TOTALITY!

2006 JULY THE JOURNAL FOR ECLIPSE CHASERS ISSUE 2

> BEING DISTRIBUTED TO APPROXIMATELY 25 ADDRESSES <

Ring of Fire Expeditions in Libya

IN THIS ISSUE;

2006 Eclipse Highlights and Photos from Libya with Ring of Fire Expeditions

Text compiled from a report by Paul D. Maley from the Ring of Fire Expeditions Web Site

The 32nd RING OF FIRE EXPEDITIONS trip to observe a solar eclipse once again experienced a highly successful trip. Three teams of eclipse seekers traveled to the same location south of Jalu, Libya in order to observe a wonderfully successful total eclipse expedition. Teams 1 and 2 were handled by Wings Travel, while Team 3 was handled locally by Numida Tours. It was Wings that did our principal coordination and the results of this were truly outstanding. Teams 1 and 2 toured only in Libya, while team 3 continued on to Egypt, some members enjoying a cruise along the Nile river. There were no visa problems and the tours were carried out as planned, although there were some logistical questions that were not understood until the groups arrived. The hospitality of the Libyan people wherever we went was very open and helpful making this one of the best travel experiences [we have encountered].

On eclipse morning I was able to use David English's Iridium satellite phone to communicate with our NASA eclipse expert Steve Sokol, who confirmed what we could see for ourselves---severe clear skies and no reason to relocate for a clear view of the eclipse. It was the best possible option for our three teams.

Now for the best part. The eclipse had to have been one of the best visual experiences of all time. Under the transparent desert sky, the corona was very bright. This was solar minimum, but it was easy to read camera dials and I thought the overall darkness was less than at recent eclipses. The Sun's high altitude also was a plus, and the extent of the corona was at least 3 solar radii visually. Anne Reuter observed Mercury and Canopus, and I was able to see Venus 1 hour 6 minutes before totality—the earliest ever. The wind had been predicted to blow from north to the south, but actually blew in the reverse direction, causing any dust kicked up by drivers to be blown away from the observers [and their equipment].

The 'star' of the pre- and post-eclipse show were best observed by David Weber who noted that he was awash in a sea of shadow bands. Three to four minutes before 2nd contact and measured about 12 to 18-inches apart and moving along at 10 to 15 feet per second. After totality they were seen up to 5 minutes following 3rd contact, but the spacing appeared to be wider, He described them as visible 45-50 feet distant, and showed better on the sand surface than on white cloth. Shadow bands are generally perceived in a different way by almost everyone. Pat Reiff noted that the shadow bands seemed to pass in batches and were not all continuous. Anne thought she saw shadow bands or something akin to them silhouetted in the dust cloud raised not far from where she was standing. I have only seen shadow bands once, and if it were not for the fact that I dropped a battery on the ground I would not have noticed them-[they were] incredibly easy to see skipping across the flat sand in front of me, and appearing to be moving in the same direction as the Moon's shadow.

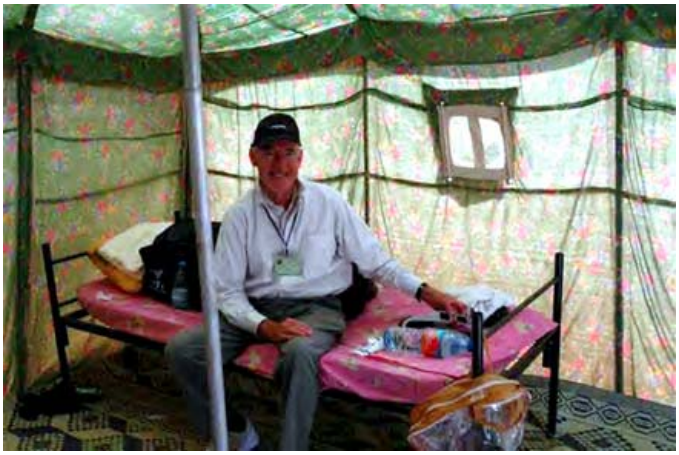
The shadow of the moon appeared as conical, but also had a dome-like appearance as it enveloped the site 5 to 10 seconds before 2nd contact. The diamond ring was seen at both 2nd and 3rd contact, but more prominently at 3rd contact.. Temperature measurements were logged by Terry Kemper, Wynne Lienhardt and Mamta Rajan. Unfortunately, the data was somewhat incomplete and inconsistent between the 3 thermometers. We will have to figure out a way to get better weather data logging equipment next time.

Dick Dietz repeated his Questar video of the edge of the Sun, recording the coronal structure all around the periphery during totality. In addition he was able to tape some very high quality video of Baily's beads at both 2nd and 3rd contact. The corona appeared saturated more so than at other eclipses and the beads were far more pronounced at the centerline than in the past.

The preparation and execution of the camp and logistics were amazing considering the difficulties of the desert and the large number of tourists. We generally had privacy, access to toilets, a mess tent, AC power, the internet, and the Red Crescent standing by for medical support. Vendors were in a different part of the camp. Overall there were actually several camps in one for a total of perhaps 1200 persons in our area alone.

Paul Maley stands by the Texas flag at eclipse tent city in Libya Photo by Lynn Palmer

True running water and toilets at a the temporary city in the middle of the desert. Photo by Lynn Palmer



David Weber and his bed in a 4 man tent. Photo by Alex McNair

An air ambulance was on hand in case of emergencies. Photo by Lynn Palmer

Members of Ring of Fire Expeditions Group 3 ready for the eclipse

Photo by Kaethe Stella

Wi-Fi in the middle of nowhere!

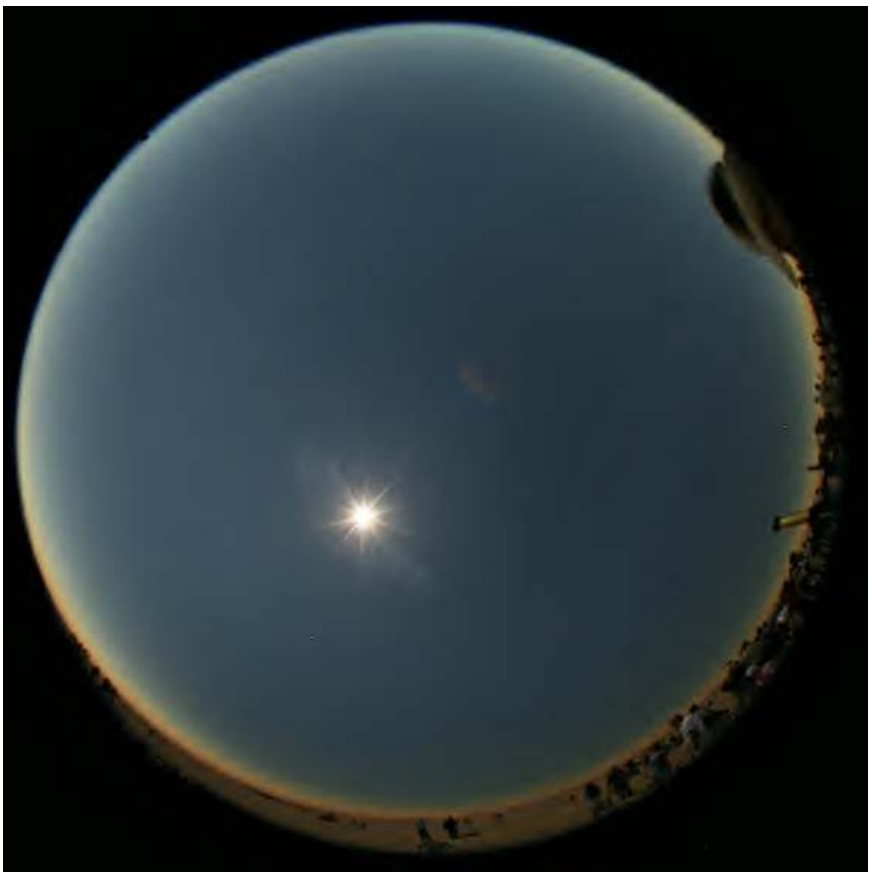
Photo by Debbie Moran

Paul Maley with his camera gear and tripods.

Photo by Lynn Palmer

Dick Mischke keeps his gear cool with a thermal blanket

Photo by Michelle Otake



Fisheye view at totality Photo by Pat Reiff

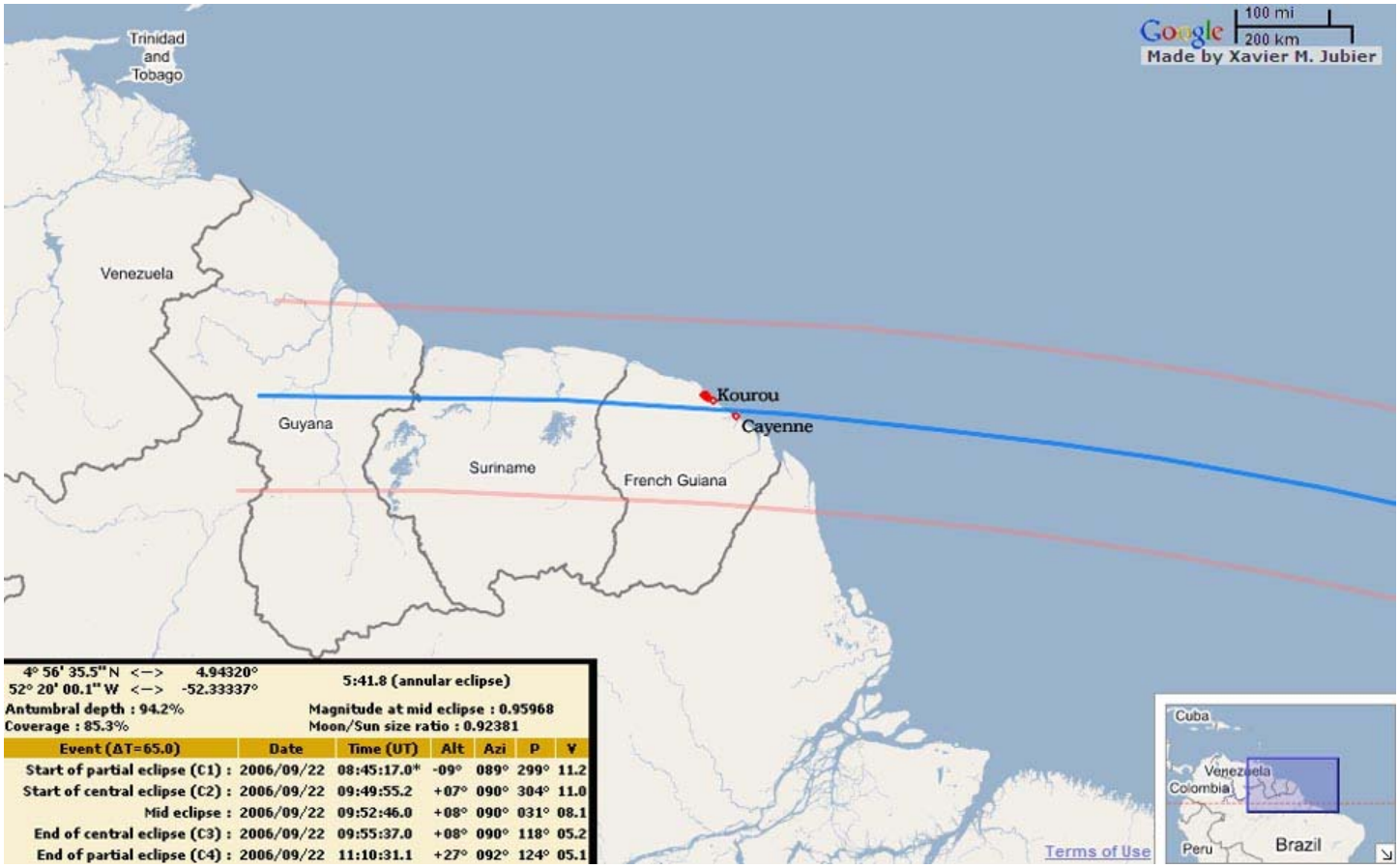
Tripoli Sunset
Photo by Dan Deshon / Betsy Vobash

Sabranrha and Leptis Magna

Photos by Dan Deshon and Betsy VobachLynn Palmer

Ring of Fire Expeditions Team 1 at Sabratha Photo by Lynn Palmer

Annular Eclipse - 2006 September 22



This chart was generated from Xavier Jubier's web site, and edited into this final format. The information contained in the box in the lower left corner highlights the details of the eclipse as seen from Cayenne, French Guiana.

Indeed a total eclipse is where most people choose to journey to, but there are groups that travel to both total and annular eclipses. One such group is the one that we have highlighted in this issue of TOTALITY!, the *Ring of Fire Expeditions*. On September 22 of this year an annular eclipse occurs. For the most part this eclipse occurs across the South Atlantic, and the only land location that this eclipse can be seen from is in the very northeast part of South America, at the very beginning of the eclipse.

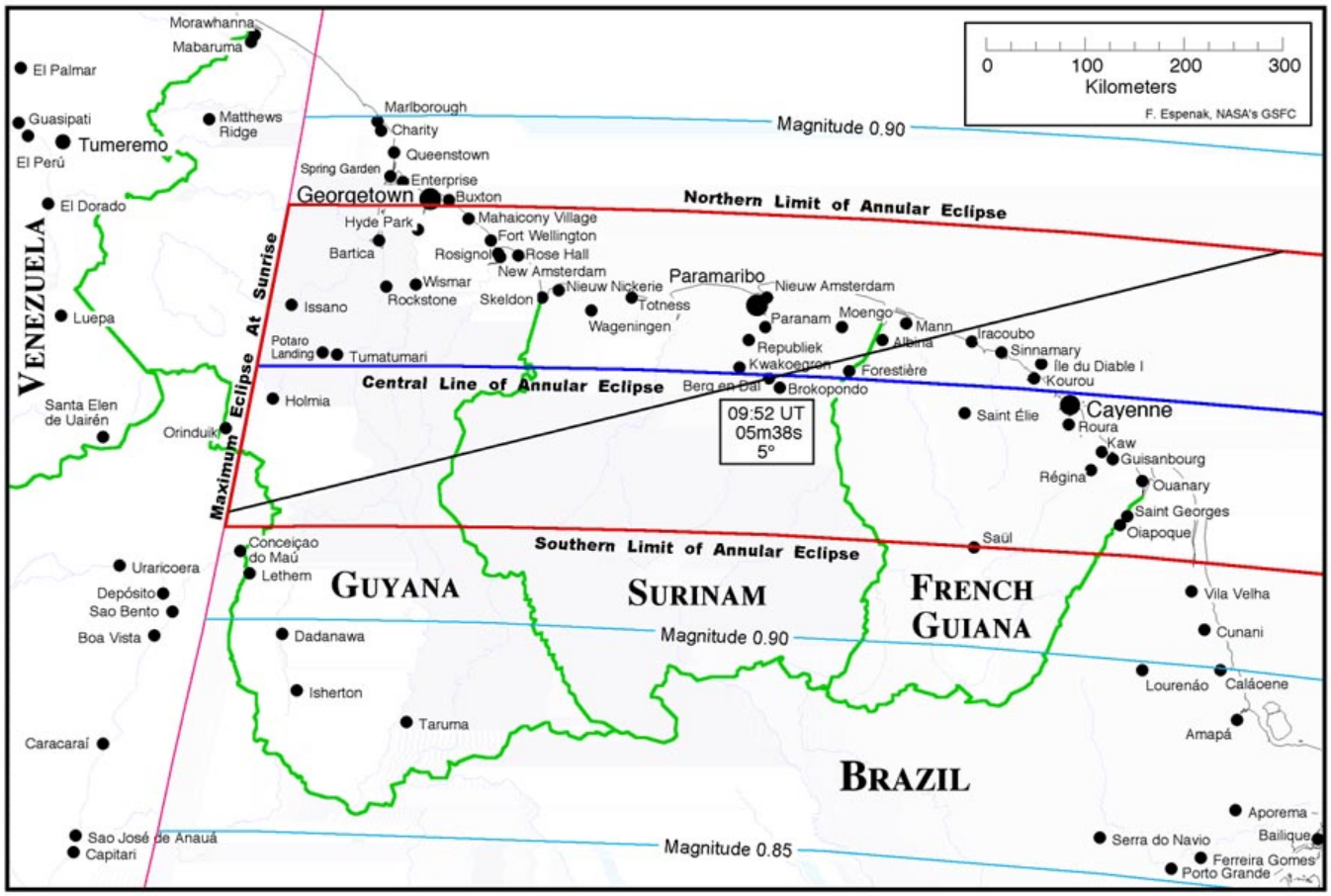
Over the South Atlantic the longest duration of the annularity will last for 7m 09s.

In Venezuela as the sun rises, it will be seen in partial eclipse, but not quite is the annular phase visible. The first opportunity to see the Moon centered over the Sun will be in Guyana, and a small portion of Brazil along the southern edge of annularity.. The path takes the annular phase across northern Surinam and French Guiana, and the southern edge of the annular path clips a small portion of Brazil before it moves out into the Atlantic Ocean, not to hit land again. The best opportunity to see this eclipse from a well situated observing location would be near Cayenne or Kourou in French Guiana. These locations place one slightly south of the centerline and the other slightly north of the centerline. A short road trip about one-third away from Cayenne toward Kourou would place an observer on the centerline! Cayenne is the city of French Guiana. The northern edge of annularity clips the capital city of Guyana, Georgetown, and both the capital cities of Surinam and French Guiana, Paramaribo and Cayenne respectively, fall well in the path of annularity.

The start of the eclipse, first contact, will occur well before sunrise. In Cayenne, sunrise will occur almost exactly due east since the fall equinox occurs only one day later, on the 23rd, and this location being only 5 degrees north of the equator. From this location the Sun will be only 7 degrees above the horizon when first contact comes at 9:49:55.2 UT. Mid eclipse occurs at 9:52:46.0 UT with 3rd contact at 9:55:37.0 UT. This gives a total annularity of 5m 41.8s. Fourth contact comes at 11:10:31.1 UT, with the Sun 27 degrees above the horizon. From looking at Jay Anderson's web site, there is a good chance of viewing the eclipse, usually under scattered and possibly broken skies. There also is a 18.9% chance for fog at the time of the eclipse in Cayenne, French Guiana.

For anyone interested in going to this eclipse, the Ring of Fire Expeditions has 3 more places available. The tour will include a trip to the Guiana Space Center where the European Space Agency makes their space launches at Kourou, as well as a chance to view objects in the southern skies. If you can't afford the trip, and want to wait for an annular eclipse on the home turf, the southwestern U.S. will have an annular eclipse on 2012 May 20 (to be featured in a future issue). For more info on this trip, please visit the Ring of Fire web site at http://www.eclipsetours.com.

Figure 6: Annular Solar Eclipse of 2006 Sep 22



This chart of the eclipse was created by Fred Espenak for NASA. The blue line marks the center of the path, and the red lines denote the north and south boundaries of the annular phase. Outside of these areas the eclipse will be partially eclipsed, but to a large degree.

Eclipse Chaser Profile – Paul D. Maley

Paul Maley, at 59, is without a doubt, one of the most prolific observers and eclipse chasers around. He is the consummate observer of earth orbiting manmade satellites, spacecraft and space debris. He has traveled the globe leading groups to observe occultations of stars by asteroids to help determine their sizes and shapes, to do observations of the Moon to help refine the lunar polar diameter, and has led groups to observe solar both total and annular eclipses with the "Ring of Fire Expeditions" travel group.

Paul was a true vanguard, becoming one of the first people to organize group travel to solar eclipses as a public outreach program by the NASA Johnson Space Center Astronomical Society, beginning with the total solar eclipse in March 1970 through the U.S. Working with Carlson Wagonlit Future Travel out of Houston, TX, 32 trips to view solar eclipses have been lead by Paul, and only 3 of which have been impeded due to overcast skies.

Paul has worked at the NASA Johnson Space Center since completing undergraduate school in 1969. A self proclaimed space-junkie, he trained two members of the ill-fated Challenger shuttle crew to observe Halley's comet in 1986. Several astronauts have been observers on asteroid occultation expeditions that he has organized as well as have participated in solar eclipse expeditions.

Paul's astronomical interests are quite diverse. In 1977 he made the first observation of a possible natural satellite in orbit about an asteroid (6) Hebe. Although not confirmed, this observation was documented in *OCCULTATION NEWSLETTER* and set off the hunt for minor planet satellites. The first such object was officially found by the Galileo space probe, in 1993 [Dactyl orbiting the asteroid (243) Ida]. About 50 others have been found by large ground - based telescopes up to now. Paul has successfully recorded 58 asteroid occultations out of more than 1,200 attempts in a long term effort to confirm an amateur discovery of this type which has still not been accomplished. He has served as vice president of the International Occultation Timing Association since 1983 which has many goals, among them recording Baily's Beads at solar eclipses to help reduce short term corrections to the solar radius, as well as coordinating observations of occultations of minor planets. Paul has coordinated such events mainly with astronomical societies in central and south America, and in the US.

Observing artificial Earth satellites has also been a long time passion. He carries 7x35 binoculars, a tape recorder and star charts with him on every domestic and international business trip for years and at night would make optical characteristic observations from cruise ships, and even from trains. He has made such measurements during an eruption of Mt. Etna in Sicily and from active lava zones in Hawaii. Once, because his hotel room door was jammed shut, he was forced to observe from a hotel window through windows that would also not open. In the mid 1980s he was instrumental in determining that a proposed Gamma Ray flasher, dubbed the Aries Flasher (also called the Ogre), was not real and in fact was caused by space debris. This was documented in a single author publication in the ASTROPHYSICAL JOURNAL. Still another 'discovery' of a flash on the moon was also linked by Paul to a coincidental flash from a different piece of space junk. On another business trip to Holland in 2002, he was jogging in the hours before sunrise as is his custom and accidentally discovered a flashing satellite which turned out to be an Iridium satellite that had lost its attitude stabilization.

Paul once observed three total lunar eclipses in a single calendar year as well as survived being shot

at while running a military roadblock in the middle of the night in Sudan after attempting a grazing occultation of a star by the moon during a total lunar eclipse there. He also took the first and only photo of a grazing stellar occultation by a totally eclipsed moon from the Philippine Islands in 1982, as well as the first photo of an asteroid occultation---from Georgetown, Guyana in 1979.

Although there have been many eclipses between 1970 and 1990, Paul did not make them all simply due to lack of funds. His first formal trip was with Lockheed co-worker Wes Simpson, for a trip to Georgia in 1970. They hauled Simpson's ancient Mogey refractor in a beat up car and shared gas expenses in the long drive from Houston, only to experience cloudy and rainy skies. He has often spent money as fast as he made it in pursuit of eclipses and occultations. When it came to a choice of paying the rent or going to an eclipse one big regret was that he was forced to choose the latter.

His first telescope was an SPI 3-inch reflector at about age 13. Once when he was observing the Sun and after leaving the telescope for a few minutes with a glass filter screwed into the opposing end of the eyepiece, upon returning to it, that he first dodged a critical danger of unsafe sun viewing. The filter had cracked, allowing sunlight to stream into the eyepiece. There were no warnings about safe filter use then and from that point on he became concerned about instructing others in proper viewing techniques.

The 2004 Transit of Venus was also a memorable event marker. As leader of the NASA Johnson Space Center Astronomical Society delegation, he presented a Mauritius flag that was flown on the Space Shuttle to the prime minister of Mauritius. During 2005 he successfully completed three historical initiatives related to astronomy: 1) he established a historical marker commemorating the U.S. Naval Observatory Venus Transit expedition to Fort Sam Houston in 1882, 2) he completed historical research and obtained approval from the State of Texas establishing a Historical Marker for the Belgian expedition to San Antonio for that same transit (accomplished with funds raised by the San Antonio Astronomical Association), and 3) he personally designed and funded a historical plaque at the Asaph Hall residence in Washington DC commemorating the house where the discoverer of Mars' two satellites (in 1877) lived during that important time. Paul notes the completely unrelated coincidence of Hall's discovery with his own apparent discovery of a satellite in orbit around (6) Hebe 100 years after Hall's Mars satellite discoveries. This is one reason why he pressed hard to establish this marker. He made several trips to Washington DC to work with the elders of the Alexander Memorial Baptist Church in Georgetown which currently owns the Hall house to successfully negotiate the placement of this plaque

Paul (on the right of course) during a visit to North Korea in October 2005
Photos courtesy of Paul Maley

I asked Paul a few questions about the solar eclipses he has been to. Here are his responses to these;

TOTALITY!: "Few eclipse chasers have stood in the Moon's shadow for triple digits. Have you yet hit that mark or are you approaching it?"

PAUL: "Actually that is of no importance to me and I have never attempted to keep track of this. Sheridan Williams and others have asked me the same question. Many eclipses I have organized have been for the sole purpose of being near the edge of the path in order to obtain scientific data on

Baily's Beads. This limits totality time intentionally. I have never understood why there seems to be some sort of need to reach some hypothetical number of magic minutes under totality."

TOTALITY!: "What is the best eclipse you have been to?"

PAUL: "[That is] very difficult to say in that the eclipse is not all of the experience. Expeditions to the edge of totality or annularity have afforded to me the most interesting views---of Baily's Beads specifically---which are suspended in slow motion. I enjoy the coordination, overcoming of challenges, side excursions etc. There has never been a 'best' eclipse up to now. Every eclipse is different and all have been suspenseful in some way. Even ones where I have experienced clouds have been enjoyable. Perhaps the total eclipse of July 1991 was the best in the sense of having successfully coordinated almost 400 people in three expeditions getting into clear skies for that long eclipse. Gabon in 1987 was by far the worst due to problems with customs people having attempted to confiscate our equipment and clouds partially spoiling the 1-second total eclipse!"

TOTALITY!: "What is the most unique eclipse you have seen?"

PAUL: "Again this is hard to answer. Perhaps Libya 06 in the sense that it was almost the expedition that never occurred due to nearly insurmountable obstacles that got in the way prior to execution of the trip. The end result was an exceptional success with clearer skies than would have been expected, perfect real time weather monitoring and assessment, toilets in the desert, seeing the green flash for the first time after dozens of failed attempts, a bright corona and the best shadow bands I have ever seen."

TOTALITY!: "You have been all over the world, and visited 207 countries, where has your favorite "Away Mission" been to?"

PAUL: " . . . the idea is that life is composed of experiences and this includes eclipses also; the more expeditions (hence, the more eclipses), the better the life experience. I would probably consider either Australia or Chile the most enjoyable countries that I have experienced."

Paul met his second wife Lynn Palmer in November, 1994 after an eclipse expedition at the Lima Peru airport. They have literally been together ever since that meeting. He also enjoys traveling to and exploring volcanoes and was an avid raiser of basset hounds. He is now a cat person and aspires to be the kind of person his cat wants him to be. He enjoys running and completed his first half marathon in Vancouver, British Columbia in May 2005 at age 58. In Panama in 2005 Lynn Palmer (Paul's wife and marathon runner) and he set up the first "5k Eclipse Run (and walk) for the Sun", and did so again in Libya in 2006, and likely will do so at future Ring of Fire expeditions. When the day comes that he retires, he hopes to find an affordable dark sky hill top site in Arizona where he will (hopefully) one day discover a comet with his Fujinon 25x150 binoculars*.

His next eclipse expedition, the 33rd, will be this September's trip to French Guiana to observe the annular eclipse on the 22nd for 5m 48s of annularity only 27 minutes after sunrise.

I want to thank Paul for supplying a large portion of the text herein, some of which is found on his Ring of Fire Expeditions web site, which contains many additional specifics about his passion of observing the sky. Please see the link to this site later in the back of this and every issue of TOTALITY! Thanks also for his insightful answers to my questions, making this a very interesting piece to a very busy puzzle. - Editor

*.After Paul's mother died in 1978, she left him just enough money with which he could purchase these Fujinon comet hunting binoculars. Paul flew to Japan (on a free ticket) to bring them back and has used them prodigiously to observe comets and make artificial satellite measurements. But since finding a comet from the Houston area has proven impossible, he hopes to use them in the future from Arizona."

Eclipse Specialty Tour Group Web Sites . . .

Astronomical Tours
http://astronomicaltours.net/index,html
Astro World Travel
http://www.homestead.com/AstroWorld/travel.html
Far Horizons
http://www.farhorizon.com/2006-solar-eclipse.htm
Ring of Fire Expeditions
http://www.eclipsetours.com
Sirius Travel
http://www.siriustravel.com/
Sita Solar Eclipse Tours
http://www.eclipsetours.net/
TravelQuest International
http://www.tq-international.com/index.htm
Travel Wizard
http://www.travelwizardtravel.com/astro.htm
Winco Eclipse Tours, Inc.
http://www.wincoeclipsetours.com

Other Useful Eclipse Web Sites . . .

NASA Eclipse Home Page
http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak's Web Site
http://www.mreclipse.com/
Jay Anderson – Eclipse Weather Predictions
http://home.cc.umanitoba.ca/~jander/
Xaviar Jubier's Google Earth Eclipse Maps
http://xjubier.free.fr/en/site_pages/SolarEclipsesGoogleMaps.html
IAU Solar Eclipse Working Group
http://www.williams.edu/Astronomy/eclipses/

Acknowledgements . . .

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Larry A. Stevens
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Some future issues will occasionally use photos that have been posted to web sites that are saved at 72 dpi, and likely will not be as sharp as others posted at 128 dpi.

Please send any correspondence, suggestions or submissions to TOTALITYnewzine@aol.com.

Photo submissions can also be sent to the TOTALITYnewzine@aol.com, please format @128dpi.

In the Next Issue;

- 2006 Eclipse Highlights and Photos from Egypt
- Eclipse Chaser Profile – Jay Pasachoff

In Future Issues;

- Eclipse Timeline: 2008-2017
- 2008 Total Solar Eclipse – The Hermit Eclipse
- 2009 Total Solar Eclipse – Longest Eclipse of the 21st Century
- Total & Annular Solar Eclipse Maps 2001 to 2050
- Will Your Next Eclipse Trip Weather It?
- Eclipses of the Past >
  1984 – The "Broken Ring" Eclipse
  1991 – The Great Eclipse