THE LUNAR OBSERVER

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.

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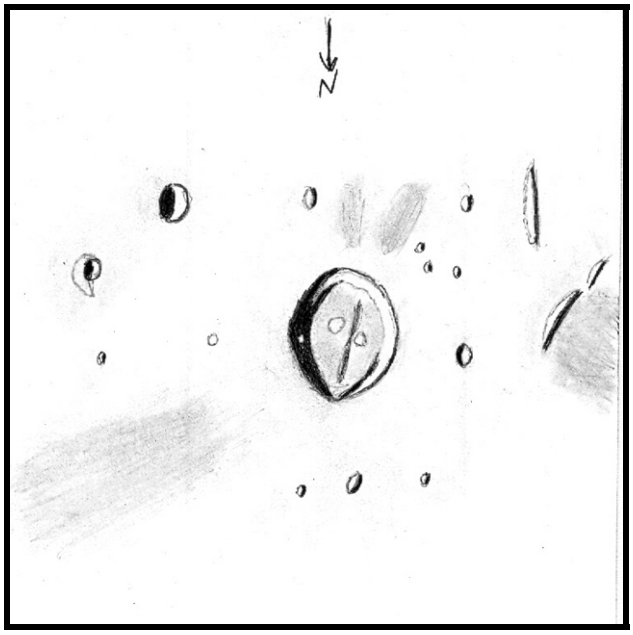
RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – SEPTEMBER 2011

KEPLER



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
March 17, 2011 01:18-01:58 UT, 15 cm refl, 170x, seeing 8-7/10

I observed this crater and vicinity on the evening of March 16/17, 2011 after the moon hid 6th-magnitude ZC 1381. Kepler is the center of a conspicuous ray system, but this sketch concentrates on detail in and around Kepler instead of its ray system. Kepler's floor is dominated by a dusky streak extending from north to south. This feature is flanked by two shadowwless bright spots. There is a darker streak (shadow?) from the north point southwestward along the base of the sunlit interior west wall. The shadowed inside east area shows evidence of terracing and has a tiny bright dot near a blunt point on Kepler's east rim. This sunlit point is probably too conspicuous on the sketch. Kepler A is the fairly large crater southeast of Kepler, and Kepler B is the smaller crater to its northeast. Kepler B has a wide bright rim on its east side. This may be a

substantial slope catching the rising sun. This slope extends northward, coming to a point north of Kepler B. There is no such slope by Kepler A. There is a tiny peak north of Kepler B, and a tiny bright spot east of Kepler. Kepler omega is the middle and largest of three peaks north of Kepler. The pit Kepler F is just west of Kepler, and Kepler kappa is the longer of two ridges farther to the west. Another, lower ridge is south of Kepler kappa. A loose group of four small peaks is southwest of Kepler, and another peak is between this group and Kepler A. There are dusky wedges to the northeast of Kepler and west of Kepler kappa. These are gaps in Kepler's otherwise smooth ray system. Two more grayish areas lie south of Kepler.

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LUNAR CALENDAR

SEPTEMBER-OCTOBER 2011 (UT)

Sept. 04	17:39	First Quarter
Sept. 05	05:00	Extreme South Declination
Sept. 06	11:00	Moon 3.0 Degrees S of Pluto
Sept. 10	19:00	Moon 5.3 Degrees NNW of Neptune
Sept. 12	09:26	Full Moon
Sept. 13	14:00	Moon 5.6 Degrees NNW of Uranus
Sept. 15	06:24	Moon at Apogee (406,067 km – 252,318 miles)
Sept. 16	17:00	Moon 4.6 Degrees N of Jupiter
Sept. 19	20:06	Extreme North Declination
Sept. 20	13:39	Last Quarter
Sept. 23	04:00	Moon 4.6 Degrees SSW of Mars
Sept. 27	09:00	Moon 6.3 Degrees SSW of Mercury
Sept. 27	11:08	New Moon (Start of Lunation 1098)
Sept. 28	01:02	Moon at Perigee (357,555 km – 222,174 miles)
Sept. 28	06:00	Moon 5.5 Degrees SSW of Venus
Sept. 28	09:00	Moon 6.6 Degrees SSW of Saturn
Oct. 02	11:42	Extreme South Declination
Oct. 03	19:00	Moon 2.8 Degrees SSE of Pluto
Oct. 04	03:15	First Quarter
Oct. 07	22:00	Moon 5.4 Degrees NNW of Neptune
Oct. 10	18:00	Moon 5.7 Degrees NNW of Uranus
Oct. 12	02:06	Full Moon
Oct. 12	11:44	Moon at Apogee (406,434 km – 252,546 miles)
Oct. 13	18:00	Moon 4.7 Degrees N of Jupiter
Oct. 17	02:06	Extreme North Declination
Oct. 20	03:31	Last Quarter
Oct. 21	21:00	Moon 6.1 Degrees SSW of Mars
Oct. 26	02:00	Moon 6.4 Degrees SSW of Saturn
Oct. 26	12:27	Moon at Perigee (357,050 km – 221,861 miles)
Oct. 26	19:56	New Moon (Start of Lunation 1099)
Oct. 28	01:00	Moon 0.57 Degrees WSW of Mercury
Oct. 28	03:00	Moon 2.0 Degrees SW of Venus
Oct. 31	02:00	Moon 2.3 Degrees S of Pluto

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 is on-line at: **http://www.alpoastronomy.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 has significantly higher resolution than the published version.

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)

CALL FOR OBSERVATIONS: FOCUS ON: Mare Humorum

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 **November 2011** edition will be **Mare Humorum**. Observations at all phases and 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 complex area including the crater Gassendi to your observing list and send your favorites to:

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

Deadline for inclusion in the Mare Humorum article is October 20, 2011

FUTURE FOCUS ON ARTICLES:

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

Copernicus	**TLO Issue:**	**January 2012**	**Deadline:**	**December 20, 2011**
Archimedes		**March 2012**		**February 20, 2012**

FOCUS ON: Posidonius

By Wayne Bailey
Coordinator: Lunar Topographical Studies

Posidonius (fig. 1) is a prominent crater located on the eastern edge of Mare Serenitatis on the southeast side of the inlet to Lacus Somniorum, at 32° N latitude 30° E longitude. Sunrise at Posidonius occurs about 5 days after new moon,

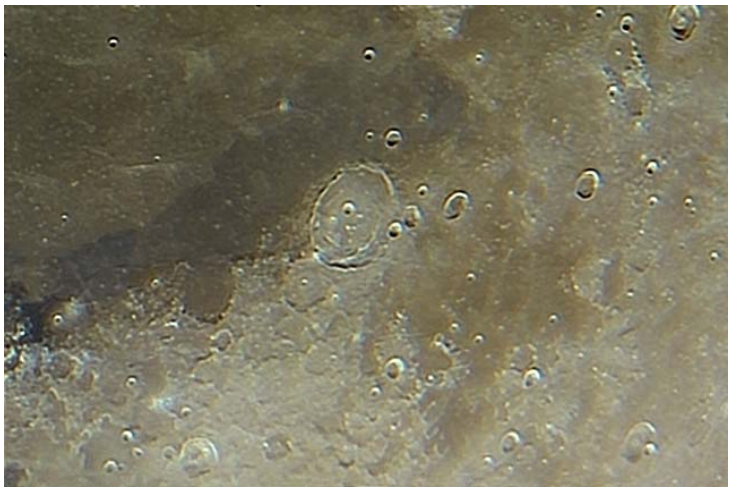
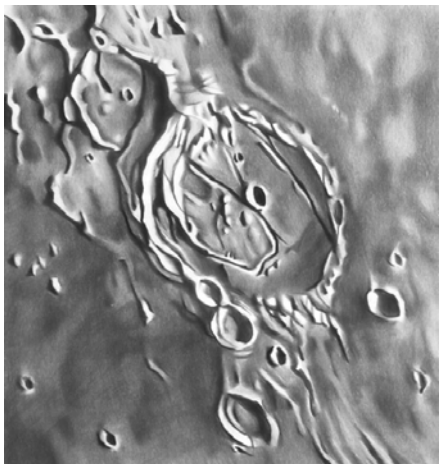


FIGURE 1: POSIDONIUS & VICINITY. *John Duchek-Carrizozo, NM, USA. August 8, 2011 03:30 UT. 10" f/4.7 reflector, 2x barlow, Canon 500D. Seeing 5/10, transparency 2/6. Enhanced color.*

with sunset about day 18. It is easily recognized anytime it is illuminated due to its size (95 km diameter), location in an uncrowded region on the mare rim, distinctive appearance, and its bright rim and floor near full moon.



The crater is tilted on the rim of Mare Serenitatis, but not as steeply as nearby le Monnier, indicating that it was most likely formed after the Mare floor began subsiding under the weight of basin filling magma. Since the rim is breached, and the floor has been at least partially flooded by magma from interior vents, it

FIGURE 2: POSIDONIUS. *Peter Grego, St. Dennis, Cornwall, UK. uly 29, 2002 01:00-02:15 UT.*

formed before the volcanic activity that filled Mare Serenitatis ended. The many craters, rilles, central mountains and up-arched floor (fig. 2) make an interesting comparison with le Monnier to the south. Le Monnier, which was the landing site for the USSR's Luna 21 with its Lunokhod rover, stands out as a dark, smooth circular area on the Mare rim. Lunokhod found that le Monnier's floor is covered with a slippery layer of dark, soft material. Posidonius is very similar to the crater Gassendi on the north rim of Mare Humorum, the subject of the next Focus On.

The small, bowl shaped crater Posidonius A is slightly west of center, with an arc of mountains (fig. 3) just to its east. The eastern and western

FIGURE 3: SUNSET ON POSIDONIUS. *Peter Grego, St. Dennis, Cornwall, UK. September 20, 2008 00:15 00:30 UT. Colongitude 150.5°-150.6°, Seeing A-II. 200 mm SCT, 200x, binoviewer.*

halves of the floor are noticeably different. The western half appears to be flooded by magma. A small ridge begins near the southern wall, curving inward as it continues towards the west, where it is joined by a prominent rille that continues the arc until it turns eastward to follow the bottom of the north wall almost to Posidonius B. Posidonius B is a bowl shaped crater situated on the northeast rim. Plate 26 of the Kaguya Atlas shows that this rille is almost entirely composed of small craters. Another prominent rille

crosses the floor tangential to the west wall of Posidonius A. Several smaller rilles criss-cross the eastern floor.

FIGURE 4: POSIDONIUS & CHARCORNAC. *Michael Sweetman, Tucson, AZ, USA. May 9, 2011 03:29 UT. 4" f/10 refractor, 3x barlow. Seeing 4/10, transparency fair. DMK21, IR cutoff filter.*

A tiny, bright crater sits on the south rim near the adjacent 51 km diameter crater Charcornac (fig. 4). A prominent ridge separates from the south rim near Charcornac and curves inward from the eastern wall around to Posidonius B. With the western ridge, this gives the impression of a large partially buried crater that's tilted down to the northwest. The floor appears to be arched upward by intrusion of magma.

Charcornac, which is tangent to the south rim appears to be a smaller version of Posidonius. Although it appears more weathered than Posidonius, it also has a near central bowl shaped crater, and a fractured floor.

The color and albedo of le Monnier's floor seems to be similar to the adjacent mare material, but the interiors of Posidonius and Charcornac are distinctly different than the adjacent (or distant) mare or Lacus Somniorum (fig. 1). This is another indication that flooding of the crater interiors originated from interior vents, not from wall breaches. Several wrinkle ridges are visible in Mare Serenitatis and crossing the inlet to Lacus Somniorum (fig. 5).

FIGURE 5: POSIDONIUS. *Maurice Collins-Palmerston North, New Zealand. August 5, 2011 06:00 UT.*

In summary, this is an easily located region, at a conveniently observable position on the moon. Even casual observation will reveal interesting features, such as the difference in tilt compared to nearby craters, and the similarity to Charcornac. But careful examination will also reveal a wealth of small and subtle details, such as the complex of rilles, wrinkle ridges or the albedo and color variations.

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.
Gillis, Jeffrey J. ed. 2004. Digital Lunar Orbiter Photographic Atlas of the Moon.. Lunar & Planetary Institute, Houston. Contribution #1205 (DVD). (http://www.lpi.usra.edu/resources/lunar_orbiter/).
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Rukl, Antonin. 2004. Atlas of the Moon, revised updated edition, ed. Gary Seronik, Sky Publishing Corp., Cambridge.
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A LOOK AT POSIDONIUS

By Jay Albert

Posidonius is a fairly large and very interesting crater in the northeastern quadrant of the moon. It is located on the northeast shore of Mare Serenitatis and is known for its cratered, hilly and fractured floor. This crater is 95 kilometers wide and 2,300 meters deep and some of the rilles (cracks) on the floor are around 40 kilometers in length. It is best seen when the moon is only a few days old or a few days after full when the low sun angle emphasizes the relief of its features.

I attempted to photograph Posidonius (named after a 1st century BC geographer and astronomer) between 2:05 and 2:30am EDT on May 20, 2011 using an Olympus digital camera, fully zoomed (20x) and attached to a Scopetronix 40mm Plossl eyepiece in my C 11. To shorten my exposure times, I changed my ISO setting from ISO 64 to ISO 200. That turned out to be a mistake. The photos were much grainier than at ISO 64 and still blurry. Observing conditions made my task more difficult with some haze in the sky and the seeing had deteriorated to 4/10. All of the photos I took were poor to atrocious. I did what I could to sharpen and improve the contrast in the best one, but it was still pretty bad and not worth showing to anyone. Rather than just write this off as a complete loss, I decided to try to make a drawing (fig. 1) of what detail I was able to get in the photo, even though I did not capture the large cracks in the floor and some of the finer features.

The time of day at Posidonius is about mid-afternoon (two days after the full moon) and some of the shadows are beginning to appear. The crater in the center of Posidonius is Posidonius A; P is on the right, J and D are the larger two at the top and C is the tiny craterlet on the floor south of A. The large crater adjoining Posidonius' southeast wall is Chacornac, which is about 50 kilometers across with a craterlet in the middle. The appearance of Posidonius changes continually as the sun rises and sets over the crater, bringing different features into high relief and then making them fade into the background. I'll have to try this again when lighting conditions are optimal and observing conditions are better.

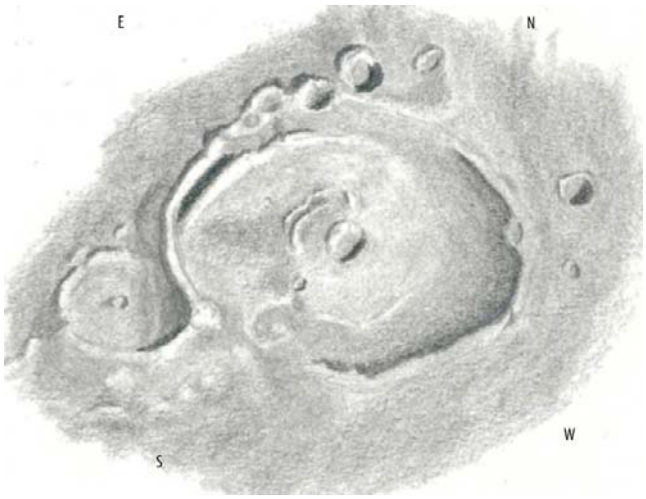


FIGURE 1: Posidonius. *Jay Albert, Lake Worth, Florida, USA. Drawing from digital image. See text for details.*

HUMORUM SCULPTURE

By Howard Eskildsen

For some reason Capuanus has held my attention since I first started imaging the Moon, and I imaged the area again in July of this year. Its strange projections to the northwest seemed like feathers in a cap that were hard for me to understand. Later during the same lunation when the lunar colongitude was around 200 degrees, I had briefly gazed at the Moon through my little 5" Mak-Cass and noticed that Capuanus' feathers and many other surrounding features pointed back towards Mare Humorum. Obviously they were sculpture remnants from the formation of Mare

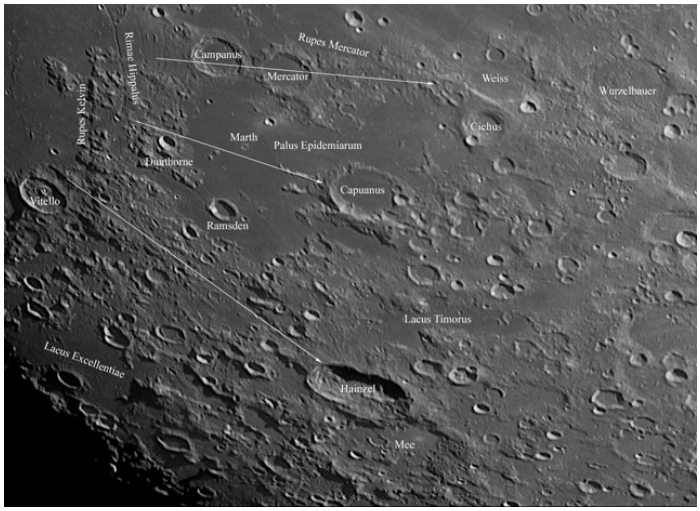


FIGURE 1: Palus Epidemiarum. *Howard Eskildsen, Ocala, Florida, USA. July 1, 2011 01:08 UT. Seeing 7/10, transparency 5/6. 6" f/8 refractor, Explore Scientific lens, 2x barlow, V-block & IR block filters, DMK41AU02.AS.*

Humorum. The July image (fig. 1) hinted of this, but not to the degree that I had seen visually.

After searching my files I located another image from October 2010 (fig. 2) that nearly matched what I saw through the small scope, with the sculpture showing quite plainly. I added some arrows showing some of the sculpture lines to both images for comparison. Some of the more southern areas without arrows seem to point more towards Vitello or southern Humorum than the areas marked with arrows. It makes me wonder if this might represent migration of the center of pressure due to oblique impact or modification by later, more distant impacts such as Orientale.

FIGURE 2: Palus Epidemiarum. *Howard Eskildsen, Ocala, Florida, USA. October 31, 2010 08:18 UT. Seeing 7/10, transparency 5/6. 6" f/8 refractor, Explore Scientific lens, 2x barlow, no filter, DMK41AU02.AS.*

It is interesting how Palus Epidemiarum sits at the margin of sloping hills in a manner similar to Mare Vaporum at the foot of the Apennines on the northern Moon. It is also separated from Lacus Excellentiae by a highland ridge that is similar to the separation between Mare Vaporum and Mare Aestuum, while another ridge separates Epidemiarum from Mare Humorum that is analagous to Montes Haemus. The whole area on the images reminds me of a micro Montes Apenninus. Obviously similar mechanisms were at work, on a smaller scale.

Had I not taken 5 minutes early one morning to gaze at the moon through a little scope, I might never have noticed and would still be scratching my head over Capuanus' feathers.

An obscure 'spider' in Catharina P

Charles Galdies

http://znith-observatory.blogspot.com/

Catharina, together with Theophilus and Cyrillus forms part of a prominent trio on the northwest side of Mare Nectaris.

Catharina (fig. 1) is the largest of the three great formations: a ringed crater with an irregular outline, extending more than 100kms. The wall is rather narrow and low on the northwest but rises to more than double the height on its northeastern side. This side of the wall is heavily impacted by several smaller craters. Little terracing on the inner wall is evident, and the outer wall sections are heavily eroded. Thefloor is relatively flat but rough, with the remains of smaller craters and hills. No central peaks are visible.

FIGURE 1: *My sketch of Catharina's 'spider'.SCT200mm, f/10, 2.5x barlow, 2x10mm binoviewer. 5th August 2011, 18:22UT, 5/10.*

The most remarkable features of the crater are (1) the large, narrow-ringed Catharina P occupying a third of the floor of Imbrian origin, and (2) a large ring-plain on the S. side.

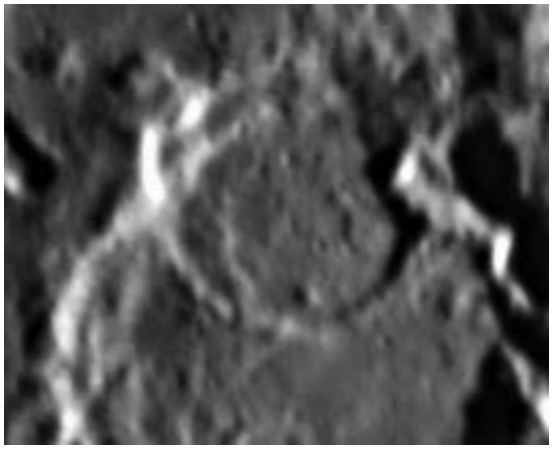
An interesting and delicate formation on the east side of Catharina P has been nicknamed by Haslet as *Catharina's spider*. His 'personal' sketch can be seen at this link which certainly merits a re-visit. This barely 10km-wide feature is not visible in the Moon-Light Atlas nor in Neison's (1876).

But high resolution images show it as a formation of a pair of small plateaus next to each other. The image (fig. 2) by Wes Higgins shows it to be a very shallow formation crossed by a fine chain of craters traversing it from the NE direction and extending towards the southern eroded wall of Catharina P. This image was taken on July 15, 2006 using an 18" reflector, Infinity 2-1M camera, 15fps, stack of 325 frames. [capture time unavailable].

FIGURE 2: Catharina P. *LPOD image by Wes Higgins. July 15, 2006. 18" reflector, Infinity 2-1M.*
.http://www.lpod.org/?m=20060817

On August 5th, I photographed this un-commonly documented 'spider' formation (Fig. 3). The low sun angle brought into view the shallow plateau illuminating it's slightly elevated level from the floor of Catharina P.

It is interesting to note that in Higgin's image the sun angle is illuminating the 'spider' from the opposite side to that shown in my image. Relatively speaking, the shadows of small features (craterlets and hills) in the floor of Catharina P in both images seem to have more or less the same depth but are in opposite directions. One can assume that the sun angle was more or less similar during image capture. Therefore a comparison between the two images could bring some preliminary information on the elevation and slope of this plateau.



If this assumption is correct, then the fact that the shadow cast by the formation on its western side is more evident than on its eastern side could lead to the conclusion that this plateau may be rising upwards towards the southwestern side of Catharina P. But further investigation is needed.

FIGURE 3: Catharina P. *Charles Galdies. Naxxar, Malta. August 5, 2011.*

An interesting feature tied to this plateau is the very fine crater chain which cuts through it and extends towards the Southwest. This is indeed a subtle feature and I wouldn't be surprised that it is missed out from many lunar photographs. Lunar observers rarely report on this formation.

It so happens that my image is the very first lunar photo I captured in my life, meaning that my digital processing is still very rudimentary. At the same time, I cannot help but noticing the subtle hint of this fine crater chain cutting transversely Catharina's spider.

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LAST LIGHT IN POSIDONIUS

Phillip Morgan

My 10 year quest to find out just what is the very last feature to be illuminated at sundown, on the floor of Posidonius was finally resolved in the early hours of last Friday (the 19th).

Observing began at 03:20 U.T, and at this late stage only tiny dots of light were still visible on the crater floor. However, from past observations I knew that the brightest and most southerly of these was the northern outer rim of the crater Posidonius A (Fig. 1). As time progressed these points of light became less, until at about 03:50 the only remaining one was this brightest one. It was difficult to get an accurate timing for final extinction due to the onset of some high cirrus cloud at 03:45, and this made transparency much worse.

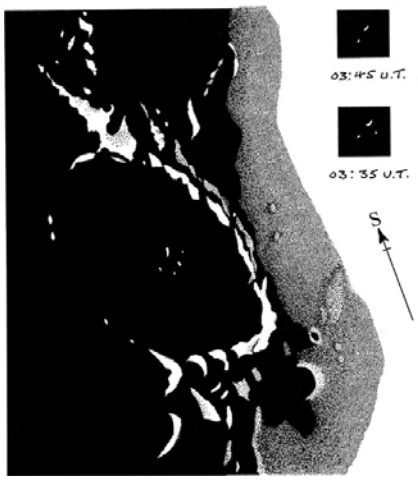

Figure 1: Posidonius. *Phillip Morgan. Lower Harthall-Tenbury Wells, Worcestershire, England. August 19, 2011. 03:20-03:45 UT, Colongitude 150.8°-151.1°. Seeing 7/10, Transparency 3-2/5. 305mm, f/5, Newtonian, 400x.*

John Moore kindly did some LTVT simulations for my location and time of observation, and these confirm my findings, though they don't show the smaller specks of illumination to the north that I do. My feeling was that these were small surface irregularities illuminated by sunlight streaming through the famous gap in the Posidonius western rampart. But I could be wrong!

John also did for me an intriguing video for the time of my observing session. You will note that the very last feature to remain illuminated on the floor area is a peak under the southwest rampart by the Rimae Posidonius II. This was quite definitely not visible, nor have I seen it on previous last light observing sessions. John and I have come to the conclusion that this due to a high-unwanted spike in the LOLA data that has gone uncorrected.

Note that John's video is north up!

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

JAY ALBERT – LAKE WORTH, FLORIDA, USA. Drawing of Posidonius.

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 2.5, 3.5, 4.5(2), 5.5, 7.6, 9.5, 10.5 & 22 day moon, Alphonsus, Atlas-Hercules, Bullialdus, Northern Limb, Plato, Southern Highlands, & Southern Limb.

WILLIAM DEMBOWSKI – WINDBER, PENNSYLVANIA, USA. Digital images of Aristoteles-Eudoxus-Cassini, Montes Caucasus, Triesnecker, & Albategnius. Banded Crater reports for Proclus, & Menelaus.

JOHN DUCHEK – CARRIZOZO, NEW MEXICO, USA. Digital image of Mare Serenitatis-Posidonius.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Mare Australe, Mare Crisium, Mare Fecunditatis, Mare Nectaris, Mare Tranquilitatis, Palus Epidemiarum(2), & Tycho Rays.

CHARLES GALDIES – NAXXAR, MALTA. Drawing & Digital image of Catharina spider.

PETER GREGO – ST. DENNIS, CORNWALL, UK. Drawings & Eratosthenes & Posidonius(2).

ROBERT HAYS, Jr. – WORTH, ILLINOIS, USA Drawing of Herigonius.

PHILLIP MORGAN –LOWER HARTHALL-TENBURY WELLS, WORCESTERSHIRE, ENGLAND. Drawing of Posidonius.

MICHAEL SWEETMAN – TUCSON, ARIZONA, USA. Digital image of Posidonius.

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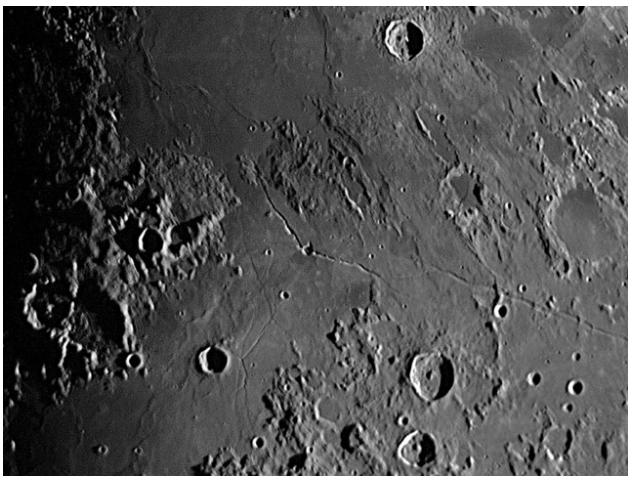
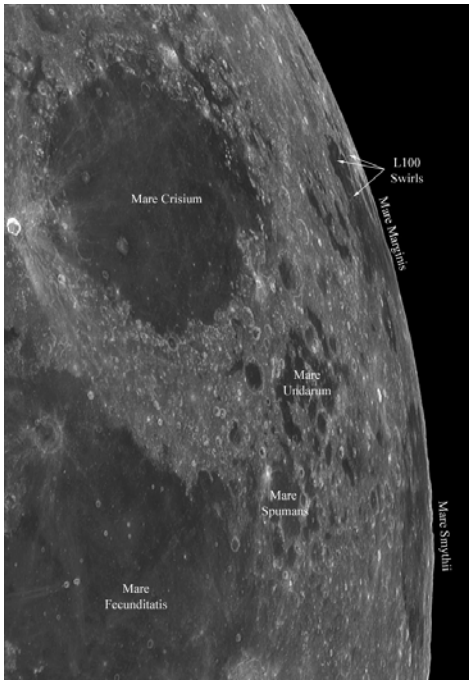
RECENT TOPOGRAPHICAL OBSERVATIONS

BULLIALDUS - Maurice Collins-Palmerston North, New Zealand. August 9, 2011 07:58 UT. C-8 SCT 3x barlow, LPI.

RECENT TOPOGRAPHICAL OBSERVATIONS



TRIESNECKER – William Dembowski, Windber, Pennsylvania, USA. June 9, 2011 00:49 UT Colongitude 1.9º, Seeing 4/10. Celestron 9.25" SCT f/10, DMK41 UV/IR filter.



MARIA CRISIUM, MARGINIS & SMYTHII - Howard Eskildsen-Ocala, Florida, USA. July 12, 2011 01:23 UT. Seeing 7/10, Transparency 5/6. 6" f/8 refractor, Explore Scientific lens 2X Barlow, DMK 41AU02.AS, IR block & V block filters.

Note the swirls on Mare Marginis (labeled image). This is L100 on Chuck Wood's Lunar 100 list of objects to view on the moon, and is a rare sight. These swirls are of unknown origin, but have a relatively strong magnetic field that may alter space weathering to make the swirls bright, or may trap fresh, bright levitated granules or ejecta, but no one really knows. Interestingly, it is antipodal (directly opposite) to the Orientale Basin on the SE moon. Most of the known swirls are antipodal to major impact basins, except for the most famous swirl, Reiner Gamma. Strange features.

ERATOSTHENES– Peter Grego, St. Dennis, Cornwall, UK. July 21, 2011 01:00-01:30 UT. Colongitude 154.9-155.1º. Seeing AII-III. 200 mm SCT, 100x & 200x, no filter.

Following an observation of Eratosthenes more than 11 days earlier in this lunation (ed. Note: see Aug. 2011 TLO), the crater was chosen as the subject of a follow-up observation. The general features of Eratosthenes and its immediate area were observed; the same area and scale of observation was attempted. Eratosthenes was some distance from the evening terminator, and nowhere in the area depicted could any truly black shadow be detected. Its inner western wall was shaded, but some of the central terracing remained catching direct sunlight. Two blocky central peaks were seen, each casting a slight grey shadow, although they did not bear a great deal of resemblance (based on this sketch) to my previous observation, although it must be pointed out that the rientation of this image is rotated more than 20 degrees in comparison, so that lunar north is almost directly up. Terracing was observed along the middle of the inner eastern wall, and there was broad dusky banding in the north. The peaks of the southern Montes Apenninus, north of Eratosthenes, were brightly illuminated. Rays from Copernicus crossed the area outside Eratosthenes.

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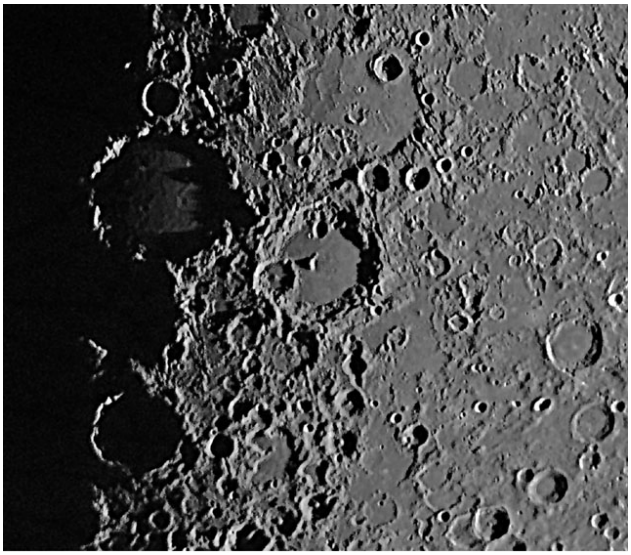
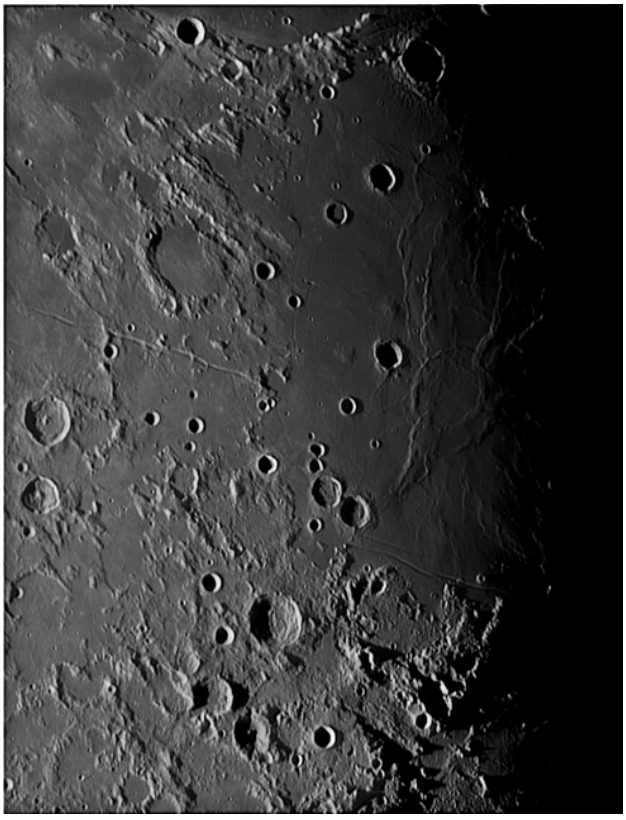
ADDITIONAL TOPOGRAPHICAL OBSERVATIONS

SOUTHERN HIGHLANDS - Maurice Collins-Palmerston North, New Zealand. August 9, 2011 07:08-07:35 UT. Windy. C-8 SCT, 3x barlow, LPI.



ALBATEGNIUS – William Dembowski, Windber, Pennsylvania, USA. June 9, 2011 00:57 UT Colongitude 2.0º, Seeing 4/10. Celestron 9.25" SCT f/10, DMK41 UV/IR filter.



MARE TRANQUILITATIS - Howard Eskildsen-Ocala, Florida, USA. August 19, 2011 09:48 UT. Seeing 7/10, Transparency 4/6. 6” f/8 refractor, Explore Scientific lens 2X Barlow, DMK 41AU02.AS, IR block & V block filters.

BANDED CRATERS PROGRAM

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

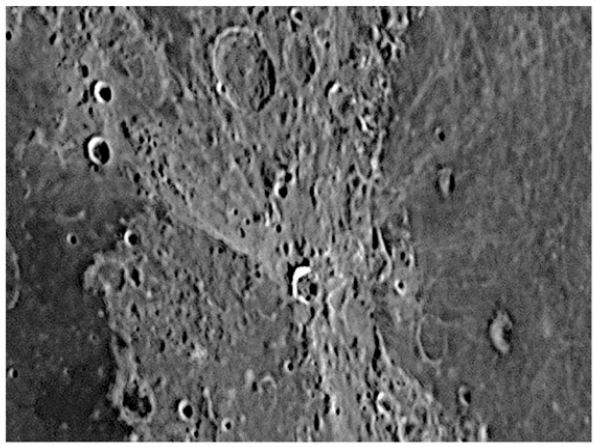
Assistant Coordinator – William Dembowski - dembowski@zone-vx.com

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

A.L.P.O. Lunar Section - Banded Craters Observing Form

Crater Observed: Proclus
Observer: William M. Dembowski Observing Station: Elton Moonshine Observatory
Mailing Address: 219 Old Bedford Pike, Windber, PA 15963
Telescope: Celestron SCT 2.35 cm f/10
Imaging: ImagingSource DMK41 Filters: UV/IR
Seeing: 4/10 Transparency: 3/6
Date (UT): 2011/06/09 Time (UT): 01.12
Colongitude: 2.1

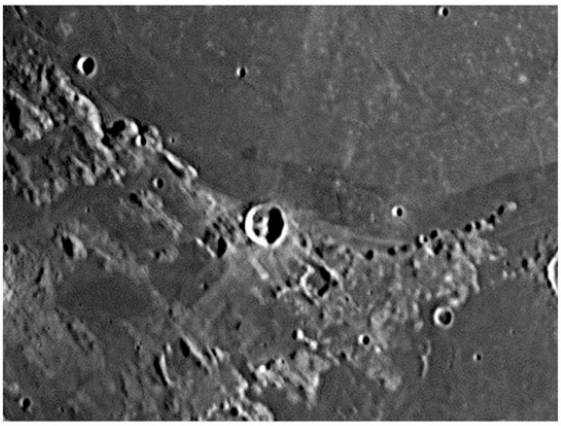
Image: (North up) (East right)



A.L.P.O. Lunar Section - Banded Craters Observing Form

Crater Observed: Menelaus
Observer: William M. Dembowski Observing Station: Elton Moonshine Observatory
Mailing Address: 219 Old Bedford Pike, Windber, PA 15963
Telescope: Celestron SCT 2.35 cm f/10
Imaging: ImagingSource DMK41 Filters: UV/IR
Seeing: 4/10 Transparency: 3/6
Date (UT): 2011/06/09 Time (UT): 00.54
Colongitude: 2.0

Image: (North up) (East right)



BRIGHT LUNAR RAYS PROJECT

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

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

Bright Lunar Rays Website: http://moon.scopesandscapes.com/alpo-rays.html

RECENT RAY OBSERVATIONS

22 DAY MOON - Maurice Collins-Palmerston North, New Zealand. August 21, 2011 15:57-16:10 UT. ETX-90, LPI.

NE TYCHO RAYS - Howard Eskildsen-Ocala, Florida, USA., July 12, 2011 01:32 UT. Seeing 7/10, Transparency 5/6. 6" f/8 Explore Scientific lens refractor, 3x Barlow, DMK 41AU02.AS, IR-UV block filter.

LUNAR TRANSIENT PHENOMENA

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

LTP NEWSLETTER – SEPTEMBER 2011

Dr. Anthony Cook - Coordinator

Observations for July 2011 were received from the following observers: Jay Albert (Lake Worth, FL, USA) observed: Aristarchus, Aristillus, Censorinus, Herodotus, Hyginus, Littrow, Plato, Prinz, and Swift. Maurice Collins (New Zealand) observed: Earthshine and took whole disk images of the Moon. Marie Cook (Mundesley, UK) observed: Aristarchus, Langrenus, Messier & A, Moltke, Mons Pico, Petavius, Plato, Prinz, Promontorium Agarum, and Torricelli B. I took some time lapse imagery of the Moon through narrowband filters using the remotely operated telescopes at Aberystwyth University. Colin Henshaw (Saudi Arabia) captured images of Earthshine. Kerry Koppert (New Zealand) took a whole disk image of the Moon. Piotr Malinksi (Poland) observed: Aristarchus, Copernicus, Mare Humorum, Sinus Iridum, Tycho, and took several images of other areas of the Moon.

LTP Reports: Only one report was received for July, indirectly through Geoff Burt who pointed out a link to You Tube (an on-line web site where people can post their favorite video clips). The video observation can be seen on: http://www.youtube.com/user/flaxious. Alas there was little information available last time I looked e.g. the actual time, name and location of the observer. Anyway what it shows is the eastern half of the Moon and close to the edge of the Moon (but slightly off limb), occasional bright spots appearing. These spots would drift towards the limb, where they would appear to merge, then mostly vanish. For a few of the spots you can just make out a tiny dark spot continuing across the inside of the Moon's disk for a short distance before vanishing into the glare of the Moon.

A quick back of the envelope calculation on speed at the Moon's distance reveals that these are clearly travelling at too high a velocity to be associated with anything near the Moon, therefore these have to be this side of our atmosphere. Without a precise location of the observer it is difficult to be sure what these were, however if taken from Northern Europe then in July the Moon was very low down at this phase, so we would be looking through a long path length of our atmosphere. So there is plenty of atmospheric volume for objects to get in the way between the observer and the Moon. I suspect that the effect seen involved diffraction of light around distant objects. The objects might have been a flock of birds, more nearby flying ants or airborne seeds, distant toy balloons released during a fete, or parts of a broken up aircraft contrail. Whatever they were, the effect was here on Earth, and so I am happy to assign a weight of 0 to this observation. I have some interesting video of the Moon being occulted by animals (possibly sheep?) when the Moon was low down in the sky, grazing some hilltops, here in Wales – there too show some nice examples of diffraction effects off the animals fur, but on a much larger scale than the above You Tube video shows!

Routine Reports: On 2011 Jul 12, Jay Albert (Lake Worth, FL) re-observed Aristarchus and Prinz under the same illumination conditions that match those as seen during LTP reported by David Weier back in 1990 Jan 08. Here are the original LTP reports based upon the Cameron catalog….

> ***On 1990 Jan 08 at UT00:55 D. Weier (Sun Praire, WI, USA, 12.5" reflector, x159) observed an "anomalous black bar across Aris. Nearly digonal to terminator." The nearby crater Prinz had curious shadow patterns, perhaps related to the rising sun projecting shadows from the eastern rim and "reflected down"? "At 0224 W wall had a break in it & a diffuse glow where it should not be. Manske thinks it was Earthshine effect. At 0305 Weier saw Manske's bar - with diffused light and flicker like an aurora - like a gas with electric charge. At 0325 saw a strange glow in Aris. but may be due to atm. though thought it to***

be a LTP. Darling had never seen such effects before (flickering implies a medium in it)." The Cameron 2006 catalog ID=387 and the weight=3. The ALPO/BAA weight=3.

On 1990 Jan 08 at UT 00:55 D. Weier (Sun Praire, Wi, USA, 12.5" reflector, x159, seeing=7/10) observed that Prinz had interesting shadow patterns" - these were pointed and possibly caused by the shape of the eastern wall and the rising Sun. The Cameron 2006 catalog ID=387 and the weight=3. The ALPO/BAA weight=1.

Jay reports the following, upon re-examining the area...*"Aristarchus [387]- I immediately saw the quite subtle "black bar" across the crater. It was almost perpendicular to the terminator. Aristarchus' floor was completely shadow-filled. The bar appeared as black notches opposite each other on the E and W walls with the black bar connecting them. I thought the black bar might be a contrast effect or possibly due to the tendency of the human brain to "connect the dots" or even an actual shadow from a peak on the E wall (although the shadow on the crater floor was already black). I used 224x and 311x from 02:45 to 03:10 UT and observed simultaneously with Prinz.". "Prinz [387]- "Interesting" and "pointed" shadow patterns were obvious at 311x. The shadows do not appear to be anomalous, but are the result of the low solar angle. The southernmost E wall shadow was the most prominent and sharpest-pointed and extended about 2/3 of the way to the W wall. Sharp pointed but much smaller shadows extended outside the crater from the W wall. Observed simultaneously in same field with Aristarchus. This evidently is not a LTP."* I will keep the Aristarchus LTP with a weight of 3 due to the glow effects seen in 1990, though we know that the black bar itself is completely normal now. As for Prinz, Jay has proved to me that this is clearly not a LTP, therefore its weight will be lowered to 0.

On 2011 Jul 08 at UT 05:25-05:54 Maurice Collins produced a Moon mosaic (See extract in Figure 1) and this just about covered the repeat illumination slot for the following LTP:

Torricelli_B observed by Holmes_D on 1989-1-14 On 1989 Jan 14 at UT 19:15-19:30 D. Holmes (Rockdale, England, UK) reported that Torricelli B was "dull & inconspicuous". The Cameron 2006 catalog ID=344 and the weight=5. The ALPO/BAA weight=2.

I have to agree with the original LTP report description: Torricelli B was most definitely "dull and inconspicuous". Therefore the weight will be reduced to 1 as this is probably the normal appearance at this phase, but will keep it on the LTP list for now, just in case repeat illumination and libration have some effect.

Figure 1. Part of the Moon mosaic by Maurice Collins, taken on 2011 Jul 08, with north at the top.

Although not an observation from July, and nothing to do with LTP, I just thought that readers might be interested in what we can do with lunar eclipse images. Collin Henshaw obtained an excellent sequence of images from the 2011 June 15th lunar eclipse. Rather than show the really impressive ones of totality and the umbra, I thought that it might be interesting to extract the penumbral shadow, an often neglected part of lunar eclipses. To do this I used the last image that Collin sent me (Figure 2 left) and used the western hemisphere (clear of penumbral shadow) as a reference. A penumbral eclipse image (Figure 2 centre) was registered to this and normalized to the non-eclipse part of the Moon. The images were then subtracted, contrast stretched and histogram equalized to bring out the penumbra (Figure 2 right). Some features are

visible in the penumbra, namely the mare areas – this is partly due to the reference image still having a tiny bit of penumbra on the SE side of the Moon, but also because the mare are slightly colored, and are being illuminated by color filtered light passing through our atmosphere, hence they may be brighter or darker than other less colored parts of the Moon. So what use is this to LTP studies? Well there are a fair share of LTP reports during lunar eclipses – so this tool provides a quantitative way of examining whether features have changed in brightness above what they would be expected to do. It can also be used to study irregularities in the density of the umbral and penumbral shadow by effectively removing most of the features on the lunar surface apart from subtle lunar surface mineralogy colors.

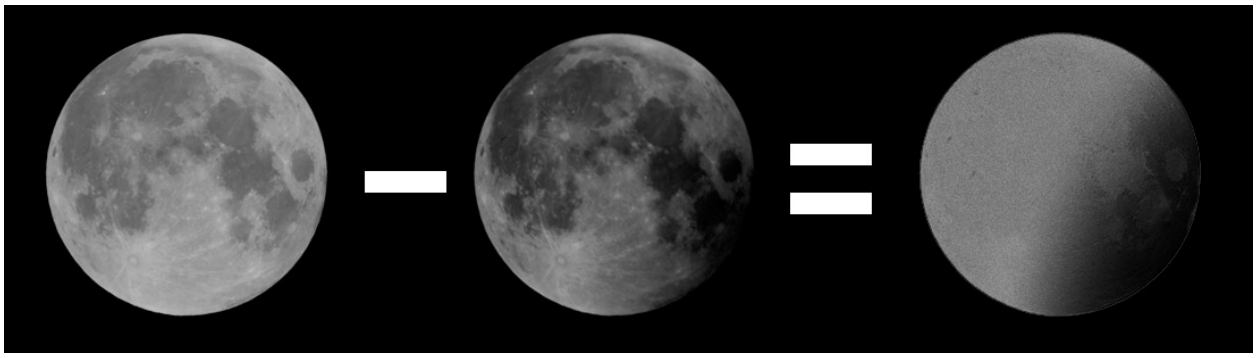


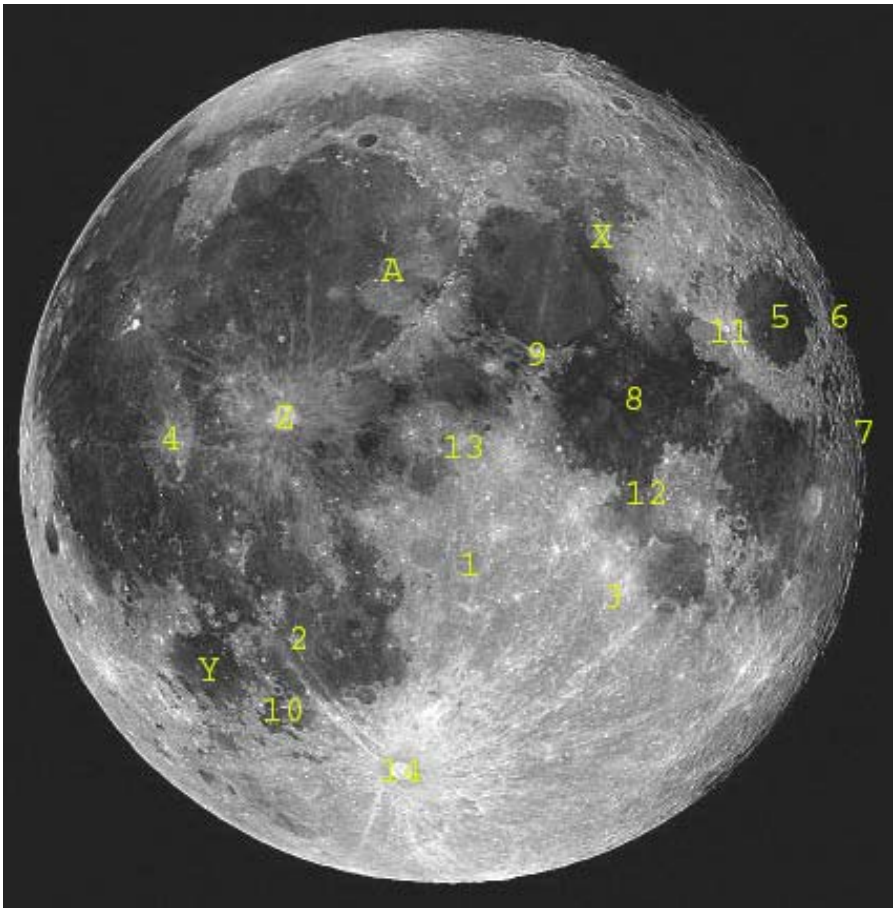
Figure 2. The 2011 June 15 Lunar Eclipse. Left image taken at 22:46UT or 43 minutes after umbral last contact. Centre image taken at 22:21UT or 18 minutes after umbral last contact. Right: the difference image (with some contrast stretching and histogram equalization), showing the penumbral shadow quite clearly.

Suggested Features to observe in September: 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! Twitter LTP alerts can be accessed on http://twitter.com/lunarnaut.

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.

KEY TO IMAGES IN THIS ISSUE

1. **Albategnius**
2. **Bullialdus**
3. **Catharina**
4. **Kepler**
5. **Mare Crisium**
6. **Mare Marginis**
7. **Mare Smythii**
8. **Mare Tranquilitatis**
9. **Menelaus**
10. **Palus Epidemiarum**
11. **Proclus**
12. **Torricelli**
13. **Triesnecker**
14. **Tycho**



FOCUS ON targets

X = Posidonius (September)
Y = Mare Humorum (November)
Z = Copernicus (January)
A = Archimedes (March)