ASSOCIATION OF LUNAR & PLANETARY OBSERVERS
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THE LUNAR OBSERVER

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.
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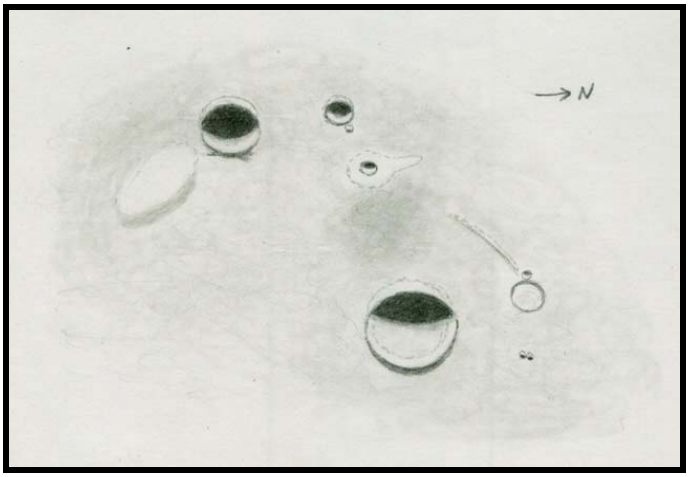
17 Autumn Lane, Sewell, NJ 08080

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

FEATURE OF THE MONTH – MARCH 2012

LANSBERG C



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
October 21, 2011 10:10-10:34 UT, 15 cm refl, 170x, seeing 7-8/10

I sketched this crater and vicinity on the morning of Oct. 21, 2011 between two reappearances of modest stars. This area is in Oceanus Procellarum southwest of Lansberg itself. Lansberg C is not strongly curved on its west side,. giving it a somewhat D-shape. I saw no detail on its floor. Lansburg G is the shallow ring just to the north, and Lansburg GA is the small, deep pit just west of G. Two tiny peaks make a tight pair east of Lansburg G. A low ridge extends southwestward from Lansberg GA toward Lansberg E. A bright halo with a northward extension surrounds Lansberg E, and a vague dark patch is between Lansberg E and C. Lansberg F is the larger crater southwest of E. A tiny peak is just northeast of F. Lansberg D is the sizable crater south of F, and is the second largest crater on this sketch. This crater had irregular exterior shadowing on its east side. All of the craters Lansberg F, E and D appear relatively deep compared to Lansberg C judging from their interior shadows. What appears to be a low oval mound is south of Lansberg D. It was a modestly bright patch with weak shadowing on its east side that morning.

LUNAR CALENDAR

MARCH-APRIL 2012 (UT)

Mar. 01	01:22	First Quarter
Mar. 01	16:12	Extreme North Declination
Mar. 07	24:00	Moon 9.1 Degrees SSW of Mars
Mar. 08	09:41	Full Moon
Mar. 10	10:03	Moon at Perigee (362,399 km – 225,184 miles)
Mar. 11	03:00	Moon 5.9 Degrees SSW of Saturn
Mar. 14	14:12	Extreme South Declination
Mar. 15	01:26	Last Quarter
Mar. 16	02:00	Moon 1.4 Degrees SSW of Pluto
Mar. 20	02:00	Moon 5.6 Degrees NNW of Neptune
Mar. 22	12:00	Moon 1.4 Degrees NNW of Mercury
Mar. 22	12:00	New Moon (Start of Lunation 1104)
Mar. 22	20:00	Moon 5.2 Degrees NNW of Uranus
Mar. 25	23:00	Moon 3.0 Degrees N of Jupiter
Mar. 26	06:05	Moon at Apogee (405,779 km – 252,139 miles)
Mar. 26	21:00	Moon 2.0 Degrees SSE of Venus
Mar. 28	23:42	Extreme North Declination
Mar. 30	19:41	First Quarter
Apr. 03	22:00	Moon 8.3 Degrees SSW of Mars
Apr. 06	19:19	Full Moon
Apr. 07	10:00	Moon 6.0 Degrees SSW of Saturn
Apr. 07	17:00	Moon at Perigee (358,313 km – 222,645 miles)
Apr. 10	21:06	Extreme South Declination
Apr. 12	08:00	Moon 1.3 Degrees SSW of Pluto
Apr. 13	10:50	Last Quarter
Apr. 16	10:00	Moon 5.7 Degrees NNW of Neptune
Apr. 18	21:00	Moon 7.0 Degrees NNW of Mercury
Apr. 19	03:00	Moon 5.2 Degrees NNW of Uranus
Apr. 21	07:19	New Moon (Start of Lunation 1105)
Apr. 22	09:01	Moon at Apogee (406,420 km – 252,538 miles)
Apr. 22	19:00	Moon 2.5 Degrees N of Jupiter
Apr. 25	05:36	Extreme North Declination
Apr. 25	02:00	Moon 5.7 Degrees S of Venus
Apr. 29	09:57	First Quarter

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 be included (**Bold items are required)**:

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

CALL FOR OBSERVATIONS:
FOCUS ON: Pyrenees Mountains

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 **May 2012** edition will be **the Pyrenees Mountains**. 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 the **Pyrenees** to your observing list and send your favorites to:

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

Deadline for inclusion in the Pyrenees Mountains article is April 20, 2011

FUTURE FOCUS ON ARTICLES:

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

Bullialdus	**July 2012**	**June 20, 2012**
Aristillus	**September 2012**	**August 20, 2012**

FOCUS ON: Archimedes

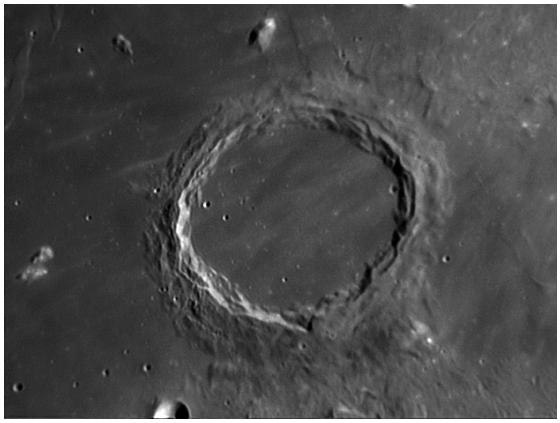
By Wayne Bailey

Coordinator: Lunar Topographical Studies

Archimedes is the largest crater (83 km diameter) in the southeastern section of Mare Imbrium, close to the Montes Apenninus (Figs. 1). It forms a conspicuous triangle with Aristillus and Autolycus. The rugged terrain to its south is the lighter colored Apennine Bench, including the Montes Archimedes. The crater and bench are surrounded on the north, west and south by darker Mare material. A pool of dark mare material (Palus Putredinis) also lies to its southeast, extending from the Apennines almost to the crater.

***FIGURE 1*. Archimedes Area.** *Andy Miller - Conneaut , Ohio. March 5, 2009 06:00 UT. Seeing 8/10, Transparency 4/6. 4" f/8 refractor. Afocal, 16mm plossl, HP 635 camera.*

The crater itself has a well-preserved, circular rim with a flat floor that is approximately level with the surrounding mare (Fig. 2). There is no sign of a central peak. Considerable structure can be seen in the wall, which almost appears braided. It has not been breached, so the magma that flooded the interior must have risen through cracks in the crater floor. The standard diameter to depth and central peak height relations indicate that it is flooded by more than 2 km of magma, completely submerging the central peak.



The Apennine Bench appears to be igneous material from the floor of Imbrium, possibly raised by slumping of sections of the basin wall (the Apennines) prior to the general basin flooding. Several examples of slumped sections of wall can be seen protruding from the mare at the base of the Apennines southeast of Archimedes. Since Archimedes hasn't been distorted by formation of the Bench, it must be younger. Both the Bench and crater must also be older than the Imbrium Basin filling material.

***FIGURE 2*. Archimedes Detail.** *Hongsun Yoon – Republic of Korea. April 24, 2010 11:08 UT. Seeing 6/10, Transparency 4/6. Mewlon 300, f/11.9 Dall-Kirham, 2.5x powermate, Lumenera LU075, Astronomic G dichroic filter with IR block.*

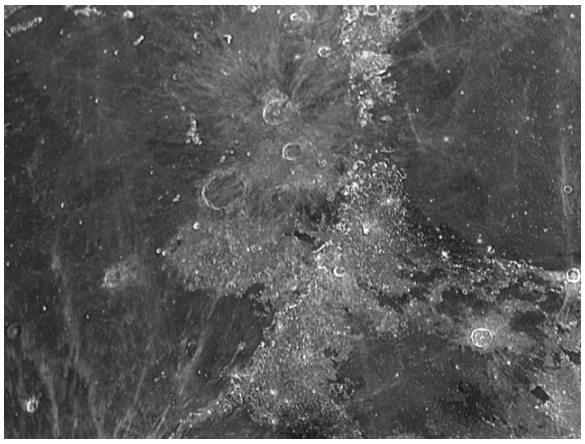
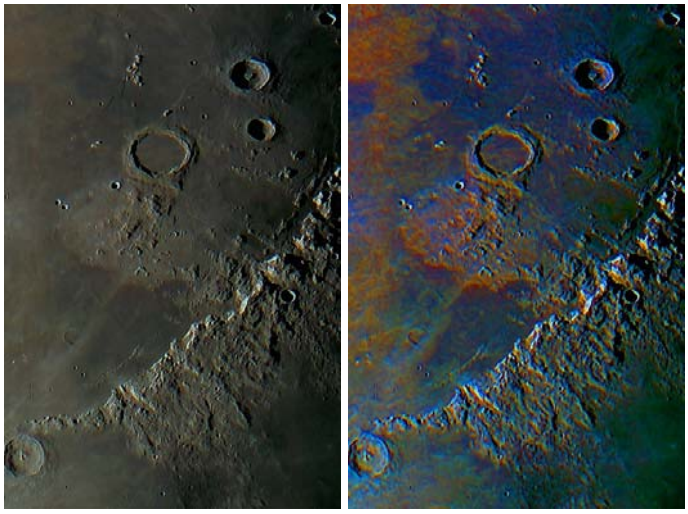


***FIGURE 3*. Rays Near Archimedes.** *William Dembowski – Windber, Pennsylvania, USA. August 12, 2011 02:00 UT Colongitude 65.2º, Seeing 6/10. Celestron 9.25" SCT f/10, DMK41 UV/IR filter.*

There are only a few easily visible craters on the floor of Archimedes. Orbital images, however, show that it is peppered with smaller craters (e.g. Shirao & Wood, 2011). Under a high sun, the outstanding feature of Archimedes is the light ray segments crossing its floor (Fig. 3). The surrounding area is covered with many rays. Aristillus contributes rays from the northeast, and Copernicus (and/or Eratosthenes) send rays from the southeast. Rays from nearby Autolycus are almost unrecognizable

in the tangle around Archimedes. But the light streaks on the floor of Archimedes appear to be primarily oriented towards Autolycus.



There's also a curiously distinct boundary between areas of heavy and light ray coverage that touches the south tip of the Montes Spitzbergen and points to Autolycus. This may simply be random effect of ray overlap, since I can't see any way that it can be due to shadowing during ray formation.

FIGURE 4. Archimedes Color. *John Duchek Carrizozo, NM. August 21, 2011 05:00 UT. Seeing 8/10, Transparency 4/6. 10" Newtonian, Canon Xli 500 D. Left: Original image- increased color saturation. Right: Color saturation greatly increased.*

Color images enhance the distinction between various rock formations (Fig. 4). I've increased the color saturation of John Duchek's image to emphasize these differences . Notice in particular, that the mare east of Aristillus and Autolycus, as well as the section of Palus Putredinis closest to the Apennines are distinctly different than the rest of Mare Imbrium. They seem to resemble more closely the portion of Mare Serenitatis visible in the lower right corner of the image (across the Apennines).

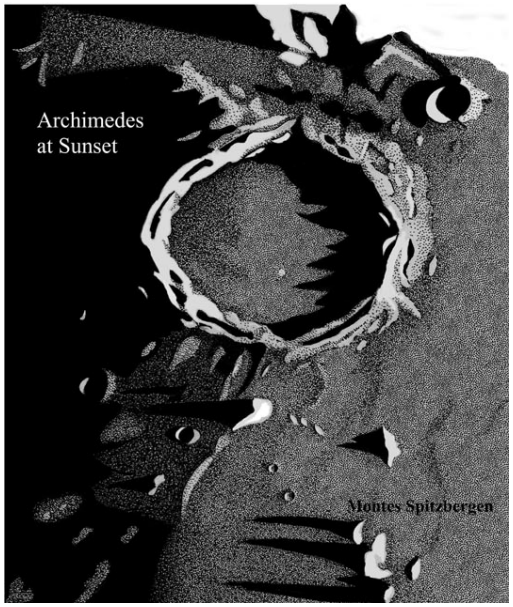


FIGURE 5. Shadow Spires in Archimedes. *Phillip Morgan –Lower Harthall-Tenbury Wells, Worcestershire, England. September 1, 2010 04:15-05:05 UT. Seeing 7/10 Transparency 3/6. Colongitude 180.3-180.7°. 305 mm f/5 Newtonian, x400.*

The first probe to reach the moon, the Soviet Lunik 2, crashed between Archimedes and Autolycus. Apollo 15 landed at the base of the Apennines, near Hadley Rille, at the opposite end of Palus Putredinis. Rocks collected by the astronauts showed that the igneous material that forms the Bench erupted about 3.8 billion years ago, which is taken as the age of the Imbrium Basin. The Basin filling lavas erupted over the next 600 million years. Archimedes formed before these eruptions ended, since its interior is flooded, so it must be between about 3.8 and 3.2 billion years old. Autolycus with its ray system formed about 2.1 billion years ago, and finally Aristillus and its rays formed about 1.3 billion years ago.

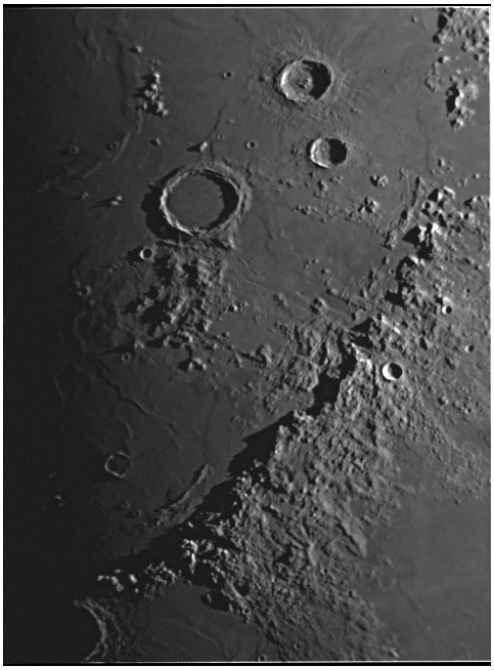


FIGURE 6. Archimedes & Montes Apennines. *Orlando Benitez Sanchez – Canary Islands, Spain. January 31, 2012 21:30 UT. Seeing 8/10, Transparency 9/10, Colongitude 9.6°. 235 mm SCT, f/10, DMK21AU04.AS, polarizer filter.*

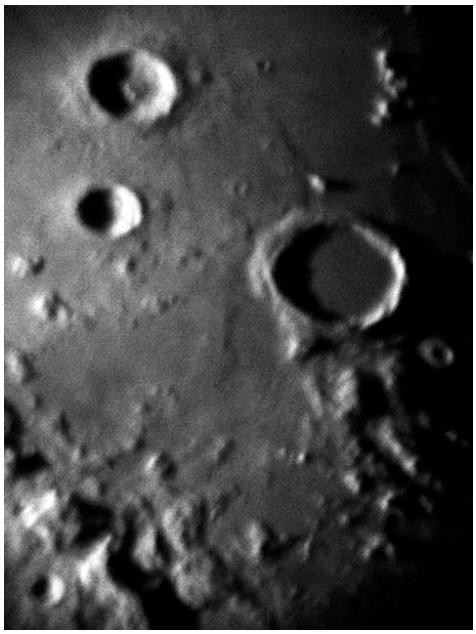
The shadow spires in Archimedes can be a fascinating sight near sunrise (Fig. 5). There are also numerous rilles (besides the well-known Hadley Rille) and wrinkle ridges (Fig. 6) to explore when the sun angle is low. And trying to detect the numerous small craters on Archimedes floor can be a challenge. Following the changing

visibility of the multiple ray systems in the area can also be fascinating when the sun is higher. So this area should keep an observer interested for quite some time.

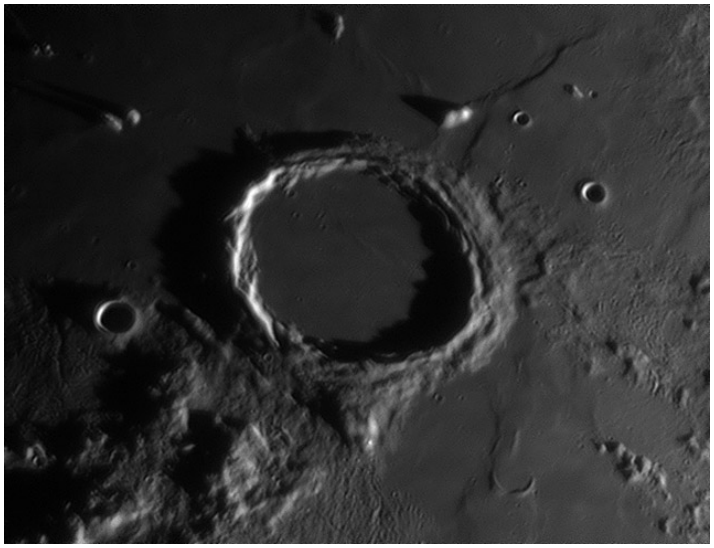
ADDITIONAL READING

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/).
Grego, Peter. 2005. The Moon and How to Observe It. Springer-Verlag, London.
North, Gerald. 2000. Observing the Moon, Cambridge University Press, Cambridge.
Rukl, Antonin. 2004. Atlas of the Moon, revised updated edition, ed. Gary Seronik, Sky Publishing Corp., Cambridge.
Shirao, Motomaro & Charles A. Wood. 2011. The Kaguya Lunar Atlas. Springer, New York
Wlasuk, Peter. 2000. Observing the Moon. Springer-Verlag, London.
Wood, Charles. 2003. The Moon: A Personal View. Sky Publishing Corp. Cambridge.
The-Moon Wiki. http://the-moon.wikispaces.com/Introduction

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



ARCHIMEDES-ARISTILLUS – Jay Albert – Lake Worth, Florida, USA. January 2, 2012 03:11-03:35 UT. Seeing 5/10, Colongitude 9.6°. C-11 SCT, f/10, afocal, 40 mm eyepiece, Olympus digital camera..



ARCHIMEDES – Falcon Israel. CPC-11 XLT, 2x barlow, Skynyx 2-0M.

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. Digital images of Archimedes and Archimedes-Aristillus.

ORLANDO BENITEZ SANCHEZ-CANARY ISLANDS, SPAIN. Digital images Albategnius-Hipparchus, Archimedes(2), Aristillus-Autolycus, Aristoteles-Eudous, Eratosthenes(2), Hipparchus, Maginus, Messier A rays, Mons Piton-Aristillus, Montes Pyrenaeus(2), Northern Hemisphere Moon, Plato, Southern terminator, Stofler, Theophilus, Triesnecker, Vallis Alpes and Walter.

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 14, 16 & 24 day moon and Einstein.

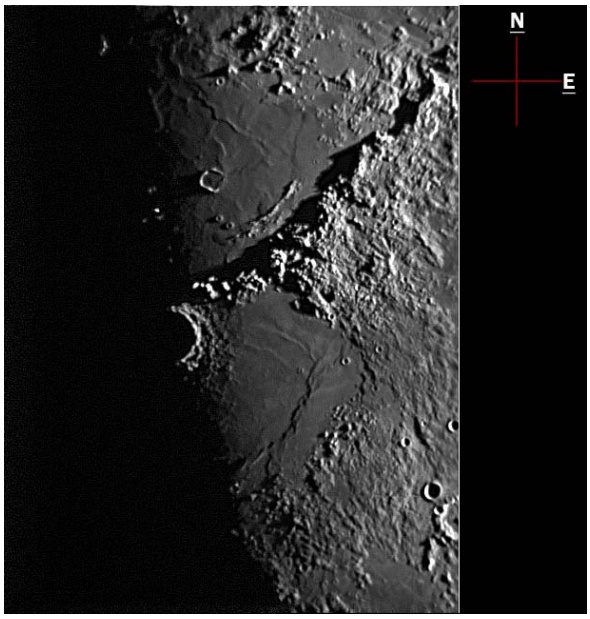
ED CRANDALL – LEWISVILLE, NORTH CAROLINA, USA. Digital image of Posidonius.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Albufeda, Beaumont, Copuanus, Catharina(2), Colchis, Descartes, Hyginus(2), Kies, Madler(8), Mare Nectaris, Lacus Mortis(2), Montes Pyrenaeus, Pitatus, Rabbi Levi, Rheita, Sacrobosco(2) Sinus Asperitatis, Taylor-Geber. Banded crater forms for Agatharchides A, Burg, Dawes, Gutenberg A, Isidorus, Maury, Messier, Rosse(3) and Theon Sr & Jr.

CHARLES GALDIES – NAXXAR, MALTA. Digital image of Eratosthenes.

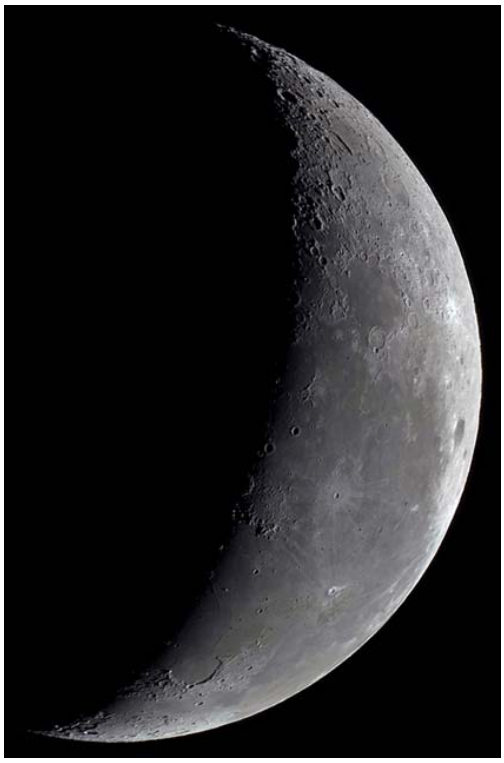
HONGSUN YOON –SEOUL, REPUBLIC OF KOREA. Digital image of Archimedes.

RECENT TOPOGRAPHICAL OBSERVATIONS

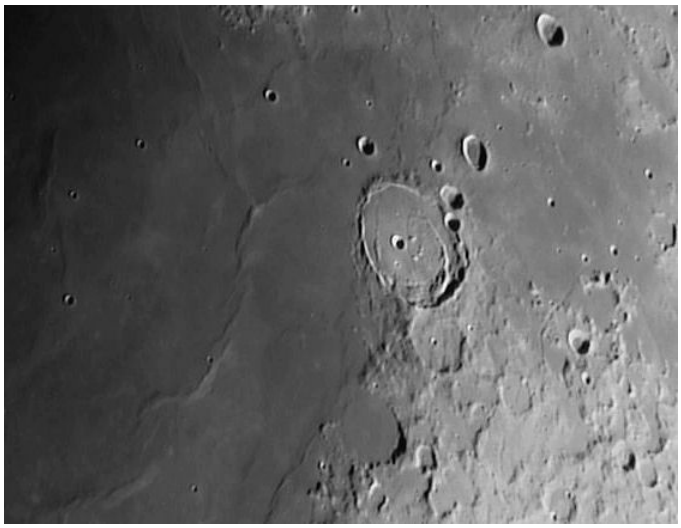


ERATOSTHENES-MONTES APENNINUS - Orlando Benitez Sanchez-Canary Islands, Spain. January 31, 2012 21:35 UT. Seeing 8/10, Transparency 9/10, Colongitude 9.6°. SCT 235mm, f/10, DMK21AU04.AS polarizing filter.

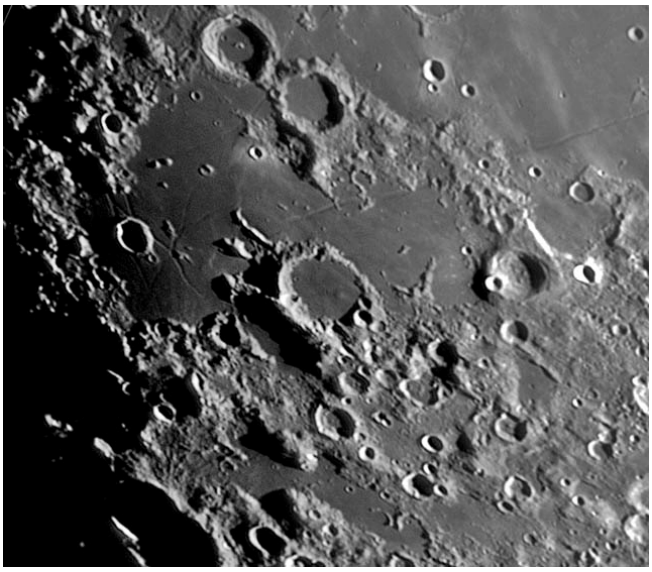
RECENT TOPOGRAPHICAL OBSERVATIONS



24-day MOON - Maurice Collins-Palmerston North, New Zealand. February 16, 2012 16:33-16:41 UT. Seeing A-II. ETX-90, LPI.



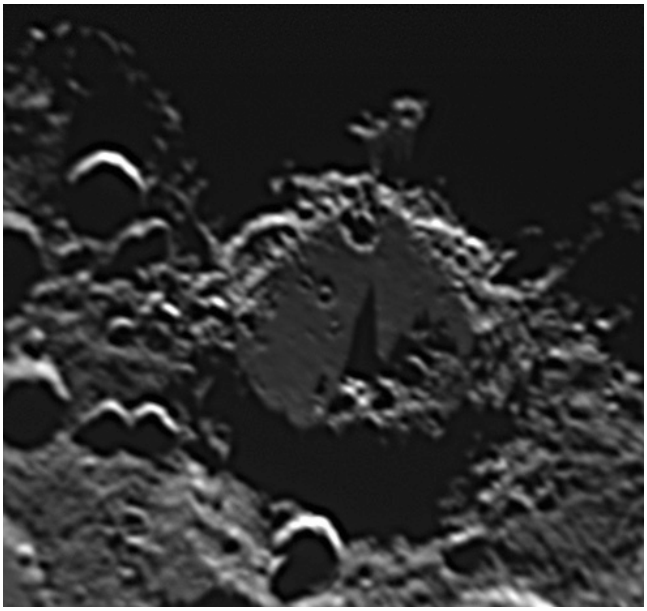
POSIDONIUS – Ed Crandall – Lewisville, North Carolina, USA. December 1, 2011 23:12 UT. 110 mm f/6.5 APO, 3x barlow, ToUcam



CAPUANUS - Howard Eskildsen-Ocala, Florida, USA. February 3,2012 01:28 UT. Seeing 6/10, Transparency 4/6. 6" f/8 refractor, Explore Scientific lens, 2X Barlow, DMK 41AU02.AS, IR block & V block filters.

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS

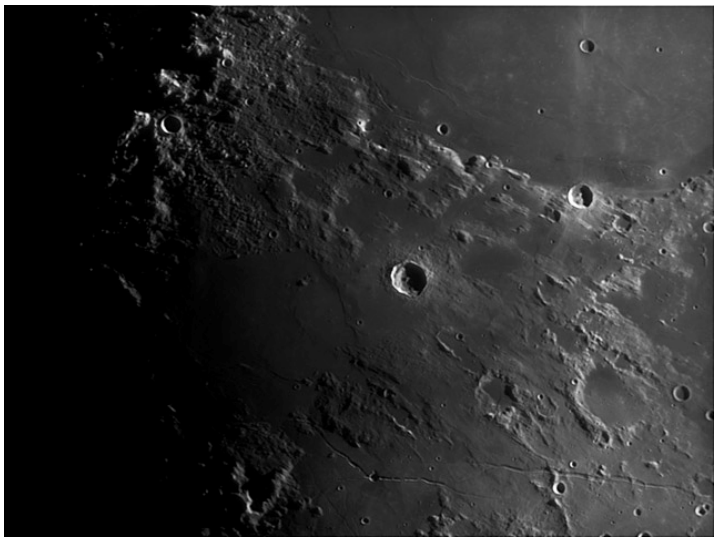
HIPPARCHUS - Orlando Benitez Sanchez-Canary Islands, Spain. January 30, 2012 22:27 UT. Seeing 8/10, Colongitude 357.9°. SCT 235mm, f/20, DMK21AU04.AS.



STOFLER - Orlando Benitez Sanchez-Canary Islands, Spain. January 30, 2012 22:25 UT. Seeing 8/10, Transparency 7/10, Colongitude 357.9°. SCT 235mm, f/20, DMK21AU04.AS.

EINSTEIN - Maurice Collins-Palmerston North, New Zealand. February 7, 2012 10:42 UT. ETX-90, 2x barlow, LPI.

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



HYGINUS-BESSEL - Howard Eskildsen-Ocala, Florida, USA. January 31,2012 00:41 UT. Seeing 8/10, Transparency 5/6. 6" f/8 refractor, Explore Scientific lens, 2X Barlow, DMK 41AU02.AS, IR block & V block filters.

KIES - Howard Eskildsen-Ocala, Florida, USA. February 3,2012 01:28 UT. Seeing 6/10, Transparency 46. 6" f/8 refractor, Explore Scientific lens, 2X Barlow, DMK 41AU02.AS, IR block & V block filters.

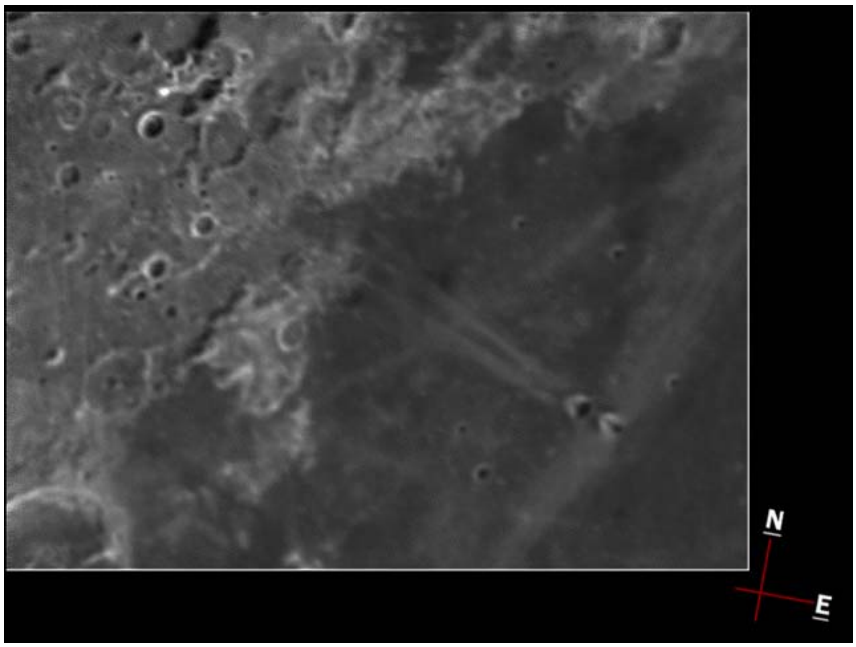
BRIGHT LUNAR RAYS PROJECT

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

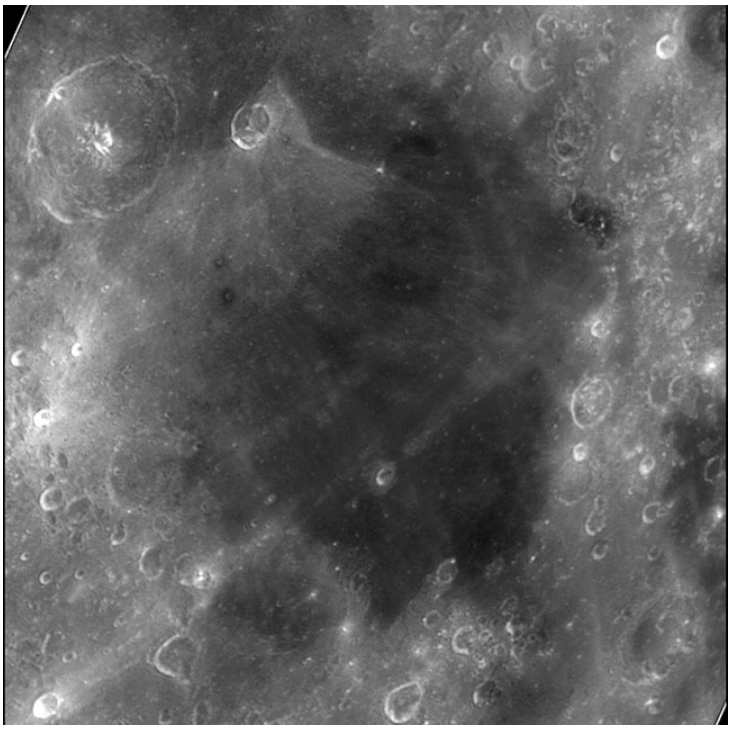
Assistant Coordinator – William Dembowski – dembowski@zone-vx.com

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

RECENT RAY OBSERVATIONS



MESSIER A-Orlando Benitez Sanchez-Canary Islands, Spain. January 30, 2012 22:15 UT. Seeing 8/10, Colongitude 357.8°. SCT 235mm, f/20, DMK21AU04.AS



MARE NECTARIS - Howard Eskildsen-Ocala, Florida, USA. February 3, 2012 01:44 UT. Seeing 6/10, 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

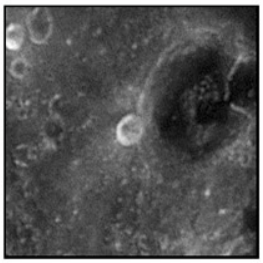
Assistant Coordinator – William Dembowski - dembowski@zone-vx.com

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

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

Crater Observed: Gutenberg A
Observer: Howard Eskildsen Observing Station: Ocala, Florida
Mailing Address: P.O. Box 830415, Ocala, Florida, 34483
Telescope: Refractor, Explore Scientific lens 15.2 cm f/8
Imaging: DMK 41AU02.AS, 2X Barlow, Filters: IR and V-Block Filters
Seeing: 6/10 Transparency: 4/6
Date (UT): 2012/02/03 Time (UT): 01:42
Colongitude: 38.9°
Position of crater: Selen. Long. Selen. Lat.
39.9° East 9.0° South
Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07

Image (north up): Comments:



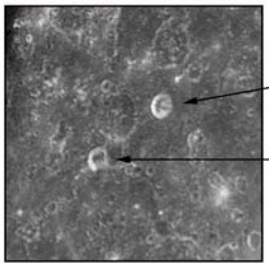
Three dark bands radiate from the WNW crater floor, one towards the NE, one ESE and one to the SSW. It has a slight "chicken foot" apperance, but not as pronounced as Idsidorus D.

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

Crater Observed: Isidorus D&E
Observer: Howard Eskildsen Observing Station: Ocala, Florida
Mailing Address: P.O. Box 830415, Ocala, Florida, USA
Telescope: 6" Refractor, Explore Scientific Lens 152 mm f/8
Imaging: DMK 41AU02, 2X Barlow Filters: IR block and V-block filters
Seeing: 6/10 Transparency: 4/6
Date (UT): 2012/02/03 Time (UT): 01:42
Colongitude: 38.9°
Position of crater: Selen. Long. Selen. Lat.
Isidorus D 34.1° East 4.2°South
Isidorus E 32.6° East 5.3° South

Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07

Image (North up): Comments:



Isidorus D has strange marking on the floor that resembles the footprint of a bird or theropod dionsaur. I have noticed similar markings on other craters as well.

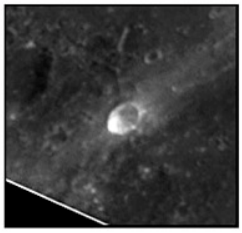
A dark thick band runs diagonally across Isidorus E.

BANDED CRATER OBSERVATIONS

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

Crater Observed: Polybius A
Observer: Howard Eskildsen Observing Station: Ocala, Florida
Mailing Address: P.O. Box 830415, Ocala, Florida, 34483
Telescope: Refractor, Explore Scientific lens 15.2 cm f/8
Imaging: DMK 41AU02.AS, 2X Barlow, Filters: IR and V-Block Filters
Seeing: 6/10 Transparency: 4/6
Date (UT): 2012/02/03 Time (UT): 01:44
Colongitude: 38.9°
Position of crater: Selen. Long. Selen. Lat.
28.0° East 23.0° South
Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07

Image (north up): Comments:

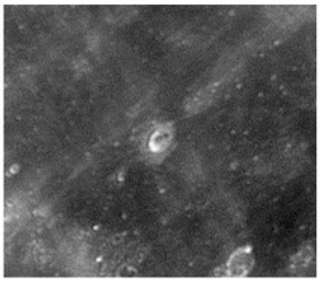


Fine dark and bright rays radiate from the NW portion of the crater floor. Subtle, but quite interesting. The crater is partially covered by ray material from Tycho, that may mute the dark areas inside Polybius A.

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

Crater Observed: Rosse
Observer: Howard Eskildsen Observing Station: Ocala, Florida
Mailing Address: P.O. Box 830415, Ocala, Florida, 34483
Telescope: Refractor, Explore Scientific lens 15.2 cm f/8
Imaging: DMK 41AU02.AS, 2X Barlow, Filters: IR and V-Block Filters
Seeing: 6/10 Transparency: 4/6
Date (UT): 2012/02/03 Time (UT): 01:42
Colongitude: 38.9°
Position of crater: Selen. Long. Selen. Lat.
35.0° East 17.9° South
Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07

Image (north up): Comments:



A dark band is plainly visible crossing diagonally across the northern portion of the crater.

LUNAR TRANSIENT PHENOMENA

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

LTP NEWSLETTER – MARCH 2012

Dr. Anthony Cook - Coordinator

Routine observations for January 2012 were received from the following observers: Jay Albert (Lake Worth, FL, USA) observed: Alphonsus, Aristarchus, Baillaud, Harpalus, Linne, Mare Crisium, Mons Pico, Mons Piton, Picard, Plato, Proclus, Promontorium Laplace, Purbach, Secchi, Swift, Torricelli B, Vallis Schroteri, and several other features. Maurice Collins (New Zealand) took whole disk images of the Moon. Marie Cook (Mundesley, UK) observed: Agrippa, Alphonsus, Aristarchus, Censorinus, Cleomedes, Hercules, Mons Pico, Peirce, Picard, Plato, Proclus, and Promonotorium Agarumi. I took time lapse video of the Moon and also took video of Earthshine, looking for impact flashes from Aberystwyth University. Kevin Kilburn (Manchester, UK) imaged Fracastorius, and Langrenous. Rolf Hempel (Germany) took a whole disk image of the Moon. Kerry Koppert (New Zealand) took some whole disk images of the Moon. Bob O'Connell (Keystone Heights, FL, USA) observed Aristarchus, Atlas, Proclus, and several other features. Brendan Shaw (UK) imaged Agippa, Aristarchus, Censorinus, Eimmart, Eratosthenes, Gassendi, Herodotus, Mare Crisium, Mons Pico, Picard, Pitiscus, Plato, Posidonius, Proclus, Pytheas, Schroter, and Theophilus.

News: Lunar and Planetary Science Conference abstracts are now available on: http://www.lpi.usra.edu/meetings/lpsc2012/pdf/program.pdf but there does not appear to be any specific papers about LTP this year.

Routine Reports: As usual, space is rather limited to describe all of the supply of routine reports sent in, but here are a few highlights from January 2012:

1) Torricelli B, a bright crater? On 1985 Jul 01 UT02:00-03:00, K.P. Marshall of Medellin, Columbia observed Torricelli B to be *"very bright"*, and verified this using a visual CED (Crater Extinction Device). Cameron's 2nd LTP catalog gives this a weight as high as 4. However on 2012 Jan 07, between 01:51-03:39 Bob O'Connell re-examined the area under the same illumination, using a Celestron 9.25" f/10SCT (x160, x200) and found the crater to have no unusual brightness, nor undergoing any brightness variations. An image taken at 02:19UT confirms this. But he did notice a sparkling effect coming from the usual bright spot on the northern rim of Torricelli B, that was linked to seeing effects – such effects were seen also on small high albedo craters elsewhere on the Moon, but not as prominent as in Torricelli B. Jay Albert though, who observed the same night using a higher resolution C11 scope (x224 and x311), from UT 02:17-02:45, noted that the crater had the appearance of a small, very bright ring, with an especially bright spot on the northern rim He also noted that the spot flared in brightness with seeing. Bob wonders whether it was the bright spot that Marshall detected in 1985 in the CED. An LROC WAC image mosaic (See Figure 1) shows the spot to be a geologically recent landslide area on the NW rim. Could it be this that was being measured in the CED device back in 1985, and it can be seen at its brightest only when the seeing is good? Please keep an eye on this area, especially with cameras as these can record the relative brightness to other small bright craters. Torricelli B has had a number of LTP reports over the years.

2) Amazing Alphonsus On 2012 Jan 31, Rolf Hempel made an image mosaic of Alphonsus crater between 18:51 and 19:15UT. This overlapped with the repeat illumination of two past LTP:

1990 May 05 UT 02:03 – David Darling (Sun Praire, WI, USA) observed a point of light inside the crater just to the north of the central peak, along the central ridge.

1967 Aug 13 UT 17:32-10:25 \Horowitz (Haifa, Israel) using an 8" reflector, saw a glow or hazy patch, seen whilst using filters, that was brighter than the background. It was not seen a couple of hours later or the next night.

Rolf's image in Figure 2, shows neither of these effects, and so this leads support to the view that these two LTP may have been genuine. Alphonsus is a well known site for LTP and so should be monitored closely – though it would really help if observers did this during repeat illumination prediction times so that we can check up on the normal appearances of this crater.

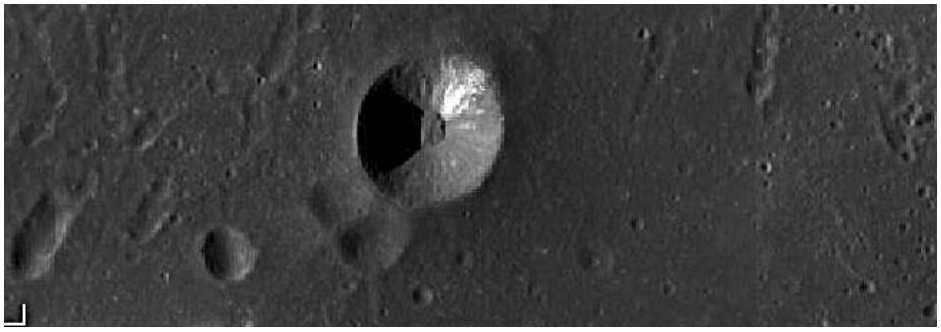


Figure 1. NASA LROC WAC mosaic of Torricelli B area from: http://target.lroc.asu.edu/da/qmap.html .

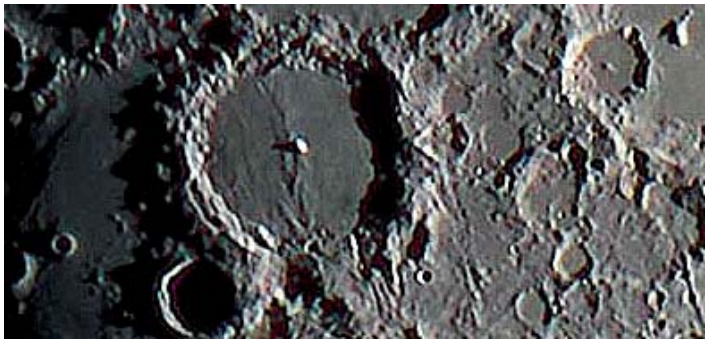


Figure 2. A close-up color enhanced and sharpened view of Alphonsus from Rolf Hempel's whole Moon mosaic from the night of 2012 Jan 31.

3) A Perfect Sketch of Plato: During a whole Moon mosaic taken by Kerry Kopert on 2012 Jan 02, made between 08:44 and 09:26UT, he caught Plato at a similar state of illumination to when T.G. Elger observed shadow spires in 1887 Feb 01 at ~18:00 UT. The 1978 NASA catalog by Cameron states that Elger saw *"Ill-defined shadow of peaks of W.border-in contrast to sharpness of mts. outside it. Never seen before. Such phenomena occur on floor, but never on ramparts"*. Although Kerry's image appears to be a little earlier in sunrise to Elger's sketch, and does not shed much light on the sharpness of the shadows across the floor and onto the western ramparts, it does at least confirm the accuracy of much of the topography depicted in Elger's sketch. It is interesting that Elger's sketch does not depict what is stated in the Cameron catalog either, but maybe that refers to separate written notes? An additional image mosaic taken by Maurice Collins, from 08:44-09:26UT backs up Kerry's results.

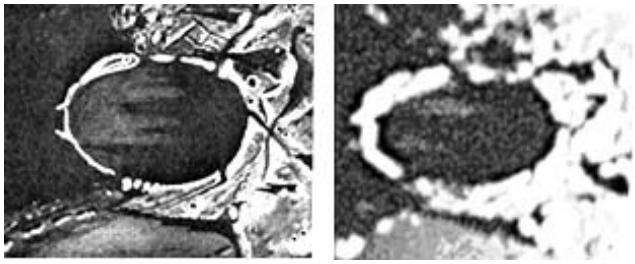


Figure 3. (**Left**) Elger's sketch from 1887. **(Right)** Kerry Kopert's image from 2012. North is at the top in pictures.

4) A Foggy Censorinus: On 1988 Mar 27/28 between 23:30 and 00:30UT, Marie Cook (using a 12″ reflector), found Censorinus to be foggy and fuzzy in appearance. The effect was not seen in adjacent areas. On 2012 Jan 03 UT 20:12-20:30 she re-observed under almost the same illumination conditions, but found that the crater appeared as a sharp point of light and not fuzzy. This implies that the effect seen in 1988 could possibly have been a real LTP?

5) Herodotus Pseudo Peak: The amateur astronomer Bartlett (Baltimore, USA), amongst other amateur astronomers, saw on occasions a central peak on the flat floored crater Herodotus, despite there not being a physical central peak there. According to Cameron's NASA catalog of LTP from 1978, under LTP ID No. #950, on the night of 1966 Jun 30 at UT 03:10-03:15 Bartlett saw a *"Bright pseudo-peak again vis. within floor shadow. Peak est. 5 bright. Had seen it at successive lunations in '66 - 4" x280*

refractor used.″ Cameron assigns a weight of 4 to this LTP report, but in the ALPO/BAA catalog we have a weight of 3 because only one observer was involved.

I simulated what Herodotus should have looked like with ALVIS software for Bartlett′s observing session in Baltimore. I can see no central peak, but there is a dip in the shadow from the eastern rim, on the floor of crater (see Figure 2). Could Bartlett have become confused by this under the seeing conditions that prevailed at the time, and under the limited resolution of the 4″ refractor being used?

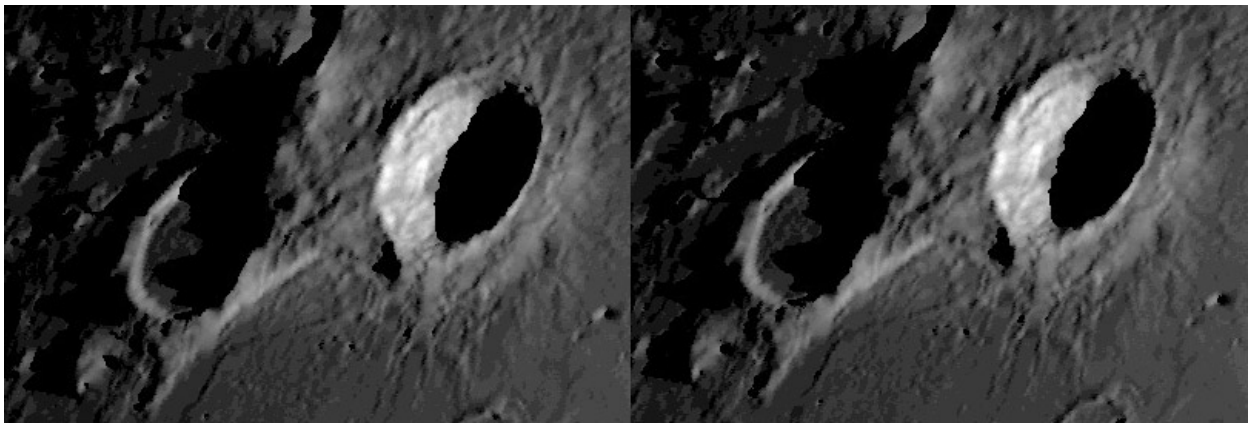


Figure 4. Computer simulation of the normal appearance of Herodotus during Bartlett's LTP from 1966 Jun 30, with north at the top. The Altitude and azimuth of the Sun at the centre of Herodotus for the mid point in this LTP session was $Alt_{\odot}$=3.4º, $Az_{\odot}$=90.2º. (Left) what the crater should have looked like at the start of the LTP session. (Right) What the crater should have looked like at the end of the LTP session.

Brendan Shaw attempted an imaging session of Herodotus during 2012 Jan 5th, in order to see if he could spot the pseudo peak and the results are shown in Figure 5. It appears that the Sun begins to break cover on the western edge if Herodotus at around 19:24UT. The closest similar illumination to Bartlett's 1966 Jun 30 LTP, according to Harry Jamieson's Lunar Observer's Toolkit, is Brendan's 20:20UT image because this is within 0.1º of the correct solar altitude, and within about 0.3º in solar azimuth (calculations centred upon the middle of Herodotus). The difference between Brendan's images and the ALVUS simulation shown in figure 4 is that ALVIS does not take into account the effects from the diameter of the Sun or diffraction effects, where as the images that Brendan are real images with all these effects occurring naturally.

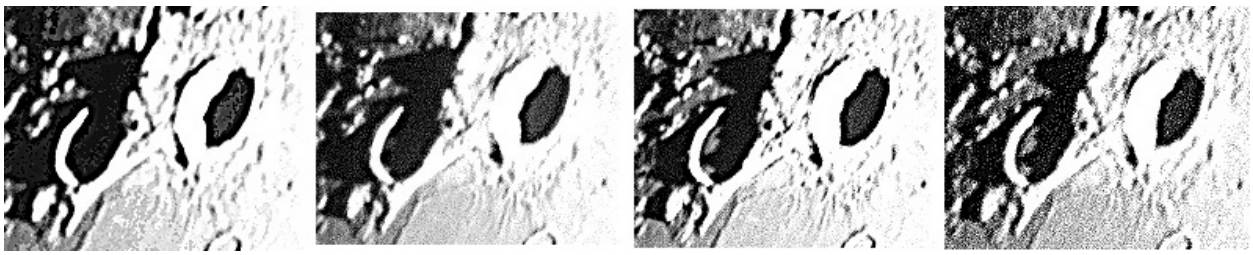


Figure 5. Bendan Shaw's image sequence of the shadow filled Herodotus on 2012 Jan 5th with north towards the top. These images have been sharpened and contrast enhanced to bring out details on the shadowed floor of Herodotus. (Far left) 19:24 UT, $Alt_{\odot}$=2.8º, $Az_{\odot}$=90.3º. (Left) 19:31 UT, $Alt_{\odot}$=2.9º, $Az_{\odot}$=90.4º. (Right) 20:20 UT, $Alt_{\odot}$=3.3º, $Az_{\odot}$=90.5º. (Far right) 20:51 UT, $Alt_{\odot}$=3.6º, $Az_{\odot}$=90.6º.

Because no pseudo peak is visible in Brendan's images, or the simulation, this leads to two possible explanations: 1) Bartlett somehow managed to mistake the central dip in the shadow (see Figure 4) on the floor of Herodotus for a central peak through his 4" refractor? or 2) Bartlett actually did see a LTP on the floor of Herodotus, possibly a sunlit dust cloud above the surface - though the mechanism by which this would happen is far from clear. It is probably a good idea to keep on looking out for other opportunities to see repeat illumination of other past LTP sightings of pseudo spots in Herodotus because these have been at least 14 other sightings, and several of these are by astronomers other than Bartlett, using larger instruments.

LTP Reports: Two candidate reports of LTPs were made in January, however these are both being assigned weights of 1 because, although the observers followed correct procedures in letting me know about these, there may be more mundane explanations. But of course we will not know for sure unless other observations made around the same time appear, or in the case of the Hahn report, we get some repeat illumination observations.

On 2012 Jan 09 Nick Hazel (Beverly, Yorkshire) was imaging the Moon with a Nikon D7000 camera with a tripod mounted 70-300 zoom lens (at max) with a 2x convertor, at f/9 with 1/320th sec exposures (ISO 400). In one of these, taken at 21:05UT was a very clear grey column effect cutting through the crater floor from the west and out onto the eastern rim. Not much detail can be seen in this column. It should be said though that there is a hint of this column effect in other images and I am not entirely convinced that the effect is not seeing related – but Nick did the right thing in sending me his images for checking.

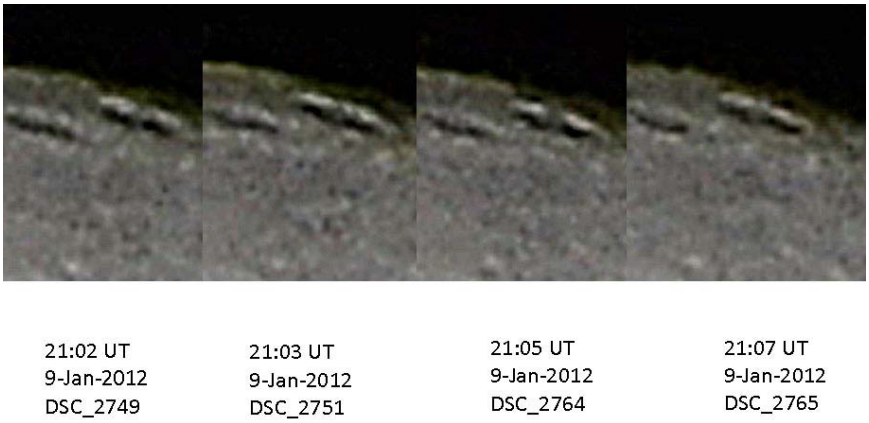


Figure 6. Nick Hazel's image sequence of Hahn crater. The column effect can be seen in the 21:05UT image

On 2012 Jan 30 at 16:30-16:40 UT, Lajos Bartha, from Budapest, Hungary, using a 70mm diameter refractor (x82, very clear sky), reported that Aristarchus in Earthshine was a bright spot, where as Copernicus was only weakly visible and Kepler was invisible. An image was obtained by a colleague of his, András Maczó at 20:34 UT, and sent to me. Although it shows Aristarchus as bright (see Figure 7), I would not say that it was exceptionally bright from what I have seen myself in the past, and although showing a lot of detail in Earthshine, it is difficult to be sure whether Aristarchus' apparent brightness was due to glare from internal reflections in the optics. At least it confirms that Kepler was more difficult to see than Copernicus, although the image was obtained much later than the visual observation. Anyway Aristarchus has many LTP reports associated with it in Earthshine, and one very simple way to look for these is to do time lapse imaging of Earthshine with accurate telescope tracking. This way we can monitor whether it is really changing in brightness, rather than a contrast effect from cloud reflectivity on Earth, or scattered light effects in the optics affecting image contrast. Of course if anybody else has images of Earthshine from 2012 Jan 30th then I would be delighted to examine them and report back.

Suggested Features to observe in March: For repeat illumination (only) LTP predictions for the coming month, these can be found on the following web site: http://users.aber.ac.uk/atc/tlp/tlp.htm. By re-observing and submitting your observations, we will get a clear understanding of what the feature ought to have looked like at the time. Only this way can we really fully analyze past LTP reports. 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.

Figure 7. A contrast and color enhanced version of an Earthshine from 2012 Jan 30th. Original image by András Maczó. North is at the top. Note the optical effects from glare from the bright side of the Moon, out of the picture towards the right.

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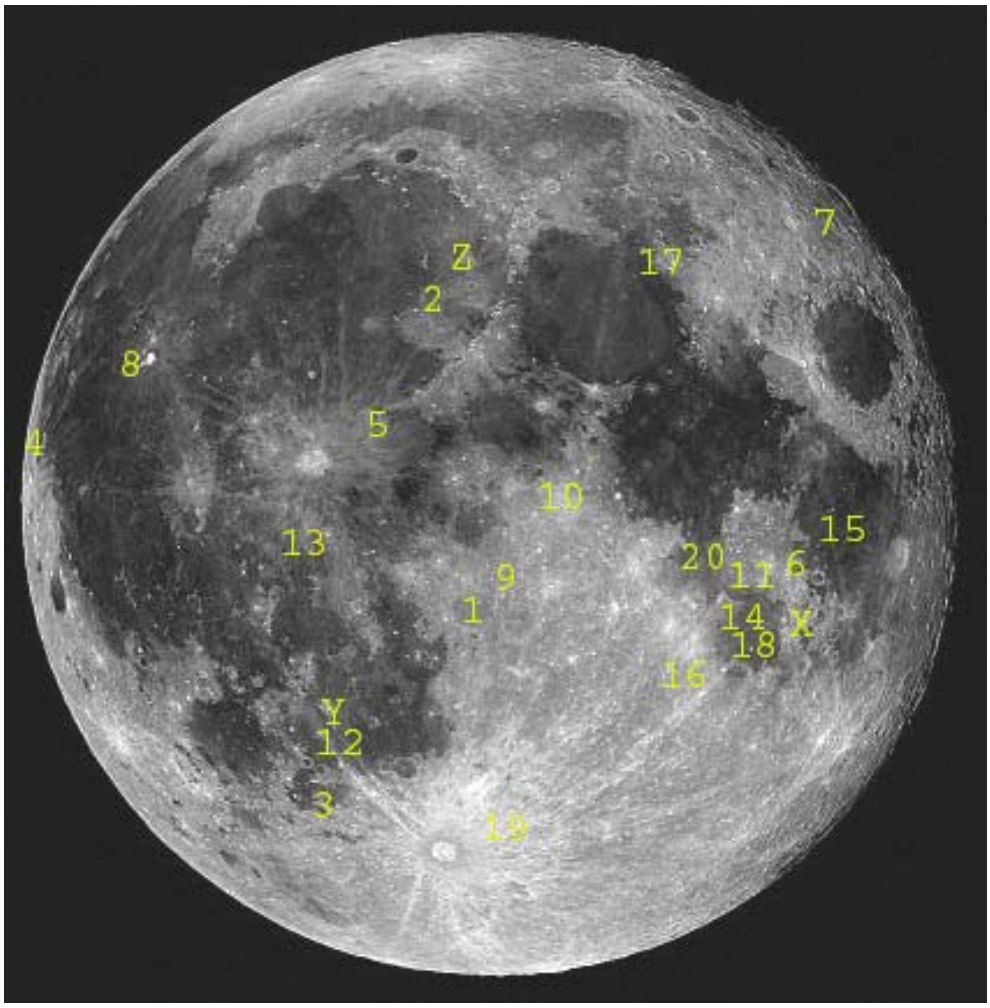
KEY TO IMAGES IN THIS ISSUE

1. **Alphonsus**
2. **Archimedes**
3. **Capuanus**
4. **Einstein**
5. **Eratosthenes**
6. **Gutenberg**
7. **Hahn**
8. **Herodotus**
9. **Hipparchus**
10. **Hyginus**
11. **Isidorus**
12. **Kies**
13. **Lansberg**
14. **Mare Nectaris**
15. **Messier**
16. **Polybius**
17. **Posidonius**
18. **Rosse**
19. **Stofler**
20. **Torricelli**



FOCUS ON targets

X = Pyrenees Mts. (May)
Y = Bullialdus (July)
Z = Aristillus (September)