THE LUNAR OBSERVER

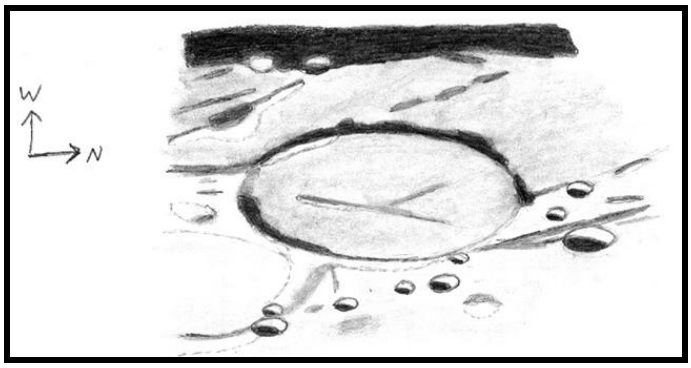
A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.

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 – NOVEMBER 2013

WARGENTIN



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
October 10, 2011 04:25-04:59 UT, 15 cm refl, 170x, seeing 6-8/10

I observed this crater on the evening of Oct. 9/10, 2011 after the moon hid 16 Piscium. This is a very unusual-looking feature south of Schickard. It appears to be generally a large, round plateau. There is a modest rim, typical of craters, at its south end, but not at its north end. The west side of Wargentin (away from the sun) cast a substantial, serrated shadow except for a gap near the north end. The east side of Wargentin was bright as it caught the morning sun. There is some interior shadow toward the south end from a likely raised rim there. This interior shadow is widest at the south end where it blends into a bright strip along west side shadow. This may be where a raised rim is catching sunlight. The interior surface of Wargentin is generally dusky. Two narrow, somewhat fuzzy lines make a Y-pattern inside Wargentin. These may be from low ridges since there is slight brightening on the sunward side along this pattern's southern end. A curved feature east of Wargentin is part of the rim of Nasmyth. Two pits are perched on it, the larger one being Nasmyth **D.** A wider rim part of Nasmyth extends south from Wargentin and may have two or three depressions. A crooked line of four craters lies north of Nasmyth D near the east rim of Wargentin. From south to north they are Wargentin P, K, L and **M.** Wargentin L is the largest of this quartet. Wargentin A is the conspicuous crater to the north; it is the second largest crater completely shown in this sketch. The two smaller craters west of A are Wargentin H and C. I drew an assortment of shadow strips and patches of varying intensity. One bit of shadowing is from a low hill near Wargentin L, and another is from a sizable mound southwest of Wargentin. The area very near the terminator was difficult to draw and may be generalized. There appears to be at least one crater in the area west of Wargentin. The area northwest of Wargentin does appear quite smooth and dusky.

LUNAR CALENDAR

NOVEMBER-DECEMBER 2013 (UT)

Nov. 03	05:00	Moon 1.3 Degrees WNW of Mercury
Nov. 03	12:48	New Moon (Start of Lunation 1124)
Nov. 03	12:48	Annular eclipse of Moon
Nov. 03	19:00	Moon 1.9 Degrees SSE of Saturn
Nov. 06	06:48	Extreme South Declination
Nov. 06	09:29	Moon at Perigee (365,361 km – 227,025 miles)
Nov. 06	24:00	Moon 8.0 Degrees N of Venus
Nov. 07	14:00	Moon 1.9 Degrees N of Pluto
Nov. 10	05:58	First Quarter
Nov. 11	06:00	Moon 5.5 Degrees NNW of Neptune
Nov. 14	00:00	Moon 3.2 Degrees NNW of Uranus
Nov. 17	15:15	Full Moon
Nov. 19	17:18	Extreme North Declination
Nov. 22	03:00	Moon 5.0 Degrees SSW of Jupiter
Nov. 22	09:51	Moon at Apogee (405,445 km – 251,932 miles)
Nov. 25	19:29	Last Quarter
Nov. 27	13:00	Moon 5.4 Degrees SSW of Mars
Dec. 01	08:00	Moon 1.5 Degrees SW of Saturn
Dec. 01	23:00	Moon 0.53 Degrees NE of Mercury
Dec. 03	00:21	New Moon (Start of Lunation 1125)
Dec. 03	16:42	Extreme South Declination
Dec. 04	10:16	Moon at Perigee (360,063 km – 223,733 miles)
Dec. 04	24:00	Moon 1.8 Degrees N of Pluto
Dec. 05	22:00	Moon 7.5 Degrees N of Venus
Dec. 08	15:00	Moon 5.4 Degrees NNW of Neptune
Dec. 09	15:12	First Quarter
Dec. 11	04:00	Moon 3.3 Degrees NNW of Uranus
Dec. 17	01:06	Extreme North Declination
Dec. 17	09:28	Full Moon
Dec. 19	04:00	Moon 5.0 Degrees SSW of Jupiter
Dec. 19	23:50	Moon at Apogee (406,267 km – 252,443 miles)
Dec. 25	13:49	Last Quarter
Dec. 25	24:00	Moon 4.4 Degrees SSW of Mars
Dec. 29	00:00	Moon 0.98 Degrees SSW of Saturn
Dec. 31	04:48	Extreme South Declination

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 nonmember 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.

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 :

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)

Additional commentary accompanying images is always welcome.

Items in bold are required. Submissions lacking this basic information will be discarded.

CALL FOR OBSERVATIONS: FOCUS ON: ARISTARCHUS

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 **January 2014** edition will be **Aristarchus.** 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 to your observing list and send your favorites to:

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

Deadline for inclusion in the Aristarchus article is December 20, 2013

FUTURE FOCUS ON ARTICLES:

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

Subject	TLO Issue	Deadline
Mare Frigoris	**March 2014**	**February 20, 2014**

SHOOTING THE MOON WITH A SMARTPHONE

Jay Albert

I bought my first smartphone, the HTC One, a few months ago. I hadn't thought about using the phone's camera for astrophotography until the ALCON 2013 Conference when I tried shooting the Sun through the eyepiece of a solar telescope which had been set up for conference participants during a lunch break. I managed to get two decent frames out of a couple of dozen frustrating tries by hand-holding the phone over the eyepiece. The results and disappointment were much worse this summer when I tried to take a photo of the Moon by hand-holding the phone over an eyepiece. I knew this was not going to work out.

Then I saw an ad for the Orion Steady Pix Universal Adapter for Smartphones (let's shorten that to "Orion Smartphone Adapter" for this article) and decided to give it a try. Mine arrived in early September and I used it for the first time the night of September 14th-15th. Being somewhat clumsy, I initially had a lot of trouble trying to set it up so that the phone would be directly over and aligned with the eyepiece…and stable. I tried first with the 80mm refractor with a helical focuser that is piggy-backed on my C11. After numerous attempts, I gave up in frustration. I then tried clamping the phone and adapter to a 9mm orthoscopic eyepiece and using it with my C11, which also has the benefit of a JMI feather-touch type of focuser (very smooth). I managed to get the camera over the eyepiece and stable after only a few tries. I did not use the zoom function on the HTC One's camera and found that the camera's chip is not large enough to capture the entire field. But I did get some decent photos. I selected the best and cropped and edited them in Photoshop Elements 9. I was shooting through thin cirrus clouds that night, which contributed to a slight spurious color cast, so I converted the photo to black & white. Figure 1 is the resulting image of the smooth-floored crater Plato, the lunar Alps with the Alpine Valley and the bulls-eye crater Cassini at the bottom of the frame. I want to again mention that this is a single frame; I did not take videos and did not stack and process anything in Registax.

The Plato image is not as good or detailed as I've been able to get with my Celestron Neximage 5 Solar System Camera, but I was encouraged enough to try again. After all, the HTC One and Orion Smartphone Adapter are easier carry around than the Neximage 5 camera and my wife's laptop computer and there's no complicated software to operate with the phone. I tried

Figure 1. Plato to Cassini 2013-09-15, 01:56UT

the Orion Smartphone Adapter again the night of September 20th-21st and was able to set up easier and faster than the first time. This time I also used the smartphone's digital zoom to adjust the view to the main features I wanted to capture. I took a few to several frames of each feature and uploaded them to my computer the next day. I selected the best frame for each and adjusted the brightness, contrast and sharpness in Photoshop Elements 9. Here are a few of the results:

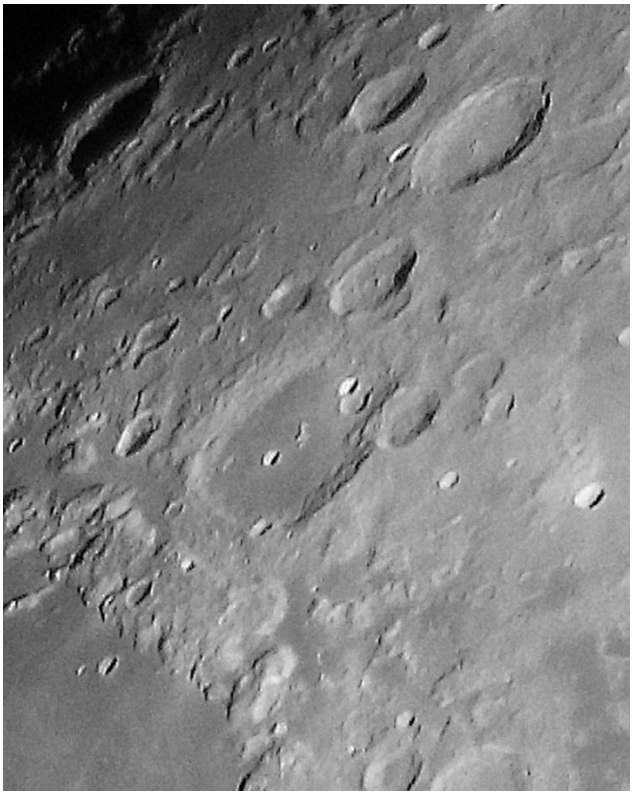


Figure 2. Cleomedes, Burckhardt & Geminus 9/21, 04:24UT

Figure 3. Endymion, Atlas & Hercules 9/21, 04:25UT

Cleomedes (figure 2) is the large (126 km), smooth-floored crater above the north shore of Mare Crisium at the bottom of the frame. In a line above Cleomedes are the craters Burckhardt (57 km) and Geminus (86 km) at the top right of the frame. Cleomedes has some small, newer craters on its floor and all three craters show small central peaks.

Endymion (figure 3) is the large (125 km), smooth-floored crater near the Moon's terminator at the top of the frame. It has high, prominent walls and its floor is not marred by any fresh craterlets. Atlas (87 km) is below Endymion. It is interesting for its ring of central mountain peaks and two prominent patches of dark material on its floor. Hercules (69 km) lies to the right of Atlas and has a fairly large craterlet on its floor.

The crater Petavius (figure 4) (177 km) is a popular target for lunar observers for its large size, large complex of high central peaks and, most notably, for its prominent rille connecting its central peak complex with its southwest wall (lower right wall in this image). If you look closely, you can see a much smaller, thinner rille going north (up) from the central peaks. Petavius also has a dark patch at the base of its north wall.

Langrenus (figure 5) (132 km) is the large, fresh looking crater near the top of the frame. Its high, terraced eastern wall is brightly lit by the setting sun, as is its prominent central peak. To the left beyond Langrenus lies the Moon's terminator and to the right (west) lies Mare Fecunditatis. Below Langrenus lies the older, much eroded crater Vendelinus (147 km). Its walls are much lower than those of Petavius and partially obliterated by newer craters while its floor is filled with mare lavas.

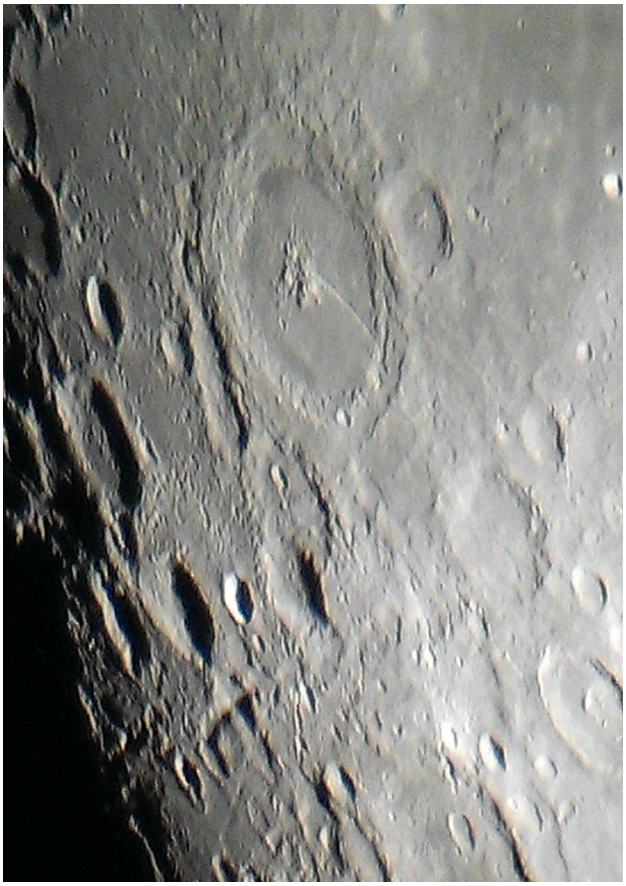


Figure 4. Petavius 9/21, 04:22UT

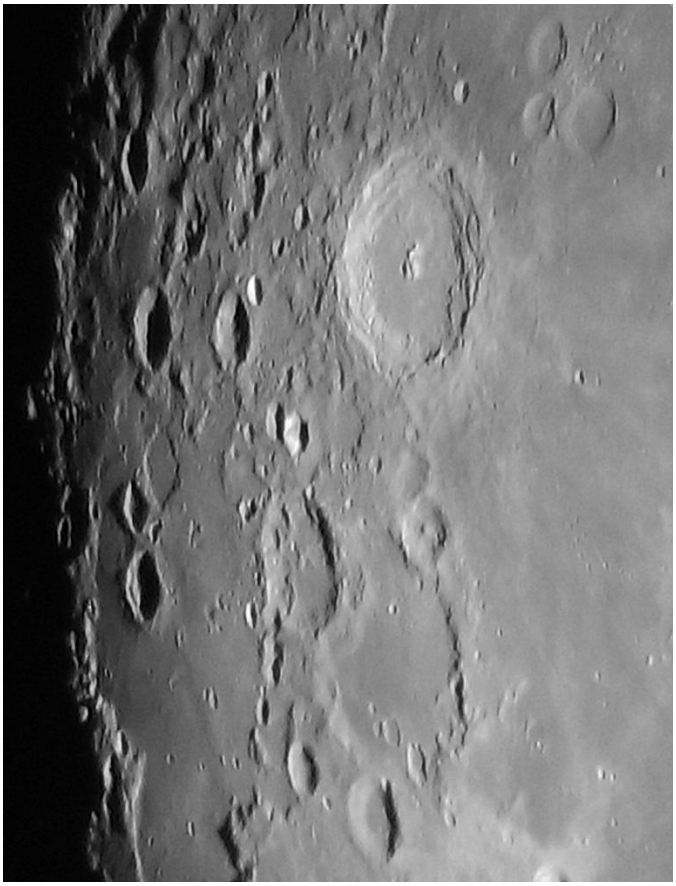


Figure 5. Langrenus & Vendelinus 9/21, 04:23UT

All of these September 15th images were taken less than two days after the full Moon, so the terminator where night is falling is in the east to the left and the Sun is shining as it descends in the west to the right.

****

FOCUS ON: SCHICKARD-WARGENTIN

By Wayne Bailey

Coordinator: Lunar Topographical Studies

Schickard and Wargentin are two easily recognized craters in a part of the southwest quadrant of the moon that can be a little difficult to navigate. Schickard stands out under low angle illumination (fig. 1a) because of its large size. With higher angle illumination (fig.1b) the bold albedo patterns on its floor stand out. Neighboring Wargentin, although smaller, is recognizable by its interior which is flooded up to its rim,

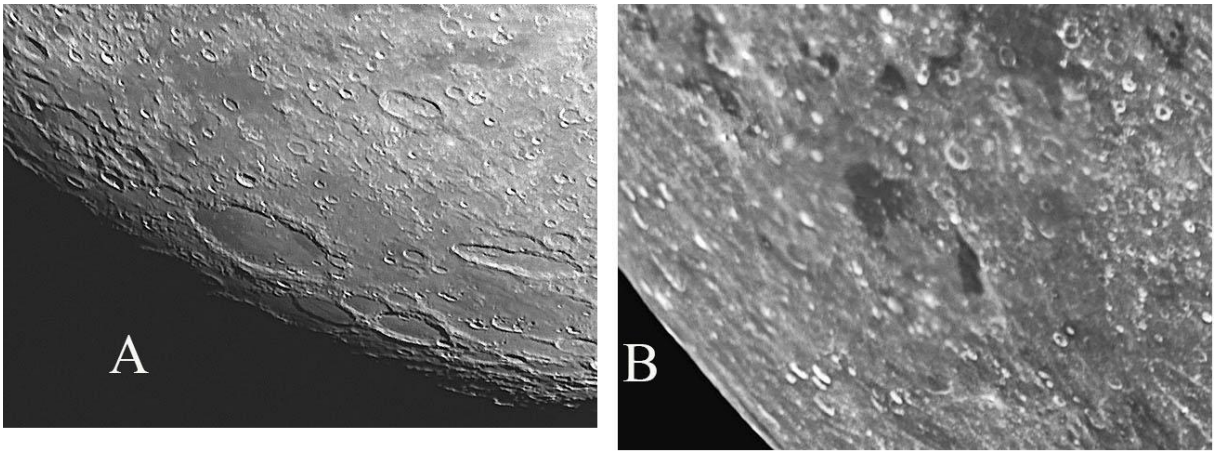


Figure 1. ***Schickard under low and high angle illumination*** *– William Dembowski, Windber, Pennsylvania, USA. Celestron 9.25" SCT f/10, Imaging Source DMK41,UV/IR filter.*

A. August 12, 2011 01:19 UT Colongitude 64.9, Seeing 4/10.

B. October 6, 2009 02:14 UT Colongitude 116.9, Seeing 5/10.

giving it the appearance of a plateau or mesa (fig. 2). Because this pair is near the western limb, they are illuminated from shortly before full moon until shortly before new moon, mostly during the waning phases of the lunation. This means that they are best observed during the latter half of the night, not the early evening hours, a fact that some find inconvenient.

Figure 2. ***Wargentin & Schickard -*** *Richard Hill – Tucson, Arizona, USA October 2, 2009 05:42UT. Seeing 8/10. colong 70.6º. C-14 f/17.6 (1.6x barlow) SCT, DMK21AU04. UV/IR blocking filter.*

Another result of being located near the western limb is that the transition from very low angle illumination as the sunrise terminator passes, to shadowless lighting occurs quickly, within the few days between local sunrise and full moon (figs. 1-5). The reverse transition, from full phase to sunset proceeds much more slowly.

Wargentin's interest lies mainly in its unusual, lava filled interior. It appears to be flooded essentially to its rim. The southern rim extends slightly above the flooded interior, but it appears that the lava may have slightly overflowed parts of the northeast and southwest rim. A short section of the rim near Wargentin L appears smoother than the rest, and there may be overflows through low spots in the southwest rim. If so, though, the overflow volume seems to be small, since it doesn't appear to have noticeably affected regions much beyond the walls. Other than a few tiny pits on the flooded surface, the only features visible are a Y-shaped pattern of wrinkle ridges (fig. 2 and also see the accompanying drawing and notes by Robert Hays). To me, an interesting question is why the lava flooding Wargentin's interior rose so much higher above the exterior surroundings than is typical of other floor flooded craters, and why did the filling apparently stop before significantly overflowing?

Figure 3. ***Schickard & Wargentin. Mike Boschat,*** *Halifax, Nova Scotia, Canada. September 14, 201323:30 UT. C8, f/10, Seeing 6/10, Transparency 5/6, Phillips SPC900NC. Colongitude 30.3º.*

Turning to Schickard, close examination will show both linear features on the walls and crater chains that appear to be aligned to Mare Orientale (fig. 4). Gouges on the northeast wall are perpendicular to Mare Orientale, but may be aligned to Mare Humorum. These seem to indicate that Schickard predates the creation of the Humorum and Orientale basins.

As with many large craters, the floor of Schickard has been flooded by lava, creating a flat bottomed, relatively shallow crater. The dark albedo markings are typical for mare type basalt flooding. The light, somewhat V-shaped band appears to be highland material. Spectral data supports these distinctions. The light material appears to be debris from the formation of Mare Orientale that overlies the basalt floor. The existence of dark-halo craters that have penetrated through this thin layer to the underlying dark basalts supports this idea. But Orientale ejecta would likely have covered the floor uniformly, not just the central band. So later lava flows must have covered the northern and southern sections of the floor with darker material. Most of the craters on Schickard's floor seem to occur in the light area which also indicates that this surface has been exposed longer (fig. 5).

Figure 4. ***Schickard.*** ***Marnix Praet****–Stekene, Belgium. September 6, 2013 UT. 10" Newtonian 3x barlow, DMK21AU618, red filter.*

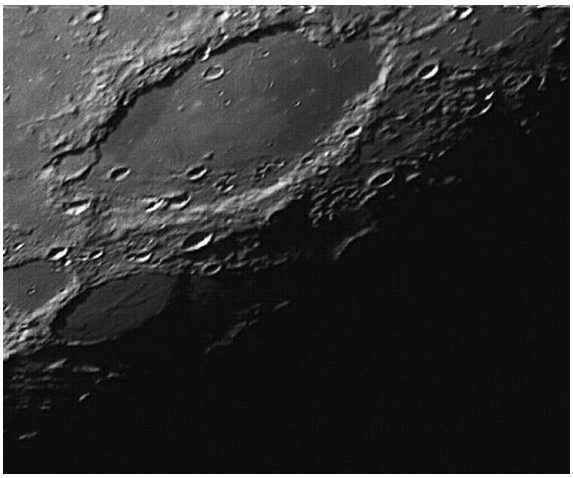


Figure 5. ***Jay Albert****-Lake Worth, Florida USA. August 19, 2013 03:24 UT. Seeing 5-6/10 Transparency 3/6. C-11, NextImage 5.*

In closing, this is an area that may not be the most convenient to observer, but careful, thoughtful, observation will raise interesting questions. Can all of them be answered without in situ investigations?

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.
Chong, S.M., Albert C.H. Lim, & P.S. Ang. 2002. Photographic Atlas of the Moon. Cambridge University Press, New York.
Chu, Alan, Wolfgang Paech, Mario Wigand & Storm Dunlop. 2012. The Cambridge Photographic Moon Atlas. Cambridge University Press, New York.
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.
Schultz, Peter. 1972. Moon Morphology. University of Texas Press, Austin.
Wlasuk, Peter. 2000. Observing the Moon. Springer-Verlag, London.
Wood, Charles. 2003. The Moon: A Personal View. Sky Publishing Corp. Cambridge.
Wood, Charles & Maurice Collins. 2012. 21st Century Atlas of the Moon. Lunar Publishing, UIAI Inc., Wheeling.
The-Moon Wiki. http://the-moon.wikispaces.com/Introduction

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 image of Schickard-Wargentin.

WILLIAM DEMBOWSKI – WINDBER, PENNSYLVANIA, USA. Digital images of Schickard-Wargentin.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Boole-Repsold, Cavalerius-Mare Orientale, Einstein, Grimaldi-Byrgius, Harding-Sruve, Krafft-Riccioli, Rocca-Byrgius, Russell-Olbers & Volta-Lavoisier.

PETER GREGO – ST. DENNIS, CORNWALL, UK. Drawing of Hippalus.

HAYS, ROBERT - WORTH, ILLINOIS, USA. Drawings of Bohnenberger & Wargentin.

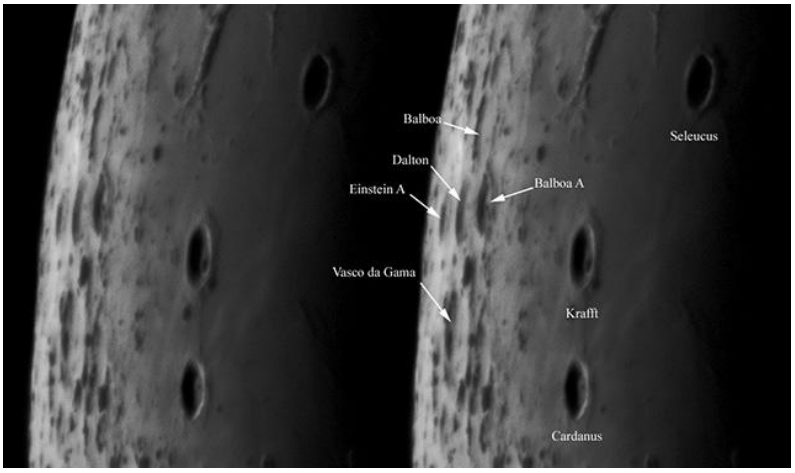
RICHARD HILL – TUCSON, ARIZONA, USA. Digital images of Clavius, Copernicus(2), Montes Alpes-Sinus Iridum, Playfair, Ptolemaeus-Arzachel & Tycho(2).

DAMIAN PEACH-SELSEY, WEST SUSSEX, UNITED KINGDOM. Digital images of Fracastorius, Moretus, Piccolomini & Posidonius.

ROBERT REEVES-SAN ANTONIO, TEXAS, USA. Digital image of Mare Crisium, Lacus Mortis-Lamont, East limb waning terminator, Waning Moon, Pallas-Ariadaeus, Plato-Aristoteles, Rima & Rupes Cauchy.

****

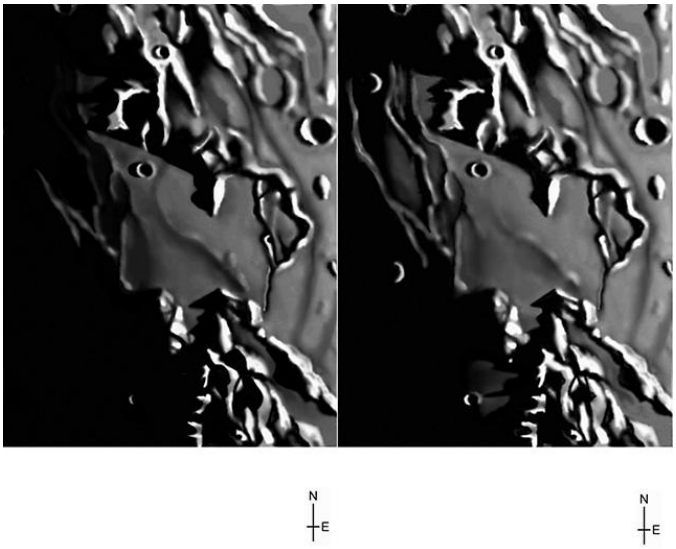
RECENT TOPOGRAPHICAL OBSERVATIONS



.**EINSTEIN** - Howard Eskildsen-Ocala, Florida, USA. October 2, 2013 10:50 UT. Seeing 7/10, Transparency 5/6. 6" f/8 refractor, Explore Scientific lens, 2x barlow, DMK 41AU02.AS, IR block & V block filters.

Had excellent seeing this morning, but the moon was only about 20 degrees above the horizon. It had libration that slightly favored the western side. It is surprisingly difficult to get good images of the western moon under this illumination, but there is much worth observing. The crater Einstein hides along the western libration zone of the moon and often is not visible at all from Earth. In this image it is very difficult to determine the margins of the crater due to the sun angle, but Einstein A is nearly dead center in the larger crater. The northen margin of Einstein ends behind the mid portion of Balboa and the southern margin behind mid Vasco Da Gama (note it is "Da Gama", not "De Gama"). Other craters are easily spotted and can serve as guides to elusive Einstein.

RECENT TOPOGRAPHICAL OBSERVATIONS

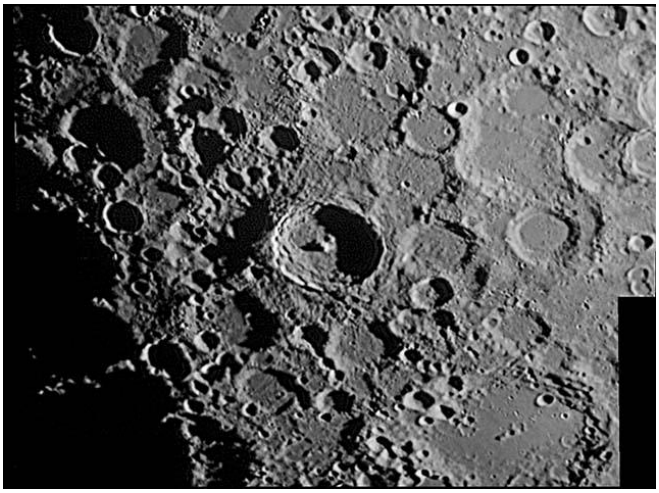


HIPPALUS & PROMENTORIUM KELVIN

Sunrise- Peter Grego, St. Dennis, Cornwall, UK. October 14, 2013. Seeing AII, cloud separated sessions. 300 mm Newtonian, 200x.

Left: 20:45-21:30 UT. Colong 35.3-35.7º.
Right: 21:45-22:20 UT. Colong 35.8-36.1º.

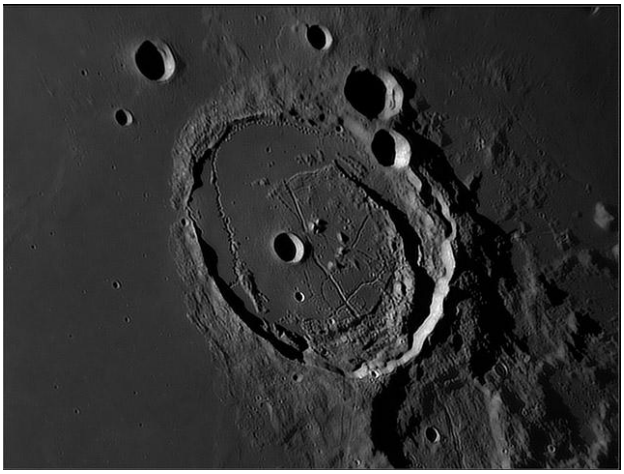
A follow-up sequential observation of an interesting region of the Moon, an area crossed by arcuate faults on the eastern shoreline of Mare Humorum, further to an observation of the same area with the same instrument, magnification and seeing, and under similar lighting that was made on 2013 April 20 (see TLO May 2013, p12). In this observation the Sun was several degrees higher over Hippalus than it was at the time of the previous observation. This makes a good sequence with an observation made on 2008 December 7 at a very low morning illumination (see BAA LSC, January 2009, 46, 1, p1 & p39). Hippalus itself was easily identifiable with its scalloped northern and eastern walls, and most of the feature's interior was free of shadow. A line of shadow was cast by the eastern rim, while the northern rim (a promontory) was the brightest part of Hippalus' wall and cast a shadow westward over the mare, a shadow whose apex was a muted 'peak', not as long or as pointed as that observed in my observation of 2013 April 20. The main Rima Hippalus was most clearly discernible within the crater and its path south across the mare to the mountains. There were briefly-held clear indications of several other rilles, but while their dusky arcuate nature was apparent their bright interior valley walls were not at all obvious (like it was in the main rille), so they have not been drawn as such. The intensity of the rilles did not appear to change much between the beginning of Obs. 1 and the end of Obs. 2. The change in illumination revealed more rilles to the west in the mare, lit the outer eastern wall of Gassendi O and D, while Vitello E, initially seen by its illuminated inner western wall, became illuminated on its eastern glacis.



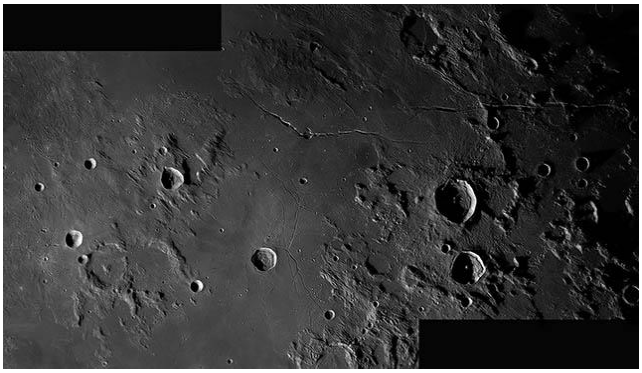
TYCHO – Richard Hill – Tucson, Arizona, USA September 14, 2013 02:16 UT. Seeing 7/10. TEC 8" f/20 MAK-CASS, DMK21AU04. 656.3 nm filter.

This crater is usually imaged in higher sun showing the albedo features of the rays. At lower sun we get to see the ejecta closer in. It's interesting how some of the ejecta seems to be aligned tangent to the crater walls rather than radially from the center. This must be associated with the ejecta scars at the bottom of the image coming from another impact (Clavius?). Notice the sharp right angle made by the northern wall of Tycho D and the finger of illuminated peaks to the left that is the northern wall of Longomontanus. I like the floor of Saussure appearing as a raised plateau too.

RECENT TOPOGRAPHICAL OBSERVATIONS



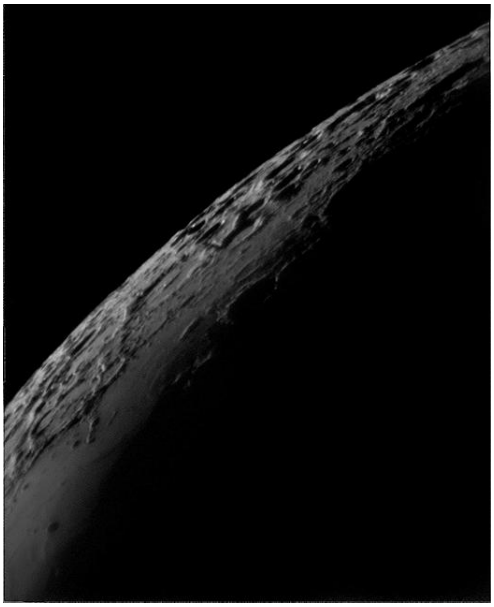
POSIDONIUS–Damian Peach –Selsey, West Sussex, United Kingdom. September 24, 2013.



PALLAS-ARIADAEUS-Robert Reeves-San Antonio, Texas USA. October 25, 2013 UT. C-11 Edge HD SCT, f/10, SKYRIS 274.

****

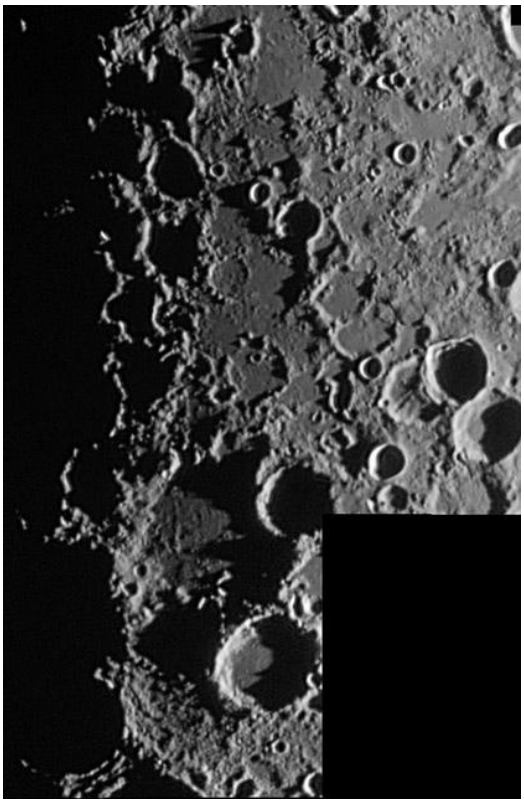
ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



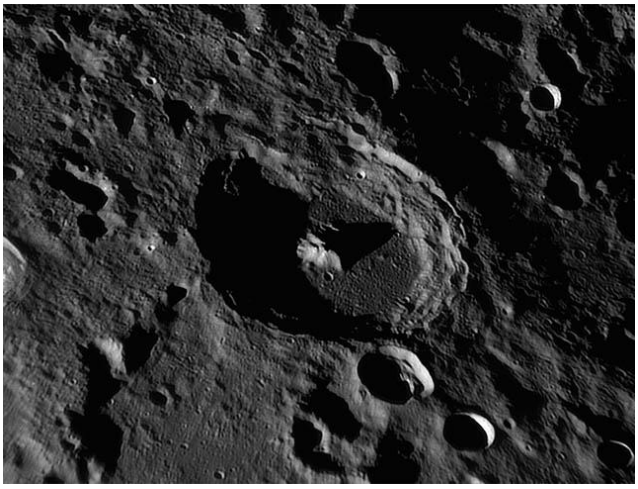
BOOLE-REPSOLD - Howard Eskildsen-Ocala, Florida, USA. October 2, 2013 11:02 UT. Seeing 7/10, Transparency 5/6. 6" f/8 refractor, Explore Scientific lens, 2x barlow, DMK 41AU02.AS, IR block & V block filters.

This image shows scars of the Imbrium impact radiating towards the limb on the upper half of the image. One particularly deep gouge skirts the northern boarder of the low, flat crater Xenophanes just below the middle of the image.

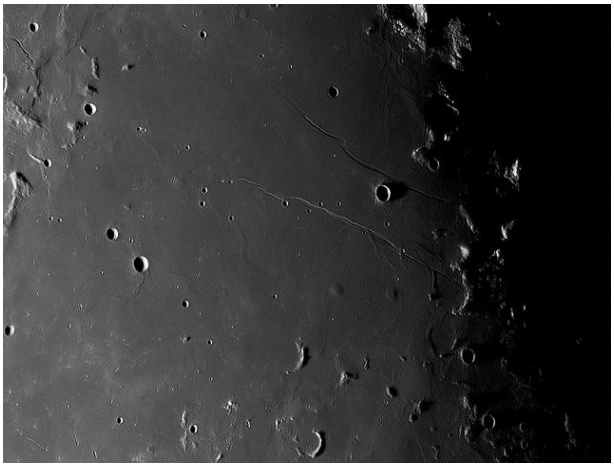
ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



PLAYFAIR – Richard Hill – Tucson, Arizona, USA September 12, 2013 02:04 UT. Seeing 7/10. TEC 8" f/20 MAK-CASS, DMK21AU04.



PICCOLOMINI–Damian Peach –Selsey, West Sussex, United Kingdom. September 24, 2013. Seeing variable, Transparency poor, heavy dew.



RIMA & RUPES CAUCHY-Robert Reeves-San Antonio, Texas USA. October 25, 2013 UT. C-11 Edge HD SCT, f/10, SKYRIS 274.

I have been stalking Rupes and Rima Cauchy for years with my C-8 and all I got was something that looked like two kitten's whiskers. Now, by accident, I fall upon it at the right moment with the C-11. Its amazing what three extra inches of aperture will do! look at the two locanic domes just south of the Cauchy features. There is a third at the top of the field.

One thing is really apparent with the C-11 and Skyris if the seeing is good...there are far more riles and domes scattered about the Moon than i ever realized. I couldn't see them in the C-8. Plus I am awash in images that are showing zillions of kilometer-sized craterlets in areas that previously looked smooth. Its amazing.

LUNAR TRANSIENT PHENOMENA

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

LTP NEWSLETTER – NOVEMBER 2013

Dr. Anthony Cook - Coordinator

Observations for September were received from the following observers: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Aristarchus, Censorinus, Copernicus, Daniell, Plato, Proclus, Ross D, and the western limb. Maurice Collins (New Zealand - RASNZ) imaged: Aristarchus, Clavius, Copernicus, Gassendi, Oceanus Procellarum, Tycho, and took whole disk images of the Moon. Marie Cook (Mundesley, UK - BAA) observed Aristarchus, Herodotus, Proclus, and Torricelli B. Rik Hill (Tucson, AZ, USA – ALPO) imaged Copernicus, Playfair, and Tycho. Robert Reeves (San Antonio, TX, USA) imaged several features. Thierry Speth (France) imaged: Furnerius, Mare Crisium and several other features. Franco Taccogna (Italy – UAI) imaged Gassendi and Mons Piton.

News: NASA was expecting to do a LADEE web-seminar in early October, but this was cancelled due to the US government shutdown. The web seminar was intended to coordinate amateur astronomer observing of impact flashes with one of the mission objectives, namely to see if dust detected in orbit correlated with impact flashes seen from Earth. Fortunately several non-government, US and international, amateur astronomers are already searching for impact flashes, and this is being coordinated by Brian Cudnik (cudnik@sbcglobal.net). Please get in contact with him if you would like to join in, or visit his web site at: http://alpo-astronomy.org/lunarupload/lunimpacts.htm . You basically need just a low light level camera, capable of imaging a large area of the lunar surface on the night side such that it can detect stars on the limb as faint as magnitude 9 or 10 in an exposure of say 1/25th (PAL), or 1/30th (NTSC), and a means to record the video output without dropped video frames in a non-MPEG compressed format e.g. Video 8 which stores 8-bit low compression (high quality) JPEG images for each frame. AVI raw video, with no compression is even better, though this will eat up disk space rapidly. Occultation or meteor observers may have the necessary hardware to participate in this impact flash project work. Software to search for the impact flashes in the video is called Lunar Scan and is available for free download from: http://www.lunarimpacts.com/lunarscan15.zip

I was saddened to learn about the passing away of BAA observer Phil Morgan this year. Phil was an active observer of both the ALPO and BAA lunar sections. Apart from his excellent drawings, which had a style and accuracy similar to Harold Hills, he also has 4 LTPs listed as being discovered by him. He was also able to show that some past reports of a milky appearance on the floor of shadow filled Plato, was probably caused by internal scattering of light off of the illuminated rim of the crater – though we still encourage observers to attempt repeat illumination predictions of this.

Jill Scambler has pointed out a typo is last month's newsletter, namely "Janssen" in Figure 1, should have been "Jansen". Jill also reports that she has been doing further analysis on LTP's to do with their geographical distribution across the Moon.

Kevin Kilburn emailed me concerning the October newsletter, in particular the Gassendi LTP observations of 1967 Jan 21, about something that was not in the NASA report, namely that Kevin was observing independently no more than about 3 miles west of Mike Duckworth. Mike observed the Gassendi LTP visually but Kevin was observing using a 'moonblink' with a red and blue filter wheel – he detected a reddish patch on the NE wall of Gassendi north of the bright wall that the LSC article image shows. It was not on the wall itself, but instead it was in a sort of hollow on the east side of the wall.

Kevin also sent me two images of Aristarchus, one made by himself in 2012, and a color/topography composite made by Dr Phil Masding using color draping (See Fig 1 (left)). In Kevin's

opinion, the evidence suggests it is real surface color on the NE inner crater wall being illuminated by bright sunlight and he is confident that violet/blue LTP's, seen in and around Aristarchus for decades, are based on observations of surface color at the limit of the observer's naked eye color perception. I too share this view, but would still like to put LTP observations to the test with repeat illumination observations, as it is a well know fact that the Moon's surface can change color slightly with different viewing and illumination conditions, especially if opposite slopes in the topography have compositional differences in their coatings– though the effect is pretty faint to detect. Just to re-enforce Kevin's view, here are some comments from Jay Albert: - in addition to the photos in figure 7 (from last month), Jay imaged Aristarchus the night of August 19th too (See Fig 1 (right)). After color correction his adjusted photo does show a couple of blue points on the NW rim as well as a dark area on the north wall just below the rim. Neither of these were seen visually at the time.

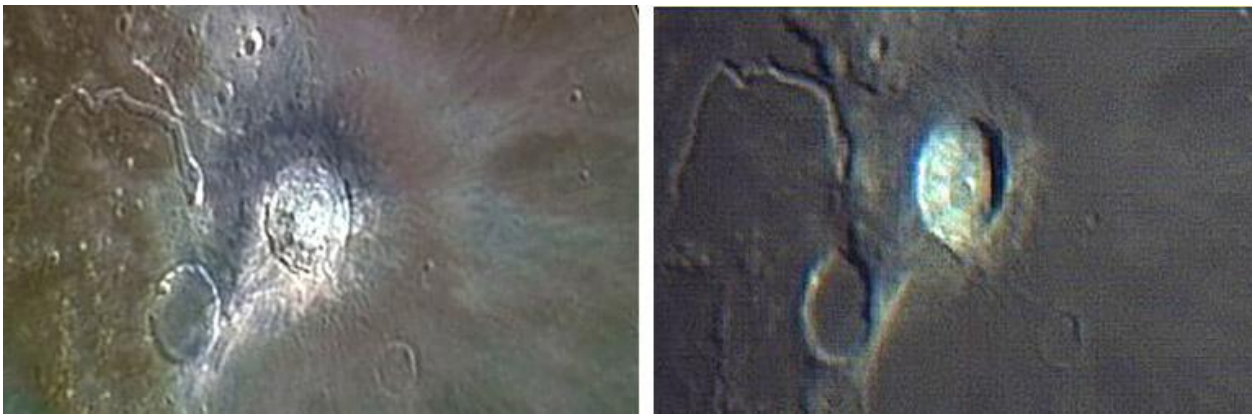


Figure 1. *Images of Aristarchus oriented with north towards the top.* ***(Left)*** *A natural color/topography composite made by Dr Phil Masding and Kevin Kilburn, using "color draping". This utilized images published on line by Alvares (color) and Roel (background topography).* ***(Right)*** *A color image of Aristarchus taken by Jay Albert on 2013 Aug 19 UT 03:03.*

Also, concerning the previous October newsletter, Jay Albert comments that the left photo in figure 3 (from last month) actually shows four craterlets on the floor of Plato, rather than three. *"If you look closely, you can see that the craterlet in the north is actually the double craterlet that is usually seen unless the seeing or transparency are really poor. I also wanted to mention that I have often found the floor of Plato to be darker than the mare to the north and the south, and have commented on that in some of my previous LTP Observing Reports, - I think it's rather normal"*.

Martin Mobberley, a former president of the BAA and an accomplished observer, has published a biography "It Came from Outer Space Wearing an RAF Blazer!" about Patrick Moore. I mention it here, because it has several references to LTPs and observing programmes from the past. This includes some of Patrick's observations, and BAA LTP programme issues, from the 1960's to the 1990's; also Patrick's reaction to a critical article about LTP in the Sky and Telescope, back in 1999, and a subsequent book by the same authors: "Epic Moon: A History of Lunar Exploration in the Age of the Telescope". As yet I have only gotten past the first few chapters due to academic pressure of work - but I will definitely finish it off and give a more thorough comment at a later date. However by skimming through later pages looking for mentions on LTP, the book appears to give a rather critical author's opinion of LTP in general. Nevertheless, I have learnt a lot of new facts about Patrick Moore, and suspect that at least some of the LTP records uncovered will be useful for updating the LTP database. However please be aware that if you have good memories of Patrick Moore, and all that he achieved, then there maybe parts of the book that might shatter some of these views, and if you do not like this, then you could try reading:"Patrick Moore: The Autobiography" instead, or indeed both books together for a comparison.

LTP Reports: No LTPs were reported in September.

Routine Reports: Here are a selection of reports received for September that can help to re-assess some past LTP observations.

Mons Piton: On 2013 Sep 12 UT 17:15-18:10 UAI observer Franco Taccogna imaged Mons Piton under exactly the same illumination conditions as to a 1983 LTP reported in the Cameron catalog:

On 1983 May 20 at UT00:00-03:00 K. Marshall (Medellin, Columbia) noted that Mons Piton was too bright near the terminator and was surrounded by shadow. A sketch was made. The mountain appeared segmented with one thin shadow line. The mountain looked like a Mexican Sombrero hat. The CED brightness measurements were normal Piton=3.6, Proclus=3.5 and Censorinus=3.7. The Cameron 2006 catalog ID=221 and the weight=3. The ALPO/BAA weight=2.

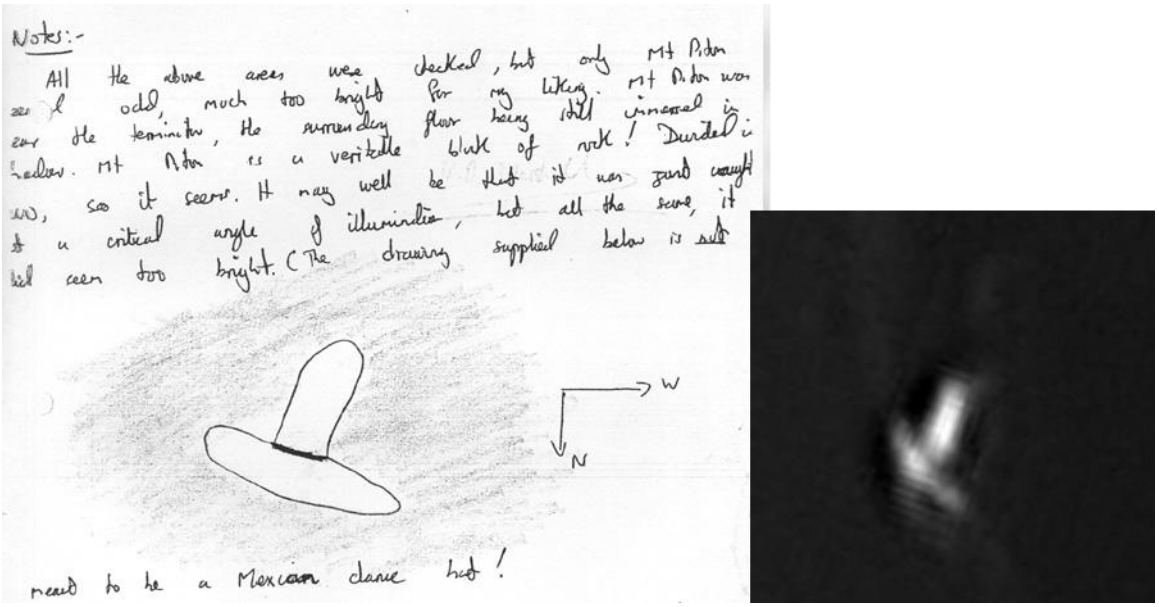


***Figure 2**. Images orientated with north towards the bottom. **(Left)** An extract from Kevin Marshall's 1983 LTP report on Piton. **(Right)** An extract of an image of the region around Mons Piton, taken by Franco Taccogna (UAI) on 2013 Sep 12 UT 17:32 – this has been over enlarged and reoriented to match the Marshall sketch..*

Franco's image can be seen in Figure 2, alongside the original Kevin Marshall report. It is clear that the "Mexican Sombrero Hat" appearance is perfectly normal, and so too is the thin shadow line. Regarding Kevin's comments, he does not specifically say that what he has seen was a LTP, just that Mons Piton was very bright and appeared "odd", but offers an explanation that it might have been due to the Sun catching a sunward facing slope. His CED brightness readings were 3.7 for Censorinus, 3.6 for Mons Piton, 3.5 for Proclus, and 2.7 for Torricelli B. Franco's image does shows Mons Piton as bright, but it is difficult to say whether it is abnormally so. Therefore I will reduce the weight of the Marshall LTP from a 2 to a 1.

Daniell: On 2013 Sep 15 UT 00:40-01:10 Jay Albert observed this crater under similar illumination to a LTP seen by Marcus Price back in 1979:

Daniell 1979 May 06 UT 20:30-20:45 Observed by Price (Camberley, England, Seeing III, Transparency: Poor) "Obscuration seen, Whilst the NW interior was normal, the SE was somewhat fainter and less distinct." A BAA Lunar Section Report. Cameron 2006 Extension Catalog ID=52 and weight=2. ALPO/BAA weight=2.

Jay reports: "*NW and W walls were very bright. The crater's floor was dark in the W and NW, but lighter on the SE floor. The NW wall was much more prominent than the SE wall, although the latter was clearly seen with the thinnest strip of shadow at the base of its interior. Daniell's appearance was very similar to the LTP description, except there was no obscuration seen- even through the haze and thin cirrus. I used 311x and observed from 00:40 to 01:10UT*. This report does not clear up why detail was obscured back in

1979 on the south east, though possible explanations might be libration or atmospheric transparency related. Until we get more repeat illumination observations, this LTP will remain at a weight of 2.

Censorinus: On 2013 Sep 15 UT 08:04-08:58 Maurice Collins observed this crater under the same illumination conditions to a LTP seen by Brandli back in 1969:

Censorinus 1969 Nov 19 UT 1922 Observed by Brandli (Wald, Switzerland, 6" reflector, x90) "Brightening -- photo, (the author, WBC, cannot verify from photo. It is brighter, but so are Proc. & Dionys. -- it being between. i.e. Proc. > Censor. > Dionys. Apollo 12 watch)." NASA catalog weight=5 (very high). NASA catalog ID #1220. ALPO/BAA weight=2.

Maurice captured an image mosaic at this time, and as we can see from Fig. 3, although the three craters are a bit saturated, it does look like the order of brightness goes: Proclus > Censorinus > Dionysius, exactly as the above report suggests. Now of course this is not a repeat libration+illumination observation, and libration can sometimes make a difference to relative brightness of features, especially on slopes. Alas we do not have the original photograph to be able to determine if a brightening has taken place. However in view of the similarity, I am prepared to lower the ALPO/BAA weight from a 2 to a 1.

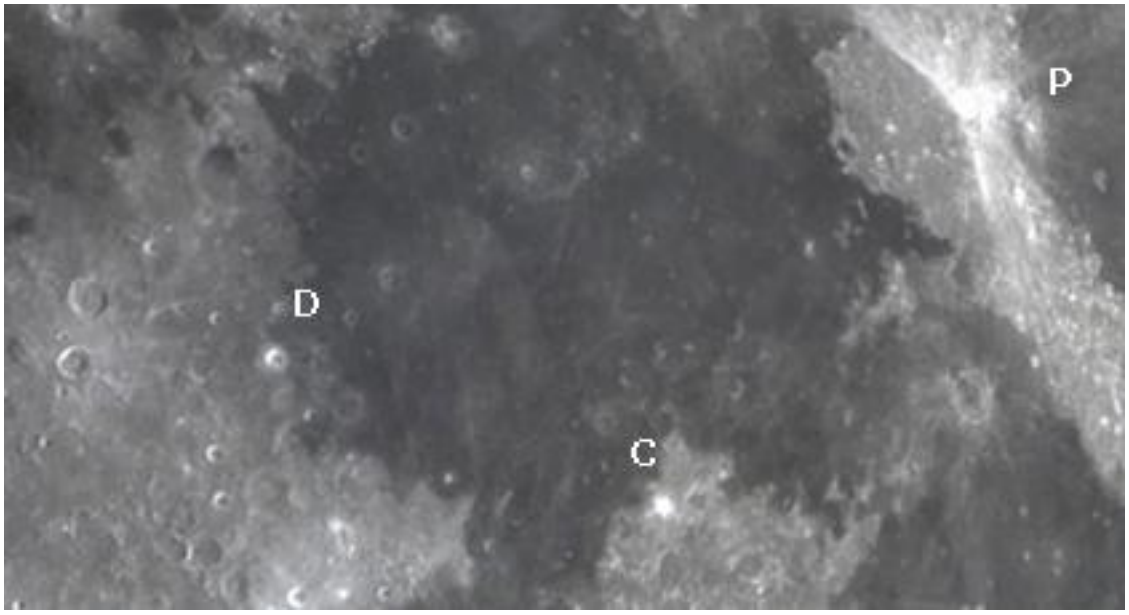


Figure 3. *From part of a mosaic by Maurice Collins taken on 2013 Sep UT 08:04-08:58 with north towards the top. C=Censorinus, D=Dionysius, P=Proclus.*

Herodotus: On 2013 Sep 16 UT 19:40-19:45 Marie Cook observed this crater under similar illumination to a LTP seen in 1957:

1957 Sep 6 UT 02:55-03:24 Observed by Bartlett (Baltimore, MD, USA, 5" reflector x180, S=1-5, T=5) Pseudo peak visible within floor shadow at 03:10h" NASA catalog weight=4 (high). NASA catalog ID #671. ALPO/BAA weight=3.

Marie reports that she did not see any sign of the pseudo peak, however observing conditions were poor at the time. She tried again later at 21:45-21:55, when the seeing was III, however it was not visible then either. As you can read in Cook and Dobbins': "The Pseudo-Peak of Herodotus", published in The Moon: Occasional Papers of the Lunar Section of the British Astronomical Association Vol. 2, Dec 2012., p22-35, the pseudo peak is normally not visible, but when it has been reported, then it seems to lie between selenographical co-longitudes of 52.6° to 58.7°. The LTP weight will remain as a 3, at least until someone records it again, or a more plausible theory (beyond those given in the above paper), is presented.

Isidorus K: On 2013 Sep 23 UT 21:59 Thierry Speth took an image of the region around this crater because it matched the illumination to a rather strange description in the 2006 Cameron catalog extension, regarding a LTP seen back in 1979:

1979 Apr 16 UT 04:30-07:01 David Darling (Sun Praire, WI, 12.5" reflector, x342, seeing 9) observed something resembling a cigar shaped shiny object seen on S rim - hanging over a smaller crater. It looked like a bright aluminum can in the sun & cast a shadow onto the rim. The length was 8-10 miles long x 1 mile wide at the central point. It appeared tapered to points at both ends. Observer studied it for several hours. S term. ~60-70 miles away. Apparently not related to topog. Alt. 8 deg. Cameron 2006 Extension catalog weight=3. ALPO/BAA catalog weight=1.

In Fig 4, I have annotated the location of this small crater Isidorus K, however nothing resembling what was described can be seen. Is it possible that it was a mis-identification with another feature? There is the southern rim of the interior crater to Isidorius, which looks bright and elongated, but it is clearly not the satellite craterlet K. There are quite a few SW-NE trending ridges in the image, and so I wonder if this might have something to do with the explanation – many of which look like elongated oblongs? I tried to find the reference for this report, but it is apparently mentioned in a letter to Winnie Cameron, and in the American Lunar Society's Selenology II (1), 28-35, 1992 (Apr), neither of which I have. If anybody has a copy of that edition of Selenology, then I would be very keen to see a scanned copy of those pages in order to verify the description given in the Cameron catalog. Sometimes the Cameron catalog lists objects as LTP, even though the original observer casts doubt on the nature of the observation – I wonder if this is the case here as the unchanging appearance over 2.5 hours is somewhat untypical of LTP. I am therefore leaving the ALPO/BAA weight of this oddly described LTP as a 1, until I can find out more about the original observation.

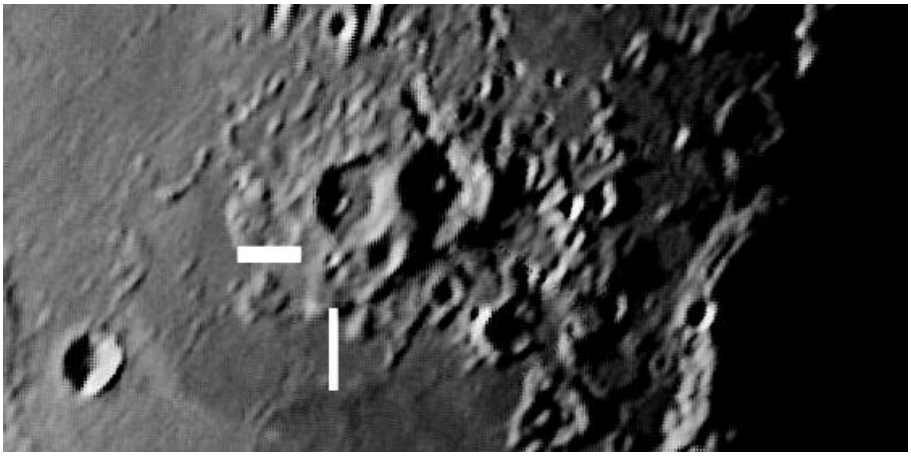


Figure 4. *Image by Thierry Speth, taken on 2013 Sep 23 UT 21:59, with north towards the top. The white markers indicate the location of Isidorus K, with the main crater Isidorus to the north.*

Suggested Features to observe in November: For repeat illumination (and a few repeat libration) LTP predictions for the coming month, these can be found on the following web site: http://users.aber.ac.uk/atc/tlp/tlp.htm. 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: +44 798 505 5681 and I will alert other observers. Twitter LTP alerts can also 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. **Boole**
2. **Cauchy**
3. **Cleomedes**
4. **Einstein**
5. **Hippalus**
6. **Langrenus**
7. **Pallas**
8. **Petavius**
9. **Piccolomini**
10. **Plato**
11. **Playfair**
12. **Posidonius**
13. **Schickard**
14. **Tycho**

FOCUS ON targets

X = Aristarchus (January)
Y = Mare Frigoris (March)