



# THE LUNAR OBSERVER

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

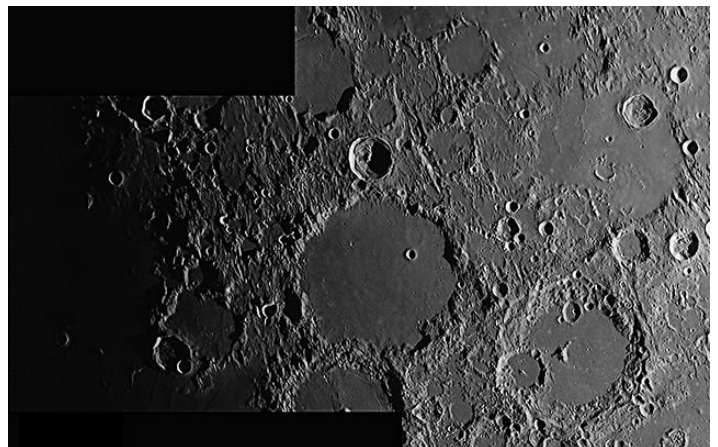
**EDITED BY: Wayne Bailey [wayne.bailey@alpo-astronomy.org](mailto:wayne.bailey@alpo-astronomy.org)**

**17 Autumn Lane, Sewell, NJ 08080**

**RECENT BACK ISSUES: [http://moon.scopesandscapes.com/tlo\\_back.html](http://moon.scopesandscapes.com/tlo_back.html)**

## **FEATURE OF THE MONTH – JUNE 2017** **PTOLEMAEUS**

Richard Hill – Tucson, Arizona, USA April  
5, 2017 02:12 UT. Seeing 8/10. 8" Mak-  
Cass, f20, 656.3 nm filter, SKYRIS 445M.



Many of those that look at the moon for the first time do so around first quarter and the first thing they often notice is the great crater right in the middle. This, what we used to call a great walled plain, is the 158km diameter Ptolemaeus. I have heard people say they can see it naked eye when it is on the terminator. Sadly, I've not had that experience. This is an ancient crater, even by lunar measure. It may be as old as 4.5 billion years. It may seem hard to believe but to the right of Ptolemaeus is the crater Albatagnius (139km) which is half a billion years younger. It looks older with all the later impact damage like the 46km crater Klein on its left wall. Up above Klein is another large walled plain, not so well defined as Ptolemaeus. This is Hipparchus (155km). It's about the same age as Ptolemaeus with the younger Horrocks (31km) near its northern wall.

On the floor of Ptolemaeus is a very stark young crater Ammonius that was a challenge to me with my little 2.4" telescope in the early 1960s. Back then it was called Lyot but the crater of that name now lies on the lunar southeastern limb. Above Ptolemaeus is a clear deep crater, Herschel (43km) and further above that you can see most of another plain, Flammarion (77km) named for Camille Flammarion who was the author of one of the first serious astronomy books (tome) I ever had.

Before leaving, notice that the whole area is raked with deep, long parallel scars from mountain sized "rocks" that were ejected probably during the Imbrium impact and scoured the landscape. There's a particularly interesting one of these gashes just to the right of Herschel.

# **LUNAR CALENDAR**

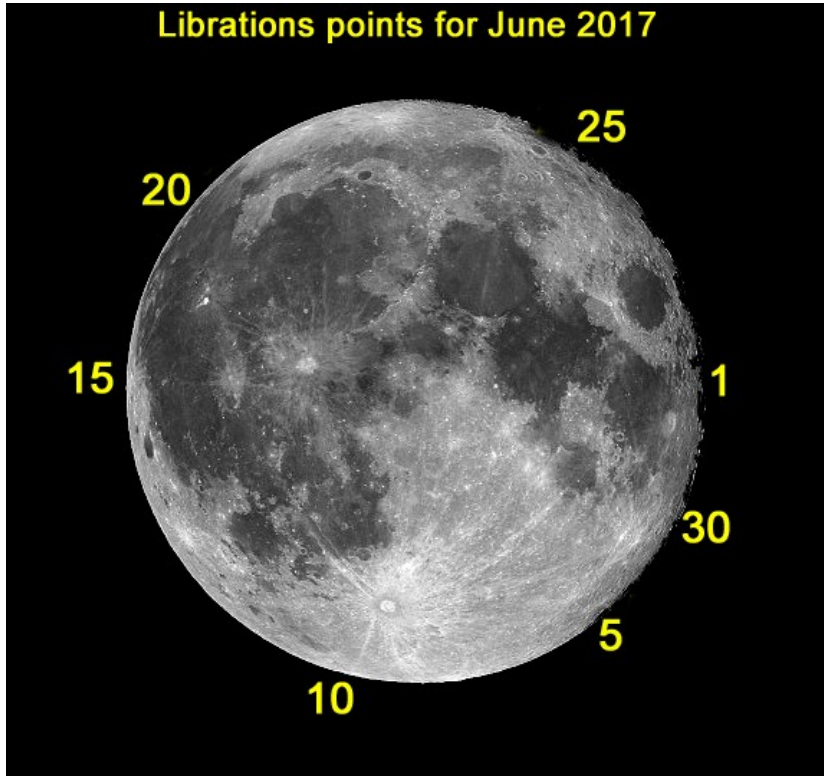
## **JUNE-JULY 2017 (UT)**

<b>2017</b>		<b>UT</b>	<b>EVENT</b>
Jun	01	12:42	First Quarter
	03	23:57	Moon-Jupiter: 2.5° S
	08	22:21	Moon Apogee: 406400 km
	09	13:10	Full Moon
	10	01:25	Moon-Saturn: 3.4° S
	11	03:36	Moon Extreme South Dec.: 19.4° S
	17	11:33	Last Quarter
	20	21:13	Moon-Venus: 2.4° N
	22	14:23	Moon-Aldebaran: 0.5° S
	23	10:49	Moon Perigee: 357900 km
	24	02:31	New Moon
	24	11:12	Moon Extreme North Dec.: 19.4° N
	28	00:26	Moon-Regulus: 0.1° N
Jul	01	00:51	First Quarter
	01	07:28	Moon-Jupiter: 2.9° S
	06	04:27	Moon Apogee: 405900 km
	07	03:34	Moon-Saturn: 3.6° S
	08	10:49	Moon Extreme South Dec.: 19.4° S
	09	04:07	Full Moon
	16	19:26	Last Quarter
	19	23:37	Moon-Aldebaran: 0.4° S
	20	11:13	Moon-Venus: 2.7° N
	21	17:09	Moon Perigee: 361200 km
	21	22:11	Moon Extreme North Dec.: 19.4° N
	23	09:46	New Moon
	25	08:49	Moon-Mercury: 0.9° S
	25	10:14	Moon-Regulus: 0°
	28	20:15	Moon-Jupiter: 3.4° S
	30	15:23	First Quarter

# LUNAR LIBRATION

JUNE-JULY 2017

Librations points for June 2017



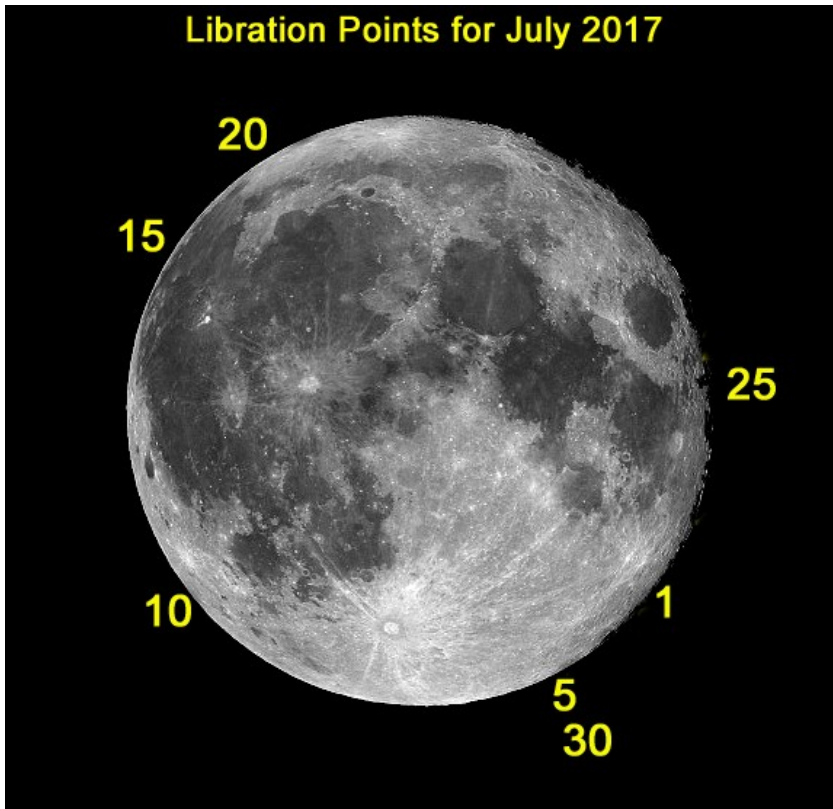
Size of Libration

06/01	Lat -00°45'	Long +07°13'
06/05	Lat -05°31'	Long +04°45'
06/10	Lat -05°51'	Long -01°19'
06/15	Lat -00°12'	Long -06°52'
06/20	Lat +06°01'	Long -06°11'
06/25	Lat +04°14'	Long +03°08'
06/30	Lat -03°25'	Long +07°01'

**NOTE:**

Librations are based on a geocentric position and at 0 hr. Universal Time.

Libration Points for July 2017



Size of Libration

07/01	Lat -04°36'	Long +06°33'
07/05	Lat -06°41'	Long +02°25'
07/10	Lat -03°08'	Long -03°41'
07/15	Lat -03°54'	Long -06°49'
07/20	Lat +06°32'	Long -02°34'
07/25	Lat +00°06'	Long +05°15'
07/30	Lat -06°11'	Long +05°18'

**NOTE:**

Librations are based on a geocentric position and for 0 hr. Universal Time.

## **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 Journal of the Association of Lunar and Planetary Observers-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.alpo-astronomy.org>. 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 (use month name or specify mm/dd/yyyy, dd/mm/yyyy)**

**Size and type of telescope used Magnification (for sketches)**

**Filter (if used)**

Medium employed (for photos and electronic images)

Orientation of image: (North/South - East/West)

Seeing: 0 to 10 (0-Worst 10-Best)

Transparency: 1 to 6

Full resolution images are preferred-it is not necessary to compress, or reduce the size of images. *Additional commentary accompanying images is always welcome.* **Items in bold are required. Submissions lacking this basic information will be discarded.**

Digitally submitted images should be sent to both

Wayne Bailey – [wayne.bailey@alpo-astronomy.org](mailto:wayne.bailey@alpo-astronomy.org)

and Jerry Hubbell – [jerry.hubbell@alpo-astronomy.org](mailto:jerry.hubbell@alpo-astronomy.org)

Hard copy submissions should be mailed to Wayne Bailey at the address on page one.

## CALL FOR OBSERVATIONS:

### FOCUS ON: Messier & Messier A-Oblique Craters

**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 **July 2017** edition will be **Messier & Messier A-Oblique Craters**. 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 these craters in Mare Fecunditatis to your observing list and send your favorites to (both):

**Jerry Hubbell** – [jerry.hubbell@alpo-astronomy.org](mailto:jerry.hubbell@alpo-astronomy.org)

**Wayne Bailey** - [wayne.bailey@alpo-astronomy.org](mailto:wayne.bailey@alpo-astronomy.org)

**Deadline for inclusion in the Messier & Messier A-Oblique Craters article is June 20, 2017**

## FUTURE FOCUS ON ARTICLES:

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

**Subject**  
Lunar Domes

**TLO Issue**  
September 2017

**Deadline**  
August 20, 2017

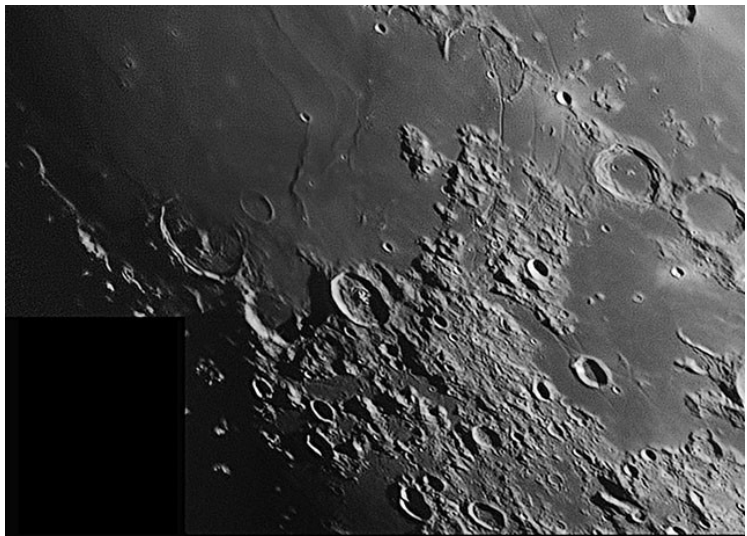
# ON THE SOUTH SIDE OF MOIST

## Richard Hill

The southern shore of Mare Humorum (Sea of Moisture) is a very complicated area. That sea is in the upper left of this image (fig. 1), still mostly in darkness. What people usually notice first here are the three rilles or Rimae Hippalus with Hippalus itself being the 60km diameter flooded crater at the upper end. The rimae run about 250km along the southern edge of the mare. Parallel to them but further into the mare are the line of cliffs called Rupes Kelvin with the triangular island to their left called Promontorium Kelvin. The southern end of these rimae point to a 43 km crater near the center of this image. This is Vitello, a fairly odd crater. It has a low, sharp rimmed crater wall and a central peak that sits on an elevated plateau. There has been argument over the years that this may be a caldera. To the left of Vitello is a bright walled bay on the mare the same size as Vitello. This is the crater Lee.

Above Lee is another flooded, ruined crater with an odd remnant central peak, the crater Doppelmayer (66km) and to the right of it the ghost crater Puiseux (26km)

**Figure 1.** SOUTHERN MARE HUMORUM. Tucson, AZ USA. March 9, 2017 06:11—04:29 UT. Seeing 8/10. 8" Mak-Cass, f20, 656.3 nm filter, SKYRIS 445M.



On the right side of this image is another flat region, Palus Epidemiarum. On its floor is a 26km crater, Ramsden, with a system of rilles in and around it appropriately called Rimae Ramsden. Notice how they run right along the edge of the mountains to the north. Lastly the two craters above Ramsden are Campanus (49km) on the left and Mercator (also 49km) on the right.



# LUNAR TOPOGRAPHICAL STUDIES

Coordinator – Wayne Bailey - [wayne.bailey@alpo-astronomy.org](mailto:wayne.bailey@alpo-astronomy.org)

Assistant Coordinator – William Dembowski - [dembowski@zone-vx.com](mailto:dembowski@zone-vx.com)

Assistant Coordinator – Jerry Hubbell – [jerry.hubbell@alpo-astronomy.org](mailto:jerry.hubbell@alpo-astronomy.org)

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

## OBSERVATIONS RECEIVED

ALBERTO ANUNZIATO—PARANÁ,, ARGENTINA. Drawing of Luther.

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 5, 8, 9 & 12 day moon, Alphonsus, Archimedes, Deslandres, Maginus, Mare Imbrium, Montes Caucasus, Moretus, Plato, Sinus Medii & W. Bond.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Clavius & Schiller-Zuchius.

MARCELO GUNDLACH – COCHABAMBA, BOLIVIA. Digital images of Lade & Mare Imbrium triangle.

RICHARD HILL – TUCSON, ARIZONA, USA. Digital images of Hortensius, Ptolemaus & Vitello.

DAVID TESKE - STARKVILLE, MISSISSIPPI, USA. Digital images of Aristarchus & Schickard.

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## RECENT TOPOGRAPHICAL OBSERVATIONS



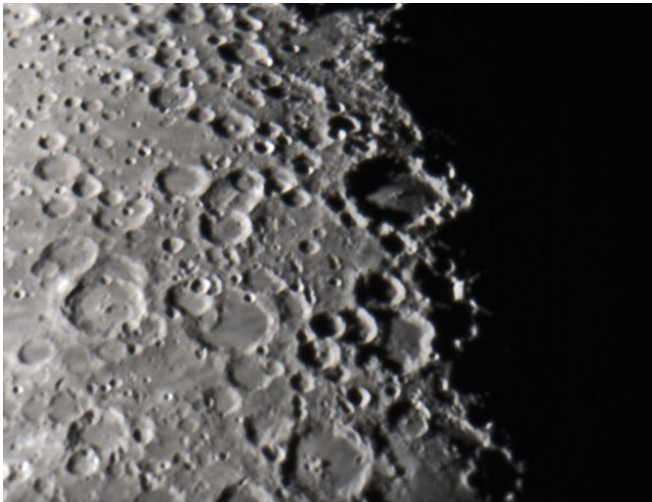
**LUTHER**– Alberto Anunziato, Paraná, Argentina. May 2, 2017 01:30-02:00 UT. ETX-105 Mak-Cass, 154x.

*The Virtual Moon Atlas defines Luther as a "craterlet", in fact its diameter is only 10 kilometers. But on may 2 (01,30 to 02.00 UT) Luther casted a huge shadow over Mare Serenitatis. It is a special impact crater, it is "on the shoulders of a giant," on the shoulders of a dorsum or wrinkle ridge and so its exterior walls, elevated at the moment of the impact, projects a shadow much longer than it would be if Luther were directly in the lunar mare. It was interesting to note how bright the crater's rim appeared in contrast to the dark of its interior, with a shadow darker than the shadow casted by the crater itself.*

*Luther is on one of the secondary ridges of Dorsa Smirnov. At colongitude 340.9° and so close to the terminator (passing by the center of Mare Serenitatis) are visible some details of the wrinkle ridge, such as the shadow on its hillside and areas lit by sunlight at low angle, especially an area located to the south. When I observed, I indicated in the draft of the drawing three bright areas to the east, aligned in order of brightness. Great was my surprise to discover that those bright spots were 3 domes known as Luther domes (page 76 of the Photographic Moon Book of Alan Chu). So I added them to my personal catalog of domes observed with my little telescope.*

# RECENT TOPOGRAPHICAL OBSERVATIONS

**12 day MOON** - Maurice Collins,- Palmerston North, New Zealand. May 9, 2017 09:42 UT. ETX-90, ASI120MC.



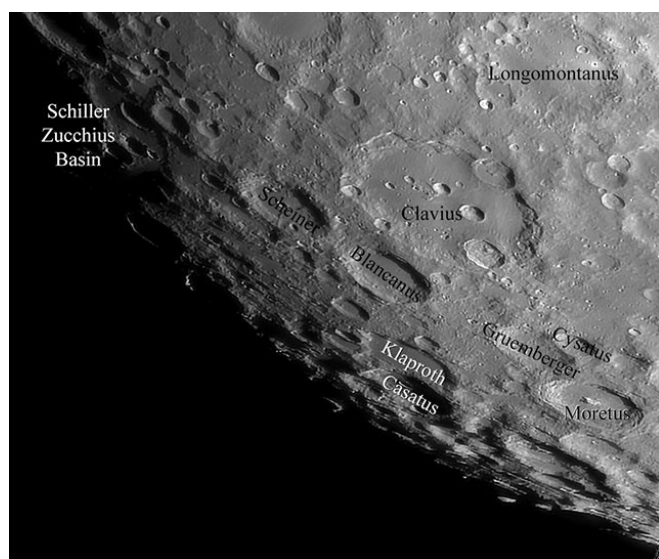
**MAGINUS**- Maurice Collins,- Palmerston North, New Zealand. May 4, 2017 05:50 UT. C-8 SCT, ASI120MC. Seeing A-V. N-down,



**MARE IMBRIUM**- Maurice Collins,- Palmerston North, New Zealand. May 6, 2017 07:16 UT. C-8 SCT, ASI120MC. N-down.



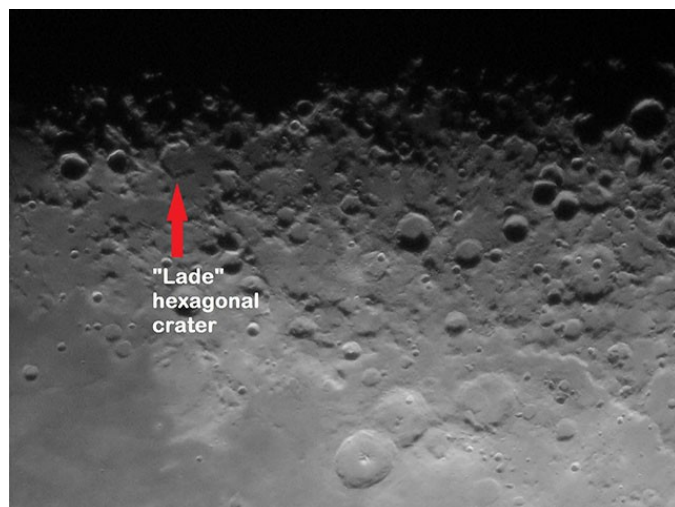
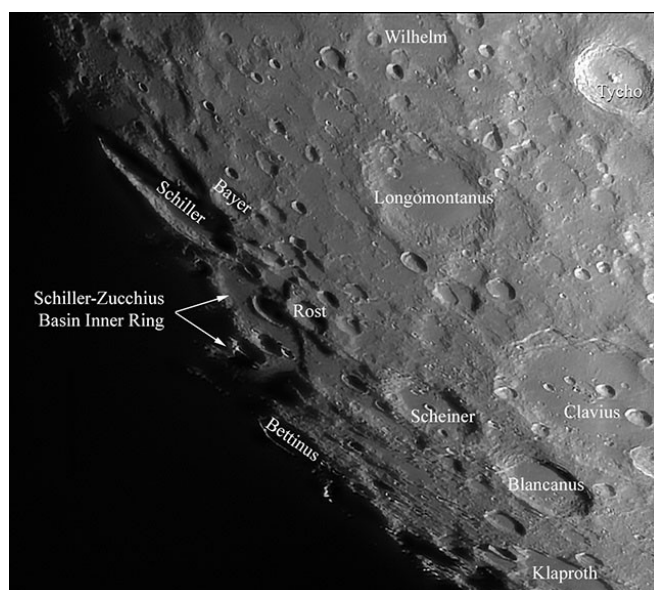
# RECENT TOPOGRAPHICAL OBSERVATIONS



**CLAVIUS** - Howard Eskildsen, Ocala, Florida, USA. May 7, 2017 01:34 UT. Seeing 8/10, transparency 6/6. 6" Refractor, f/8, 2x barlow. DMK41AU02.AS.

**SCHILLER-ZUCHIUS BASIN** - Howard Eskildsen, Ocala, Florida, USA. May 7, 2017 01:32 UT. Seeing 8/10, transparency 6/6. 6" Refractor, f/8, 2x barlow. DMK41AU02.AS.

The partly-illuminated Schiller-Zucchius Basin caught my eye last night while viewing the moon, and it was the first area that was imaged. Arrows point to the inner ring of this double-ring basin. The visible section of the outer ring lies between Rost and Bettinus. The western half of the basin hides in the shadows beyond the terminator.



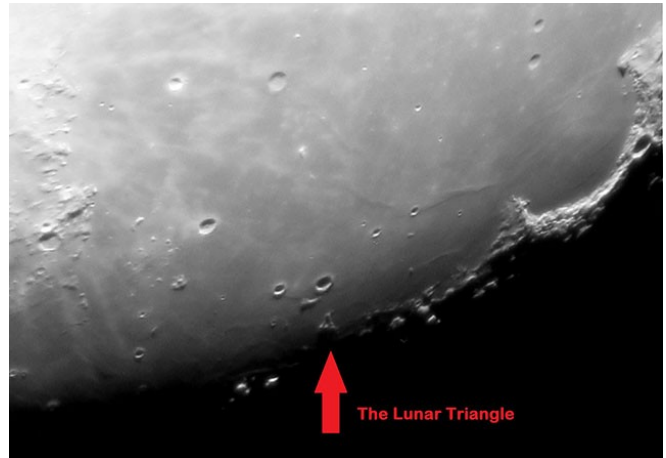
**LADE**– Marcelo Gundlach, Cochabamba, Bolivia. May 3, 2017 03:31 UT. Seeing 8/10, transparency 4/6. 150mm f/8 refractor, Canon Power Shot A-620.

*Attached you'll find an image of our Moon which shows the hexagonal crater "Lade". In this region there is some hexagonal craters too.*

*This crater show a missing wall and the hexagonal shape you can notice with low angle ilumination.*

# RECENT TOPOGRAPHICAL OBSERVATIONS

**Triangle on MARE IMBRIUM**— Marcelo Gundlach, Cochabamba, Bolivia. May 6, 2017 23:55 UT. Seeing 8/10, transparency 5/6. 150mm f/8 refractor, Canon Power Shot A-620. N-right, E-up.



**ARISTARCHUS**—David Teske, Louisville, MS, USA. May 8, 2017 02:29UT. C-9.25 Edge HD SCT . Clear Sky, Seeing 6/10. Malincam Skyraider.

**SCHICKARD**— David Teske, Louisville, MS, USA. May 8, 2017 02:31UT. C-9.25 Edge HD SCT . Clear Sky, Seeing 6/10. Malincam Skyraider.



# **LUNAR GEOLOGICAL CHANGE**

## **DETECTION PROGRAM**

**Coordinator – Dr. Anthony Cook – [atc@aber.ac.uk](mailto:atc@aber.ac.uk)**

**Assistant Coordinator – David O. Darling - [DOD121252@aol.com](mailto:DOD121252@aol.com)**

Observations for April were received from the following observers: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Aristarchus, Censorinus, Eimmart, Heordotus, Hyginus, Lubbock, Mare Crisium, Mons Piton, Plato, Promontorium Agarum, Promontorium Laplace, Ross D, and Torricelli D. Alberto Anunziato (Paraná, Argentina – AEA) observed: Aristarchus, Curtis, Jansen, Messier, and Posidonius J. Maurice Collins (Palmerston North, New Zealand – RAS NZ) took some whole Moon images. Anthony Cook (Torrevieja, Spain- ALPO/BAA) imaged several features. Marie Cook (Mundesley, UK – BAA) observed Censorinus, Gassendi, Kepler, Proclus and Theaetetus. John Duchek (Carrizozo, NM, USA – ALPO) imaged Cichus. Les Fry (Elan Valley, UK – NAS) imaged several features. Rik Hill (Tucson, AZ – ALPO/BAA) imaged Aristotles, Fracastorius, Hortensius, Lacus Mortis, Mare Australe, and Ptolemaeus. Franco Taccogna (Italy – UAI) imaged Aristarchus, Earthshine, Theaetetus, and several features.

**News:** John Duchek (ALPO) has written a Python program to convert the date and UTs, from the repeat illumination prediction websites into local time for anywhere in the world (outside of the UK and other GMT counties). If you are interested in this, please email me and I will put you in contact with John for a free copy of his software. Please note that when reporting observations, you must always adhere to using UT, as this is a standard that all astronomers and space scientists adopt.

Jill Scambler (BAA) has sent me her latest analysis of LTP statistics, which I am having a good read through, and will report back to you on some of her findings.

Concerning the lunar impact flash from 2017 Jan 1<sup>st</sup> (See April Newsletter), which was videoed by myself and GLR observer Stefano Sposetti, a simultaneous video recording by Bruno Cantarella (UAI) has shown no detection. However as this was checked out using the Lunarscan impact flash software, and the flash might have been close to the image noise levels, I have asked the UAI to check again, but with manual inspection, around the time of the flash of 17:47UT. Apart from the image noise explanation, another reason might be if the camera that Bruno was using was not as red/near IR sensitive as the Watec cameras that myself and Stefano used? I will let you know if there are any further developments on this event.

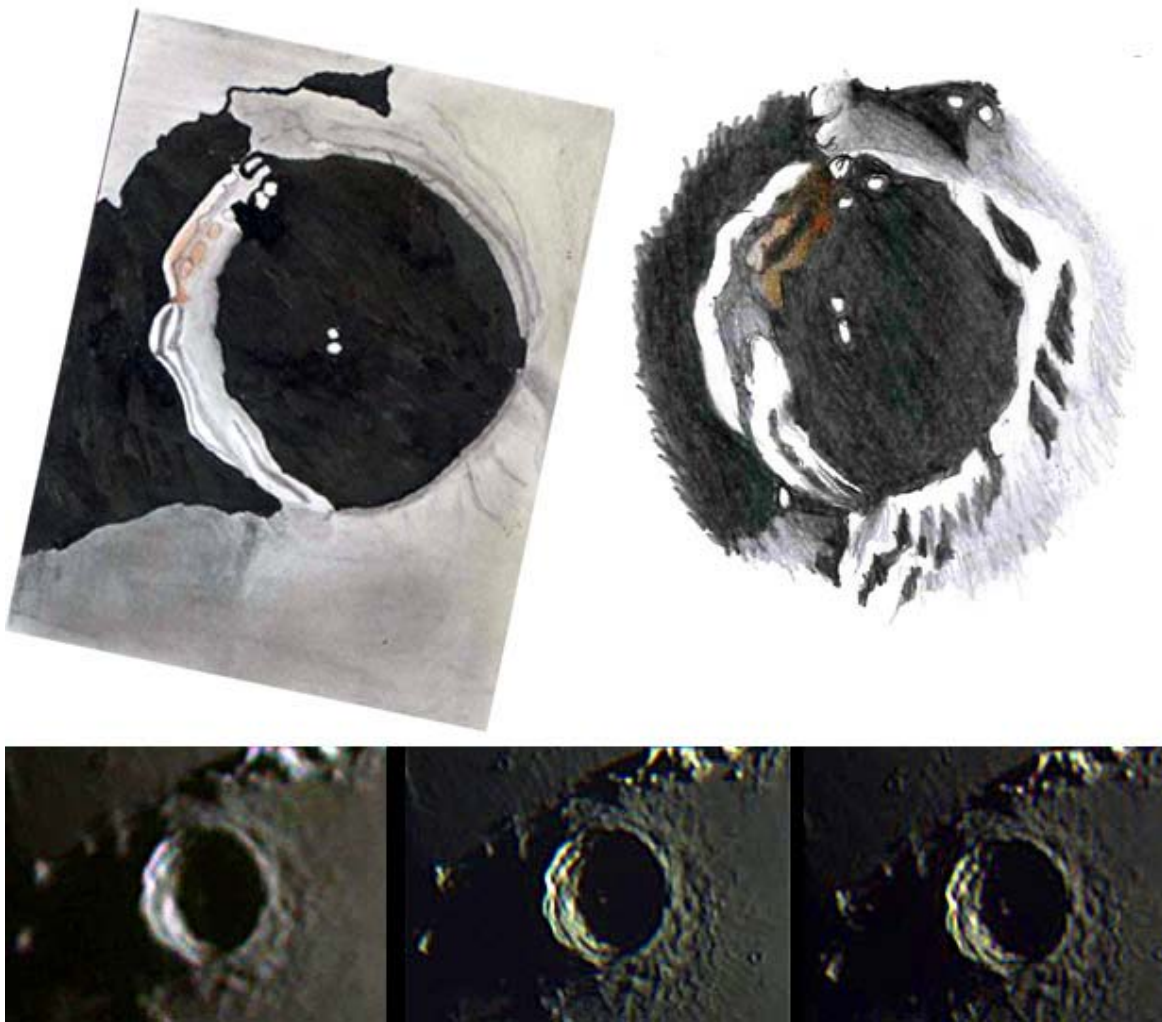
**LTP Reports:** One visual report received during May has raised some considerable interest, though both I and the observer concerned would not like to claim that this is an actual LTP, or at least not just yet.

**Eratosthenes:** On 2017 May 04 UT 21:50-22:10 Nigel Longshaw (Oldham, UK, BAA, 78 mm APO refractor, x125 & x175, seeing: Antoniadi II-III, transparency: good) observed a slight brownish (orange?) tint on the inner NW wall illuminated terraces. Nigel reports that this was immediately obvious when first looking at the crater, but as time progressed the effect became less bright. Other craters were checked for similar colored tints, but none were seen elsewhere on the Moon. The color effect was probably more pronounced under the lower power eyepiece than in the higher power one, and it was commented upon that the colored part of the crater inner rim was “less bright” than other portions of the inner western rim terracing.

This observation was of particular note in that it shared part of the location to a similar effect seen by visual observer, Dr Paul Abel, back in [2009 Nov 29](#), when he used Sir Patrick Moore’s 15” reflector at Selsey, UK, during a gap in the filming of BBC TV’s monthly Sky at Night. You can see Paul’s observation in Fig 1 (Left) and as a comparison, Nigel’s sketch in Fig 1 (Right). Note that the colors were not as vivid as this, but I have had to enhance them so that they show up clearly in this illustration. The Selenographic Colongitude range spanned by Paul’s sightings started 2.1° earlier than Nigel’s sighting, but they both overlap in terms of illumination at the end. On the same night that Nigel was observing, UAI observers Aldo Tonon and Franco Taccogna, were attempting to



image Eratosthenes crater (17:47-21:47) to see if they could detect color, but as you can see from their images in the bottom half of Fig 1, they did not detect any color in the locations depicted in the sketches by Paul or Nigel, or elsewhere.



**Figure 1.** The 3.2 billion year old, 59 km diameter, Eratosthenes crater orientated with north towards the top. **(Top Left)** A sketch by Dr Paul Abel (BAA) made on 2009 Nov 29 UT 18:42-21:03, or Selenographic Colongitudes: 13.3°-15.5°. **(Top Right)** A sketch by Nigel Longshaw (BAA) made on 2017 May 04 UT 21:50-22:10, or Selenographic Colongitudes: 15.4°-15.5°. **(Bottom Left)** An image by Aldo Tonon (UAI) on 2017 May 04 UT 21:19 or Selenographic Colongitude 15.1° - image has had atmospheric spectral dispersion removed, been sharpened, and had its saturation increased to 50%. **(Bottom Centre)** An image by Franco Taccogna (UAI) on 2017 May 04 UT 21:19 or Selenographic Colongitude 15.1° - image has had atmospheric spectral dispersion removed, been sharpened, and had its saturation increased to 50%. **(Bottom Right)** An image by Franco Taccogna (UAI) on 2017 May 04 UT 21:47 or Selenographic Colongitude 15.4° - image has had atmospheric spectral dispersion removed, been sharpened, and had its saturation increased to 50%.

Now we have had several repeat illumination observational attempts for the 2009 Nov 29 event in the past, and none has shown any color here, with the exception of [one CCD observation](#), however that revealed color on other craters too. At the time of Paul's 2009 LTP, images were taken, but most were in monochrome, and some filtered ones taken using Patrick Moore's 15" telescope were saturated on the rim in one of the wavebands used – so we cannot confirm there was real lunar color there. The last of the UAI images (Fig 1 – bottom right), from 2017 May 04, is just 3 minutes before Nigel starts observing but despite color enhancement shows, no color on the NW rim terraces. It is quite a reasonable assumption, that many would make that the fact that no color shows up in the images, but is reported by visual observers, yields a visual interpretation explanation of some kind? During the 2009 event Brill Leatherbarrow (BAA), who observed visually from Sheffield suspected atmospheric spectral dispersion, however Paul Abel and colleagues checked for this and did not find similar colors on other craters (like Nigel Longshaw did). I have confidence in both visual and CCD methods of observing, and so would like to

suggest that you all attempt observations of Eratosthenes crater at Selenographic Colongitudes of between  $14.3^\circ$  and  $15.5^\circ$ , and if you see any colors visually, then please use red and blue filters, because if it is as a result of atmospheric or telescope optical spectral effects then it will look the same through either filter. Conversely if it is some real color on the Moon, then visually it will be slightly brighter in the red filter than in the blue filter. If real color is present it will be detected for sure, if the resolution is high enough, in colour images, and we can check for spectral dispersion/chromatic aberration easily.

Just out of interest, Nigel Longshaw has sometimes found similar color tinges in [Geminus](#), first reported by Thomas Elger in 1885. So if you would like to attempt repeat illumination observations of either crater then please keep a close eye on predictions for your nearest observing station on:  
[http://users.aber.ac.uk/atc/lunar\\_schedule.htm](http://users.aber.ac.uk/atc/lunar_schedule.htm)

**Routine Reports:** Below is a selection of reports received for April, that can help us to re-assess unusual past lunar observations. Due to time constraints around exam marking time, I have not been able to do as much analysis that I would normally like to do.

**Mons Piton:** On 2017 Apr 04 UT 02:26-02:43 and 03:15-03:20 Jay Albert observed this mountain under the same illumination conditions, to within  $\pm 0.5^\circ$  to the following report from 1987 by David Darling:

*1987 Feb 06 UT 02:35 Observed by Darling (Sun Prairie, Wisconsin, USA, 12.5" Newtonian x342) "I was using a 12.5 f5 Newtonian reflector with a 9mm eyepiece and 2x Barlow with no filters. I had been observing other features on the Moon when I had panned to the area where the sunrise was taking place on Mount Piton. The mountain peak looked like a shimmering block of ice with a phosphorescence luminescence cloud around the peak. What was really interesting was the shaft of light streaming across the Lunar Maria that appeared like a cone and it came to a point near Mount Piton. The Mountain had the appearance of mother of pearl and the luster or glow that surround the peak only lasted about 20 minutes." The Cameron 2006 catalog ID=296 and the weight=4. The ALPO/BAA weight=3.*

Jay, using a Celestron Nexstar 6" SCT (Seeing 6/10, transparency 2<sup>nd</sup> magnitude, 13 mph wind gusts, but with the Moon almost overhead), found David's description of the mountain, glowing within the darkness beyond the terminator, fairly accurate, up to a couple of points. Firstly Jay only saw a "cloudy effect" around Mons Piton when ever wind gusts shock his scope, or as a result of occasional drops in seeing quality. Secondly Jay saw no sign of a shaft of light, or light cone, coming to a point near Mons Piton, however he has seen such a shaft of light on other occasions, but not this time. Just as a comparison I checked the altitude of the Sun at the lunar surface for the corresponding observations of Jay's and David Darling: 2017 Apr 04 UT 02:26-02:43:  $\text{Alt}_\odot = -1.9^\circ$  to  $-1.7^\circ$ , 2017 Apr 04 UT 03:15-03:20:  $\text{Alt}_\odot = -1.5^\circ$ , 1987 Feb 06 UT 02:35:  $\text{Alt}_\odot = -2.2^\circ$ . Please do not be alarmed by the negative solar altitudes – these are what one would expect at the base of the mountain, however the top peak pokes up beyond the morning terminator. But as you can see, David Darling's observation would have been about an hour earlier, in terms of illumination, as seen from Jay's observing site, but still within our  $\pm 0.5^\circ$  repeat illumination observing criteria.

**Chacornac:** On 2017 Apr 04 UT 20:47-20:50 Les Fry (NAS) produced an image mosaic of the whole Moon, but this just happened to be when both the illumination, and topocentric libration (viewing) angles, were within  $\pm 1^\circ$  to the following unusual report from Armenia from 2009:

*On 2009 Aug 28 at UT 17:00:15-17:00:42 S. Khachatryan (Yerevan, Armenia, 127mm Maksutov-Cassegrain, x171, seeing 9 (1=worst and 10=best), Transparency 5-6 on a scale of 1 to 6) observed in the Chacornac area a series of fiery sparks (dot like with tiny rays), slightly elongated with the multitudinal rays orientated towards the south west direction. The color was mostly red, with some yellow. The final flash was the most clear. The LTP was tiny in area, but "was distinctly bright against any other object on the Moon". The positional uncertainty of the location of the spark effect was approximately  $\pm 150$  km, based upon an examination of an atlas afterwards..... The ALPO/BAA weight=2.*

Now I am not expecting Les' image (Fig 2) to reveal anything new about what was seen from Armenia, which by the way was made under good seeing and transparency conditions. However at least we now have a very good context image of what the Moon should have looked like at the time. So if we ever wish to make computer animations of past events, then we have a good background image to use.





**Figure 2** Chacornac crater, just south east of Posidonius crater, as imaged by Les Fry (NAS) using a 10.5" SCT at Prime Focus with a Canon 1100d camera 1/125<sup>th</sup> Sec exposure at ISO 800. The image is orientated with north towards the top and Chacornac has been placed in the centre of the image. Note that this image is a subsection of the original image and has undergone noise removal, some sharpening, and contrast enhancement.

**Theaetetus:** On 2017 Apr 04 UT 20:40-20:55 Marie Cook (BAA) observed under similar illumination, to within  $\pm 0.5^\circ$ , to the following report:

*Theaetetus 1952 Dec 24 UT 20:00? Observed by Moore (England?) "Bright spot, hazy line of light" NASA catalog weight=4. NASA catalog ID 556. ALPO/BAA weigh=2.*

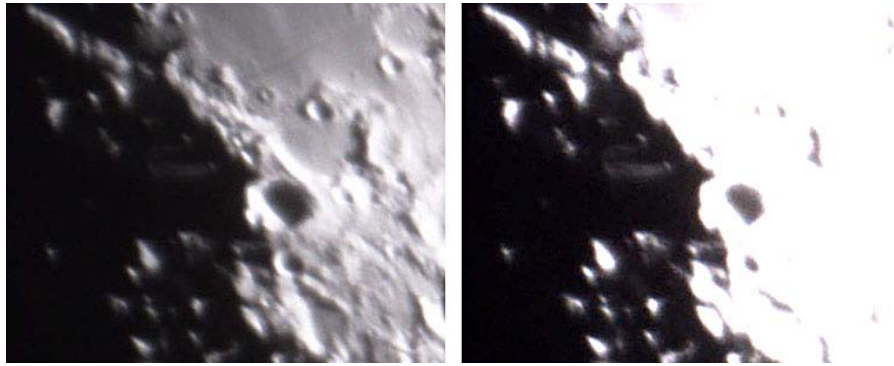


**Figure 3** Theaetetus crater, located at the centre of this sub-section of a much larger image mosaic taken by Les Fry (NAS) on 2017 Apr 04 UT 20:47-20:50, using a 10.5" SCT at Prime Focus with a Canon 1100d camera 1/125<sup>th</sup> Sec exposure at ISO 800. The image is orientated with north towards the top, and has undergone noise removal, some sharpening, and contrast enhancement.

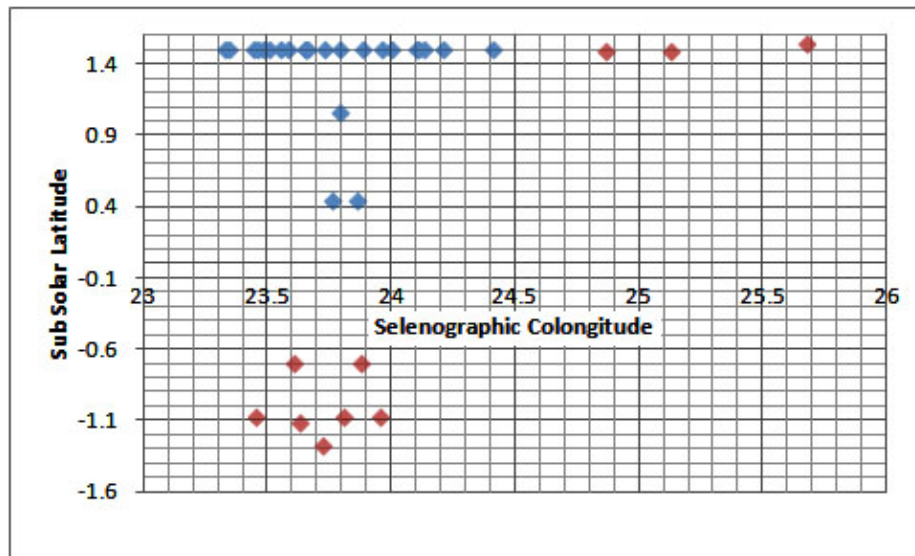
Marie comments that, the crater appeared half filled with shadow, but there was no bright spot seen, and the crater showed sharp detail, in other words appeared normal. This is confirmed in an image by Les Fry, taken on the same night (Fig 3).

**Cichus:** On 2017 Apr 6 UT 01:49-03:31 John Duchek (ALPO) imaged the crater as part of a project for Nigel Longshaw, as described in the February 2017 newsletter.

John's image (Fig 4), indeed a whole sequence of them, has now revealed to Nigel how the needle-like faint thread(s) form so rapidly, in the space of a few minutes. I am using data points to plot a graph of the sub-solar latitude versus colongitude in order to better understand when the thread-like effect becomes visible (See Fig 5). It appears to depend upon whether it's the lunar winter or summer season. We may eventually be able to pin down the visibility time to the nearest minute or two. For further details of when to observe, if visible from your location, see: [http://users.aber.ac.uk/atc/lunar\\_schedule.htm](http://users.aber.ac.uk/atc/lunar_schedule.htm)



**Figure 4.** An image of the Cichus region, orientated with north towards the top, and taken by John Duchek (ALPO), taken on 2017 May 06 UT 02:13. (Left) The original image. (Right) Contrast stretched version.



**Figure 5.** A plot of the visibility (Red) and non-visibility (Blue) of the tread of light effect seen just beyond the terminator, NW of Cichus, based upon observations in the ALPO/BAA archive database.

**Plato:** On 2017 Apr 08 Maurice Collins (RAS NZ) took a whole Moon image (fig. 6), which although taken through an ETX-90 scope and is not at high resolution, does at least correspond to the same illumination, to within  $\pm 0.5^\circ$  to the following 1987 report:



**Figure 6.** The region around Plato as imaged by Maurice Collins on 2017 Apr 08 UT 08:28, and orientated with north towards the top.

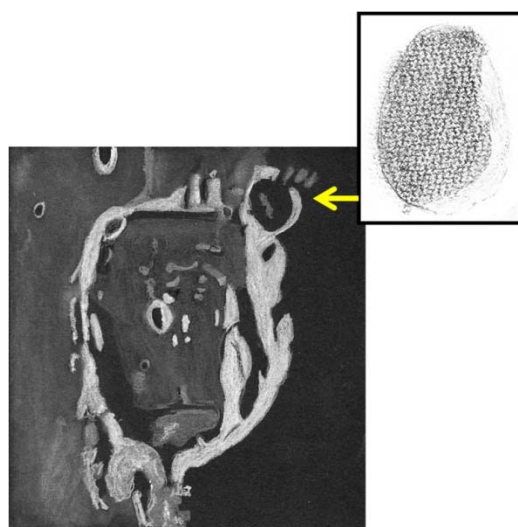
On 1987 Jan 11 at UT P. Moore (Sussex, UK) found the floor of Plato was much more dark than the adjacent Mare Imbrium. Furthermore there was a blurring of detail over the northeast wall and onto the nearby floor. detail elsewhere in the crater was OK. By 23:00UT there was less lack of detail effects. M. Cook (Frimley, UK) at 21:55UT noted the obscured area but decided that it was narrower than the same effect one month ago and suspected that she may have been observing towards the end of this LTP. The effect gradually dimmed between 21:55 and 22:45UT. Other craters were

normal. G. North was affected by poor seeing conditions. Davies detected a slight obscuration on the north east corner - it was a misty gray feature at x200. The Cameron 2006 catalog extension ID was 292 and the weight was 5. The ALPO/BAA weight was 4.

Now Maurice's image is not of sufficient resolution to discern the interior detail described in the 1987 observations, however it can tell us about the darkness of Plato that Patrick Moore refers to, in comparison to the Mare Imbrium and Mare Frigoris. Indeed I took the following average measurements in the mare adjacent, north and south of Plato using equivalent Plato sized patches: Mare Imbrium =  $103.6 \pm 4.4$ , Plato =  $93.8 \pm 5.6$ , and Mare Frigoris =  $104.6 \pm 6.0$ . So as you can see, it is perfectly normal for Plato to be darker than the surrounding mare at this lunar phase.

**Posidonius J:** On 2017 Apr 16 UT 05:00-05:15 Alberto Anunziato (AEA) sketched this feature under the same illumination conditions (to within  $\pm 0.5^\circ$ ) to the following report by Dale Holt:

*On 2008 Oct 19 during 05:40-06:30UT D. Holt of Chipping, UK observed an anomalous patch of illumination just to the west of the centre of the Posidonius J crater. It is possible that this is just some high ground on the floor protruding through the shadow filled crater at sunset. Therefore this has been assigned a weight of 1 for now, just in case it is a LTP - until proven otherwise.*



**Figure 7.** Sketches of the Posidonius area, with a Posidonius J inset – north is towards the top. **(Bottom Left)** Posidonius by Dale Holt (BAA) from 2008 Oct 19 UT 05:40-05:30, showing a light patch on the shadowed floor of J. **(Top Right)** A sketch by Alberto Anunziato (AEA) from 2017 Apr 16 UT 05:00-05:15, showing the shadow filled floor of Posidonius J.

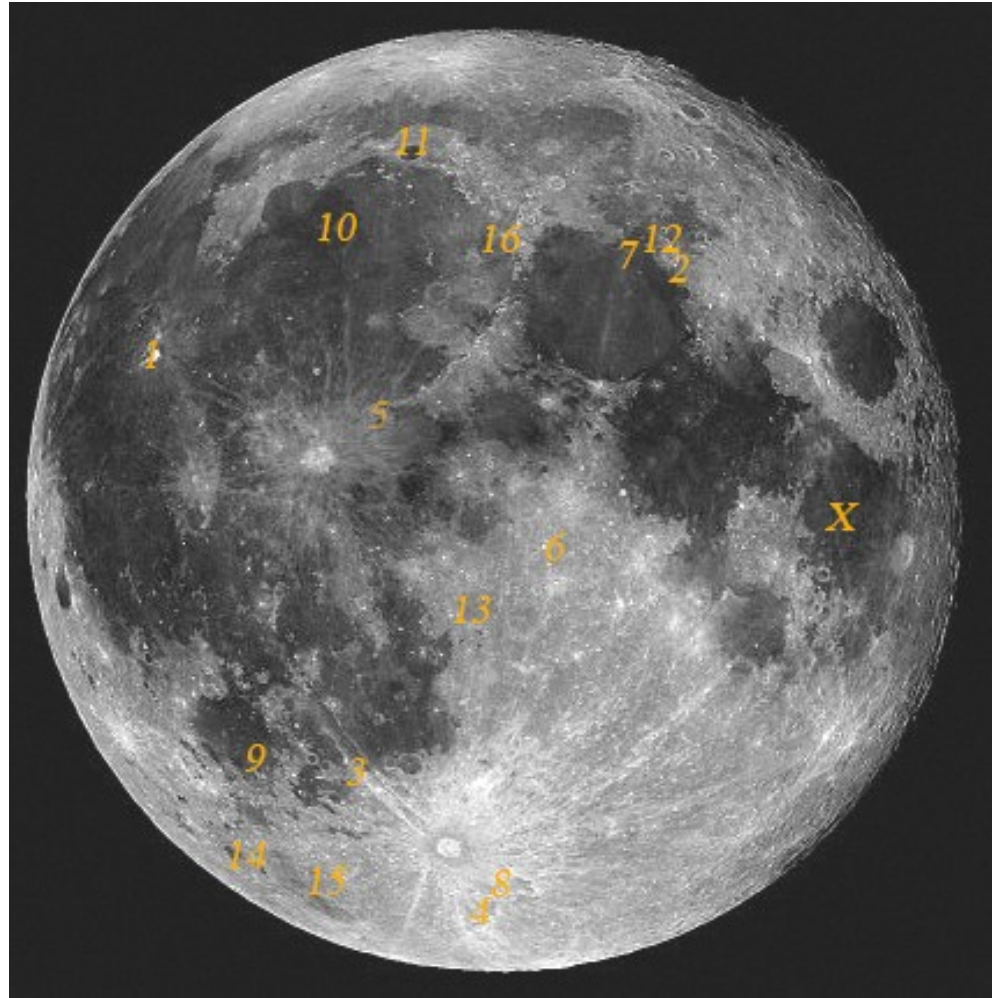
Alberto's sketch (Fig 7 – Top Right) shows no light patch on the floor of J, and is one of several repeat illumination observations, over the years by others, in an attempt to replicate what was seen in 2009. Please try to observe this area at sunset, again using predicted dates and times for your locality on [http://users.aber.ac.uk/atc/lunar\\_schedule.htm](http://users.aber.ac.uk/atc/lunar_schedule.htm)

**General Information:** For repeat illumination (and a few repeat libration) observations for the coming month - these can be found on the following web site: [http://users.aber.ac.uk/atc/lunar\\_schedule.htm](http://users.aber.ac.uk/atc/lunar_schedule.htm) . By re-observing and submitting your observations, only this way can we fully resolve past observational puzzles. To keep yourself busy on cloudy nights, why not try "Spot the Difference" between spacecraft imagery taken on different dates? This can be found on: [http://users.aber.ac.uk/atc/tlp/spot\\_the\\_difference.htm](http://users.aber.ac.uk/atc/tlp/spot_the_difference.htm) . If in the unlikely event you do ever see a LTP, firstly read the LTP checklist on <http://users.aber.ac.uk/atc/alpo/ltp.htm> , and if this does not explain what you are seeing, 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 <https://twitter.com/lunarnaut> .

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## KEY TO IMAGES IN THIS ISSUE

1. Aristarchus
2. Chacornac
3. Cichus
4. Clavius
5. Eratosthenes
6. Lade
7. Luther
8. Maginus
9. Mare Humorum
10. Mare Imbrium
11. Plato
12. Posidonius
13. Ptolemaeus
14. Schickard
15. Schiller
16. Theaetetus



**FOCUS ON targets**

**X = Messier-Messier A**