THE LUNAR OBSERVER

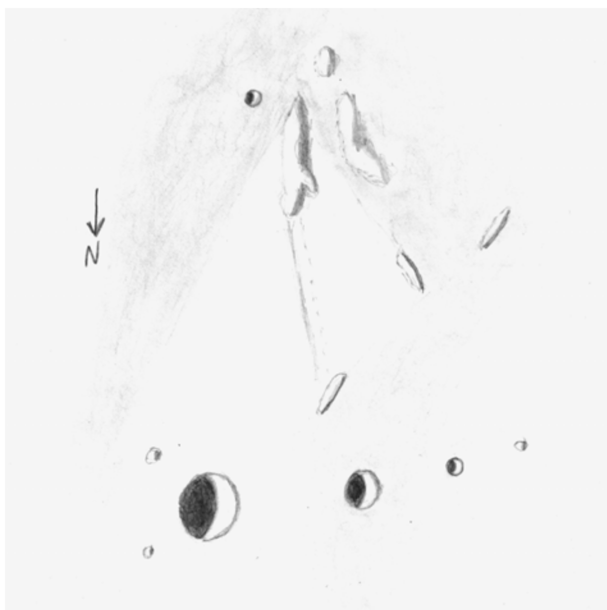
ALPO — Association of Lunar & Planetary Observers — Founded in 1947

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.
EDITED BY: Wayne Bailey wayne.bailey@alpo-astronomy.org
17 Autumn Lane, Sewell, NJ 08080

RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – JULY 2009

Fra Mauro A&C



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
March 7, 2009 3:10-3:32 UT
15 cm refl, 170x, seeing 7

I drew this area on the night of March 6/7, 2009 while watching the occultations of 6th-magnitude ZC 1167 and two other stars. Fra Mauro A & C are west of Fra Mauro, near the north end of Mare Cognitum. These are two round, relatively simple craters, A being the larger, but C appears to have more shadowing outside its west rim. A small pit, not shown on the Lunar Quadrant map, is west of Fra Mauro C, and a tiny peak is farther to the west. Two more small peaks are east of Fra Mauro A. There are several ridges to the south. The large one with substantial shadowing is Bonpland sigma. The pit Bonpland L is just east of this ridge's southern tip, and a small domelike hill is to the southwest near a large ridge that has less shadowing than Bonpland sigma. A short, wide rille starts at the north end of Bonpland sigma, and extends toward Fra Mauro C, but ends near a short ridge. Most of this area is dusky mare material, but a relatively bright tongue takes in Fra Mauro A, most of Bonpland sigma, and the rille. Some short ridges are on the light-dark boundary, but the large, low one near Bonpland sigma is entirely in the mare area.

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LUNAR CALENDAR

JULY-AUGUST 2009 (UT)

July 07	09:21	Full Moon (Penumbral Lunar Eclipse)
July 07	21:40	Moon at Apogee (406,232 km - 252,421 miles)
July 10	19:00	Moon 3.3 Degrees NNW of Jupiter
July 10	19:00	Moon 2.7 Degrees NNW of Neptune
July 13	07:00	Moon 5.2 Degrees NNW of Uranus
July 13	19:00	Moon 1.3 Degrees NNW of asteroid Juno
July 15	09:53	Last Quarter
July 18	11:00	Moon 4.8 Degrees N of Mars
July 19	05:00	Moon 5.9 Degrees N of Venus
July 21	20:17	Moon at Perigee (357,464 km - 222,118 miles)
July 22	02:34	New Moon (Start of Lunation 1071)
July 22	19:00	Moon 2.7 SSW of Mercury
July 25	10:00	Moon 6.0 Degrees SSW of Saturn
July 28	21:59	First Quarter
Aug. 04	00:43	Moon at Apogee (406,026 km - 252,293 miles)
Aug. 06	00:55	Full Moon (Penumbral Lunar Eclipse)
Aug. 06	19:00	Moon 3.1 Degrees NNW of Jupiter
Aug. 06	24:00	Moon 2.7 Degrees NNW of Neptune
Aug. 09	12:00	Moon 5.1 Degrees NNW of Uranus
Aug. 13	18:55	Last Quarter
Aug. 16	03:00	Moon 3.2 Degrees N of Mars
Aug. 17	22:00	Moon 1.7 Degrees NNE of Venus
Aug. 18	07:00	Moon 0.48 Degrees NNW of asteroid Vesta
Aug. 19	04:54	Moon at Perigee (359,641 km - 223,471 miles)
Aug. 20	10:01	New Moon (Start of Lunation 1072)
Aug. 21	05:00	Moon 0.97 Degrees NNE of asteroid Pallas
Aug. 22	01:00	Moon 6.1 Degrees SSW of Saturn
Aug. 22	09:00	Moon 2.6 SSW of Mercury
Aug. 27	11:41	First Quarter
Aug. 31	11:05	Moon at Apogee (405,267 km - 251,821 miles)

AN INVITATION TO JOIN THE A.L.P.O.

The Lunar Observer is a publication of the Association of Lunar and Planetary Observers that is available for access and participation by non-members free of charge, but there is more to the A.L.P.O. than a monthly lunar newsletter. If you are a non-member you are invited to join our organization for its many other advantages.

We have sections devoted to the observation of all types of bodies found in our solar system. Section coordinators collect and study members' observations, correspond with observers, encourage beginners, and contribute reports to our Journal at appropriate intervals.

Our quarterly journal, **The Strolling Astronomer**, contains the results of the many observing programs which we sponsor including the drawings and images produced by individual amateurs. Additional information about the A.L.P.O. and its Journal can be found on-line at: **http://www.alpo-astronomy.org/index.htm** I invite you to spend a few minutes browsing the Section Pages to learn more about the fine work being done by your fellow amateur astronomers.

To learn more about membership in the A.L.P.O. go to: **http://www.alpo-astronomy.org/main/member.html** which now also provides links so that you can enroll and pay your membership dues online.

Note: The published images now contain links to the original, full resolution images. Clicking on an image while connected to the internet, will download the original image, which in some cases is significantly higher resolution than the published version.

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When submitting observations to the A.L.P.O. Lunar Section

In addition to information specifically related to the observing program being addressed, the following data should always be included:

- Name and location of observer
- Name of feature
- Date and time (UT) of observation
- Size and type of telescope used
- Orientation of image: (North/South - East/West)
- Seeing: 1 to 10 (1-Worst 10-Best)
- Transparency: 1 to 6
- Magnification (for sketches)
- Medium employed (for photos and electronic images)

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CALL FOR OBSERVATIONS:
FOCUS ON: Deslandres

Focus on is a bi-monthly series of articles which includes observations received for a specific feature or class of features. The subject for the **September 2009** edition will be Deslandres. Observations of all kinds (electronic or film based images, drawings, etc.) are welcomed and invited. Keep in mind that observations do not have to be recent ones, so search your files and/or add this fascinating area to your observing list and send your favorites to:

Wayne Bailey - wayne.bailey@alpo-astronomy.org

Deadline for inclusion in the Deslandres article is August 20, 2009

FUTURE FOCUS ON ARTICLES:

In order to provide more lead time for potential contributors the following targets have been selected:

Menelaus	**TLO Issue: Nov. 2009**	**Deadline: Oct. 20, 2009**
Atlas & Hercules	**TLO Issue: Jan. 2010**	**Deadline: Dec. 20, 2009**

Lunar Reconnaissance Orbiter
Lunar Crater Observation & Sensing Satellite
(LRO/LCROSS)

LCROSS: LRO and LCROSS were both launched successfully in a text book fashion on 2009 June 26 and have now gone into orbit. LCROSS has already returned some images, so we know that its cameras work correctly. We are told will be due to impact into a permanently shadowed area in the vicinity of the south pole on 2009 Oct 09 at UT 11:30 (07:30 EDT, 10:30 PDT) – a date for your diary providing that the Moon is above the horizon and it is night at your locality..

LRO: If you would like to look for LTPs at the locations where the spacecraft will be imaging, like David Darling has organized before with Clementine and Lunar Prospector, then the precise real time location of the spacecraft can be found on the following Arizona State University web site:

http://lroc.sese.asu.edu/whereislro/

Please do bear in mind that the footprints of the LROC highest resolution camera will be 2.5km x 26km or approximately 1" x 13" as viewed from Earth (at the centre of the lunar disk) and the image scale will be 50cm / pixel. However there is also a multi-waveband context camera that will obtain 100m / pixel images too. So should a LTP occur, when the images will be released by NASA's Planetary Data System (PDS), we will have access to multi-spectral and multi-resolution imagery of whatever was happening. I therefore urge strongly all experienced lunar observers to attempt to image, or visually look for LTPs, along the spacecraft trajectory during the lifetime of the mission. If you are not interested in LTP work, then please try to do this anyway because you will be able to compare your images with the context images from LRO!

Continuing on the subject of LROC, I have come across the following public web site – it enables you to tell the spacecraft to take images of specific parts of the lunar surface. If your choice is lucky enough to be accepted and imaged, then when the results are eventually released by NASA's PDS then you will be able to see these. Again please do bear in mind that the "postage stamp image sizes" are very small areas of the Moon, the public selection of targets will have a very low priority (waiting until the primary mission is over and we enter an extended mission), and you cannot put in more than 5 requests per day. http://target.lroc.asu.edu/output/lroc/lroc_page.html

Dr Anthony Cook, Institute of Mathematical and Physical Sciences, University of Wales Aberystwyth, Penglais, Aberystwyth, Ceredigion, SY23 3BZ, WALES, UNITED KINGDOM. Email: atc @ aber.ac.uk

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Just a couple of additional notes: Please check the map of existing targets when submitting imaging requests. Most of the obvious targets are already scheduled by the mission science team, so there's no need to request them again.

Mission documents indicate that ground-based observing will be optimized for Hawaii or Chile, and should be 2 hours after sunset or 2 hours before sunrise at either of these sites. Also the Moon should be greater than 45º above the horizon. Most of the participating terrestrial professional observatories are located between New Mexico, USA and Hawaii.

The nominal impact occurs when the moon is near its most northerly declination, favoring northern hemisphere observers. The phase is waning gibbous, 21 day old moon. Nominal impact occurs midday in Europe, with the moon near or below the horizon. The sun is just rising for most of the east coast of North America, resulting in a bright sky although the moon's altitude is good. The precise impact time will be known two weeks prior to impact, however, given the mission constraints on ground observability, the general conditions (lunar altitude and sky brightness) at any ground site are unlikely to change significantly.

Additional LRO/LCROSS web sites:

http://lcross.arc.nasa.gov/observation.htm
http://groups.google.com/group/lcross_observation
http://www.nasa.gov/lcross

FOCUS ON: Mare Fecunditatis

By Wayne Bailey
Acting Coordinator: Lunar Topographical Studies

Mare Fecunditatis lies mostly in the southeastern quadrant of the moon, south of Mare Crisium, and east of Mare Nectaris (fig. 1). Mare Tranquilitatis lies to its northwest. There is very little visible evidence for the underlying multi-ring basin that the mare presumably fills, which seems to indicate that the basin is old. The Fecunditatis basalt, however, overlies ejecta from Mare Crisium and Mare Nectaris, so that the mare flooding must postdate the formation of these basins.

Figure 1. Mare Crisium to Petavius. Maurice Collins - Palmerston North, New Zealand. April 10, 2009 09:27 UT. C8 SCT, LPI.

Its outline is somewhat irregular, bounded on the north by the highlands of the outer Mare Crisium ring, separated from Mare Tranquilitatis on the northwest by Montes Secchi, and partially flooding the region between the Montes Pyrenaeus and the outer ring of Mare Nectaris on the southwest. The eastern boundary is less distinct than the north or southwest boundaries. The Mare extends about 1000 km along its longest dimension. Low sun conditions (fig. 2) reveal wrinkle ridges in the north and east that may outline an inner ring that's about 475 km diameter.

At first glance, the surface of Mare Fecunditatis seems fairly bland and featureless. Closer examination will reveal numerous interesting features.

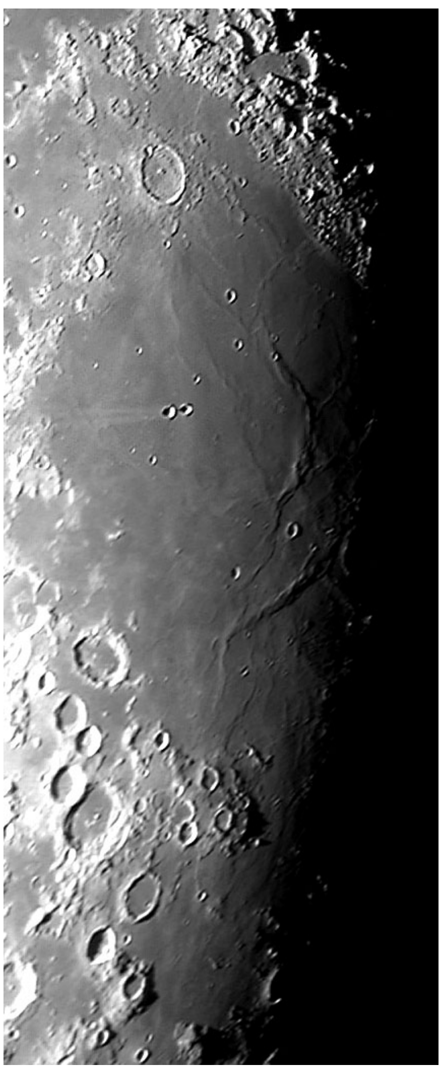

Figure 2. Mare Fecunditatis at the terminator. Axel Tute – Kussaberg, Baden-Wurttemberg, Germany. November 15, 2008 22:00 UT. colongitude 124º, Seeing 6/10, Transparency 5/6, 8"SCT f/10 ToUCam 740k Webcam

The most widely recognized feature may be the twin craters Messier and Messier A. Even under a fairly low sun, (fig. 2) two parallel rays can be seen extending westward from Messier A that appear to be aligned with the crater rim. The rays are also parallel to the axis connecting the two craters. Careful examination shows that Messier is elongated, also parallel to their connecting axis. Messier A is slightly elongated perpendicular to their axis but a bright spot on its western side gives it the appearance of elongation along the axis. Messier is 9x11 km and Messier A is 13x11. (see Howard Eskildsen's

Messier-Messier A image in the Banded Craters section of this issue). Elongated craters are created by very low angle impacts. The shape of Messier indicates that the impactor approached on a trajectory only about 5º above horizontal. The extremely directional pattern of the rays also indicates the impactor approached from the east at very low angle.

Several explanations have been offered for the formation of crater pairs. One idea is that the object that formed Messier broke into two pieces, either at or just prior to impact, with one piece continuing on to form Messier A. Another considers that the impactor was a binary, two objects gravitationally bound together. Considering that we now know that binary asteroids are relatively common, I believe the latter is the more likely scenario.

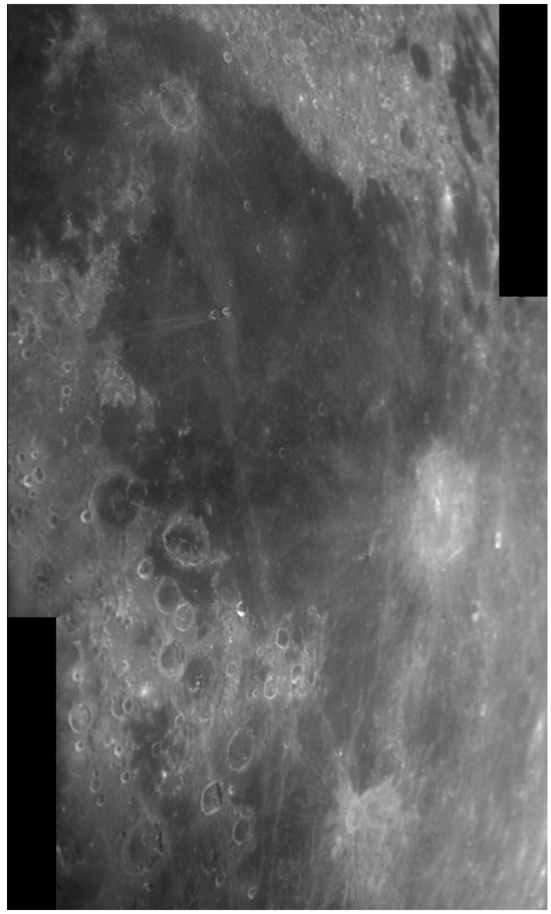

Figure 3. Mare Fecunditatis-High Sun. Howard Eskildsen – Ocala, Florida, USA. March 05, 2009 01:42-01:44 UT. Seeing 9/10, Transparency 5/6. Meade 6" f/8 refractor, 3x barlow, Orion Starshoot II, W-8 yellow filter,

High sun conditions reveal a complex pattern of rays criss-crossing Mare Fecunditatis (fig. 3), not as many as nearby Mare Nectaris, but more than Mare Crisium. Five dark patches near the northwest shore, including the three between Secchi and Lubbock, may mark the locations of volcanic vents that were the lava sources for the mare. Saturated color images (fig. 4) can emphasize the subtle variations within the mare lavas. Note in particular the visibility of the arrowed feature in figure 4 compared to the subtle darkening in the other figures.

Figure 4. Saturated Color Image of Mare Fecunditatis. Maurice Collins - Palmerston North, New Zealand. June 3, 2009 08:26-09:02 UT. C8 SCT, LPI.

The Soviet sample return missions Luna 16 & 20 landed in Sinus Sucessus in the northeast corner of the mare. Luna 16 returned a surprisingly varied sample from this rather bland mare plain.

There are two large craters, Langrenus (147 km) and Vendelinus (132 km) on the eastern shore. Langrenus, which has a prominent system of rays (fig. 3), is young. It's younger than Mare Fecunditatis since both its rays and secondary craters are visible on the mare surface. Vendelinus, is approximately the same size, but predates the mare. Its walls are eroded and its interior is flooded by mare lava.

An interesting example of time sequencing can be seen at Gutenberg, on the west shore (fig. 2). The younger crater Gutenberg E interrupts the east wall of Gutenberg, and both are eroded and partially flooded by the mare lava, which is younger still.

Taruntius, on the north shore (fig. 2), and Petavius, just beyond the southeast shore (fig. 1), provide nice examples of floor fractured craters. Magma rising and ponding beneath the floor of the crater raises the floor creating radial and concentric cracks that can also be sources of lava seeps. Taruntius is very shallow (0.4 km) for it size (56 km diameter). It contains a central peak, several rilles and a ring of hills. Dark patches that are visible near the center under high sun may be late lava eruptions. Rima Petavius, the large cleft extending from the central peak to the southwest rim of Petavius, is visible in a 60 mm telescope.

An extensive system of rilles extends northwest from Gutenberg (Rimae Gutenberg) and Goclenius (Rimae Goclenius). The rilles extend through the craters but appear to pass under the central peaks and rims of the craters without disturbing them. These rilles are probably a result of the stress introduced by the adjacent Nectaris, Fecunditatis, and Tranquilitatis basin boundaries.

Most of the small craters in the Mare have unusually low rims for their size due to partial burial and flooding by mare lava. The cluster of three craters (Naonobu, Atwood, & Bilharz) northwest of Langrenus are good examples (fig. 5).

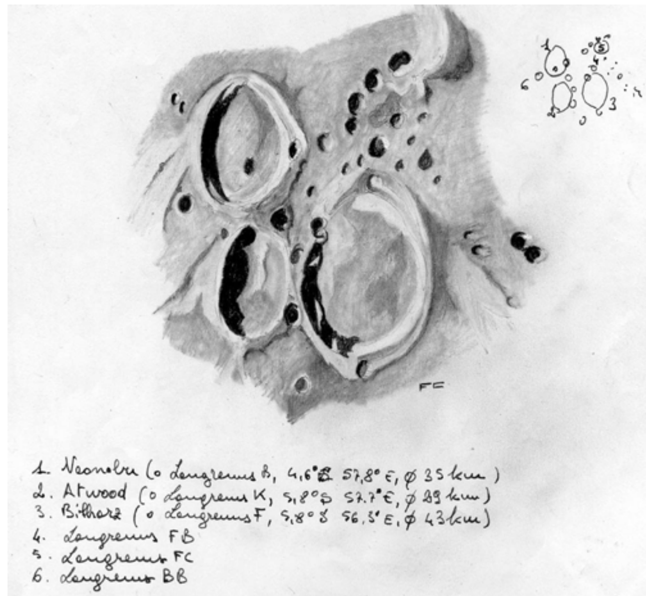

Figure 5. Naonobu, Atwood, & Bilharz. Fred Corno - Settimo Torinese, Italy. March 22, 2007 18:00 – 18:30 UT, FS 128 Taka refractor. 208x, seeing 7/10, Transparency acceptable.

Numerous ghost craters are also visible, particularly on the southern half of the mare near sunrise and sunset (fig. 2). This indicates that the mare lava is relatively shallow in this area.

ADDITIONAL READING

Bussey, Ben & Paul Spudis. 2004. The Clementine Atlas of the Moon. Cambridge University Press, New York.
Byrne, Charles. 2005. Lunar Orbiter Photographic Atlas of the Near Side of the Moon. Springer-Verlag, London.
Grego, Peter. 2005. The Moon and How to Observe It. Springer-Verlag, London.
Mutch, Thomas. 1970. Geology of the Moon. Princeton University Press, Princeton.
Rukl, Antonin. 2004a. Atlas of the Moon, revised updated edition, ed. Gary Seronik, Sky Publishing Corp., Cambridge.
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Spudis, Paul D. 1993. The Geology of Multi-Ring Impact Basins. Cambridge University Press, Cambridge, UK
Wlasuk, Peter T. 2000. Observing the Moon. Springer, London.
Wood, Charles. 2003. The Modern Moon: A Personal View. Sky Publishing Corp., Cambridge.

LUNAR TOPOGRAPHICAL STUDIES

Coordinator – Wayne Bailey - wayne.bailey@alpo-astronomy.org

Assistant Coordinator – William Dembowski - dembowski@zone-vx.com

Website: http://moon.scopesandscapes.com/

OBSERVATIONS RECEIVED

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND Digital images of 1.4, 2, 9, 10, 11, 12 day moon, 1st Quarter Moon, Full Moon, Montes Alpes, Mare Humorum, Copernicus, Humboldt, J. Herschel, Schickard, Sinus Iridum and Stofler.

FRED CORNO - SETTIMO TORINESE, ITALY Drawing of Naonobu, Atwood & Bilharz.

COLIN EBDON – COLCHESTER, ESSEX, UK Drawings of Cleomedes, Hahn, Herigonius, Pingre, and Montes Riphaeus

HOWARD ESKILDSEN - OCALA, FLORIDA, USA Banded crater reports for Ariadaeus, Burg, Dawes, Maury, Menelaus, Messier, Proclus, Rosse and Silberschlag.

MIKE WHITE – LEVIN, NEW ZEALAND Digital images of 23, 25 day moon, Mare Orientale, and Schiller-Zucchius-Bailly.

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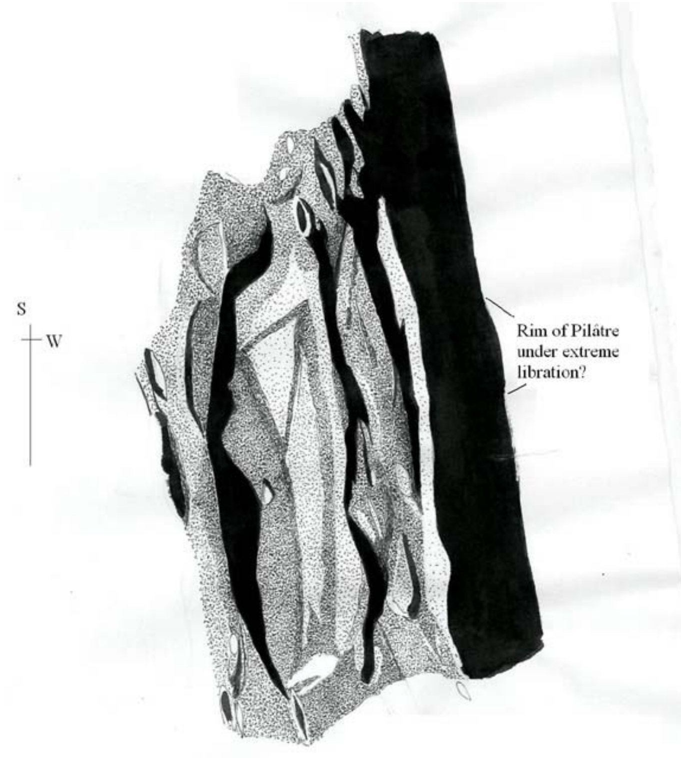
RECENT TOPOGRAPHICAL OBSERVATIONS

MARE HUMORUM – Maurice Collins - Palmerston North, New Zealand, June 04, 2009 05:31 UT. C8, f/10, LPI.

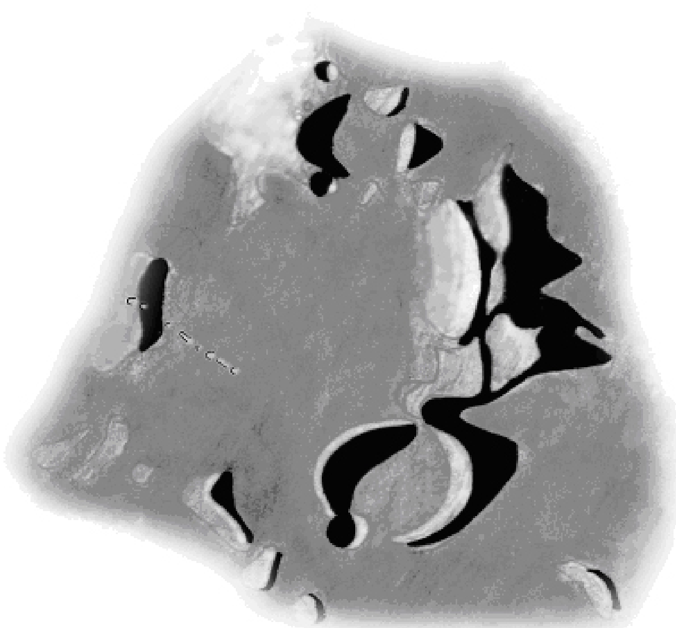


PINGRÉ - Colin Ebdon - Colchester, Essex, UK. December 11, 2008 22:45-23:45 UT. Seeing AII, Transparency moderate-good some ground mist, colongitude 69.2-69.7º. 7" f/15 Mak-Cas, 236x. Notes: Impression gained that the internal S. crater wall was crossed by dark geometric lines, and also that the Western rim of the crater floor also seemed marked by a dark line, perhaps in the latter case due to convexity combined with the shallow viewing angle.

DAVY & PALISA – Charles Galdies - Naxxar, Malta
April 4, 2009, 18:20 - 18:35 UT. 20cm SCT, 240x, Seeing: 8/10.

Tonight the craters Davy and Palisa offer an interesting combination of both large and subtle features.

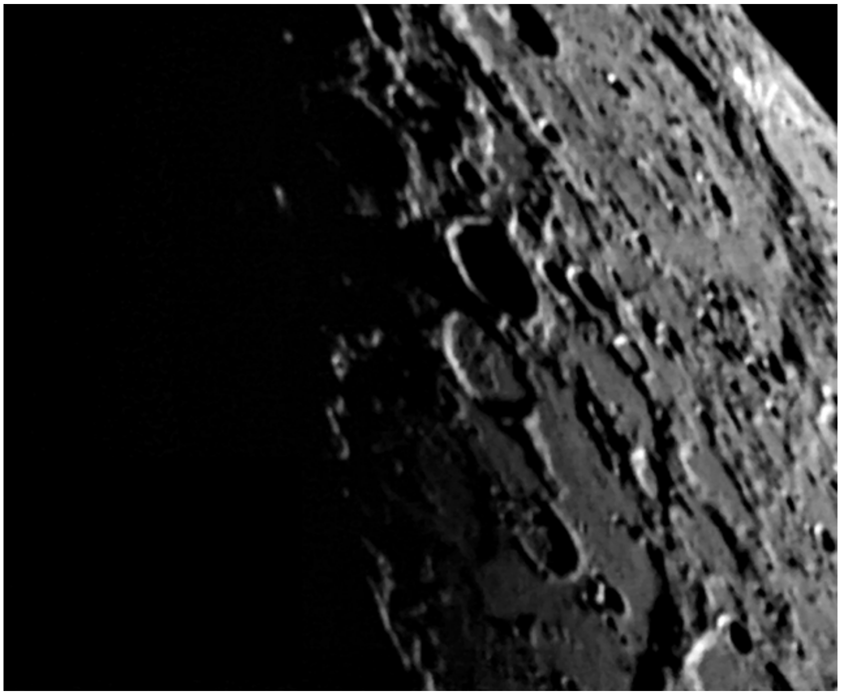
Davy features as a steep walled, damaged circular crater circular with a flat floor, while Davy A shows as a deeper circular formation with steep walls on the South-East wall of Davy.



Crater Davy Y contains an interesting chain of crater pits, Catena Y Davy. This chain is situated in the Western part of the Davy Y floor. When seeing conditions improved momentarily, this chain looks very striking, testing also the resolution capability of the optics. The catena shows as a series of larger craters (1-3km) separated from each other by what looked liked elongated streaks of similar width. These actually are unresolvable craterlets less than 1 km. The chain is thought to be caused by the impact of several parts of a same body. Better conditions are needed to resolve these smaller craterlets.

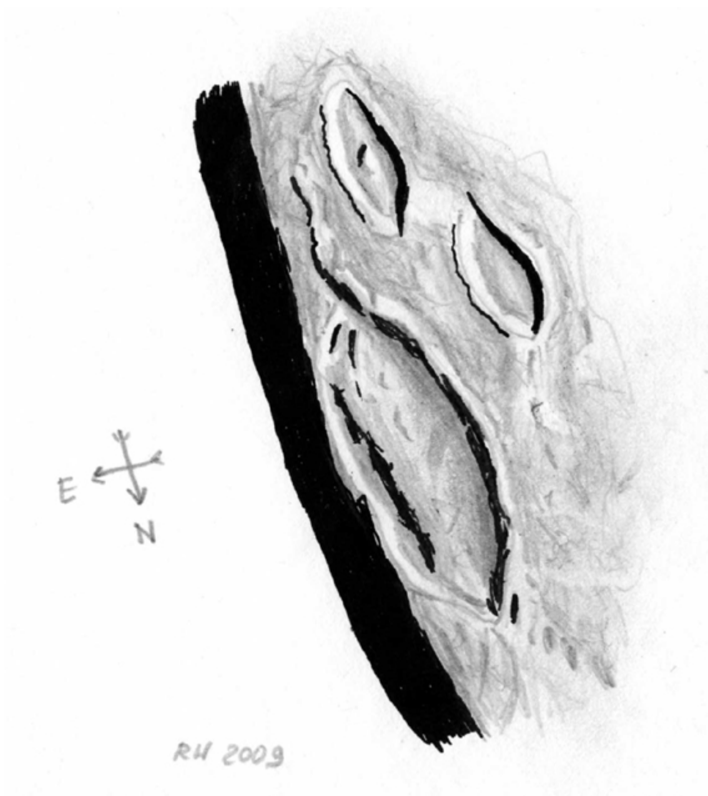
Shadows due to east walls of Davy Y into region of Davy B are striking.

Palisa crater also looks as a damaged circular crater with few steep slopes and few high walls. The high plateau walls west of Palisa is also evident.

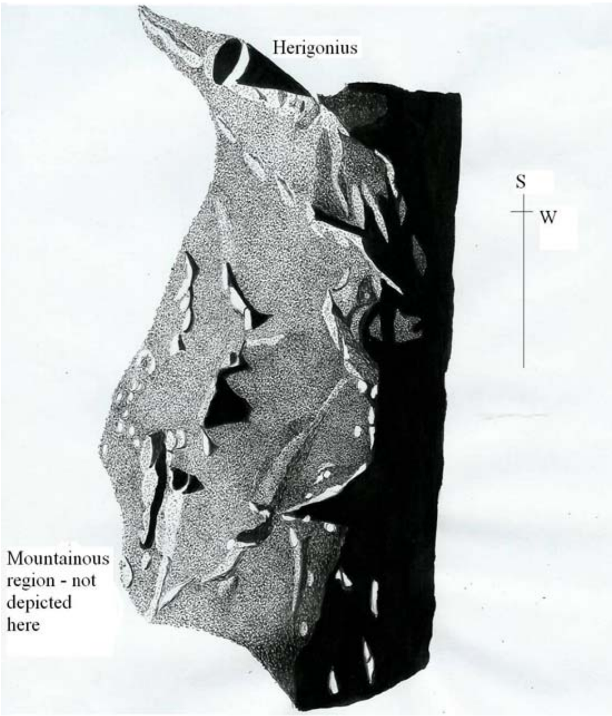


SCHILLER-ZUCCHIUS BASIN & BAILLY – Mike White – Levin, New Zealand. June 18, 2009, 19:34 UT. Orion SkyQuest XT10, TLSystem EQ Platform, 2X Barlow, Philips SPC900NC.

GAUSS & BEROSUS – Robert Wlodarczyk - Czestochowa, Poland. April 10, 2009, 21:00 UT. Seeing 6/10, Transparency 3/6. 12 cm Newtonian, f/7.5, 112-224x.



ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



HERIGONIUS - Colin Ebdon - Colchester, Essex, UK. January 6, 2009 20:15-21:15 UT. Seeing AII-III, Transparency very good, colongitude 36.2-36.7º. 7" f/15 Mak-Cas, 236x.

2 DAY OLD MOON – Maurice Collins - Palmerston North, New Zealand, June 25, 2009 05:36-06:05 UT. Seeing A-III. C8, f/10, LPI.

BANDED CRATERS PROGRAM

Coordinator – Wayne Bailey – wayne.bailey@alpo-astronomy.org

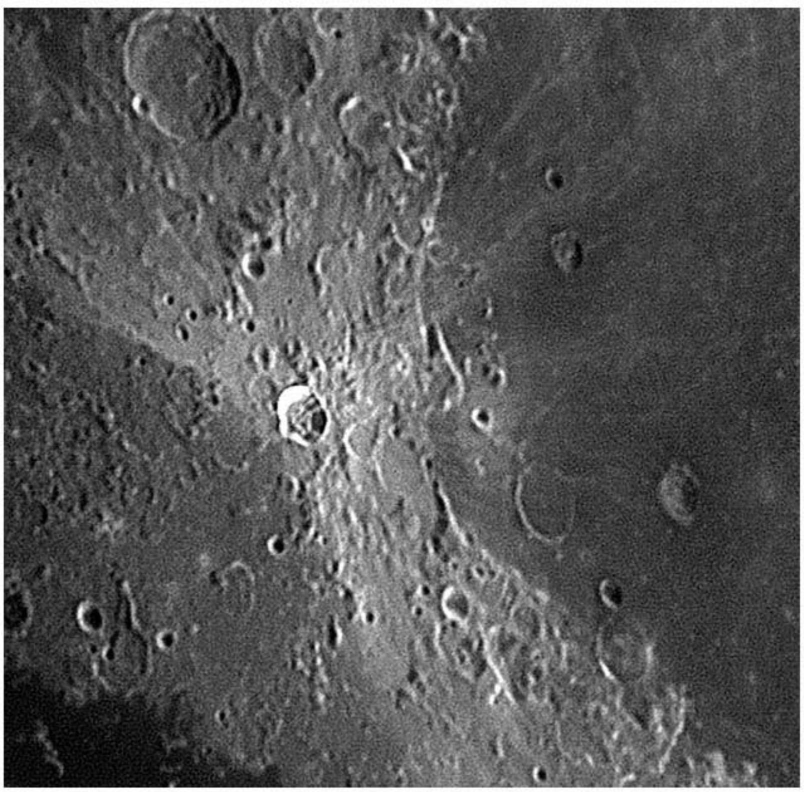
Assistant Coordinator – William Dembowski - dembowski@zone-vx.com

Banded Craters Program Website: http://moon.scopesandscapes.com/alpo-bcp.html

A.L.P.O. Lunar Section: Selected Areas Program Banded Craters Observing Form

Crater Observed: Proclus
Observer: Howard Eskildsen   Observing Station: Ocala, Florida
Mailing Address: P.O. Box 830415, Ocala, Florida, 34483
Telescope: Meade Refractor   15.2 cm   f/8
Imaging: Orion StarShoot II, 2X Barlow, Filters: None
Seeing: 5/10   Transparency: 5/6
Date (UT): 2009/05/31   Time (UT): 01:15
Colongitude: 354°
Position of crater: Selen. Long. 46.8° East   Selen. Lat. 16.1° North
Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07

Image (north up):



Comments:

Remarkably complex bright and dark bands are visible in the interior of the crater on this view.

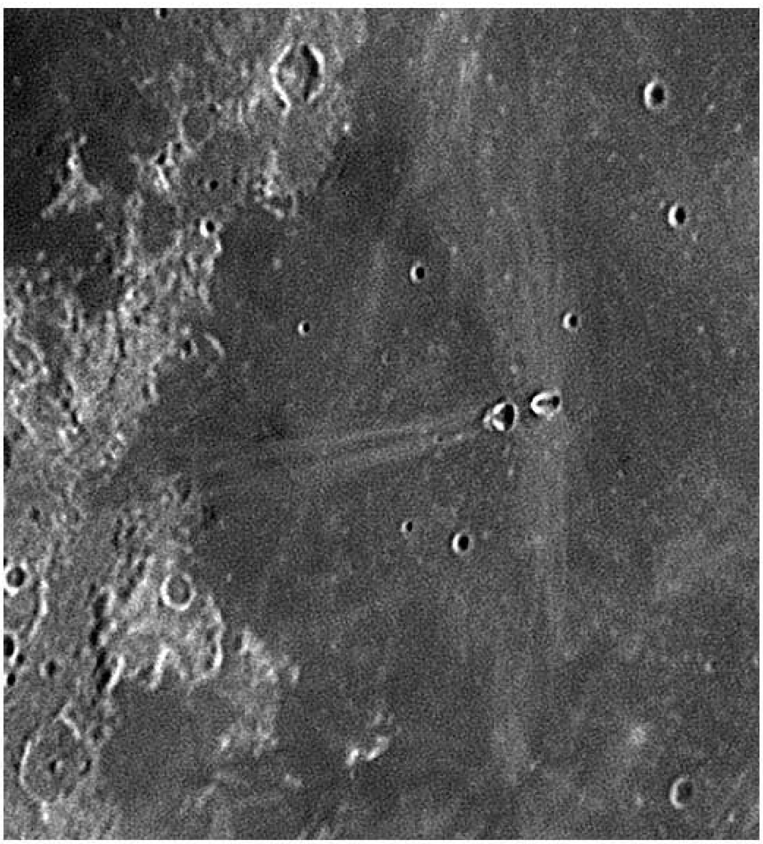
A.L.P.O. Lunar Section: Selected Areas Program Banded Craters Observing Form

Crater Observed: Messier & Messier A
Observer: Howard Eskildsen Observing Station: Ocala, Florida
Mailing Address: P.O. Box 830415, Ocala, Florida, 34483
Telescope: Meade Refractor 15.2 cm f/8
Imaging: Orion Starshoot II, 2X Barlow, Filters: None
Seeing: 5/10 Transparency: 5/6
Date (UT): 2009/05/31 Time (UT): 01:12
Colongitude: 354°

Position of crater:	Selen. Long.	Selen. Lat.	
	47.6° East	1.9° South	(Messier)
	46.8° East	2.0° South	(Messier A)

Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07, Rukl, Antonin, Atlas of the Moon

Image (north up):



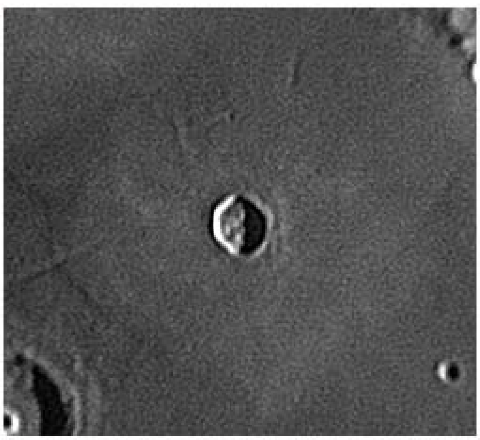
Comments:

Mesier and Messier A show considerable complexity at this colongitude.

A.L.P.O. Lunar Section: Selected Areas Program Banded Craters Observing Form

Crater Observed: Dawes
Observer: Howard Eskildsen Observing Station: Ocala, Florida
Mailing Address: P.O. Box 830415, Ocala, Florida, 34483
Telescope: Meade 6" Refractor 152 cm f/8
Imaging: Orion StarShoot II, 2X Barlow, Filters: None
Seeing: 5/10 Transparency: 5/6
Date (UT): 2009/05/31 Time (UT): 01:07
Colongitude: 354°
Position of crater: Selen. Long. 26.4° East; Selen. Lat. 17.2° North
Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1

Image (North up):



Comments:

Polygonal shape of crater is clearly visible in this photo. A dark band appears from the shadow near the center of the crater and radiates to the 8 o'clock position of the rim. This is likely a confluence of shadows on the rough, irregular crater floor.

LUNAR TRANSIENT PHENOMENA

Coordinator – Dr. Anthony Cook – atc@aber.ac.uk
Assistant Coordinator – David O. Darling - DOD121252@aol.com

LTP NEWSLETTER – JULY 2009

Dr. Anthony Cook - Coordinator

Observations for May 2009 were received from the following observers: Paul Abel (Leicester, UK), Jay Albert (FL, USA), Clive Brook (Plymouth, UK), Maurice Collins (New Zealand), myself (Aberystwyth, UK), Marie Cook (Mundesley, UK), Andrew Dallow (New Zealand), and Bill Leatherbarrow (Sheffield, UK). It is really nice to see such an enthusiastic response from New Zealand observers (we have additional observations for June too) – all thanks to Maurice Collins getting them interested in imaging the Moon.

There have been no further LTP reports since Tycho on May 3rd. To date there have been 10 LTPs since the start of the year although it should be said that most of these have low weights. This is a rather interesting statistic with respect to theories that associate LTP frequency with sunspot activity because the Sun has been exceedingly inactive over the last few months!

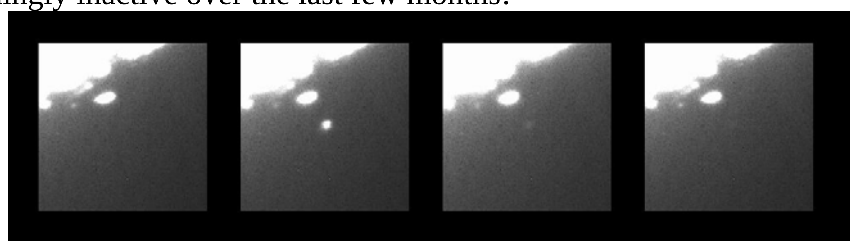


Figure 1. Images of the Kaguya impact taken 1.6 sec apart at a waveband centered on 2.3 microns using a 3.9 meter sized telescope. Image credit: University of New South Wales/Anglo-Australian Observatory (J. Bailey and S. Lee).

Kaguya: The Japanese lunar mission Kaguya impacted onto the terminator area of the south east limb of the Moon (80.4E, 65.5S) at UT 18:25. Unfortunately the Moon was below the horizon for most of our observers and Maurice Collins in New Zeeland was clouded out. One visual observer in Hong Kong saw nothing, but the Anglo Australian Telescope obtained some images of the impact flash in the far near infrared.

For many years now I have heard a rumor that some sort of impact event was observed for the Soviet Lunik V probe, but have been unable to lay my hands on any further information. Fortunately I have now found copies of the images. On 1965 May 12 at UT 19:10, the former Soviet Union accidentally crashed their Lunik V space probe (a forerunner of their Lunik IX lander) into the south eastern part of Mare Nubium (8W, 31S) after a combination of technical problems due to a faulty gyroscope and a failed retrorocket firing. It then became the 2nd Soviet satellite to strike the Moon's surface! What you may not know is that a Prof. Edgar Penzel was observing the Moon at the time from the Rodewisch satellite tracking station in the former German Democratic Republic and was taking some photographs as illustrated in figure 2. I took the 30 sec and 270 sec post impact photographs, scanned then in, aligned them (all images are rotated slightly with respect to one another) and subtracted them. I did not detect any changes for the arrowed area of the presumed impact, but do find a brightness difference blob to the right of this. I am not

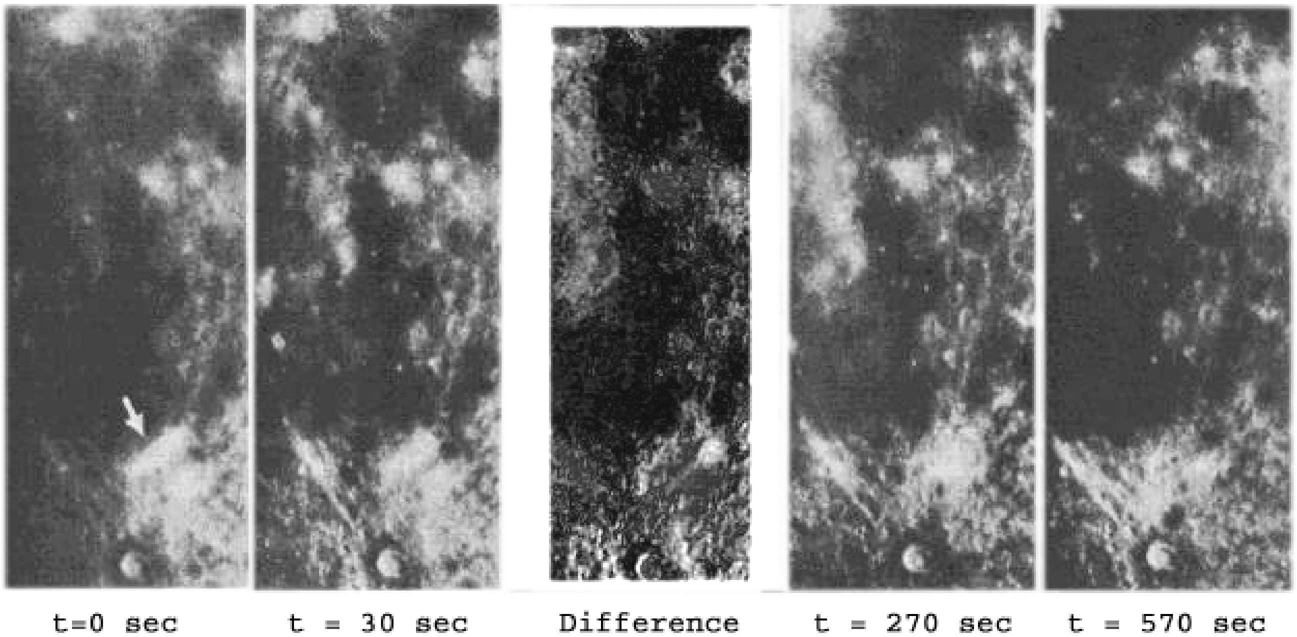


Figure 2 – Photographs (north at the top) of the Moon during the Lunik V impact in 1965. Taken from the Rodewish tracking station in Germany. Images are at the time given after impact. The central picture is a difference image that I generated between t=30 and t=270 sec images. Tycho is at the bottom in each picture. References: Geake and Mills, Physics of the Earth and Planetary Interiors, 14 (1977), pp 299-320 and Penzel, New Scientist, 26 (1965), p842.

completely sure that this is genuine and could be the result of a mark on the photographic image. Also to be honest if you compare the adjacent images then you can see a lot of differences elsewhere, and so it is not at all clear cut that any impact cloud has been captured! Interestingly the NASA NSSDC web site http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1965-036A mentions a 2nd alternative impact crash site for Lunik V of: 23W, 8N. If anybody knows more about this report or why there are two locations for the crash site, then I would be very interested to learn more.

For repeat illumination LTP predictions for the coming month, these can be found on the following web site: http://users.aber.ac.uk/atc/tlp/tlp.htm .For members who do not have access to the internet, please drop me a line and I will post predictions to you. If you would like to join the LTP telephone alert team, please let me know your phone No. and how late you wish to be contacted. If in the unlikely event you see a LTP, please give me a call on my cell phone: +44 (0)798 505 5681 and I will alert other observers. Note when telephoning from outside the UK you must not use the (0). When phoning from within the UK please do not use the +44!

Dr Anthony Cook, Institute of Mathematical and Physical Sciences, University of Wales Aberystwyth, Penglais, Aberystwyth, Ceredigion, SY23 3BZ, WALES, UNITED KINGDOM. Email: atc @ aber.ac.uk

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ANNOUNCEMENT

From the American Lunar Society

Celebrating the Year of Science, the American Lunar Society has made its Spring 2009 issue of *Selenology* (a look at past and present lunar exploration) available for free download at http://offworldventures.com/eselenology/. *Selenology* is usually only published in paper form. Steve Boint, president of the American Lunar Society, also mentioned that McAfee may flag the eselenology site as a distributor of spyware due to a previous hacking incident. Norton and Google have cleared the site, but McAfee has not yet re-evaluated it.

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KEY TO IMAGES IN THIS ISSUE

1. **Davy**
2. **Dawes**
3. **Fra Mauro**
4. **Gauss**
5. **Herigonius**
6. **Mare Humorum**
7. **Messier**
8. **Pingré**
9. **Proclus**
10. **Schiller**

FOCUS ON targets
X = Deslandres (September)
Y = Menelaus (November)
Z = Atlas & Hercules (January)