SETalk

It is a pity that Freddy Dorst and Crag Small do not appear on my eclipse chasers league table? Please see: www.clock-tower.com/tse.htm I never add anyone to the list without their permission, but if anyone can persuade these two leading eclipse chasers to allow their data to be added I'd really appreciate it.

For information on how to send the data you will see on the web page at the bottom, after the table, what data I need to add people to the list.

From: Mark R. Kidger

Sheridan: I'd like to offer myself as the other extreme. I have gone to 3 eclipses (2 total and 1 annular) and am yet to see one - my best effort was to see the Sun about 2 minutes AFTER totality.

Can anyone beat this? (my next attempt will be the 2005 Spanish annular - eclipse chasers are warned to avoid my site!) Mark

From: ChrisDwyerSenl200401hbosts.com

Sheridan, I would like to be added to the league table. Not a high attempt or hit rate, but I am hooked now!! Details are as per your requirements :

1. Chris Dwyer
2. Scotland
3. chrisdwyerSenl200401hbosts.com
4. 1999 and 2002
5. St Ives, Cornwall and Northern Botswana
6. 0 secs and 74secs (est)
7. 5 (total cloud at Cornwall) and 1 (perfect clarity in Botswana)

Also managed to catch the Annular in Durness Scotland 31st May. Clouds parted at just the right time, and saw "ring of fire" cue Johnny Cash song... Got hooked since seeing the shadow pass over in Cornwall, although no view due to cloud cover the actual "light going out" was spectacular.

Just a pity none on this year, though transit of Venus should be entertaining. Got my heart set on Easter Island 2010, though there will probably be a scramble for places and limited availability - if anyone has any info on booking/getting there, I would be interested to hear. Regards, Chris Dwyer

From: Glenn Schneider

Sheridan, I will contact Criag Small and ask him about this. I believe he has been in the umbra 21 (rather than 22) times - but as Joel M. has said, indeed he never has been clouded out. John Beattie (NYC), now, 24 (same as me). I have lost count for Daryl Nye, as I have not spoken with him in the last few years (though we both live in Tucson!), but he is up around 26-28. I will contact him as well, as I suspect he, rightfully, should be at the top of your list (takes the pressure off of me ; -)). Wendy Carlos should be here as well. I think she has done about 15-16 TSEs (missed a few along the way), I'll drop her a line too. As to Freddy, I must admit I had never heard the expression "doing a dorst" before - but I will laughingly adopt it into my umbraphillic vocabulary. I hope I did Freddy proud with my 1997 dorstian run to/from Siberia.

W.r.t. umbraphillia. I have been able to chase down my first use of the word Umbraphile, in the context which it is now used by many on SEML, back to Oct, 1977 - in a letter I wrote the mayor of Lewistown, Montana (where a group of about 75 of us headed for TSE 1979, though we ended up observing from a field outside of Roy, Montana). I asked here some time ago, but I would like to know if that subliminally entered my vocabulary from somewhere else, or if I had coined the term at that time (or earlier). Does anyone know of an independent origin - at least in the context we use it? Cheers, -GS-

From: Robert B Slobins

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There was a woman who chased eclipses from about 1887 through 1925. Clouds and wars kept her from seeing totality until 1925, I believe. She wrote a book on all of this and her name escapes me.

Mike is right; who would want to be on an eclipse expedition with totality's equivalents of the Chicago Cubs or Boston Red Sox?

On the other hand, perhaps a large contingent of the lucky could ward off such individuals' jinxes. Although I am 13 for 13 (11 totals, 2 annulars), I have checked out the records of the eclipse tour operators for their success ratios. Do not forget, mobility is crucial, so ensure that a group can move and can obtain good weather information.

It also helps to cheat and fly like a few on this list recently did! ;-) cheers/rbs

From: Mike Simmons

I once met someone who claimed to have gone to nine eclipses and been clouded out at EVERY one. I couldn't independently verify this and I have absolutely no intention of traveling to an eclipse shaow with this person. Mike Simmons

From: Luís Miguel Viterbo

Dear Glenn & all other umbrasecutors, Regarding the terms "umbraphilia" and "umbraphile" used in this context, I might venture to claim that no linguist would coin such a word. It is a hybrid neologism, in spite of it having been used before as an adjective to describe plants that live in the shadows, today called sciophilous plants among other names (those plants are known as sciophytes). Hybrud because it stems both from Latin (umbra) and Greek (philia).

Of course, "umbrasecutor" is an abhorrent word. But all other well-formed words are almost equally queer. Anyway, the Greek ones (second group below) are far better than the Latin (first group):

Umbrasequious (adj. / also n.?) - as in solisequious, following (sequor) the course of the sun, as in solisequious plants = heliotrope Umbrasecutor (n.) - as in persecutor and prosecutor, this might possibly be the correct noun form (secutor = follower, chaser)

Sciophile or Sciaphile (adj. / also n.) - as in sciophobia and sciaphobia, fear from shadows (the noun is formed as in bibliophile, cinephile, etc.); see also sciagraphy or sciamachy (from the Greek stem Ïƒ Î Î¹Î¬ -- skia or scia) Sciatrope (adj. / also n.?) - as in heliotrope, plant that turns (trepein, tropos) to follow the sun (helios), like sunflowers

If there is anyone out there with better knowledge of Latin and Greek than I (which is not difficult...), please enlighten us. I'd sure like to introduce myself as a Sciatrope or even the Hebrew word for it, if only I knew that was the right word. Cheers, Miguel Viterbo (writer, but only in Portuguese...)

From: barr derryl

The book Robert refers to is "Chasing Eclipses" by Rebecca R. Joslin. Joslin observed the 1900 eclipse in the US and wanted more. She went to Spain in 1905 to only be clouded out. She intended to journey to Norway in 1914, but while crossing the Atlantic the Great War broke out and she found herself stranded in England. In 1925 the eclipse came to her in New England, and she observed it in perfect all be it frigid skies. While most of her book deals with the distractions that kept her occupied during her several failed attempts to observe totality, she certainly ranks as a true umbraphile worthy of her own place in the annals of those who devote so much time, effort and money to chasing the shadow. Derryl Barr

Birth of Christ Annular Eclipse

From: davidSenl200401starfield.com.au To: SOLARECLIPSESSenl200401AULA.COM Date: Thu, 25 Dec 2003 13:01:35

Last night I watched an interesting documentary on the origin of the Three Wise Men.

SETalk

To cut an extremely long story short, the program suggested that:

1. The Three Wise Men were not kings. They were priests (Magi) who knew a lot about Astronomy/Astrology and could predict, or at least observe, astronomical events.

2. Jesus was not born in the year 0 AD. He was probably born some time between 8 & 4 BC.

3. The constellation Aries represented Israel, and Jupiter represented kings.

4. On the 17th April 6BC an occultation of Jupiter was visible from the Middle East in Aries, with the sun a short distance away in Aries as well.

Having been given this information I rewound the clock in Starry Night Backyard and placed the viewing location near Jerusalem. The occultation began during the morning daylight hours, so they couldn't have visually observed it, but they may have been able to predict it. Also, in the early morning hours before the occultation both Venus and Saturn would have been visible not far away in Pisces.

It would have been a spectacular sight seeing all these important astronomical objects so close together. The documentary described the importance of the occultation in Aries (Israel) and basically suggested that the event was a replacement for the star of Bethlehem.

However being able to see this event unfold on the computer with all the other planets made me think that if I'd known these objects were going to be so close I'd be setting my alarm clock to make sure I woke up in time to see them.

I played with the time a bit and fast-forwarded into the next day. To my utter amazement I noticed just how close the moon was to the sun. It didn't look like a partial eclipse was visible from the current location, but I knew an eclipse would be happening somewhere on the planet. I played with the viewing location until I found it was an annular eclipse through Sweden and Norway!

This played on my mind all night. Could the three Magi have predicted this eclipse even though they probably would not have been in a location to observe it?

Given that a partial eclipse would have only been visible through cloud (acting as a filter) or at sunset, I played with the viewing location again and found it was a partial sunset eclipse near Iran.

Looking closer I tried to determine the limit of the penumbral shadow. Again to my amazement, the limit of the shadow appeared to pass right through Bethlehem!

Now I don't think it matters what your individual beliefs are, but this is a fantastic set of coincidences that deserves more attention, and certainly needs a more accurate determination of the penumbral shadow beyond me playing with Starry Night Backyard.

I haven't been a subscriber to the SEML for long, and perhaps I'm dredging up a topic that has been discussed before, but I'd be interested to see if someone could work out the footprint of the shadow both for the partial and annular phases.

Wouldn't it be funny if the Three Wise Men turned out to be early Umbraphiles? Regards David Finlay http://www.starfield.com.au

From: Mike Simmons

Here is a little background on Magi from a sidebar on the history of Persian astronomy that accompanies an article on astronomy in Iran (Persia) that I wrote for Mercury Magazine (Astronomical Society of the Pacific).

<quote> While Persia's written record spans millennia, clues regarding astronomical observations come to us from the even more distant past. Pottery dating back more than 5,000 years is adorned with painted figures suggestive of constellations. The ziggurat of Chogha Zanbil, built more than 3,200 years ago by the Elamites near their capital of Susa in southwestern Iran, is suspected of hav-

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ing an astronomical purpose, perhaps as an ancient observatory. Many constellation symbols and other celestial shapes made their first appearances in neighboring Babylon. Dating to the dynasty of the Kassites, who migrated from the Zagros Mountains of western Iran over three millennia ago, up to 40 cosmic figures have been found engraved on individual land boundary markers known as kudurru stones.

Iran underwent profound changes with the birth of Persia's religion, Zoroastrianism, in the 7th century BC. Founded by Zoroaster (often known as Zarathustra in the West), the ancient faith is the basis for many of modern Iran's most cherished traditions. Astronomy at the time was the dominion of Zoroastrian priests known as magi (the origin of the term magician) and the holy book of the Zoroastrian faith, the Avesta, has many references to astronomical observations. Zoroaster himself is said to have been an astronomer who established an observatory that produced a zij, a set of astronomical tables.

The founder of the Persian Empire, Cyrus the Great, captured Babylon in 539 BC. The magi that migrated there transformed Babylonian astronomy. For example, they were the first to record planetary motion through constellations. The magi learned from the Babylonian astronomers as well, and translated Babylonian books into the early Persian language. During the 5th century BC, the zodiac as we know it first appeared when Babylonian priests and Persian magi divided the ecliptic plane into 12 equal-sized zones represented by constellations. With refinements in eclipse predictions and the development of astrology, citizens' daily lives were linked to sky events. A few centuries later, three Persian magi are said to have followed a bright star to Bethlehem in the West with gifts for the newborn Jesus. </quote>

The complete article and sidebar are from the Jan/Feb 2003 issue of Mercury. It can be downloaded in PDF format from my web site at: http://www.mssimmons.com/ms/Iran/Mercury_article.pdf Mike Simmons Home page: www.mssimmons.com Iran Venus transit tour: www.vtransit.com

From: Brian Garrett

In those days, I doubt that anyone was an umbraphile--if anything, they were umbra_phobes_. Granted, as watchers of the skies the Magi would have been in a better position than most to understand the real cause of eclipses, but they would have interpreted them astrologically and viewed them as omens of some sort.

One of the interesting bits of information to be gleaned from the moonsighting.com site (though of course it is old news to practicing Muslims) is that the prophet Mohammed knew that eclipses were not portents. He instructed his people to pray during an eclipse, not for deliverance from some imagined threat, but in praise to Allah for the beautiful display of the wonders of His Merry Christmas, happy Hanukkah, blessed Yule, or whatever your preferred Solstice observance may be, Brian

From: Jean Meeus

David, Does all this really make sense? I have read somewhere that the story of the Three Wise Men and of the "Star" has been added several centuries later.

So much has already been written on the subject, with a lot of possible "explanations", going from "the whole story is nonsense" to "the Star was a miracle". Jean Meeus

From: Mike Simmons

One of the surprises of the 1999 TSE in Iran for me was the sound of prayer coming from a town below us as we awaited totality on a hilltop. I recognized that it wasn't the right time for prayer so I asked an Iranian friend about it and was told that the devout would pray throughout the eclipse in thanks. But I wondered if they would then be in the mosque and miss the eclipse as a result (visions of past eclipses where locals missed out because they stayed indoors to avoid the eclipse's supposed harmful effects!). I was assured, however, that they would stop praying and experience totality. Interest throughout the country was very high and the people were for the most part well prepared. Mike Simmons

From: Jay.M.PasachoffSenl200401williams.edu

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I agree with Jean. There is a long literary tradition of making up astronomical events to match historical ones, so quite possibly there was no particular astronomical event linked to Jesus's birth.

There are a number of books on the subject, including recently Author Kidger, Mark R., 1960-

Title The star of Bethlehem : an astronomer's view / Mark Kidger

Publisher Princeton, N.J. : Princeton University Press, c1999 Jay Pasachoff

From: davidSenl200401starfield.com.au

Robert, you are correct, most of the documentary mirrors the information on Molnar's web page and book. However he doesn't mention anything about the eclipse the next day, or that the occultation would not have been visible to anyone in the middle-east as it happened during daylight hours.

Molnar also says the Magi would not have had the ability to predict the occultation (or the eclipse), however if he wants to use it as the "Star of Bethlehem" then he has to give the Magi credit for the prediction.

Eclipses were successfully predicted hundreds of years before this event. I'd like to see his reasoning as to why he thinks the Magi couldn't have figured it out.

Imagine how Herod felt about these events? Being an important and powerful ruler, I'm sure he had Astrologers informing him about the occultation and the eclipse. The combination of these two events could be argued as a trigger for the mass infanticide he committed.

Is there a map of the shadow for this eclipse? I'd like to see just how close it comes to Jerusalem and Bethlehem. Starry Night shows the moon barely kissing the sun at Bethlehem. Regards David Finlay http://www.starfield.com.au

From: Klipsi

at the 1998 annular eclipse on a beach near Mersing, Malaysia, the local muslim cleric was also praying and reading the Coran, over loudspeaker system. It was quite a marvellous event to hear prayers during an eclipse. Klipsi

From: Robert B Slobins

David: I ran the date 17 April -5 on The Sky and Skyglobe. Molnar's date of the 15th was not correct. I also ran a horoscope chart for the date and saw the node in the same part of the sky. With the waning crescent moon, I figured there had to be some kind of eclipse somewhere, and there was the next day.

The magi would have regarded the Moon-Jupiter conjuction as the portent. Maybe they knew that there were to be an eclipse following, but would not know of the type or location thereof. cheers/rbs

From: Mark R. Kidger

Robert, you are correct, most of the documentary mirrors the information on Molnar's web page and book. However he doesn't mention anything about the eclipse the next day, or that the occultation would not have been visible to anyone in the middle-east as it happened during daylight hours. I've had several days with my Internet connection down and find a huge number of messages on the Star of Bethelehem on my return. Obviously my opinions are somewhat partial ones, although I have tried to be objective in my book about the different theories.

This is really a major off-topic and to avoid incurring the wrath of our moderator I'll limit my enthusiasm for the subject. As far as eclipses are concerned, there are only two connections that I can see:

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(1) The March 13/14th 4BC (small) partial luna eclipse that marked the death of Herod. Some authors go for an alternative, later eclipse, but it is really pushing things a bit.

(2) A near total eclipse of the Sun on November 24th 29AD that would have been 95% at Jerusalem. This eclipse could have been the cause of the "darkness at midday" reported at the time of the crucifixion - it took place at around 11am local time - but the date does not tie in with the established date of April 3rd 33AD!

Michael Molnar's theory struck me as being a very exciting new idea but, the more I looked into it and the more that I have discussed it, the less plausible it has seemed. The theory has many holes in it. There were two occultations of Jupiter that occurred above the horizon in Jerusalem: one around midday and the other just after sunset, both impossibly close to the Sun in the sky to be observed. In fact, I would seriously doubt that they could have been observed eeven with a telescope.

However, between 20BC and 1AD there were no less than 170 occultations of the major planets (Venus, Mars, Jupiter and Saturn), many far better visible.

Molnar's connection with the Jupiter occultations relies on the fact that they took place in Aries. Molnar argues that there is an astrological connection of the Jews with the constellation of Aries, but other authorities that I have consulted are, to put it mildly, sceptical and regard the link as totally unproven. Remove the connection with Aries and suddenly the theory falls apart.

Molnar also says the Magi would not have had the ability to predict the occultation (or the eclipse), however if he wants to use it as the "Star of Bethlehem" then he has to give the Magi credit for the prediction. The problem with this is that if you want an invisible star that was an occultation and have so many far more spectacular occultations available it looks as if one is stretching things to fit your target date. If they could predict the occultation then they could have predicted any one of the others around that time that were also invisible. In fact, why the 6BC occultations? The Magi would have crossed the desert so often chasing occultations that they would have earned a round the world trip with their frequent flier miles (do camels accrue them?)

As far as the Magi are concerned, there is nothing other than contextual evidence to say who they were. One expert that I consulted at the British Museum assured me that they could only be Diaspora Jews. I personally feel from none too contemporary contextual evidence that the Persian explanation is correct, but almost nothing is known about Persian science and, more importantly, astrology.

From: Mike Simmons

At 05:51 AM 12/26/2003, Mark Kidger wrote: As far as the Magi are concerned, there is nothing other than contextual evidence to say who they were. One expert that I consulted at the British Museum assured me that they could only be Diaspora Jews. I personally feel from none too contemporary contextual evidence that the Persian explanation is correct, but almost nothing is known about Persian science and, more importantly, astrology.

I consulted a friend who is an archaeologist at the National Museum of Iran who is now working at the British Museum (he travels back and forth) about the Magi (priests of the Zoroastrian religion) in this regard. Here is his reply:

About the text, there is no way that Jewish priests recognize themselves as Magi. Also in the reports they have been traveled from the east. There are many documents about the presence of Persian Magi in Babylon and other centers for astronomical and astrological studies. The name of Balthazar,(Bel ta usur?) shows this Babylonian connection. Caspar more looks an Iranian name. The old historians in the west aslo have mentioned this and also mentioned that : the name of their teacher(Zoroaster) means a star worshiper. So there was always a connection between the Magi and their religion and stars. Zoroaster also is told that he has been established a Zeej or a place for observing the stars and Magi also had this science and followed him. Now I am writing a chapter of my thesis about priests, and sometimes I am coming acoross to these topics in Classical sources. Mike Simmons

From: Mark R. Kidger

Sorry to disappoint you, but the Magi are wrapped up in a load of myth and later revision. The names of the 3 Magi (there is no evidence whatsoever that there were 3, only the highly symbolic 3 gifts) date from the 5th Century AD and were not even com-

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monly used for 5 more centuries. The Magi were set down by Hippo around 430AD to represent the whole world and later refined by the Veenerable Bede around the early 8th Century to stand for the three races of the world (European, African and Asian), although it was not Hippo who introduced the names. The names were presumably chosen to reflect the three races.

As this is an off-topic I won't go deeper in, but yes, there is quite wide agreement that the Magi were Zoroastrian priests of the caste of the Medes (known as "Magi") and this sect is still found in northern Iran.

TSE 2002 link pages?

From: Stig Linander To: solareclipsesSenl200401aula.com Date: Mon, 08 Dec 2003 22:39:27

Fri, 28 Nov 2003 12:49:25 +0100, I asked ... Any other TSE 2002 link pages on the web?

I've received many suggestions. Thanks. But those link pages were either very short or the links were embedded in other contexts.

Now I've created a link page myself: http://www.linander.dk/stig/se02lnks.htm

No frames, no un-standardized features, no need for plug-in's, just plain html.

The links are ordered by country (inspiration from Fred Espenak's
http://www.mreclipse.com/TSE01reports/TSE01reports.html and
http://www.mreclipse.com/TSE99reports/TSE99reports.html).

Of course, comments are welcome. Best regards, Stig.

From: Stig Linander

Hi, I've just updated my "Reports of the 2002 Total Solar Eclipse" link page:

http://www.linander.dk/stig/se02lnks.htm

Most of the links have been obtained by scanning SEML of December 2002 and January 2003. I've tried to order the reports west to east - however, I may have made mistakes. If you have any comments, please let me know off-list. Best regards and a Happy New Year to all of you, Stig.

TSE2003 Qantas Flight Photos

From: Daniel Lynch To: SOLARECLIPSESSenl200401AULA.COM Date: Fri, 02 Jan 2004 01:14:36

The ecliptomaniacs just put up a small sample of my shots from the TSE2003 Qantas flight. There are a couple of screengrabs from my camcorder and one or two scenic Antarctic shots. Nothing special but I thought I'd share them anyway. I'll be putting up more images and proper text in the near future.

Please see http://www.ecliptomaniacs.com/2003/nov23/dl/index.htm

Thanks to the ecliptomaniacs for facilitating them. Happy New Year to all on the SEML, Daniel Lynch

SETalk

"winged sun" corona?

From: Trudy Bell To: HASTRO-LSenl200401LISTSERV.WVU.EDU Date: Mon, 29 Dec 2003 14:05:24

List - Does anyone know if there is documented evidence that ancient Egyptians ever saw the solar corona during a total solar eclipse? In the book Chasing Eclipses: The Total Solar Eclipses of 1905, 1914, 1925 by Rebecca R. Joslin (Walton Advertising and Printing Co., Boston, 1929), the book concludes on p. 140 with a drawing of a winged sun and the final paragraph (describing the author's reaction to having seen the solar corona): "The glorious celestial spectacle had been thrilling, even if the Sun-God had not assumed so quaint and spidery a raiment as on some former occasions, notably pictured in the last century, nor spread out the enormous prehistoric wings of the "Winged Sun" as they are carved on the monuments and gateways of Egypt and western Asia." Certainly in some solar eclipses the gossamer horizontal extensions of the outer corona can indeed resemble wings. Joslin's paragraph thus made me speculate: If the "winged sun" indeed represents sightings of the solar corona, might the dating of such artwork or sculptures be of *any* assistance in tracing back the presence of the corona into antiquity and any correlation with old Maunder minima? Just curious, based on this striking text reference! - Trudy E. Bell
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Trudy E. Bell / Writer and Editor 1260 Andrews Ave. Lakewood, OH 44107 phone: 216-221-5008 fax: 216-221-5088 [call or e-mail first - it's off to stop unsolicited junk faxes] t.e.bellSenl200401ieee.org http://home.att.net/~trudy.bell

From: David Iadevaia

Hi Trudy...the solar corona, to varing degrees, is always seen during a total solar eclipse. The wing shape may be due to the Sun's magnetic field. The field lines essentially eminate from the poles and "flatten" at the equator giving an elongated shape to the corona seen with the eye. The height the Sun is above the horizon during totality and the phase of the sunspot cycle will probably effect the size of the "wings". Check out the SOHO satellite daily corona images of the Sun. Various eclipses I have seen show varing elongation or "wings"..the best recent set of "wings" I have seen was the eclipse of July 1991 from Baja MX. David Iadevaia http://ecc.pima.edu/~diadevaia/

From: Dr. B. Pfeiffer

Dear all, dated solar eclipses certainly would be useful for determining the slowing down of Earth's rotation. As far as I know, there are few (or none) data from ancient Egypt in the corresponding literature. Regards Bernd Pfeiffer

From: Storm Dunlop

The suggestion that the Egyptian winged sun symbol might represent a solar eclipse goes back to E.W. Maunder ('Knowledge', vol. XX, p. 9, January 1897):

" There can be little doubt that the Sun was regarded partly as a symbol, partly as a manifestation of the unseen, unapproachable Divinity. Its light and heat, its power of calling into active exercise the mysterious forces of germination and ripening, and the universality of its influence, all seemed the fit expressions of the yet greater powers which belonged to the Invisible.

What happened in a total solar eclipse? For a short time that which seemed so perfect a divine symbol was completely hidden. The light and heat, the two great forms of solar energy, were withdrawn, but something took their place. A mysterious light of mysterious form, unlike any other light, unlike any other single form, was seen in its place. Could they fail to see in this a closer, a more intimate revelation, a more exalted symbolism of the Divine Nature and Presence?"

In 'Glorious Eclipses' (Brunier, S. & Luminet, J.-P., Cambridge University Press, 2000), which I translated, Jean-Pierre Luminet says on the matter of whether the ancient Egyptians observed eclipses:

"... Numerous historians have investigated the question; some have suggested that the very particular appearance of the Sun during an eclipse might be represented in an allegorical form.

A valuable piece of evidence that allows us to confirm this idea is the Zodiac of Osiris. This circular vault in bas-relief representing

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a celestial planisphere was found in a temple at Dandarah (Dendera), in Egypt, during Napoleon's campaign. It is now in the Louvre Museum. The positions of the planets on the Dendera Zodiac allow us to give quite a precise date for the foundation of the temple, dedicated to Osiris, in which it was found. It was between June and August of the year 50 BC. Careful study of the cartouches reveals two symbolical representations of eclipses. An eclipse of the Sun is symbolized by a disk within which a goddess is pulling the tail of a baboon, which signifies that she it trying to liberate the Sun. The baboon is, among other things, a representation of the Moon in the form of the god Thoth. Another cartouche, which shows a disk enclosing a central eye, this time symbolizes an eclipse of the Moon. Astronomical reconstructions show that an eclipse of the Sun did occur at Dendera on 7 March 51 BC, in the region of the sky in which it is represented on the zodiac, that is, in the constellation of Pisces. In addition, a total eclipse of the Moon occurred on 24 September 52 BC, at the exact point where it is sown in the Dendera zodiac, in the constellation of Aries."

Slightly later, he says: "The similarity in shape between the solar equatorial streamers and the Egyptian symbol of a winged Sun is disturbing. Is the sight of a darkened, eclipsed Sun encoded in this symbol?"

From: David Iadevaia

The ability to regress back in time to determine whether an eclipse had occured at a particular location at a particluar time is extremely difficult and the further back in time you go the more difficult it is. The math works out OK after all the variables are accounted for (Earth's length of day, orbital period,precession caused by the Sun and Moon on the Earth etc), but the problem is usually knowing if the written record was accurate to begin with. The location on Earth and the time, even being off by several months or miles would be enough to give faulty results. This is what I think Bernd is experiencing with the programs he is using. In other words the artifact is probably not being interpeted correctly as to time and location and the program is approximately calculating the eclipse closest to the time and location one would have liked to be the case. You can easliy test this for yourself, run the programs for more recent eclipses and change the location slightly. David Iadevaia

From: Trudy Bell

Re David Iadevaia's comment below - In the late 1970s, John A. Eddy of the High Altitude Observatory (if I recall correctly) had done historical sleuthing and had found that apparently there were virtually no sunspots, no aurora, and *no solar corona* seen during total eclipses of the sun for most of the 17th and 18th centuries, a time that also coincided with the "Little Ice Age" in Europe. From that and tree-ring details, it appeared that the sun had entered what he called a Maunder Minimum of solar activity, which also corresponded to climatic effects. Eddy's work appeared in Scientific American and elsewhere. So my questions are: is Eddy's theory about Maunder minima still accepted in solar physics? If so, might the portrayal of a winged sun during Egyptian times bear any relationship to the appearance of the corona during solar eclipses? (No satellite images necessary - if the Egyptians saw anything like I have during 5 total solar eclipses, the corona would have been striking to the naked eye.) THANKS! - Trudy E. Bell

From: joannecoSenl200401MAINE.RR.COM

Hi Trudy, No. The problem with wanting the winged sun to represent an eclipse is that it ignores ancient Egyptian iconography. The fact that you or we as moderns can connect the two images does not mean that the Egyptians would have chosen to show an eclipse this way. Egyptians used pictures (hieroglyphs) for writing, so much of their art can literally be read.

The winged disk is a god and there are stories about him. I don't think you will find the stories indicating that the god could be an eclipse. I don't know of any Egyptologist who thinks the winged disk represents an eclipse. Joanne Conman

From: Joan Griffith

For whatever it is worth: The Ancient Egyptian Winged Disk Symbol and Total Eclipses ... considerable evidence which supports E. Walter Maunder's theory that the ancient Egyptian "winged solar disk" symbol was, in all probability, inspired. ... http://wingedsundisksymbol.homestead.com/

An interesting & extensive web site. Just do a search for "winged solar disk" for some others. True or false? Maybe the answer is lost in the past. Joan The heart has its reasons of which reason knows nothing.-- Blaise Pascal

(Continued on page 55)

SETalk

From: Dr. B. Pfeiffer

Dear Storm, I just tried to reproduce your solar and lunar eclipses.

a) According to Redshift and Skymap, there has been no total solar eclipse at the given location and date. I tried Cairo and Alexandria. The solar eclipse was only partial. And in any case, there would have been no corona visible, I presume, as the eclipse was central, but in form of a ring. The diameter of the Moon was 29'55.5", but the diameter of the Sun was 31'56.0".

b) Both programs calculate a total lunar eclipse, but for about 1 o'clock at September 26, not Sept. 24.

Might be I made an error?

And a question to the scholars. 50 B.C., I would call this period hellenistic. I presumed you spoke of pharaonic Egypt. Regards Bernd Pfeiffer

From: Dr. B. Pfeiffer

Dear David, the programs I used take into account the Length of Day, at least to a good approximation. And I used two programs, as they have slightly different approximations. Also both programs agree, that the solar eclipse of March 7, 51 B.C. was an annular, not a total eclipse. Celestial mechanics can be calculated 2000 years backward in time, so the diameters calculated ought to be correct. Regards Bernd Pfeiffer

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

Dear Trudy, as I am just preparing a talk on Cosmic Rays for a broader public, I am scanning the web for information. Some days ago, Nature Science Update had an abstract on an article published in the Los Alamos preprint server on the influence of solar activity on climate as indicated by food prices in England from the Middle Ages till the end of the Maunder Minimum. http://www.nature.com/nsu/031215/031215-12.html

There are only ongoing discussions how the solar activity influences climate, but the fact seems well established. Regards Bernd Pfeiffer

From: David Iadevaia

Hi Bernd...I was not questioning the programs but the artifact which was claimed to suggest an eclipse occurance, David www.api-az.com ecc.pima.edu/~diadevaia

From: joannecoSenl200401MAINE.RR.COM

Hi Rolf, I'm curious to know why you think the images are connected, if you do. Is that discussed in your paper? The gods connected with the winged disk in Mesopotamia have quite different functions AFAIK from disk in Egypt. regards, Joanne Conman

From: rolfSenl200401SANTAFE.EDU

Hi Trudy -- I published a note on this subject (*) in which I speculated that some Egyptian and Babylonian motifs were inspired by solar eclipses. [This is in "Science" Vol. 196, pp. 715-17 (May 13, 1977). I can forward this to anyone interested as a .pdf file.] Cheers, Rolf

TSE2003 Qantas Flight Photos

From: Daniel Lynch To: SOLARECLIPSESSenl200401AULA.COM Date: Fri, 02 Jan 2004 01:14:36

The ecliptomaniacs just put up a small sample of my shots from the TSE2003 Qantas flight. There are a couple of screengrabs

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from my camcorder and one or two scenic Antarctic shots. Nothing special but I thought I'd share them anyway. I'll be putting up more images and proper text in the near future.

Please see http://www.ecliptomaniacs.com/2003/nov23/dl/index.htm

Thanks to the ecliptomaniacs for facilitating them. Happy New Year to all on the SEML, Daniel Lynch

TSE League Table

From: Sheridan Williams To: SOLARECLIPSES-Senl200401aula.com Date: Mon, 29 Dec 2003 17:12:41

Eclipse Chasers' League Table

It has been pointed out by Peter Tiedt that some people won't contribute because they see the table as a competition or league. I have amended the table and called is the Umbraphiles' Eclipse Observation Record. Also it is now sorted in name order so as not to appear as a competition.

Please let me have your comments, off-list of course to: sheridanSenl200401clock-tower.com.

Also Jay Pasachoff requests that the list includes annulars. This would make the list very wide. Has anyone any idea what format the table should be in to accommodate both totals and annulars (and hybrids of course).

From: Robert B Slobins

Sheridan: It should be also noted that although being at and seeing eclipses is great in itself, we should pay some attention as to satisfaction. This means whether or not one accomplished what one intended and set out to do.

It is not too much fun when one fails to photograph totality, for example, when everything else was favourable for it. cheers/rbs

From: Gerard M Foley

Google did not turn up anything helpful on Umbraphiles' Eclipse Observation Record

What is the URL, please? Gerry

From: Mark R. Kidger

Spiders and search engines generally update records and add new pages only every 4 to 6 weeks, so it is too early to expect Google to have the new page if it is a recent change.

Mark

From: Georg Lenzen

Have a look at http://www.clock-tower.com/ , then Total Solar Eclipse Chasers' Statistics Georg

From: KCStarguySenl200401aol.com

George and Sheridan Williams Thanks very much for looking that up. I new it was somewhere as I remembered when I sent in stats awhile back. That is an awesome chart. I would like to see it just totals unless annulars can be sorted out somehow (annulars are like kissing your sister- definitely not as much fun!!!) Congrats again.

From: Gerard M Foley

Thanks. Turns out I'm already there! Gerry

From: Sheridan Williams

Freddy Dorst who has been successful on 20 out of 22 eclipses has been added to my table.
Also I have added Christiaan Klein Lebbing (4 out of 4)
Updated Mick Wolf (11 out of 11)
Leticia Ferrer (6 out of 6)

I would like to thank all those above and hope one day to be able to include Wendy Carlos and other prolific Umbraphiles.

Updated table (now in alphabetical order) can be seen at: www.clock-tower.com/eclipse.htm and click on Eclipse Chasers' Observation Details

Antarctic Eclipse Viewers at AAS?

From: Glenn Schneider To: SOLARECLIPSESSenl200401aula.com Date: Sat, 03 Jan 2004 05:29:39

Jay Pasachoff and I will both be attending the American Astronomical Society meeting next week in Atlanta, Georgia. Any other Antarctic Eclipse observers planning to be there? If so maybe we can arrange an evening get together? Drop me an email or leave a note on the message board at the conference center. Jay and I will both be at the special session on Sunday (4 Jan) on the Transit of Venus (and I'll be there through Thursday, 8 Jan). Cheers, Glenn Schneider

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Umbra-whatever, Scio-whatever.

From: Peter Tiedt To: SOLARECLIPSESSenl200401AULA.COM Date: Tue, 30 Dec 2003 04:43:47

Now may be the time to construct a word to describe the passion central to this group.

I am not a linguist, so let's leave it to those who are.

Luis has already said that we should not have "hybrid" words, so let's construct a "non-hybrid" word.

Some Greek alternatives have been proposed.

So - for some Latin based - what are the Latin words for follower, observer, chaser, lover, etcetera.

Julius Ceaser said - I came, I saw, I conquered (Veni, Vidi, Vici) - this may be a tack to follow.

Or we can work on the other ancient tongues such as the Persian, Hebrew, Egyptian and so on. I was going to say Chinese, but most of us would have problems with the spelling / writing there. My 2c worth ... Peter

From: Govert Schilling

'Venator' is Latin for 'hunter'. Apparently, we're all umbravenators. -Govert

From: klipsiSenl200401bluewin.ch

and Freddy Dorst thus is a umbravelociraptor ;-)

From Thomas Goodey:

Regarding the term "umbraphile", perhaps honorable list-members would like to adopt the motto of the State of Belize - "Sub Umbra Floreo" - "I flourish in the shadow"..... Yours, Thomas Goodey

Annular eclipse table

From: Sheridan Williams To: SOLARECLIPSESSenl200401aula.com Date: Sat, 03 Jan 2004 14:32:39

Table of Annular Eclipse Viewing Statistics

I have started the table of annular eclipse statistics. Would those who want to be included please email me their data off-list:
To: annularSenl200401clock-tower.com Subject: annular data

Please use either or both of the above otherwise your data may get filtered out with the dozens of spam messages I get every day.

Just to remind you - I need the following details:
1. Your full name
2. Country in which you reside
3. Email address
4. Month/Year of total eclipse
5. Location (lat/long, or nearest place name) from where you observed
6. Duration of totality at your site
7. Sky conditions during totality (estimate please) 1=clear sky, 2=light cloud, 3=visible through medium cloud, 4=barely visible, 5=complete cloud cover

Repeat lines 4 to 7 above for each eclipse

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QF 2901 "Freebies"

From: Glenn Schneider To: SOLARECLIPSESSenl200401aula.com Date: Sat, 03 Jan 2004 05:19:06

Live and Learn. A new twist on eclipse chasing?:

I thought I had known nearly all of what went on w.r.t. the QANTAS 2901 eclipse flight, but apparently one slice of life escaped my attention, unfortunately, until will after the fact. Perhaps some here knew... Two of the eclipse seats on QF 2901 were held by ABC (the Australian Broadcasting Company) and were given away as part of a promo tional radio competition! I received an email today from Spencer Howard, a reporter for ABC Brisbane (612 ABC radio) who was on QF 2901, http://www.abc.net.au/brisbane/stories/s996269.htm and briefly described this to me:

>You asked about our prizewinners (there were two traveling with me). The competition involved people listen to ABC radio and collecting "boarding pass-words" every hour for a month. Four names were drawn from the hat. Other listeners then voted for the winner{s} (using SMS or telephone).

Did any SEML QF 2901 participants meet the lucky winners? -GS-

From: Joel Moskowitz

I was unaware of either this reporter or the winners. Either they were seated in a different area from me, or they kept a low profile.

Nabta stones

From: Raoul Mårtens To: HASTRO-LSenl200401LISTSERV.WVU.EDU Date: Sun, 04 Jan 2004 12:17:45

Since the map Fig.1 to the article about Nabta in Nature Vol. 392/2 April 1998 applies different scales vertically and horizontally it is impossible to measure on the map the azimuts of the various alignments from structure A. In the absence of a better map one must thus rely on the stated azimuts 24.3, 25, 28, 90.2 and 126 dgs. Assuming the azimuts were measured by theodolit and attention paid to magnetic declination - in this area presently 2ý dgs E but 6000 years ago maybe less - an interpretation of the alignments and the 'eggshape' seems possible.

1. The three alignments in 24.3, 25 and 28 dgs: Since they are too northerly to refer to the rise of either the sun or the moon, it follows that they likely refer to a star. Malville et a. reach the following conclusion: "Although no star was visible at the north celestial pole during most of the occupation of Nabta, north directionality would have been important for nomadic groups navigating across the Sahara."

Although correct, this diagnose may miss an important clue: There are a few bright stars in circumpolar constellations to be observed setting and then rising after only c. 6 - 8 hours. Planetarium programs show that at Nabta appr. coordinates particularly Polaris at relevant time was rising in 26-27 dgs. Though Arcturus and Polaris have about the same declination Dance of the Planets and Skyglobe both indicate that Polaris would be the star aimed at by the three alignments.in question Dance of the Planets search reports for Polaris are attached.

As the azimuts in question span 3.7 dgs it appears probable that the slight differences indicate observations of precession. Meeus' definition of precession as 5ý dgs in 400 years gives the likely result the observations were made during 369 years. .

2. The alignment in 90.2 dgs. It appears selfevident that the object is sunrise at equinox. The reason for observing this event may speculatively be assumed to be connected to an insight that if the moon's 'standstill' occurs near an equinox, the orbits of the sun and moon cross, i.e. the nodal lines of the moon and the sun are identical or parallel, a situation where eclipses frequently occur near equinoxes. One could also spec- ulate that wise persons had realized that the lunar nodes are located at these points, which thus form a practical starting point for determinig their regression.

3. The alignment in 126 dgs. This is close to the rising of Sirius c. -4800 acc. to a Stellar Epehemris 125 dgs (professor Malville

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thinks so) but also to the moon's rising at its extreme declination -29.7 dgs acc. to a Lunar Ephemeris 121 dgs, an event in ancient Egypt seen as ominous i.e. forecasting eclipses and the reason why Sirius was called the 'Dog Star' (since mythologically at solar eclipse the sun was swal- lowed by a wolf, hyena or, as i.a. in China, a dog). Acc to Allen (Starnames: Sirius) this ominous nature of Sirius implying eclipse-risk is stated in the Odyssey. The fact that this alignment is based on five stones in a row (= in identical azimuts) argues for that, in such case, the observations may concern both the precession of Sirius and the moon's extreme southerly rising point. Could the azimut difference of c. 4 dgs be explained by changes in Delta T and/or the obliquity of the ecliptic? Ephemerides for Sirius and the Moon are attached.

4. As for the 'eggshape', the orientation of its main axis in c 62 -242 dgs naturally refers to sunrise at sum- mersolstice and sunset at wintersolstice, respectively. However, the 'slots' at the ends of the solstitial sight- line may possibly refer to moon's occasional and irregular risings and settings close to the sun's solstitial azimuts, a puzzling phaenomenon which always has intrigued people who were trying to understand eclipses and predict them.

The geometry of the 'eggshape' compared to similar figures in Europe appears to confirm that it ought to have been in- tended for eclipseprediction or for recording the sun and moon azimuts when an eclpse occurred. Basically the figure is constructed as a semi-circle on the diameter of which there is an isosceles triangle with its top in the NE 'slot' at about azimut 63 dgs. This isosceles trian-gle consists of two rightangled triangles with sides as in the 'perfect' 3-4-5-type. The measure used was a 'hand' of appr:y 26 cm.

5. Nabta may be one of the most important discoveries of preliterate astronomy because it refutes the views of those claiming that 'primitive' people had neither understanding of nor use for basic and easily seen astronomical events. Hopefully, the Nabta popula-tion has left remains enabling geneticists to reconstruct its connection with not only old Egyptians but more distant probably related peoples. Sincerely Raoul Martens

ARTE TV 1999 Total Solar Eclipse Report

From: Dietmar Staps To: SOLARECLIPSESSenl200401AULA.COM Date: Sat, 03 Jan 2004 12:28:58

January 5, 22h25 - 23h50, ARTE TV (FRANCE/GERMAY) a french documention (1999) about the total eclipse in an small french town by ARTE reporter Ariane Doublet.

From: Jean-Paul GODARD

Thanks for the information...
More details in french at : http://www.arte-tv.com/programme/progsemaine.jsp?semaine=1&horaire=2&zTxt=1&lang=fr#

The story is about the preparation of the event in a small village north of Normandy Beaches...
Live and questions between farmers...
Where to put the parkings, how many SE viewers to order,....

I'll try to record it... Season's greetings Cordialement, Martine & Jean-Paul

From: Sheridan Williams

How can I obtain a copy of the ARTE TV 1999 Total Solar Eclipse Report. Can someone pop it onto DVD or VHS (PAL) for me?

From: Michael Gill

The documentary can be obtained from a variety of online sources, such as...

http://www.cieletespace.fr/front/default.asp?name=/nboutique/front/detail_prod_direct.asp?Nprod=VITERD

Prospective purchasers of videos should be aware that the SECAM format is used in France. Caveat emptor! Cheers, Michael Gill

From: Luís Miguel Viterbo

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In fact, the link Michael provided is to the DVD, which, according to the film's distributors site (http://www.filmsduparadoxe.com/dvdvhs.html), is Zone 2. By the way, they also sell it, and it's 28.00 ?, instead of the 31.50 ? you pay on Ciel & Espace. I didn't check on the delivery costs, though, and the caveat emptor stands, of course.

The documentary was premiered in the United States on March 14, 2003, in the Embassy of France at Washington, within the 2003 Environmental Film Festival (http://www.dcenvironmentalfilmfest.org/FSET.htm?P14.htm~bottomFrame), with English subtitles.

According to the French Foreign Affairs site "France Diplomatie", the film was released in French, French with English subtitles, and French with Spanish subtitles (check the French page http://www.france.diplomatie.fr/mediasociete/documentaire/promotion/diffusion/collections/balade/film12.html). On this page, you can access QuickTime and RealVideo samples of the film too.

According to Quark Productions, the movie's producer, it has already been viewed on theatres by more than 70,000 people (info on the French page http://www.quarkprod.com/film.php?id=32).

This was before ARTE bought its rights, as you can read on a very interesting article by Magali Jauffret on the French newspaper L'Humanité (check on the January 24, 2001 edition; the article, in French, can be read online on http://www.humanite.presse.fr/journal/2001-01-24/2001-01-24-238394). Apart from France and the United States, Les Terrains ("Down to Earth" in the English version) was already screened at least in Germany, Canada and Indonesia. And it's starting to become a cult movie. I don't want to miss it... Miguel Viterbo

From: Michael Gill

Here is the link for the video: http://www.cieletespace.fr/front/default.asp?name=/nboutique/front/detail_prod_direct.asp?Nprod=VITER Cheers, Michael Gill

From: Sheridan Williams

The format is SECAM. Does anyone know if this will play on a PAL VHS player?

Mayan astronomy & cultural interpretation

From: ECOLINGSenl200401AOL.COM To: HASTRO-LSenl200401LISTSERV.WVU.EDU Date: Mon, 05 Jan 2004 19:04:27

The discussion continues to amaze me. I'll give several concrete examples from Mayan archaeoastronomy at the end.

Thanks to Steve McCluskey for carrying the ball, but what is *known* about human perception and culture means that we must reject even this claim (which Steve did not reject):

>"No part of the visual image is made to ... seem brighter ... because of >our cultural heritage."

What is brighter is most definitely affected by distractions to attention, which can be in other modalities (closing one's ears to noise can make stars seem brighter) and also by beliefs about the sky, which cause one to attend to some parts more, and therefore those seem brighter. This is not speculative, this is well and firmly known in psychology.

It is the belief in the simplicity and immutability of "direct observation" under the presuppositions of our own culture that is at fault here.

Playing word games, *defining* what is "seen" as the physical response in the sensors of the eye (not even the physiological response of the body, which is mediated by culture), is just that, merely word games, it cannot change the empirical facts of psychology of perception.

For some people, an analogy with music may help to see this. It is well known that the perception of music is radically different

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depending on whether one is steeped in a musical tradition or not. If one is steeped in the tradition, then the musical changes which that tradition defines as significant will be more clearly perceived, vs. being less clearly perceived or not at all being perceived. The transition from a major-seventh chord to a dominant chord is the single strongest signal in classical western music. Yet it may not be perceived at all by someone steeped in another musical tradition, certainly not with the same salience. So it is with all culturally defined interpretations, they affect the basic perception itself.

In Mayan astronomy, there are written codices, and among those, the Eclipse table and the Venus table of the Dresden codex stand out, as most obviously reflecting what their names imply. They have intervals in days which include the Saros cycle and the 177 or 178-day cycle of lunar nodes, approximately 6 months (with the 5-month interval of 148 days interleaved at points appropriate to keep the predicted possible eclipses at the nodes). Already here, we need BOTH culture AND astronomy to confirm the match. Even reading the numbers involves cultural knowledge. Beyond that there are "ring" numbers, a special cultural way of counting which functions something like subtraction. Beyond that there are the culturally specific ways of relating introductory tables (lists of intervals) to the main tables. Beyond that there is the reading of numerous content glyphs. Without those *cultural* interpretations, which are by no means self-evident ones, except that we all now take for granted the hard work of our predecessors, it would not be possible to confirm that these are astronomical tables. Even the intervals in days would not be known.

In the Venus tables, there are even indications that they had a method of realignment, taking account of the fact that Venus's synodica period is 583.92 days instead of an even 584 days. But here, interpretations are more difficult, because there are several alternative ways of interpreting where they might have made the corrections in real dates. We do not understand the *culture* of the way the tables were used well enough to pin down that only one of the possible sets of dates can be correct. Perhaps we will find more clues, perhaps not. As of now, it is lack of *cultural* knowledge which limits us.

Now let's consider some harder ones, ones not yet certainly solved, and we can see more clearly that the professional field of (Mayan) cultural studies is just as crucial to interpretation as is knowledge of astronomy.

There is a so-called "Mars" table, partly so called because it is constructed as 10 x 78 = 780, which is the whole number closest to Mars's synodic period. But the division into intervals of 78 days is problematic, its reason unclear. There are associated pictures of a "Mars beastie" descending from a sky band, descending to different degrees. An earlier *cultural* interpretation was that this referred to the relative brightness of Mars, that a greater descent from the skyband represented a greater brightness. A more recent proposal is that this refers to the distance Mars deviates away from the ecliptic (because of the tilt of its orbit). We simply do not know in any absolute sense. It is the lack of *cultural* knowledge that limits us here. We simply do not know what things to compare, in order to find a match. Under either of the two interpretations above (and there could be yet others), some attempt to pin down single dates for the table can be made. But these are still without a certain way of choosing among them.

For the other planets, things are even more difficult. Jupiter should be easy, and Mayan archaeoastronomers believe some references are to Jupiter (from inscribed stone stelas, at this point more often than from codices). But we do not certainly know the glyphic names of Jupiter, in neither kind of recording. We do not know which kinds of phenomena involving Jupiter the Maya will have chosen to pay attention to, so we don't know what to match the records to. It is even worse for Saturn and for Mercury, though given the extreme sophistication of Maya astronomy, it is virtually inconceivable that they did not at one time have highly exact records for all of the visible planets.

There are many intervals measured in days in Mayan records. Which of these were intended to be astronomical? Which of these should we compare with which astronomical phenomena? These are all gaps in our *cultural* knowledge. Clues from cultural studies, which might be art-historical (interpretation of iconography) or epigraphic (interpretation of glyphs) or architectural (alignment preferences) may all be relevant.

There are glyphs at the site of Palenque which were at one time thought to refer to the rising of Venus as evening and as morning star. These glyphs are now understood as representing "dry" (a sun with a leafless tree), read as a Mayan word homonymous with a suffix marking plurality on nouns denoting persons. So from an astronomical reference these have become a mere phonetic syllable. The glyph "Star War" shows "Venus" (or "great star"), with something descending (hair? rain?) above a glyph for "Earth" or above a glyph for a particular place name. It was at one time thought that battles were scheduled with first heliacal risings of Venus. But this is now more prosaically read simply as a glyph meaning something like 'attack' or 'defeat' (a place), with no astronomical referent.

(Continued on page 62)

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Even in such a matter of building alignments, we have the problem that we do not know *a priori* which buildings to consider, nor what in astronomy to compare them to. That is a *cultural* question. (I am writing the following without notes, pardon if any minor inaccuracies). The archaeoastronomer Anthony Aveni gave a paper about a year and a half ago in which he considered all of the "E" -shaped buildings in the Maya world, a category which is suspected to be used for alignments to the seasons, with one long platform and three small buildings used for alignments. He noted what their alignments were, and crucially, their dates of construction. They appeared to fall into two groups. One group, the earlier ones, appeared to be aligned to the solstices, centered on 27 degrees. The other group, the later ones, appeared to be aligned to zenith passage at the relevant latitudes, and are centered on 14 degrees. This implies a *cultural* change between the two periods, if the interpretations are correct. Notice that we do not know *a priori* what comparison to make. We cannot know *a priori* to use solstices, nor to use zenith passages. If we insist on the largest possible "N" for supposed scientific rigor, then we must mix the two groups. As with anything cultural, the change is not instant, there is some overlap of the two groups.

To confirm Aveni's hypothesis about this, we will need to find some other clues that indeed there was a shift from focus on solstices to focus on zenith passages. Ideally we will find indications for particular buildings confirming which alignment they were intended to have. We do not know where such clues will come from. Iconography is possible, but we do not know *a priori* what iconography might signal these interpretations.

Consider one of the most difficult and vexing questions of all, a question which is considered by most people to be beyond the pale, in the realm of new-age wishful thinking, either (legitimately) because we do not yet have the tools to address it, or (illegitimately) because the person condemning the question simply believes a priori that ancient people could not have had such knowledge. Did some of the ancient cultures of which we have some records know of precession? Did they have world ages in more than a purely metaphorical and artistic sense? We don't know how such knowledge would have been manifest, what a few people possessing this knowledge would have chosen to record, and how that information will have undergone degradation and loss. Only with knowledge of that and much more do we have any hope of deciding whether what we still can find from the past should be taken as the remnants of such knowledge or not. We simply can't do it yet. But we can ask various intermediate questions even now. Were various ancient peoples aware of the five-fold division of the sky imposed by Venus's synodic periods (5 x 584 = 8 x 365)? Was the five-pointed star a record of this? Were various ancient peoples aware of the pattern of Jupiter-Saturn conjunctions, both that 3 x 20 = 60 years gave them a near-exact circle of the sky, and that a larger interval above 800 years gave them a still more exact circuit of the sky? Were these used to keep track of larger time spans? What in iconography, epigraphy, other cultural phenomena could count as evidence on any of these questions?

I hope the overall picture is clear. Both cultural and astronomical data and both cultural and astronomical reasoning must go into any attempt to match an ancient phenomenon whose remnants we can still observe with archaeoastronomical culture (or with astronomy). It is most definitely *not* the case that only one of the fields can definitely confirm a hypothesis, and the other cannot.

The supposed dichotomy between "hard" and "soft" sciences is bogus. There is however a valid continuum between sciences dealing with phenomena having a relatively smaller or larger number of variables. Physical sciences have the smallest number of variables. Chemical and biological sciences have more, psychology still more, and social and political sciences and history and humanities have the largest numbers. That does not make the latter any less "hard" sciences. The latter are more *difficult* and more *complex*, but that is another matter entirely. In all professional fields, there are more careful and more sloppy practitioners, and different roles for fads (which, yes, do happen even in the most extreme of the "hard" sciences). Again, this is not an essential difference between the fields.

I spend about half of my time working on the *science* of electoral systems. This is becoming stronger and stronger, with rather precise mathematical formulas and equations relating the variables. We even are close to being able to predict substantial influences of particular electoral systems on a socity's civility, on co-operation vs. antagonisms among its citizens.

Let's get past blanket statements that one field of investigation is somehow superior to another. The essence of archaeoastronomy and of the history of astronomy is that it is *both* cultural *and* astronomical. That is actually what makes it such an interesting and challenging topic to work in. Best wishes,Lloyd Anderson Ecological Linguistics

From: Joan Griffith

(Continued on page 63)

SETalk

Well said Lloyd. One thing Joanne has said more than once is that we need to develop a sense of how the ancients viewed their skies, or whatever. I don't quite see how we can do that, since we know far more than they did, and we can't put on a cloak of childish misunderstanding when we look at stars. Or history of astronomy. We can only imagine their superstitious response to the world around them: cause and effect, Sirius rises, Nile floods, qed. I find it extremely difficult to look up in the sky and see the planets and imagine how they could have been perceived as gods. Was it that anything that moves is alive?

Imagine if the ancients were here now and looked up to see all the space items and aircraft moving willy nilly through the skies. Could they have now the same response as to make these things gods?

Joan All you need in life is ignorance and confidence, and then success is sure. - Mark Twain

The Longest Day of the Year

From: Gerard M Foley To: SOLARECLIPSESSenl200401AULA.COM Date: Sun, 04 Jan 2004 05:08:35

Perihelion is today about 18 hours UTC. Since the earth has its maximum orbital velocity today, successive transits of the sun will occur at the longest interval of the year. Thus today is the longest solar day, all over the world. Happy New Year Gerry

From: Jean Meeus

This is not correct. The longest solar day does NOT coincide with the time when the Earth is at perihelion, but occurs several days earlier, when the equation of time varies fastest. And the equation of time depends not only on the Sun's speed along the ecliptic, but also on the obliquity of the ecliptic and on the Sun's longitude itself.

For a similar reason, the *shortest* solar day does not occur at the time when the Earth is at aphelion (that is, in early July), but near the equinoxes. Jean Meeus

From: Gerard M Foley

Thanks for the correction. It looks as if 23 December 2003 was the longest solar day of last year. 23 December should also be the longest of this year.

Sorry for the ignorance and the error. (;-((Today is perihelion though. (:-)) Gerry

From: Jean Meeus

I received the following mail from Jim Huddle:

< I thought the shortest day was the day of the winter solstice, and that the longest was the day of the summer solstice. And that at the equinoxes, day and night are approximately equal in length - not exactly equal because sunrise and sunset are defined not at the moment the sun's center rises or sets. Am I mistaken?

I replied to Jim, but my mail was returned with the comment that the address has "permanent fatal errors" -- which I don't understand:

Delta T

From: Jean Meeus Date: Mon, 05 Jan 2004 17:30:51

On 2003 December 1, the value of Delta T was 64.57 seconds. The difference between the uniform Dynamical Time and the Universal Time, known as Delta T, is often required in calculations and in computer programs, especially those for predicting eclipses and occultations, for accurate positions of planets, asteroids and comets, etc. Jean Meeus

TRANSIT OF VENUS

Transit of Venus Web site

From: LARRY KLAES To: HASTRO-LSenl200401LISTSERV.WVU.EDU Date: Fri, 05 Dec 2003

For those who want to know more about the June 8, 2004 transit of Venus, plus the history of past observations, check out this Web site: http://www.transitofvenus.org/

Venus Transit

From: ECLIPSECLATSenl200401comcast.net Cc: SOLARECLIPSESSenl200401aula.com Date: Fri, 12 Dec 2003 08:45:40

Dear Mr. Peat;

Thank you for your wonderful site which I have enjoyed over the years. It has allowed me to see various satellites in many parts of the world. One of my most memorable was seeing MIR, Soyuz and Progress simultaneously, dozens of miles apart, as all three flew over Siberia around midnight in August 1997.

I am an avid eclipse chaser and have just returned from Antarctica.

The upcoming Venus transit June 8, 2004 is generating much interest, of course.

An added bonus is the possibility of seeing the ISS transit the Sun while Venus is doing the same. Would it be possible as we get closer to mid-year 2004, for you to add a page on your website, Heavens Above, which could indicate the path of transit-ability? Obviously we would need to wait until re-boosts and drag are not so far out in the future.

At present, (and this is by no means intended to be a prediction - no more than "predicting" a blowing leaf) using WinOrbit, the ISS could possibly transit the Sun June 8 with central pass times of 5:19UT Saudi Arabia, 6:46UT North Central Africa and 8:13UT Mauritania and then a few other occurrences over the Atlantic. The Venus transit begins 05:14 and ends 11:26. Please see http://sunearth.gsfc.nasa.gov/eclipse/OH/transit04.html

Whenever the ISS is in the sunlit hemisphere, one could position himself on Earth such that he places the ISS between himself and the Sun. I attempted this a few times with MIR and a near-Full daytime Moon and was successful once using a four inch telescope.

The cc adressee above is a group of the world's most serious eclipse enthusiasts who are also planning to travel far and wide for the June transit.

Thanks again for all the past enjoyment. Sincerely, Raymond Brooks

The Transits of Venus WG

From: PP

* ELEKTRONISCHE MITTEILUNGEN ZUR ASTRONOMIEGESCHICHTE *
* *
* Herausgegeben vom Arbeitskreis Astronomiegeschichte in der Astronomischen Gesellschaft *
* *
* Nr. 69, 1. Januar 2004 * Redaktion: Wolfgang R. Dick und Hilmar W. Duerbeck *

The Transits of Venus WG

At the 2000 General Assembly of the IAU in Manchester, the following Resolution was adopted at the C41 Business Meeting:

"Recognizing the historical importance of previous transits of Venus and the numerous transit of Venus expeditions mounted by various countries, and noting the rarity of the upcoming transits in 2004 and 2012 Commission 41 recommends that the sites of pre-

vious transit of Venus expeditions be inventoried, marked and preserved, as well as instrumentation and documents associated with these expeditions."

In order to take this Resolution forward, a Transits of Venus WG was formed, with the additional aims of assembling a bibliography of existing publications relating to all transits of Venus, and encouraging colleagues to carry out further research and to publish their results. A WG Meeting is planned for the 2003 General Assembly in Sydney so that colleagues can report on their work.

The Committee members of this WG are: Dr Wayne Orchiston (Australia - Chair, e-mail: woSenl200401aaoepp.aao.gov.au), Dr Steven Dick (USA), Professor Alex Gurshtein (Russia) and Professor Rajesh Kochhar (India).

Anm. d. Red.: Die aktuelle Zusammensetzung der Vorstaende (Committees) der Arbeitsgruppen ist:

Archives WG: Brenda Corbin (USA - Chair, e-mail: corbin.brendaSenl200401usno.navy.mil), S. Debarbat (France), W. Dick (Germany), D. Green (USA), P. Hingley (UK) and W. Orchiston (Australia).

[Source: The ICHA Newsletter, No. 1, June 2001, p. 19-21.]

Murder mystery

From: Chuck Bueter To: HASTRO-L@LISTSERV.WVU.EDU Date: Sun, 14 Dec 2003 19:33:54

Apparently a crime has been committed, but I do not know if the victim(s) of the crime is the dead person or those who apparently killed him. All I have is photograph of the suspect(s) and the scene of a death. Can anyone tell me about the story behind the picture at http://www.transitofvenus.org/usno-macabre01412.jpg?

In this photograph from the archives of the U.S. Naval Observatory, apparently a group of armed sailors from a 19th century transit of Venus expedition are posing like a hunting party hulking over the beast they killed. Only at their feet is not an animal but a human. Nearby is part of a cannon. I believe, but am not certain, the site may be Kerguelen Island.

If any of you history sleuths know the circumstances that accompany this picture, please let me know. Unless you request otherwise, I may post excerpts from any replies online at http://www.transitofvenus.org/usno.htm or at http://www.transitofvenus.org/issues.htm. Thank you in advance. Chuck Bueter bueter@transitofvenus.org

From: Thomas R. Williams

I have trouble identifying the corpus delicti. To the seated sailor's left, there is what appears to me to be an ordinary blanket roll or back pack. There is something on the back of the pack that could be mistaken for a head, perhaps with a cap, and an enlarged and rather hooked nose protruding under the bill and over a darker beard. That takes quite a bit of imagination, however, and for a head that size there should be a sizeable abdomen running off to the lower right in the photograph, legs and arms, etc. and none are evident. It seems that the mystery is why this pile of material would be taken as evidence of a murder in the first place. Too many of those late night colonial adventure films? Thomas R. Williams

From: Joe Kress

The site cannot be Kerguelen Island because the photo has trees, whereas the largest plant on that cold (-1ýC to 11ýC), windy sub-Antarctic island are the Cabbages of Kerguelen: http://ile.kerguelen.free.fr/ff12-3.htm accessible via "Photos of Kerguelen" on the site http://www.btinternet.com/~sa_sa/kerguelen/kerguelen_islands.html Joe Kress

From: Bob Garfinkle

Hi List, Thomas, I respectfully think that you need to take another look at the photograph. There is definitely a body lying on the ground. The deceased's hands and left arm are clearly visible. His face shows partly in shadow, but facial features are discernable, including his nose, right cheek, and lips. On the far right of the photograph, a man hold a rifle upright. Close to his fingers, in line of sight is the dead man's foot. Bob Garfinkle

TRANSIT OF VENUS

From: bradley Skene

I know nothing about this, but it offends reason to say that you cannot see the arms, legs, and torso laying there. Take a look at the photo again. The rifle barrel of the second marine from the right (crouching) is pointing directly a human hand, connected to an arm, etc.

"Thomas R. Williams" <trw@RICE.EDU> wrote:I have trouble identifying the corpus delicti. To the seated sailor's left, there is what appears to me to be an ordinary blanket roll or back pack. There is something on the back of the pack that could be mistaken for a head, perhaps with a cap, and an enlarged and rather hooked nose protruding under the bill and over a darker beard. That takes quite a bit of imagination, however, and for a head that size there should be a sizeable abdomen running off to the lower right in the photograph, legs and arms, etc. and none are evident. It seems that the mystery is why this pile of material would be taken as evidence of a murder in the first place. Too many of those late night colonial adventure films? Thomas R. Williams

From: Chuck Bueter

Re: the transit of Venus expedition photograph...

To place the black and white photo in context, it was among a collection of photographs in manila envelopes tucked away safely in the Library of the US Naval Observatory. As I recall, there were no markings on the back of this particular picture. Several of the photographs within the same bundle were labeled, however, complete with locations, exposure times, film type, lens, and f-stops. There were a few noteworthy photographs from which multiple copies were made (unknown when) and stored together. And, yes, labeled photos from multiple observing sites were mixed together, ranging from Chatham Island to Vladivostok.

For more images from the same dusty box, see http://www.transitofvenus.org/usno.htm.

Chuck Bueter bueter@transitofvenus.org

From: Thomas R. Williams

Got it, thanks to Bob and Bradley for pointing me in the right direction. Something about the blanket roll drew my attention away from what is obviously a left arm and hand, which on first examination I apparently dismissed as a part of the blanket role. Well, I look forward to an answer to the original question. There must be some narrative record of the events that led to this pictorial record buried in the archives of the Transits of Ve-

nus. Tom Thomas R. Williams 1750 Albans Road Houston, TX 77005-1704 USA trw@rice.edu http://www.ruf.rice.edu/~trw

From: Lenny Abbey

It's probably old Ben Gunn. Lenny

From: Mike Smith

There is also a very clear rope running from behind the corpse's head across the sailor's boot right behind the head. Harder to tell, but the rope might also extend around the neck of the corpse. If so, perhaps a hanging or the execution of a prisoner? Mike Smith

From: John W. Briggs

If no other information is forthcoming, I wonder if the dead fellow's unusual hat may prove a good clue. At least, it *looks* like a very distinctive, conical padded hat -- there near the fellow's head. And his clothing is oddly padded.

I speculate that the outfit relates somehow to the cannon. Thus my hunch: He was part of the crew manning that cannon. Evidently the loosing side, in this battle scene!

Am I nuts, or does that conical hat remind me of something I've seen from Mongolia?!

A first step may be easy: Confirm the national origin of the victors. Are they British sailors? The officer (with sword and white hat) should be an easy target for someone familiar with the history of military uniforms....

With that nationality clarified, the issue re-focuses to the oddball conical hat of the deceased.... --JWB.

From: Ari Belenkiy

John: canonical hat reminds rather Inquisition's victims (of a well-known nationality). Probably victim's crooked nose points to the same point ... in history. Ari Belenkiy

From: Sara Schechner

An anthropologist might recognize the attire of the deceased in conjunction with the natural surroundings. -Sara

From: Graham Shipley

If it's not too subjective (it probably is), can I suggest that the deceased seems of very small stature? I also sense that his facial features are not Caucasian but possibly east Asian (I'm not sure of the right term to use). As to the rope, is it possibly rather the creased continuation of the 'collar' of his upper garment? Graham

From: LARRY KLAES

He was probably the guy who asked them if they could reschedule the transit for a more convenient day. :^) Larry

From: John Woodruff

I mentioned this to a colleague who I suspected would be interested. He's busy but would like to find time to follow this up; in the meantime he observes that:

"My great great grandfather [...] records that when he was in Australia in 1882 to observe the transit of Venus, 'it was only recently that the practise of shooting the natives for sport was discontinued'." John Woodruff

Nome Alaska

From: Klipsi To: SOLARECLIPSESSenl200401AULA.COM Date: Wed, 24 Dec 2003 06:06:59

anybody going to Nome Alaska for the October 13 sunset partial eclipse ? I did not plan to do so, but just recently my plans may change, as it seems I am very VERY lucky, a client of mine wants to visit Alaska next year and he wants me to join to work has his driver, all expenses paid plus salary... can't refuse this ;-) , so I said the only time I could go is in October and it is perfect for viewing northern lights plus we get a solar eclipse as bonus bla bla bla .... anyway, it seems the best hotel in Nome is the Aurora Inn. See ya around ? Olivier "Klipsi" Staiger

From: Jay.M.PasachoffSenl200401williams.edu

90% in Alaska sounds good, but so does about 35% in Hawaii at sunset, and I have higher hope of actually seeing the sun in the sky with the Hawaii weather. I saw such a partial eclipse at sunrise in Hawaii in 1989. See photos at http://www.williams.edu/astronomy/eclipse/eclipse1989/index.html Jay Pasachoff

From: Jen Winter - ICSTARS Astronomy

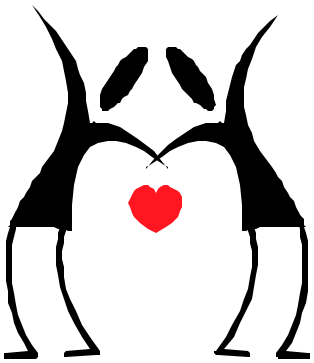
Don't forget you could see the Green Flash with the Hawaiian partial at sunset also!

Don't know how likely green flash is over Alaska, but it's been reported in very flat areas of the midwestern plains and in the deserts of the Southwest US. Has anyone reported green flash at sunset over the Yukon ice? jen

From: eclipseclatSenl200401comcast.net

Hi, my name is Ray. I am an eclipse-aholic. Yes, I will be going to Alaska, unless my addiction is cured.

Probably southwest of Anchorage at Anchor Point. Raymond Brooks



HYBRID 2005

2005 hybrid eclipse cruise

From: Kelly Beatty To: SOLARECLIPSESSenl200401AULA.COM Date: Sat, 06 Dec 2003 21:19:27

Sheridan... Sky & Telescope and TravelQuest are planning just that. it won't be as quick as Daniel might like, but it *will* be interesting (includes stops at Easter Island and Pitcairn Island). final details/princes are not yet in place but will be announced soon at http://www.tq-international.com

we're also planning an expedition to intercept the annular portion in Panama. clear skies, Kelly Beatty SKY & TELESCOPE

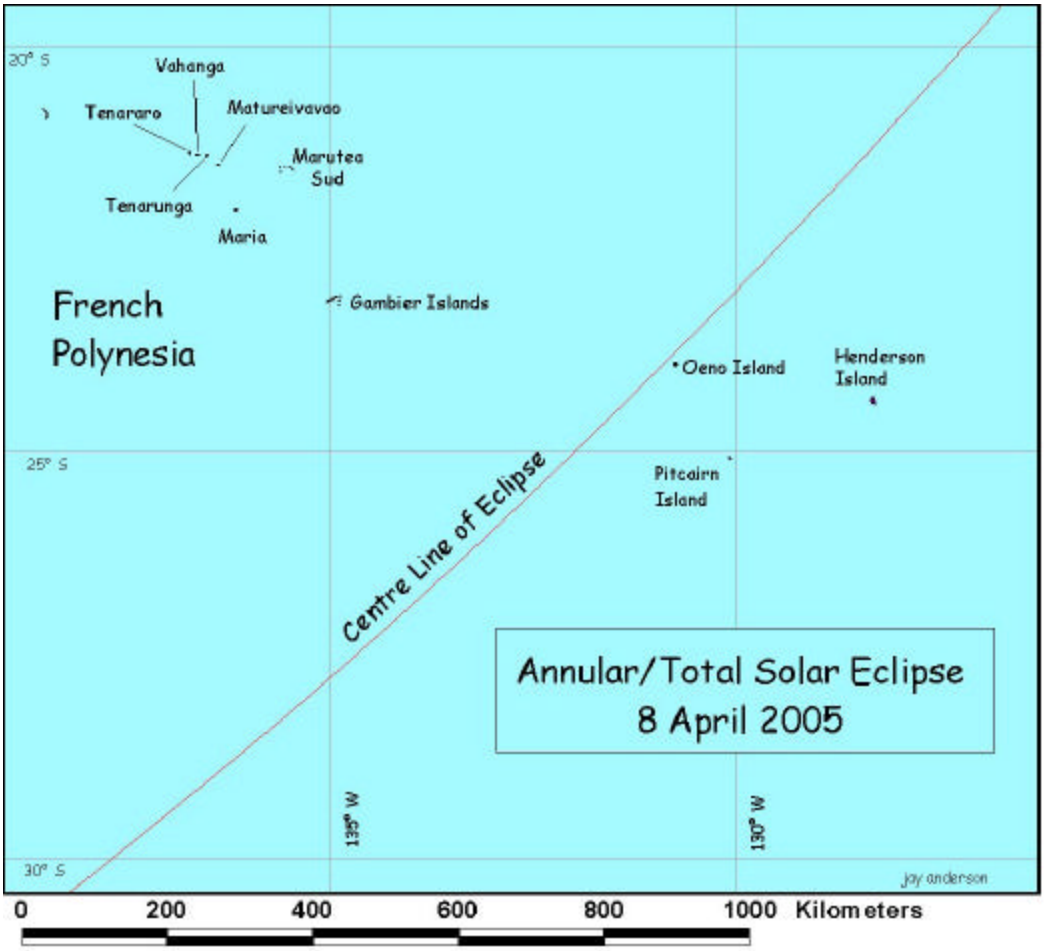
From: Jen Winter - ICSTARS Astronomy

Small hang-up with the eclipse cruise out of San Diego...

The closest intersect point for the path of totality from any major port-of-call is (at ship speed of 11-15 knots) in the neighborhood of 3 days in each direction. - and that's from either the Marquesas islands near Tahiti - or Galapagos Islands.

Now, we agree that wasting away for an excess of 10-15 days ex Tahiti or Galapagos would be fun... but logistically, it means we can't do a 7 day out of San Diego. Trust me... we're on it. jen

Oeno Island—by Jay Anderson



HYBRID 2005

ECLIPSE cruise-tour South Pacific April 2005

2005 Eclipse Cruise

DISCOVERY UNIQUE OCEAN VOYAGES

From: Jan Sládeèek To: "SOLARECLIPSESSenl200401AULA.COM" <SOLARECLIPSESSenl200401AULA.COM> Date: Tue, 09 Dec 2003 07:08:05

All, I obtained the offer from TravelQuest International and SKY & TELESCOPE and I am sending it. It's very long trip for me and will be very expensive, I will be to wait on other offer. Regards, Jan Sladecek CR, Prague Solar Eclipse Enthusiast

Od: TravelQuest International :

Sail with TravelQuest International and SKY & TELESCOPE across Polynesia to discover a span of islands unmatched for their mysterious allure, historical interest, scenic beauty and to witness the April 8, 2005, total solar eclipse.

During our 25-night cruise-tour, March 28 - April 23, we±ll visit mysterious Easter Island, the remote Pitcairn and Gambier Islands, exotic Bora Bora and Tahiti, uninhabited atolls ruled by tropical birds, and authentic villages where age-old customs endure. Palm trees, tropical lagoons, and pristine sandy beaches are only the beginning of the story. Be one of the few that will experience the April 8, 2005 total solar eclipse in the South Pacific.

There are only 85 staterooms on the World Discoverer, and the best ones go quickly! Reserve your space today.

SEE OUR ONLINE WEB BROCHURE FOR DETAILS: http://www.travelquestinternational.com/BountyCruise/Bountyhome.htm

Journeys for Inquisitive Minds
TRAVELQUEST INTERNATIONAL
305 Double D Drive, Prescott, Arizona 86303 USA
tel: +928.445.7754 / fax: +928.445.8771
Toll free within the USA and Canada 800.830.1998

To be removed fromthis email list, simply reply to this email with REMOVE in the subject line. Thank you.

From: Daniel Fischer

I'm deeply disappointed by the only offer on an eclipse cruise for the 2005 hybrid available so far: According to http://www.travelquestinternational.com/BountyCruise/Bountypricing.htm it would set you back between 10,000 and 23,000 $U.S. and thus be even more expensive than some of the recent Anatarctic offers. O.k., the track of totality *is* a bit remote, but this is all the cruising industry can think of? The challenge is up to us, it seems, to put together a vastly more affordable package - and not to let "them" dictate what *our* eclipses will cost! Daniel "umbra for all" Fischer

From: Kelly Beatty

I agree that the S&T/TQI trip is lengthy and the cost relatively high, but you're being unfair. don't forget that ~100 people paid twice as much to ride the Kaptain Khlebnikov. the 2005 eclipse takes place in an exotic setting, and we are trying to attract clients who want to maximize their enjoyment of the South Pacific while being given a fairly stable platform from which to observe. other options will surely become available -- but how many will take you to Easter and Pitcairn islands? for some people, those are big pluses. Kelly

From: Michael Gill

Daniel, The reality is that this eclipse does happen in a remote region and the vessel chosen for this particular eclipse expedition is expensive to get a berth on.

The "World Explorer" does this "Wake of the Bounty" itinerary each year, not

(Continued on page 71)

HYBRID 2005

just for the eclipse in 2005.

Checking the prices for the 2004 voyage (with no eclipse) they start from $8,329. Source: http://www.societyexpeditions.com/Html/Voyages/expedition_calendar.html

Compare this with the 2005 voyage (with eclipse thrown in) where prices start from $8,450 (~1.5% more). http://www.tq-international.com/BountyCruise/Bountypricing.htm

In order to get to totality for this TSE, our bank accounts are going to take another big hit! Cheers, Michael Gill

From: Jan Sládeèek

I agree with Daniel, this offer is very expensive, I hope that will be other offer on HSE 2005, cheaper. Jan

From: Jen Winter - ICSTARS Astronomy

Daniel, Jan Don't despair! You haven't heard from all the players in the game yet! The night is young.

The way this works is that either you can book space on a ship who is already planning to be in the path. (Society Expeditions plans to do so in their regularly scheduled sailing.) ....or you can charter a ship large enough to traverse the wide expanse from Tahiti OR Galapagos into the path of totality.

A cruise-line who won't require a charter is able to do this because they don't worry about filling the whole ship up. They trust that the program worked before.

However, what we eclipse chasers know already, the cruiselines that visit these destinations aren't so familiar with.... that "If you sail there, we will come."

Right now, we have several other potential ships in-line to negotiate with over access to the eclipse.

As in all other years, we will have multiple choices in our promotions! Don't give up the goat yet! I promise, this can be more affordable than 2003! Jen Winter - www.AstronomicalTours.net - we'll have something nailed down and ready to offer in coming weeks.

2005 Willcox point observers

From: Jen Winter - ICSTARS Astronomy To: SOLARECLIPSESSenl200401aula.com Date: Mon, 29 Dec 2003 22:46:36

I just noticed another challenge.

Those who hope to observe the 2005 eclipse at the end of the total phase (sometimes called the Willcox point) will need to be even more precise. That path width will be less than 1km as the umbral shadow lifts to become antumbral in a pin-point.

I'll take my chances in 30-40 seconds and a 20-some km wide path of totality, thanks.

We are very close to an announcement on our first April 2005 TOTAL eclipse expedition offering. Clear Skies, jen

HYBRID 2005

2005 eclipse cruise

From: Mike Simmons To: solareclipsesSenl200401Aula.com Date: Sun, 04 Jan 2004 05:59:33

A cruise to the 2005 TSE has been announced. 16 nights from Tahiti to Peru on the MV Discovery. Papeete, Moorea, Pitcairn Island, Easter Island (2 days), Pisco and Lima (Callo) Peru. And 30 seconds of totality. Details are at http://astronomyvacations.com/. Mike Simmons

From: Dave Balch

This is a fascinating list with interesting discussions by amazing people about my favorite topic... I always read everything with great interest but, unfortunately, usually don't have too much to contribute as I am more of an eclipse-aesthetics rather than an eclipse-technical kind-of-guy

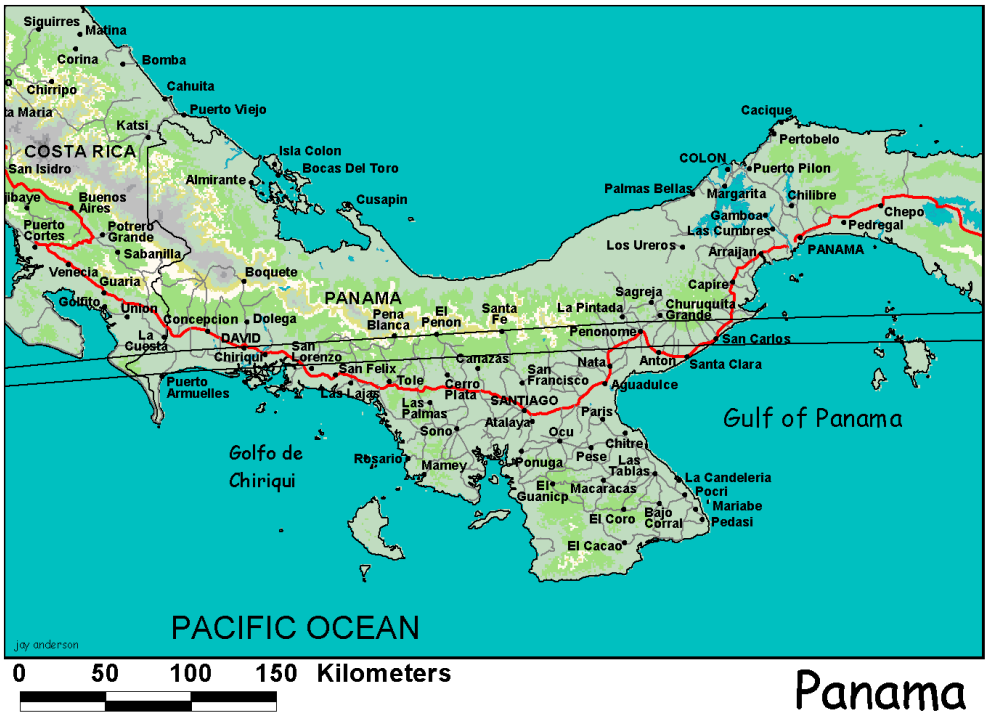
Until now...

I just heard about a new offering for 2005 and it looks very good - reasonably priced with a fascinating itinerary; Tahiti to Lima including Easter Island.

From what I understand, an enrichment program will be offered in 60 days, at which time the price will go up. So if you are willing to pass on the enrichment program you can get a better deal before it is announced.

I have been on several eclipse trips with this company and they do a good job of putting it all together... you won't be disappointed, and you'll get 31 seconds of totality!!

http://www.astronomyvacations.com Dave



Hybrid 2005 eclipse in Panama By Jay Anderson

TSE 2006

Good news from Lybia

From: Klipsi To: SOLARECLIPSESSenl200401AULA.COM Date: Sat, 20 Dec 2003 04:53:21

have you seen the latest good news from Lybia ? Wonderful development ! see CNN, USA today or other news sites. Seems like Americans may soon be allowed to visit Lybia, if this goes on. 2006 TSE in Lybia ! Yeeeehaaaaa !!!! Olivier "Klipsi" Staiger

From: Robert B Slobins

We would certainly hope that this process progresses further, and that Khaddafi pursues his recent interests in Italian 'football' further as opposed to his past activities. After having been in the Sahara before (1973), I have to look forward to North African and Islamic hospitality and the better chance for clear skies in Libya as opposed to other locations.

My wife would want to be in Brasil for sunrise, I am sure, but just what are the prospects for seeing totality there? ;-) cheers/ rbs

From: Luís Miguel Viterbo

I haven't seen the news yet, but I must admit Klipsi's mail struck me both as good and bad news: more interesting people from this list to come... more people to fill the should-be-empty-like-it-is desert. I will not be alone anymore...

Well, I've been in touch with a lot of different local and international (mainly European) agents and guides, so if anyone wants a summary of my contacts, feel free to contact me off the list (or in, if you feel it could be of general interest). Miguel Viterbo lmviterboSenl200401sapo.pt

From: Crocker, Tony (FSA)

The recent September settlement between Libya and the Lockerbie victims' families created an incentive for the U.S. to lift sanctions. The families get $5 million if U.S. sanctions stay on but $10 million if they come off. And the U.S. sanction decision has a deadline, I think a year from the September settlement. The sticking point for the U.S. sanctions was Libya's WMD programs, thus the negotiations over the past few months. The Libya sanctions/travel restriction issue should be resolved one way or the other by the Lockerbie settlement deadline.

TSE2006 by Jay Anderson

TSE 2015

North Pole 2015 (was Novo Eclipse pix)

From: Fred Bruenjes To: SOLARECLIPSESSenl200401aula.com Date: Tue, 02 Dec 2003 23:37:13

Robert B Slobins <rslobinsSenl200401compuserve.com> wrote: > We have to prepare for Spitzbergen, 2015! ;-)

Forget Spitzbergen, I want to be in an airplane at the North Pole for 2015! According to Emapwin the Pole is within the path of refracted totality. Due to the extremely low altitude and almost certain cloudiness I think an airborne observation is the only chance for success.

A bunch of us on the Novo trip discovered this eclipse during a late-night dinner, while researching Antarctic eclipses on our laptops. Eclipses viewable at the Poles are centuries apart, so we got very excited and pledged to all meet again in 2015 at the Pole. Then we would set the record for being the first to see a TSE from Antarctica and the first to see a TSE from the North Pole!

Attempts at convincing Jen Winter to coordinate the trip were met with a blank stare. :) Fred Bruenjes

From: Jay Friedland

Are you sure it wasn't an "icy" stare ;-) -Jay

From: Glenn Schneider

Hi Fred, First, I love your images from Novo! Thanks so much for sharing them!

But, I have to disagree about 20 March 2015, not about its North polar visibility, as that certainly is correct, with or without correcting for refraction. It will be total from the North Pole, but both non-central and *VERY* close to the horizon (less than 1 degree). The non-refracted altitude is appx 0.3 degrees at the North Pole - but I don't have a good pressure/temperature profile on hand to do a rigorous diffraction correction, which would certainly be needed. While the duration of totality will be just about 2 minutes (at what altitude do you want your aircraft?), I would almost certainly opt for a location near maximum eclipse on centerline, appx 64.5N, 6.5W, where we will get (before figuring in an aircraft velocity component) 2.8 minutes of totality at 18 degrees above the horizon. Such a flight could easily be launched from Iceland (my first choice) or the UK or Scandinavia and would be of comparatively short duration. If Cpt. Saemondson of IceJet (who was our Citation II pilot in 1986) is still flying then, I would want him to do it for us!

I agree with Jen and will take a pass at the North Pole, but the North Atlantic just below the Arctic Circle, I would definately do that (again) from a high altitude aircraft - if I am still around then (which I plan to be). -GS-

From: Jen Winter - ICSTARS Astronomy

Hey, wait... I didn't say I would pass on this! It's way too early to exclude a plan....

I think glassy-stare would have been a good description. What Fred didn't realize was the kind of things racing through my mind when contemplating such a logistical proposal... how do you do your site inspection?

From: Jay.M.PasachoffSenl200401williams.edu

Jen--site inspection for the North Pole: why, on an atomic submarine, of course. Jay

From: Sheridan Williams

According to various software (using a Delta T of 71 seconds) the 2015 TSE will just miss the North Pole (without taking refraction into account). Where do you get your figures from Glenn?

From: Glenn Schneider

(Continued on page 75)

Hello, Sheridan. I don't think this is a delta-T issue. Interestingly, the north (and south) poles are the only place where a delta-T error would have no effect in position as "ephemeris longitude" vs. "geographic longitude" has no meaning, just as longitude has no meaning! Timing would be different by the way we arbitrarily set our clocks to the GMT/UTC fiducial, but the arc-like path of totality would, effectively, pivot about the north pole with a delta-T error as the Earth might have a slighly different rotational phase then expected. I am sure Jean M. or Ray Brooks will say that more lucidly, but I think you know what I mean.

I don't know what S/W you are using - but I should say I computed that for 40,000 feet, as the question was really regarding a high altitude flight Did you as well? Makes a difference for a low altitude site.

As to refraction, I can virtually assure you the model I am using MUST be wrong. I do not have appropriate data for the North Polar region and was simply using the same profile I had used for the North Atlantic in October. With the Sun that low refractive indices are sure to be different. This would need some serious consideration (and work to get data I do not have) to try get that right. We have a few years to sort that out. Fred E. may want to chime in on this as well, when he de-frosts.

Still, I will opt for airborne east of Iceland and leave the North Pole to Jay Pasachoff and his nuclear powered submarine. -GS-

From: Marc Weihrauch

Hello everybody,

> Still, I will opt for airborne east of Iceland and leave the North Pole to Jay Pasachoff and his nuclear powered submarine. -GS-

Without wanting to seem irreverent: I do believe that Prof. Pasachoff did not know what he was talking about. Just think of the fights among all the passengers for the one periscope seat! ;) Marc

From: Michael Gill

Since the North Pole is the last place in the Northern Hemisphere to get sunrise after the winter, the eclipse occurring on the wrong side of the equinox means that an aircraft will be needed to see the eclipse at 90N.

> Still, I will opt for airborne east of Iceland and leave the North Pole to Jay Pasachoff and his nuclear powered submarine.

Glenn - count me in for that flight!

Jay/Glenn: I see you both got mentioned in the North Adams Transcript: http://www.thetranscript.com/Stories/0,1413,103~9054~1808764,00.html Cheers, Michael Gill

From: Jean Meeus

It is *sure* that the eclipse of 2015 March 20 will be total at the North Pole. My accurate solar eclipse program gives for the North Pole a duration of totality of 1 minute 58 seconds, the ratio of the diameters Moon/Sun being 1.0385. My program does *not* take the atmospheric refraction into account, but with such a long duration of totality the eclipse certainly remains total at the pole.

As Glenn correctly writes, a change in Delta T will have no effect here.

< Interestingly, the north (and south) poles are the only place where a delta-T error would have no effect in position as "ephemeris longitude" vs. "geographic longitude" has no meaning, just as longitude has no meaning!

Correct. Changing the value of Delta T results in changing the orientation of the Earth's globe in space (changing in rotation, of course). This would affect not only the difference between Dynamical Time and UT, hence it would change UT, but moreover it would shift all 'lines' (central line, northern and southern limits of path of totality, curve of maximum on the horizon, etc.) in an east-west direction. Only the poles would not be affected. Even if Delta T were changed by several hours (!), that would not affect the eclipse conditions at the two poles. The only thing that would change at the poles when changing Delta T, would be the place of the

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Sun (at totality) with respect to details on the horizon.

If a software gives no totality at the North Pole on 2015 March 20, then surely that software is not accurate. My program gives, for the North Pole, a Sun's altitude of -0°12' at the time of totality. This is to the geometric altitude of the center of the solar disk. If we use a refraction of 0°34' at the horizon, then the apparent altitude of the Sun's center changes to +0°22', which is a little more than the Sun's semidiameter. Hence, at the North Pole, the solar disk will be seen (barely) completely above the horizon.

All this, of course, refers to sea level. Jean Meeus

Chris O'Byrne wrote: If a software gives no totality at the North Pole on 2015 March 20, then surely that software is not accurate. My program gives, for the North Pole, a Sun's altitude of -0°12' at the time of totality. This is to the geometric altitude of the center of the solar disk. If we use a refraction of 0°34' at the horizon, then the apparent altitude of the Sun's center changes to +0°22', which is a little more than the Sun's semidiameter. Hence, at the North Pole, the solar disk will be seen (barely) completely above the horizon.

Jean, I'm getting a duration of totality of 1m 59.2s at the north pole, with the Sun less than 1 degree below the geometric horizon.

So I agree that the eclipse is almost certainly visible at the pole (in theory), but I very much doubt if we can draw any conclusions as to how long it will last, as the duration of 1m 59.2s was calculated on the basis of a "transparent earth".

Refraction will shift the path so that it covers the north pole, but I think it's impossible to draw conclusions as to how long polar totality will last on the basis of a transparent earth calculation.

Does anyone have software that properly accounts for the effects of refraction? Chris.

From: Mark R. Kidger

Refraction at zenith distance greater than 89º is a big problem. I have a colleague who did an MSc on it, and I think concluded that it was almost impossible to calculate accurately. Mark

From: Glenn Schneider

Chris, I want to thank both you and Jean for your comments regarding TSE 2015 at the North Pole. I still re-iterate I will personally leave that venue for others, I'll be back up in the air east of iceland (John Dennis... Interested?)

None-the-less, in my initial email on this I had said:

>It will be total from the North Pole, but both non-central and *VERY* close to the horizon (less than 1 degree). The non-refracted altitude is appx 0.3 degrees at the North Pole - but I don't have a good pressure/temperature profile on hand to do a rigorous diffraction correction, which would certainly be needed. While the duration of totality will be just about 2 minutes (at what altitude do you want your aircraft?)...{snip}

I actually computed a duration of totality at the North Pole at SEA LEVEL (which I am guessing you and Jean M. have done) but WITHOUT a refraction correction (as you say you didn't do) of 1m 56.4s *AFTER* applying a correction for the limb profile for the topocentric lunar liberation. Is your (and Jean's) somewhat longer predictions for a smooth limb, center of figure, center of mass, or with the limb profile? That could explain the differences. But I won't sweat the small discrepancies, as the major contributor when you put it in WILL be how to handle the diffractive air column, at the North Pole. I don't have the necessary atmospheric data in hand (and not sure if they exist, but haven't looked) - but with global warming by 2015 they may be all wet (;-) sorry, no pun intended). The method of correction I apply is described on my web site at: http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_86/ECLIPSE_86.html as was done for the Oct 1986 eclipse. But, as you can see that is HIGHLY data driven. In that case I had used a temperature/pressure profile as shown there which begins at 21C and 1070 mb at Sea Level. That obviously is too warm for the North Pole, and I suspect the tropospausal boundary is lower at the North Pole as it is at the South Pole as well. The page explains what I did then (and still do now) - but perhaps there is a better way of doing this.

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TSE 2015

If you look at the figure (or table) it does "predict" a zenithal diffractive offset of 34.8 arc minutes at sea level, which agrees with what Jean had commented on, but I suspect that this may not hold for the true atmospheric conditions. That table I generated is quantized, and the un-refracted eclipse will be closer to 0.5 degrees up (well, the Sun is of course itself 0.5 degrees in extent!) and as opposed to "on the horizon" the zenital refraction WITH THIS T/P profile would be 29.0 degrees zenithward.

BUT... No matter how you cut it, at the North Pole Totality will be just a bit under two minutes with the Sun (refraction corrected) about 3/4 of a degree above the horizon. And two more things... it will probably be cloudy, and so I won't be there! Actually one other thing, I think we got on this because Sheridan had warned us that:

>According to various software (using a Delta T of 71 seconds) the 2015 TSE will just miss >the North Pole (without taking refraction into account).

which MUST be wrong (as discussed above) as Jean, Chris and myself all compute this fully independently with our own algorithmic implementations, procedures, and derived data and we all are in very close agreement. Hence there must be some "bad" software out there which had used. Can Sheridan advise what that is as a Caveat Emptor, or at least file a bug report. -GS-

From: eclipseclatSenl200401comcast.net

Assuming no clouds, one would *definitely* see a TSE at the North Pole on that date.

From: Chris O'Byrne

True, but there must be a set of averages somewhere that would give something approaching a good idea of the sort of thing to expect. Chris.

From: Chris O'Byrne

Glenn, The 2015 eclipse poses two challenges.

1) Observing it
2) Calculating it!

I'm also going to leave the first challenge to someone more qualified than I. But if I can't observe the eclipse first hand, then the least I can do is to try and calculate what to expect if I did! Chris.

From: Glenn Schneider

Chris, Kelly Beattie (off line to SEML) raised a similar question regarding using South Pole data as a surragate to the North Pole. As this seems to be a topic of interest here is my 2 cents (though I guess it must be up to at least 10 cents by now). Here is what I said to Kelly:

"It's really a a question of the refractive airpath through such a long column depth. That is dependent on the stratified temperature/sensity profile, which is also dependent in second order to content (aerosols, partial pressure of water vapor) etc., and also on atmospheric mixing to a very small degree. In principal, IF you knew the stratification of the atmosphere along the line-of-site in terms of its variable optical index you could ray trace (and integrate) through it. The problem is, at any given time, with differences in temperature, pressure, meteorology, water content, etc., that changes in detail. People usually accept some sort of bulk modulus for an effective total refractive index through the atmosphere given some elevation angle of the line of site and (simple) model atmosphere. That simple approximation, however, really stars diverging significantly when you are at very low elevations (i.e., greater than 10 air masses), and when you are talking about the 2105 eclipse, well, the Sun will be right ON the horizon (unrefracted). So how much it will be refracted "up", in detail, and as a result how much the path of totality moves because of that is not really apriori deterministic. with a good enough "model" based upon empirical observations (i.e., statistical norms at a given site) you might do a better job - but I don't think anyone is (or has) measured that for the north pole. Yes, all sorts of data exist for the South Pole, indeed because of its utility for an astronomical observing site (but I'm not sure anyone really worried about this at the horizon; and of course Dome C is now known to be a much better sight, but I digress). But, the south pole is not a good analog to the North pole. The air is MUCH

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drier at the south Pole (the polar plateau is the driest desert on Earth), is much less azimuthally differentiated (the winds are a downward catabaic flow) AND "ground level" is at appx 9,300 ft above MSL - not sitting on the top of a frozen Ocean. It is likely that atmospheric data from some place like Thule, Greenland might be a better surrogate to build a refractive model - and then I still think if someone did an unbiased error budget, it would turn out to be very imprecise for this application."

From: Glenn Schneider

Well... We may have to agree to disagree on this one, Jen.

We do have plenty of time to study, and though Mr. Clause's enclave is usually depicted as a benign and gentle environment, the chance of a cloud out or other weather scrub will likely be even more severe that what you so happily avoided on the Antarctic coast. The northern polar regions are climatically very different those in the south. I'll defer here to the real experts. What I don't want to do in 2015 is to stand up and say:

"I was among a select few privileged humans to be the first in history to be clouded out of a total solar eclipse from the North Pole."

And you are right, "on earth" we may not be able to. The assessment will likely relay on off-earth remote sensing via polar orbital met satellites, or the observation be done off-earth at appx 11 km up. Can we table this for now until about, say, 2013? Perhaps in our old(er) ages we again will be at two different venues in 2015 as we were in 2003. I dearly hope, though, if you opt for another on-horizon frigid eclipse you can make the your postulated claim, not mine! And I'll be happy to live through that "I told you so".

Anyone know what the chance of a real Astronomical horizon is at the North Pole? I suspect that keeps changing too... -GS-

From: Jen Winter - ICSTARS Astronomy

The "A" factor which doesn't seem to be getting reflected in this North Pole discussion is Adventure or adrenaline. Remember that the guests who participated in our Antarctic land expedition were perhaps as much astronaut as astronomer. The same thrill-seekers who wanted to stand-up and say "I was among a select few priviledged humans to be the first in history to observe a total solar eclipse from Antarctica" would also love to hold the destiction of witnessing a total solar eclipse from a vantage point above the North Pole.

Naturally, I can appreciate the thrilling feeling of telling such exciting tales as told over brandy in one's study at age 80... I just don't know how "on earth" to accurately assess the viewing circumstances to be assured of good viewing. I guess we have 12 years to figure that out, don't we? jen

From: Chris O'Byrne

Jean, I'm getting a duration of totality of 1m 59.2s at the north pole, with the Sun less than 1 degree below the geometric horizon.

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Refraction will shift the path so that it covers the north pole, but I think it's impossible to draw conclusions as to how long polar totality will last on the basis of a transparent earth calculation. Does anyone have software that properly accounts for the effects of refraction? Chris.

From: Jean Meeus

My program does not take the refraction into account, but the error thus made is generally very small. The calculations are made for sea level, and a smooth lunar limb is assumed. For the Moon's radius, the "small" value, corresponding to the lunar valleys, is used. The only correction made in my program is a correction of -0.6 arcsecond to the Moon's latitude, to take into account as well as possible the difference between the center of the disk and the center of gravity. This correction was introduced about 1963 in the 'Astronomical Ephemeris', but was dropped in 1981 when the 'Astronomical Ephemeris' was replaced by the present 'Astronomical Almanac'. Jean Meeus

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Joanne & Patrick

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From: Chris O'Byrne

Glenn, In summary, does this mean that it's actually impossible to tell whether the eclipse will be total at the pole at all? Chris.

From: Jean Meeus

< In summary, does this mean that it's actually impossible to tell whether the eclipse will be total at the pole at all?

Nope. It is *certain* that the eclipse of 2015 will be total at the North Pole. The atmospheric refraction doesn't change much. It only makes the Sun to appear about half a degree higher in the sky close to the horizon.

Near the pole the duration of totality will be 2 minutes and the width of the path of total eclipse will be 409 kilometers. With such large values, the path cannot miss the pole! Jean Meeus

From: Glenn Schneider

Oh!, It will be total at the nort pole - eith absolute certainty.

It is just at this juncture Ifor one would not want to bet whetherit will be 1m50s, 1m 58s, or somehwere in between! -GS-

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