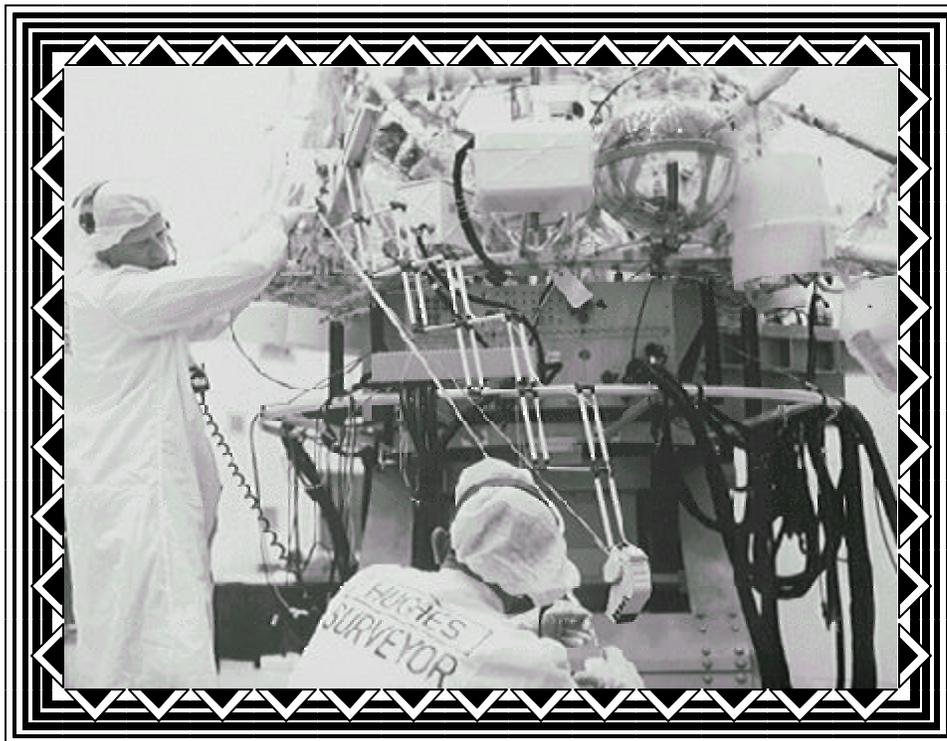
JPL Historical Photo Of The Month April 2002

[Surveyor 3 Photo]

Surveyor 3 was launched April 17, 1967, and landed on the moon three days later. Hughes Aircraft Company was the contractor selected to build the seven landers of the Surveyor Program. The image above shows workers at Hughes testing the Soil Mechanics/Surface Sampler (SM/SS) in December 1966.

Surveyor 3 was the first spacecraft in the Surveyor program to carry an electromechanical scoop device with which scientists were able to dig four trenches by remote control, scoop up samples of lunar soil, perform eight static bearing tests by pressing the scoop against the lunar surface, and 14 impact tests. These tests confirmed that the lunar surface could support a landing craft and that astronauts would be able to walk on the Moon. The spacecraft returned 6,315 high quality television pictures showing the operation of the surface sampler, as well as near and distant views of the lunar surface. On the spacecraft's fourth solar day of operation, a solar eclipse took place, in which the earth moved in front of the Sun.

On November 19, 1969, the Apollo 12 Lunar Module landed within about 180 meters of Surveyor 3. Astronauts Pete Conrad and Alan Bean visited the spacecraft, took photos of it, and removed the television camera and sampler scoop, along with several pieces of cable and tubing which were returned to earth.



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Index SENL April 2002

Please find herewith the contents of the April 2002 issue of the Solar Eclipse Newsletter. Beside the topic, the page number is listed:

.../...

The SENL issues are on the WebPages of Fred Espenak. See

SENL:

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

Index:

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

Example: SENL0011.pdf:

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

Comments are welcome at patrick_poitevin@hotmail.com

Video in RealPlayer TSE2001

From : Francisco A. Rodríguez Ramírez <farr@navegalia.com> To : <SOLARECLIPSES@AULA.COM> Date : Fri, 12 Apr 2002 18:05:23 +0100

Hi all, You can see a small real-video [295kb] with music about the last Total Solar Eclipse from National Kafue Park (Zambia).

URL: <http://www.terra.es/personal5/websaros/ets2001z.rm>

Other videos in AVI and WMV format:

- <http://leo.worldonline.es/observat/eclipse/ets2001.wmv>

- <http://leo.worldonline.es/observat/eclipse/ets2001s.avi>

Best regards, Francisco A. Rodriguez Ramirez www.saros.org <http://eclipse.astroeduca.com> www.astroeduca.com

The Spica Lunar Eclipse

From : Skywayinc@aol.com To : eclipse@hydra.carleton.ca
Date : Fri, 12 Apr 2002 09:46:45 EDT

I just want to wish all of you a "Happy Anniversary." It was 34 years ago tonight, that what has since gone down in annals as the "Spica Lunar Eclipse" took place. This was a widely observed total eclipse of the Moon, which occurred during convenient evening hours across all of North America. In addition to displaying a beautiful brick-red coloration (a Danjon rating of 2 to 2.5), the Moon was also in conjunction with the star Spica during totality, making for a memorable and unique spectacle!

I wrote about my personal memories of this eclipse for S&T's Focal point several years ago, but what makes today stand out in my mind is that this event also took place on a Friday night (in fact it was Good Friday and also Passover!). Of course in 2002 . . . we're about 180-degrees out of phase so far as the Moon is concerned (new today versus full back then), but I know that many of you probably watched it and remember it very well. It is hard to believe how vivid the memories are of that event . . . and that it was nearly 3 and a half decades ago.

And we here in the Northeast US are also very lucky we didn't have tonight's weather patterns (low clouds, areas of fog and spotty drizzle) to deal with back then either! -- joe rao

SEWP Solar Eclipse WebPages

Dear All, We never had the intention having our own WebPage. Fred's WebPages are covering nearly all aspects. Mark Peebler was so kind having a WebPage set up for the SEC2000 eclipse conference two years ago. But with the coming Totality Day next year and the international Solar Eclipse Conference the year after, we felt the need for an information page. We compiled a small webpage which we want to call Solar Eclipse WebPages (SEWP). It is just a small account. We have only 50MB available. The purpose is having permanent information available, such as info about the SEML, the SENL, TD and SEC. Of course only the latest SENL will be available. All other archived SENL's will remain on Fred's WebPages. But we also added a complete Index of all SENL issues. It is easy to search per word or topic in the file. The SECalendar is also available in its total. A request which I had for many years and many times. The past TD and SEC are briefly shown, but the up to date status on the next issues of TD2003 and SEC2004. There are some more plans to add other solar eclipse related items. Last but not least, we are trying to have some links of various solar eclipse related, and astronomy related webpages. Something what never will be finished of course. Links as well which appears on the SEML and are related to next solar eclipses. Of course there will be always a link which does not work. Please send us a message in private. Michael Gill, Fred Espenak and Derryl Barr were very helpful and checked the SEWP before we launched it. Thank you! Please check it out yourselves: <http://www.j.w.edmonds.btinternet.co.uk/> Looking forward for your reply and thank you for your continuous support. Best regards, Patrick and Joanne

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Titanic: The Reason Why?

From : Bob Morris <morris@sce.carleton.ca> To : SE from LRM <solareclipses@Aula.com> Date : Sun, 14 Apr

Titanic: The Reason Why?

"...but what a glorious end to your last crossing if we get into New York Tuesday night ..." Bruce Ismay to Captain Smith, James Cameron's Titanic

"... there will no attempt to bring her in on Tuesday. She was built for a Wednesday ship ..." Captain Edward J. Smith, in New York Times

by L. Robert Morris

The front-page article in Wednesday morning's New York Times could not be missed: "Giant in at Midnight: Newest and biggest of ocean steamships sighted off Fire Island at 12:17: At her pier about 8:30 a.m. Arrives with 500 saloon passengers who enjoyed all the latest luxuries of ocean travel."

The Times noted that the "... marine observer at Sandy Hook was straining his eyes seaward at midnight last night for the lights of the new 45,000-ton White Star liner ... the biggest ship in the world, steaming toward this port at nearly 22 knots..." That "her commander Capt. E. J. Smith ... wirelessly ... that he expected to reach quarantine about 3 o'clock"... That White Star's managing director "Bruce Ismay ... is making the trip to watch the development of the triple engines." And that the vessel was "the largest ship that has ever entered the port of New York or any other port in the world." However, the Times conceded that "the Mauritania and the Lusitania retain their speed records as a consolation."

After more imposing details -- the 100-ton rudder, the 15-ton anchor, the 22-ton central propeller, the swimming baths, the electric passenger elevators, the huge bridge deck promenade, and the expansive dining saloon running the entire width of the ship -- the article noted that White Star officials claimed that the ship will maintain an average speed of 21 knots and will make her landings in New York every Wednesday.

Thursday morning, the Times' headlines blared "Biggest of Liners Gets Noisy Welcome: Passengers Enjoyed Her Maiden Voyage and Found the Big Ship Just Like a Hotel." Further superlatives assaulted the reader: "Standing so high out of the water that the throng waiting on the pier could barely see the tops of her four smokestacks as she came alongside, the world's biggest liner, the

Olympic, was safely moored with the assistance of twelve tugs at 10 o'clock [on Wednesday, June 21, 1911]."

A Titanic Reception?

Had Titanic not struck an iceberg, the reports of her New York debut on April 17, 1912 might have been essentially indistinguishable from those accorded her sister ship, Olympic, the previous year.

Well, perhaps not.

Would Bruce Ismay's prediction of a glorious reception for Titanic have materialized given that her nearly identical twin Olympic had been docking in New York every third Wednesday for nearly a year?

After all, both public and press are quite fickle. Following the historic Apollo 11 moon landing, and Apollo 12's exciting launch into a lightning storm, interest in the U.S. moon landings had rapidly diminished to the extent that Apollo 13's communication with Mission Control was not even being televised when it radioed "Houston, we have a problem!"

And would Bruce Ismay, as has been suggested, been able to convince Captain Smith to bring in Titanic on Tuesday night, rather than Wednesday morning?

More important, why would he have even tried?

After all, Olympic had made Wednesday morning's newspapers by docking on Wednesday morning: Titanic could do likewise. Titanic's passengers had comfortable, pre-paid accommodation aboard the giant liner. Were hundreds of empty hotel rooms waiting in New York? The ship could not even dock in late evening without a dozen tugboats and numerous shore workers. And, as the Times had noted, ships first had to have a short stay in quarantine. On Thursday morning, in fact, the Times' coverage of Olympic's docking appeared next to a report that two passengers on an Italian steamship had died from cholera -- fortunately, while the ship was still within quarantine.

Further, from the New York Times' report, it is quite clear that Captain Smith would never have agreed to Ismay's request!

Smith was asked, "Will [Olympic] ever dock on a Tuesday"?

"No," he replied emphatically, "and there will no attempt to bring her in on Tuesday. She was built for a Wednesday

(Continued on page 31)

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ship, and her run this first voyage has demonstrated that she will fulfill the expectation of the builders."

Since Titanic and Olympic were near-identical twins, and given Smith's assessment of Olympic's performance objectives, why would he think differently about any attempt to bring Titanic into New York on a Tuesday?

Ours Not to Reason Why?

Titanic could not break the speed records held by Mauritania and Lusitania. And a Tuesday docking for Titanic not only seemed pointless but also -- if we are to believe the Times -- totally at odds with Smith's philosophy.

The only other reason proffered for maintaining 22 knots in a sea of icebergs was the possibility of Titanic beating Olympic's crossing time. But Olympic had gone nearly flat out, effectively reached U.S. waters at 12:17 a.m. on Wednesday morning, entered U.S. quarantine 3 hours later, anchored there for about 7 hours, and then docked in New York at 10 a.m. in the morning!

Thus, the concept of breaking Olympic's maiden voyage "time record" was totally meaningless -- and Ismay, who was aboard for Olympic's first crossing, knew this.

Why then did Captain Edward J. Smith, as author Walter Lord has concluded, miscalculate, and press on at full speed when other ships, Carpathia included, had -- in the face of no moon, no surf and, hence, no visibility of the iceberg sea-water interface -- decided to stop?

April 17, 1912

When London's The Times, England's newspaper of record, appeared on the morning of Monday, April 15, 1912, it did not report on Titanic -- for the disaster had transpired only a few hours earlier. On page six, however, it was announced that the Astronomer Royal and other members of the Greenwich Observatory staff had been dispatched to Paris.

In Tuesday's edition, details of the Titanic tragedy occupied two pages. The next page was devoted to instructions on how to photograph the next day's solar eclipse, partial phases of which would be visible from London.

On Wednesday morning, April 17, most of the six columns on the front page of Le Figaro, in Paris, were occupied by text and illustrations previewing that day's solar eclipse. Half of one column was devoted to an article entitled The Titanic Catastrophe, which was continued on page two. The calamity had, it seemed, been eclipsed by nature's mightiest spectacle.

A map showed that St. Germain-en-Laye, just northwest of Paris, was within the path of the moon's shadow cone. There, shortly after noon, in cloudless skies, the light assumed a strange quality. At 12:10, an incredible sight appeared in the sky: a slender, semicircular crescent of sun shone out from around the moon. However, instead of slowly shrinking into a single blazing diamond -- as in a total solar eclipse -- the crescent became fragmented, and then quickly expanded into a razor-thin annulus of beads of light: Bailey's Beads, the sun shining through valleys on the moon's edge.

To those who looked up at precisely 12:10:12 p.m., a coal-black moon appeared completely encircled by brilliant diamonds, set against a deep blue sky, a grand piece of celestial jewelry.

In London's Trafalgar Square -- opposite Oceanic House, headquarters of the White Star Line -- huge crowds had gathered. Smoked-glass filters in hand, their eyes turned skyward in unison, they witnessed the moon obscuring 92 percent of the sun. Thousands of kilometers to the west, aboard the rescue-ship, Carpathia, thick fog and driving rain prevailed. Had the dismal weather cleared, crew and passengers -- including survivors of Titanic -- might have observed that 40 percent of the sun was missing.

On Wednesday, April 17, 1912, the very rarest of solar eclipses, an annular-total, had occurred. The tip of the moon's

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shadow cone had literally grazed the earth's surface along a thin line of nearly zero width.

Thursday morning, a major Times article was headlined: "Eclipse of the Sun: Perfect Conditions for Observing [in London]." On the same page, under the heading "Help for Titanic Victims," it was announced that the King and Queen had contributed to a relief fund set up by the Lord Mayor of London. However, neither article referred to the epochal event described in the other.

No Moon

Since solar eclipses are infrequent, newspapers in cities close to the path of totality invariably carry articles describing the circumstances of the upcoming event. On March 27, 1912, near the top of The Times' prominent Table of Contents, under Special Articles, readers are directed to a feature giving details of the April 17 "Annular-Total Eclipse of the Sun."

That same page also included notices pertaining to the Admiralty, and Naval and Military Intelligence. Thus, ship's captains, including officers of the White Star Line, might have learned of the eclipse when seeking out sea-related information in The Times.

The most important source of eclipse-related information, however, is The Nautical Almanac. Published annually since 1767, it provides information on the daily movement and/or apparent position of the sun, moon, planets, and stars. It is every sea captain's bible. In Titanic's day, precise oceanic navigation required an accurate clock, a sextant, and a compass -- and The Nautical Almanac.

Titanic's Captain, Edward J. Smith, received *his* copy of the 1912 edition early in the previous year. The title page notes inclusion of an eclipse map. Following the "Contents" list, the map's page number and title -- Path of the Moon's shadow ... during the Central Eclipse of the Sun, April 17, 1912 -- are provided. In addition to the map, there are five pages of eclipse data.

Finally, the 600-page volume almost falls open at the tipped-in, two-page, fold-out, eclipse map.

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The absence of an evening moon before a solar eclipse is a greatly anticipated sign that the long-awaited event is indeed nigh. A quarter moon rises about midnight a week before the eclipse. The moon then rises later and later each morning, slimming down to a thin crescent as it moves "closer" to the sun it will soon hide.

--
When Charles Lightoller was asked at the inquiry the reason for the Titanic tragedy, his answer was unequivocal: "Well, in the first place," he replied, "there was no moon."

Of the various factors in the equation which ultimately led to calamity, this was the only one known to be a mathematical certainty before the voyage commenced. And, as Second Officer, one of Lightoller's duties was to distribute copies of the Nautical Almanac to all officers. Thus, it is strange that his "no moon" was not followed by "since the upcoming solar eclipse meant a new moon on April 17 -- and thus no moon in the evening sky during Titanic's scheduled April 10-17 voyage."

That there was to be an eclipse on April 17, was not only clearly indicated in the Nautical Almanac, but also -- because the eclipse central line passed so close to England -- prominently advertised in The Times.

It is almost certain, then, that long before Captain Smith set sail toward a frigid ocean of icebergs on April 10, 1912, both he and White Star Line officials were significantly aware that their ship would also encounter a sea of night-time darkness. Although it was certainly within their power to re-schedule the voyage, this was simply not a realistic option.

--
There were other ships on the Atlantic on April 14-15, 1912. However, it was only for Titanic, it has been argued, that a number of inopportune conditions coincided on the "night to remember," so as to result in a disaster.

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However, author Walter Lord, in "The Night Lives On," vehemently disagrees. He dismisses some of "the conditions."

For example, he points out that -- at the British inquiry -- the lack of binoculars in the crow's nest was considered a red herring: "binoculars were useful in identifying objects, but not in initially sighting them. That was better done by the naked eye."

It was also clear that Captain Smith knew that "icebergs were easier to spot at night if the wind stirred up some surf" and realized "... the nature of the night he was up against ... that the sea was flat calm, that there was no moon, no wind, no swell."

Thus, the real conclusion re the various problems was that "[Smith] understood all this and took it into account in deciding *not* to reduce speed."

"Under these circumstances," Lord suggests, "the collision ... becomes simply a case of miscalculation." Smith was simply wrong in deciding not to stop.

--

Captain Smith went on record a year before a disaster that he could not possibly have foreseen: ships should not be pushed beyond their design parameters. And, as Captain on Olympic's maiden crossing, he also knew that Olympic had not arrived in New York after a flat out, uninterrupted voyage -- so that there really was no meaningful time-target for Titanic to meet or beat. Finally, he understood that a ship of Titanic's size could not arrive at port 12 hours ahead of schedule and expect the tugs necessary to berth the vessel to be on hand -- and that, in 1912, quarantine was also an issue.

So, why the rush?

The Encyclopaedia Britannica (200th Anniversary Edition) observes that "in ancient times, eclipses were regarded as portents: hence it is not surprising that many eclipses are mentioned in history and in literature."

Is it conceivable that Capt. Smith -- whose career was embedded in the latter half of the 19th century -- was superstitious, and wanted to get Titanic off the ocean before the eclipse began? Arriving in New York on Tuesday night would have achieved that goal.

A preposterous suggestion?

No more so than 90 years of arguments that Smith was rushing to New York to beat Olympic's maiden voyage "time record" or to make a big splash in the Wednesday papers. (C) 1998, 2002 L. Robert Morris All Rights Reserved

From : Rybrks1@cs.com

Thank you, very interesting article by L. Robert Morris

The eclipse would have been witnessed by the Titanic at 6 am near NYC while it waited for tugs whether it set a record or not. (It was never quite in the total-annular path anywhere in its maiden crossing) It was clearly not capable of crossing in 4 days versus 5 days, so no chance to avoid the eclipse whether a record was set or not.

But....

Setting records is prominent in the human mind. Even today the internet has sites dedicated to the transatlantic speed records on water. By Cunard's own admission who today continues to claim firsts: Cunard line was mainly focused on Transatlantic speed and luxury which they won hands down. Competition between White Star and other top fleet companies is welldocumented in the historical record.

see the sites below for documentation

<http://www.steamertrunkmerchants.com/steamshipchronology.htm>

<http://www.sailspeedrecords.com/links.html>

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More to the point, transatlantic records were measured to Sandy Hook New Jersey and did not include time spent waiting for tugs or quarantine.

Quote for Lusitania record: It made the Queenstown to Sandy Hook crossing in 4 days 19 hours and 52 minutes.

Although the Titanic was averaging about 0.6 knots slower than the Lusitania, there was even competition between similar class ships in the same fleet. Moving nearly twice the tonnage of Lusitania at nearly the same speed and beating Titanic's sister, Olympic, would have been a nice claim. I can easily believe wreckless speed for that rather than simply getting near the NYC harbor before the eclipse.

The discussions of the Titanic are wonderful and it is nice to see some ties of our favorite subject, eclipses, with one of the greatest human interest stories of all time. In a few weeks (when I return home) I will detail why the saros for the Titanic eclipse (Saros 137) did a rather unusual double transition through the hybrids going from pure total to pure annular. The Titanic event occurred in the middle of the second set of 3 hybrid eclipses. It is the same saros coming up June 10 in Puerto Vallarta. Ray Brooks

From : Bob Morris <morris@sce.carleton.ca>

Ray: Thanks for the info. I've written lots more about the April 17, 1912 eclipse.

In particular, the path was so narrow just west of Paris that it served a testing ground for different eclipse prediction techniques. In an issue of Nature (have to check date) there are four lines of centrality plotted, with one deemed to be the winner via observations during the eclipse.

The arguments re Titanic speeding seem to be weighted on the issue of getting into New York a day early *and* thus making a big splash in the newspapers, with breaking the Olympic's maiden voyage "record" a secondary issue.

If Titanic had not sunk, then Olympic would have been the giant ship of record for that era.

Because Titanic sunk, people assume she would have had zillions of people on the docks of New York awaiting her arrival had she not sunk.

Again, I'd use the Apollo example: Titanic looked *so* identical to another big ship (Olympic), that one myth that propagated was that the ships had been re-labelled and Olympic (disguised as Titanic) had been intentionally sunk since she had suffered major damage in 1911, and would never again be "whole".

That myth was put aside *only* when Ballard found the proper numbers etc engraved upon the boilers in the Titanic wreckage.

So, people were going to flock to the New York dockside to see a ship identical (to the layman) to one that had appeared there roughly every three weeks since June 1911?

Nonsense.

And, given that both Smith and Ismay had been on the maiden voyage of Olympic and Titanic, and had experienced making the Wednesday papers by docking Wednesday, how can we accept arguments that Ismay coerced Smith by saying "Let's arrive early so we can make the Wednesday papers?"

Smith seems to be a man of mystery: there are no really detailed accounts of his life.

However, what is clear is that all Titanic officers had to be very aware of the eclipse. I have seen the copy of the 1912 Nau-

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tical Almanac received at the Dominion Observatory here in Ottawa. It is date stamped "received Feb 1911."

When I was a member of the Royal Astronomical Society of Canada in the late 50s, the first thing I would do on receipt of their Observers Handbook was to check out the eclipses for the year.

That was before the days of Fred Espenak and the web!

As I said, the 1912 Nautical Almanac practically falls open at the tipped in eclipse centerfold!

For 1912 sea captains, centerfolds had a different connotation than they do today!

So, given the knowledge of sea captains of the era about the night sky, mention of the eclipse is conspicuous by its absence when Lightoller said "no moon" was item number one on the "we had a problem" list.

I don't normally walk around knowing what the current phase of the moon is -- at least until I bought my Casio watch!

But in the week before a solar eclipse which is going to be 90% total in a certain locale, residents of that locale have "moon phase" on their mind. New moon coming up. London was 92% total. (Well, 92% partial.)

As I said, sea captains in 1912 had a double barrage: besides the Nautical Almanac, which they consulted on every trip, they had read about it in the Times, on the nautical page.

In one double-page photo spread in the Daily Sketch of April 18, 1912 the upper half of the spread is about Titanic, and the lower half is about observing the eclipse, with a sea captain pictured using his sextant to observe the eclipse in London!

Sky & Tel had an article about the night sky when Titanic went down several years ago. No mention of the upcoming eclipse. And the authors later told me they had missed it!

So, London and Paris newspapers on Weds 17 April 1912 have two big events: Titanic and eclipse.

Yet when we consult the hearings, and the highest ranking officer survivor says "no moon" and doesn't mention the eclipse, mighty strange! IMO

BTW, the May 66 annular-total I saw and photographed as a broken ring, from Greece (pix in Aug 66 S&T), was also the same saros! LRM



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ARVAL - Annular Solar Eclipse in Venezuela 2005, April 08

From : "Henry Mendt" <henry_mendt@yahoo.com> To : <solareclipses@aula.com> Date : Wed, 17 Apr 2002

Hello, Our new Web page "ARVAL - Annular Solar Eclipse in Venezuela 2005, April 08" is available at <http://www.oarval.org/2005Apr08Ve.htm>

Regards, Andrés Valencia, Henry Mendt, Arnaldo Arnal, Iván Rubesa,

Observatorio ARVAL Caracas, Venezuela Lat. 10° 30' N, Long. 66° 50' W (UT - 4hrs.) <http://www.oarval.org>

Seeing the sights or saving them? by Joe Cali

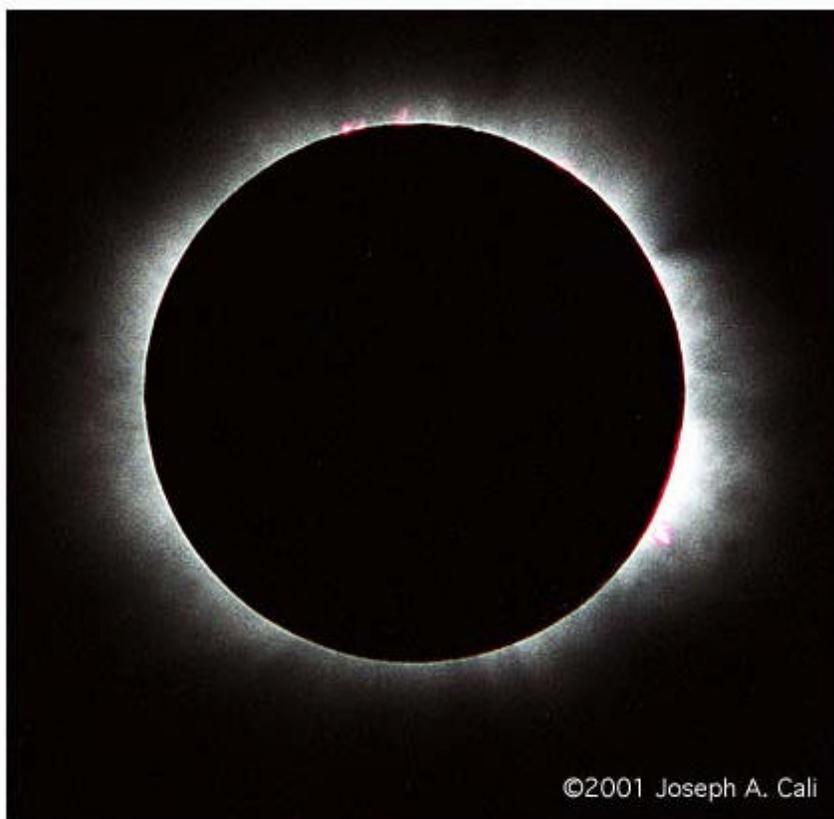
During a recent vacation in Zambia, Joe Cali helped to prevent hundreds of African villagers from sustaining permanent eye damage.

I travelled to Zambia to observe a total eclipse of the sun on June 21st. Before and after the eclipse, I'd intended to go around and see the sights.

Total solar eclipses occur every few years. The associated partial eclipse is widely visible. The total eclipse is only visible along a thin track between 20 to 200km wide covering less than 1% of the Earth's surface. The diagram on the left shows the zone of totality in red and the grid shows the area of visibility of the partial eclipse. The vertical curved lines represent time of the maximum eclipse. The horizontal curved lines represent percentage obscuration in 20% increments. The analema that encompasses each end of the track are the zones where the Sun rises or sets during eclipse.

Ever increasing numbers of people are chasing total eclipses in all corners of the globe. Zambia was my third such expedition. As a keen photographer, I combine these eclipse expeditions with extensive travel in those countries. Eleven thousand people had the same idea and rolled into Zambia the week prior to the eclipse. Similar numbers went to Zimbabwe and less to Mozambique and Madagascar. Very few eclipse chasers are amateur or professional astronomers. Most simply go to see one of the most spectacular natural events visible from planet Earth.

Ten days before the eclipse, I had an



Details : Taken at Kapini village Zambia E28°15' S15°12'
 Pentax M 500mm f4.5 with 7 element 2x converter
 Fuji press 1/250s f16 effective
 Single exposure with unsharped mask & digital retouch
 South is up.

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opportunity to go and live in a small village north of Lusaka for a few days. As a keen photographer, the opportunity to photograph a social documentary was too tempting to refuse. Kapini is a village of one thousand Lenge tribe people located 25km north of Lusaka. It has no power or telephones. The locals live in mud brick huts with grass thatched roofs. There is a primary school. Older students attend boarding high school some distance away. The government charges substantial fees for schooling. Not all children can afford to attend school.

My hosts owned a group of four small mud brick huts. The local diet is based around a starch made from boiled ground maize eaten with fish, chicken, eggs or rats and a variety of vegetables.

During my stay, I visited Kayosha school. I wanted to see the eclipse educational materials and the observing methods. The teachers told me there were no materials. Some men in the village were making plans to smoke glass and children were collecting silvered sweet wrappers to view the eclipse. I was absolutely horrified.

I immediately began working with the teachers. We constructed safe viewing apparatus out of materials we collected around the village. Shaving mirrors became eclipse projectors that would be used to project the sun's image into the meeting hall. The school

Illustrations

Above : Eclipse map showing the global view of the June 21st solar eclipse courtesy of mr.eclipse.com, For more information on solar and lunar eclipses, see Fred Espenak's personal eclipse site <http://www.mreclipse.com> or his Nasa Goddard Space Flight Center Eclipse Home Page: <http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html>

Right : Photograph of the inner corona during totality. The red patches around the sun are prominences. These are parts of the sun's surface ejected tens of thousands of kilometers into space by magnetic eruptions within the Sun. The prominence at 4 o'clock was suspended in space. The part furthest from the Sun is approximately 60000 km from the sun's surface. Polar brushes can clearly be seen around the northern limb (bottom of picture). Complex filamentary structures related to high magnetic storm activity are particularly apparent on the right hand (east) limb. To see a series of these photos covering various parts of the corona, click on the more photos link at the end of the article.

had no duplication facilities. I hand wrote basic educational and safety information on a few posters that were put up around the village. The headmaster asked me to return on eclipse day to assist the village. I'd arranged to see the eclipse with two friends who were due to arrive a few days later. As I departed, I told the headmaster I would try to return.

In Lusaka, I learned that the Zambian government had promised to spend US\$250000 on preparations. This represented only a fraction of the eclipse budgets of neighbouring countries. A TV campaign had reached the people in Lusaka, outside the city little information was made available. The ministry of finance delayed releasing the funds until it was much too late to use the funds for any meaningful eye damage prevention measures. Their inaction must have resulted in widespread eye damage. I realised that we could prevent hundreds of cases of eye damage in Kapini village even if we could do nothing in the rest of the country. My plans to visit Victoria falls were postponed. I e-mailed my two friends. Bengt Alfredsson is a member of SEML and well known to many list readers. Christian Fritzowski is a web designer from the Ruhr in Germany. Both agreed to join in when they heard what was going on. Jeffrey Eccleston, an English science teacher and another SEML member had an existing interest in this type of work and asked to join in.

Two days before the eclipse a government minister was seen on television sending thirty university students each armed with 1000 pairs of eclipse glasses to the country to educate and distribute glasses. Thirty students to speak to 6 million people spread over 750000 square kilometres in just two days? What a farce!

We returned to the village early on eclipse day. The eclipse was due to begin after lunch. We set up our cameras and other equipment that morning then began talking to the villagers who had gathered around the school to watch us. One student turned up with sweet wrapper lined sunglasses. I assured him in no uncertain terms that he would go blind and would not be able to read or be able to play soccer. The message sunk in. We didn't see any more sweet wrappers or smoked glass all day.

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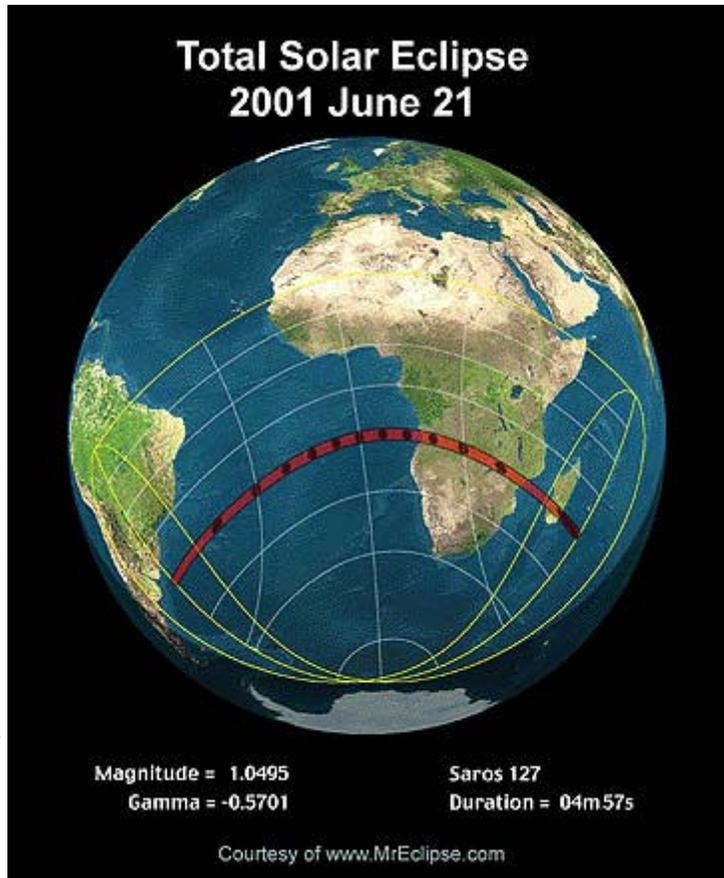
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We distributed some eclipse glasses we had obtained. Ten people shared each eclipse filter. Mirror sun projectors were operating around the school. The school grounds were full of people as the temperature dropped and the light began fading rapidly. The atmosphere was electric as we counted down the last minutes to the total eclipse. Villagers spilled onto the school soccer oval and villagers began ululating in that uniquely high-pitched African style as the Moon's shadow swept across the landscape at 4000kph engulfing the village in its wake. We signalled the villagers that it was safe to look directly at the eclipse with a toot of a car horn.

There was a brief total silence followed by one simultaneous gasp as the villagers got their first view of the Sun's magnificent coronal streamers radiating out from the dark lunar disk. There was a deep crimson glow encircling the horizon capped by a yellow band that melted into deep blue sky overhead. Try to imagine a 360 degree sunset where twilight lasts 60 seconds and you start to get the picture. Jupiter and a handful of bright stars became visible then my eye was drawn to a small telescope I had set up. The sun's corona is an impressive sight to the naked eye. Through a telescope, it is astonishing. The corona has a much more complex structure when viewed through a telescope than can be seen with the naked eye. Prominences, parts of the sun's surface thrown into space by magnetic storms on the sun, encrusted the lunar limb in ruby red blotches. The villagers screamed and cried as totality progressed.

Totality ended with a spectacular diamond ring that seemed to last forever. We all exchanged glances. Everyone had huge grins on their faces. Even those of us who have seen numerous eclipses rated this as one of the best we'd ever seen. The villagers were coming up to us, some with tears in their eyes thanking us for helping them see the eclipse.

We returned to Lusaka. The group dispersed. I returned to the village as a guest science teacher for a day. I learnt that our project had been an outstanding success. The medical clinic had not received a single patient with eye damage. So little effort had made such a difference to these peoples lives.



Film and Xray these days

From : "76630,2206" <76630.2206@compuserve.com> To : "INTERNET:SOLARECLIPSES@AULA.COM" <SOLARECLIPSES@AULA.COM> Date : Tue, 23 Apr 2002 08:56:51 -0400

Message text written by INTERNET:SOLARECLIPSES@AULA.COM New cameras arriving soon on the market:

CANON will have an EOS D60 model with 6 Mpixel Cmos (not CCD) for , probably, around 5'000 \$ more or less. You can use the full line of EF lenses with that camera.

SONY video cameras: new Digital8 model will now have STREAMING USB ! the USB port allows to do streaming , so you can use the cam as a webcam, too, e.g. with NetMeeting. Provided you have the necessary software to do streaming right on your website it will be soon possible to do live streaming of an eclipse. This videocamera has x25 optical zoom, equivalent to

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around 1150mm focal length. Time to upgrade ! ;-) Klipsi<

Klipsi: The demands of solar eclipse photography preclude the use of digital cameras. The chips have neither the resolution nor the latitude required for high-fidelity coronal photography. I also have questions as to how the flash spectrum can be rendered--the yellow He line and the H-beta line are in regions where color sensitivity may be very weak. I'll wait for the technology to catch up. -- Robert B Slobins

From : Jay.M.Pasachoff@williams.edu

My wife and I are going to Ceduna (via Sydney, Adelaide, and Melbourne) on May 16-19 to reconnoitre, so if anybody wants me to check anything special there, please let me know. Please reply directly to jay.m.pasachoff@williams.edu rather than to the mailing list as a whole. We will leave the US on May 11. Jay Pasachoff

Eclipse stamps from the Maldives

From : "Chris Malicki" <kmalicki@idirect.com> To : <SOLARECLIPSES@AULA.COM> Date : Tue, 23 Apr 2002

I went to a stamp show in Toronto and bought eclipse stamps from the Maldivian Islands commemorating the 1999 TSE. Interestingly enough, the eclipse was visible there only as a partial according to Fred Espenak's circular. I am not aware if anyone else has these stamps posted on their site. (I tried to access Martine Tlouzeau's website to check her very extensive collection, but could not get through). Please check out: <http://webhome.idirect.com/~kmalicki/stamps99.htm> Chris Malicki



From : "Jean-Paul GODARD" <jean-paul.godard@noos.fr>

Hello every eclipsestampchaser..., Hi chris The answer is "Yes she has" Have a look to <http://mseclipse.free.fr/timbres/timb95-99.htm>

As Martine's webmaster, I understand that there is a broken link, maybe due to the renaming of our provider... (Formerly "cybercable.fr" and no "noos.fr" as entry point) Cordialement, Martine & Jean-Paul ("We met in Moon's Shadow") tlouzeau@noos.fr jean-paul.godard@noos.fr

From : "Chris Malicki" <kmalicki@idirect.com>

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Thank you for pointing this out Jean-Paul. I would have certainly mentioned it in my post. I tried to get into Martine's site through Fred's eclipse stamp page but that link is broken. Martine's eclipse stamp collection is superb and the best I've seen. I would ask all eclipse enthusiasts with interest in stamps or eclipse memorabilia to check out her wonderful collection. Chris Malicki



From : "Olivier \"Klipsi\" Staiger" <klipsi@bluewin.ch>

>Hello every eclipsestampchaser..., Hi chris The answer is "Yes she has" Have a look to <http://mseclipse.free.fr/timbres/timb95-99.htm>

and on <http://mseclipse.free.fr/timbres/timb75-94.htm> where you can see a stamp from Antarctica in 1986, a year after the 1985 TSE . It is from Australia, celebrating the anniversary of the Antarctic treaty. I doubt that the image shows an eclipse, I rather see a solar halo. I maybe wrong. It could show a superimposed totality with the sun in front of itself. but I believe this shows a solar halo rather than an eclipse. The stamp itself simply celebrates the Antarctic treaty and the Australian Antarctic Territory, no mention of astronomy nor eclipse. Note that McMurdo station had a very, very deep partial eclipse in November 1985. Klipsi, Papparazzo del Cielo



Romania Eclipse stamp
1999