THE LUNAR OBSERVER

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.
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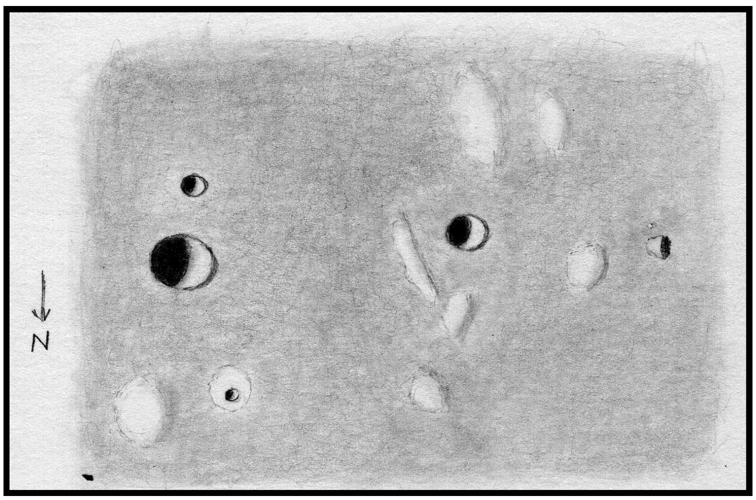
17 Autumn Lane, Sewell, NJ 08080
RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – AUGUST 2017
POSIDONIUS P & LUTHER



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
March 5, 2017 01:28-01:48; UT, 15 cm refl, 170x, seeing 7-8/10.

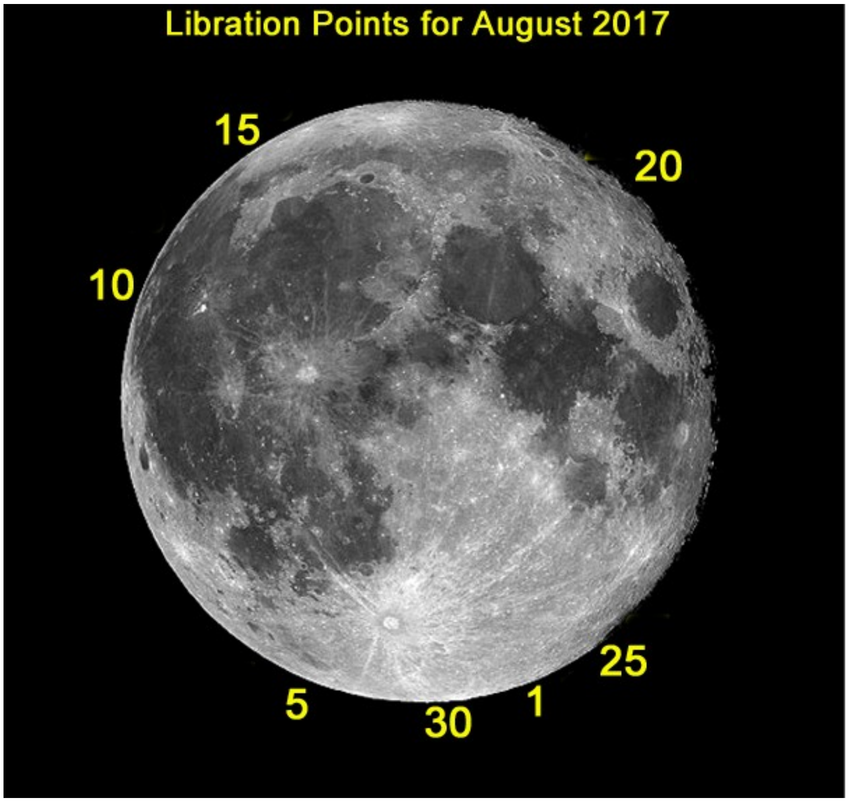
I drew these craters on the evening of March 4/5, 2017 while the moon was hiding some Hyades stars. This area is in northeast Mare Serenitatis west of Posidonius itself. Posidonius P is the largest crater on this sketch. The smaller crater south of P is Posidonius F and Posidonius G is the tiny pit to the north. There is a halo around Posidonius G, but this crater is noticeably north of the halo's center. A very low round swelling is northeast of Posidonius G. Luther is the crater well to the west of Posidonius P. All four of these craters are crisp, symmetric features, differing only in size. There are an assortment of elevations near Luther. The peak Luther alpha is well to the west of Luther, and showed dark shadowing at this time. All of the other features near Luther are more subtle than Luther alpha. One mound is between Luther and Luther alpha. Two more mounds are north of Luther, and a low ridge is just east of this crater. A pair of very low mounds are south of Luther. These are the vaguest features depicted here, and may be too conspicuous on the sketch. The low-relief features give the impression of being blisters on Mare Serenitatis while Luther alpha stands out as an isolated peak.

LUNAR CALENDAR
AUGUST-SEPTEMBER 2017 (UT)

2017		UT	EVENT
Aug	02	17:55	Moon Apogee: 405000 km
	03	07:31	Moon-Saturn: 3.8° S
	04	18:17	Moon Extreme South Dec.: 19.4° S
	07	18:11	Full Moon
	07	18:22	Partial Lunar Eclipse
	15	01:15	Last Quarter
	16	06:39	Moon-Aldebaran: 0.4° S
	18	06:50	Moon Extreme North Dec.: 19.4° N
	18	13:14	Moon Perigee: 366100 km
	19	04:45	Moon-Venus: 2.3° N
	21	18:30	New Moon
	25	13:00	Moon-Jupiter: 3.7° S
	29	08:13	First Quarter
	30	11:25	Moon Apogee: 404300 km
	30	14:23	Moon-Saturn: 3.9° S
Sep	01	02:03	Moon Extreme South Dec.: 19.4° S
	06	07:03	Full Moon
	12	12:09	Moon-Aldebaran: 0.4° S
	13	06:25	Last Quarter
	13	16:04	Moon Perigee: 369900 km
	14	13:00	Moon Extreme North Dec.: 19.4° N
	17	18:28	Moon Ascending Node
	18	00:56	Moon-Venus: 0.6° N
	18	04:32	Moon-Regulus: 0.1° S
	20	05:30	New Moon
	22	07:51	Moon-Jupiter: 4° S
	27	00:09	Moon-Saturn: 3.8° S
	27	06:49	Moon Apogee: 404300 km
	28	02:54	First Quarter
	28	10:06	Moon Extreme South Dec.: 19.5° S

LUNAR LIBRATION

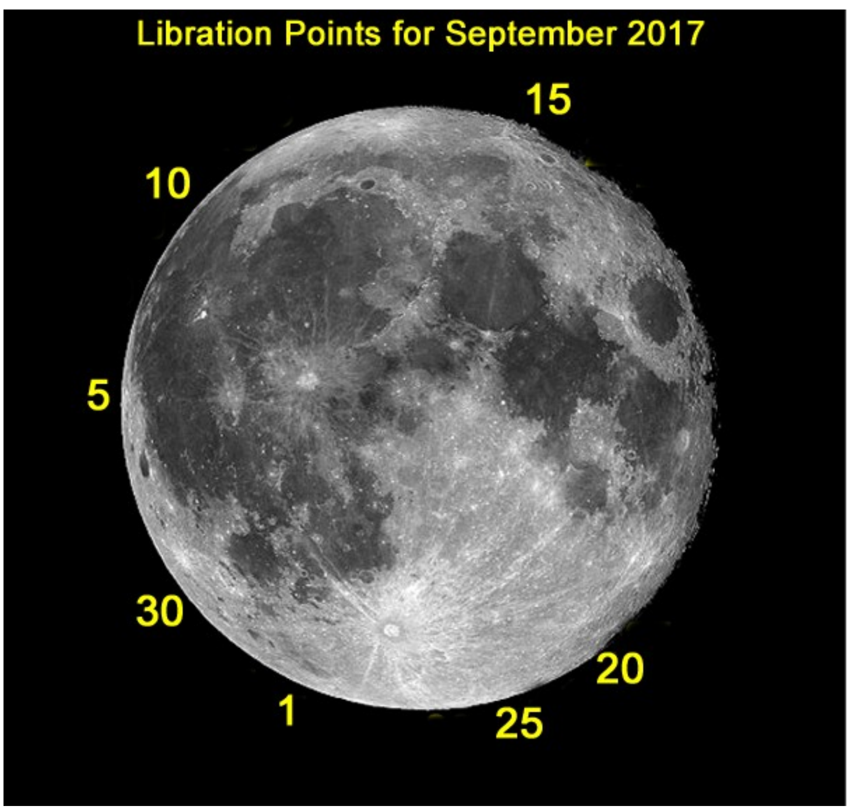
AUGUST-SEPTEMBER 2017



Size of Libration

08/01	Lat -06°48'	Long +03°13'
08/05	Lat -04°38'	Long -01°46'
08/10	Lat +02°18'	Long -05°29'
08/15	Lat +06°54'	Long -03°36'
08/20	Lat +02°24'	Long +02°34'
08/25	Lat -05°06'	Long +05°26'
08/30	Lat -06°25'	Long +01°09'

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



Size of Libration

09/01	Lat -04°56'	Long -01°24'
09/05	Lat +00°22'	Long -04°55'
09/10	Lat +06°24'	Long -03°28'
09/15	Lat +04°13'	Long +01°34'
09/20	Lat -03°27'	Long +04°43'
09/25	Lat -06°42'	Long +02°30'
09/30	Lat -02°53'	Long -03°41'

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
and Jerry Hubbell –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: Lunar Domes

Focus on is a bi-monthly series of articles, which includes observations received for a specific feature or class of features. The subject for the **September 2017** edition will be **Lunar Domes.**
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 subtle features to your observing list and send your favorites to (both):

Jerry Hubbell –jerry.hubbell@alpo-astronomy.org
Wayne Bailey - wayne.bailey@alpo-astronomy.org

Deadline for inclusion in the Lunar Domes article is August 20, 2017

FUTURE FOCUS ON ARTICLES:

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

Subject	TLO Issue	Deadline
Dorsa – Wrinkle Ridges	**Nov. 2017**	**Oct. 20, 2017**
Montes & Mons – Mountains and Mountain Ranges	**Jan. 2018**	**Dec. 20, 2017**
Rima – Rilles	**Mar. 2018**	**Feb. 20, 2018**
Craters – Latest and Greatest	**May 2018**	**Apr. 20, 2018**

MARE ORIENTALE

Howard Eskildsen

The image, fig. 1, is a study in contrasts of light and dark. On the limb, the central basalts of Mare Orientale form the horizon. The elevations of the inner ring form the lighter areas between the mare and Lacus Veris, which abut the Montes Rook. Bright scarps of the Rooks can be seen extending to the upper right of the image and then turning towards the limb before turning southward ant then hiding behind the horizon.

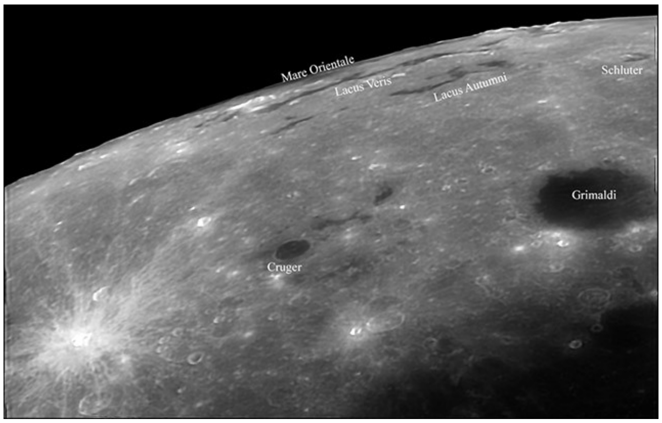


***Figure 1.* MARE ORIENTALE** *- Ocala, Florida, USA. July 15, 2017 05:55UT. Seeing 9.510, transparency 5/6. 6" Refractor, f/8, 2x barlow. DMK41AU02.AS.*

Lacus Autumni lies between Montes Rook a barely discernable Montes Cordillera, which can be seen rising just above the Lacus Autumni label. The Cordillera range runs tangent to the western rim of Schluter and, though barely discernible on this image, it curves towards the western horizon. It marks the outer rim of the multi -ring Orientale Basin.

Other dark areas of basalt are seen including Cruger and the inner basin of Grimaldi. On the lower left of the image Byrgius bursts brightly on the scene spreading rays that extend to the horizon on the left side of the image. At the lower central image a smaller version, Sirsalis F also bursts a much smaller ray halo.

Note: North is right and west up. It is easier to visualize the structures in this orientation.

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THE BEST GRABEN

Richard Hill

Rima Ariadaeus (fig. 1) is considered by many to be the best example of a graben on the moon. How nice it's near the center of the earth facing hemisphere! A graben is where parallel faults spread away from each other and the contained block between drops down. This one is best seen around 6 days after new moon, located between the highly modified 94 km diameter crater Julius Caesar to the north and the 48 km crater Agrippa to the south, filled with shadow here. The rima can be traced for over 300 km from the pair of craters Ariadaeus and Ariadaeus A on the eastern (right) end to the region where it crosses Rima Hyginus past the terminator here. Note the two toned floor of Julius Caesar, dark to the north and lighter to the south, caused by the flooding

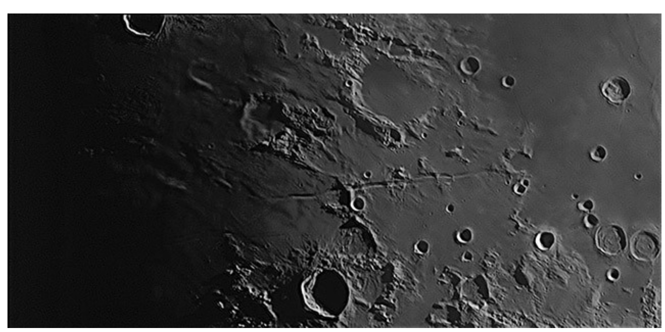

***Figure 1*. ARIADAEUS.** *Tucson, AZ USA. July 1, 2017 02:43 UT.* Seeing 8/10. Tec 8" Mak-Cass, f/20, 656.3nm filter, Skyris 445.

from the north. The whole crater is scarred from the northwest to southeast from ejecta possibly from the Imbrium impact event. On the north side of Julius Caesar is a row of craters that have been merged forming a unique valley that opens onto Sosigenes 18km) to the east (right). Then to the west is the crater Boscovich with the beautiful flow marks coming out of it to the southeast. There is a nice rille on the floor of this crater but it is too deep in shadow here to see it.

In the lower right corner of this image is a very identifiable pair of craters Ritter (32km) to the north and Sabine (31km) south. The concentric structures inside the walls of these two 3.5-3.8 billion year old craters make a fascinating study especially in contrast with some of the much younger craters like Dionysius to the west (left) or the crater Manners (15km) to the north. Another crater with an interesting interior is north of Manners. This the non-round crater Arago (26km) with a slumped western (left) wall and a ridge on its floor. To the west of the crater is a mild swelling on the surface of Mare Tranquillitatis. This is just one of the spectacular lunar domes that can be best seen better about a day earlier than this image.

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ON THE EDGE AGAIN

Richard Hill

Once again I took advantage of a particularly good libration and got a very nice image of the elusive Mare Smythii (fig.1) on the eastern limb of the 4 day old moon. What made this a little better was that it was only 4 days from perigee too. This basin is 206 km in diameter, about one third the size of the nearby Mare Crisium. But it's older than Crisium by at least 500 million years. To give you perspective, 500 m.y. ago was when animals made the first shells. Before that there were very few fossils! It's also 2 rotations of our galaxy ago.

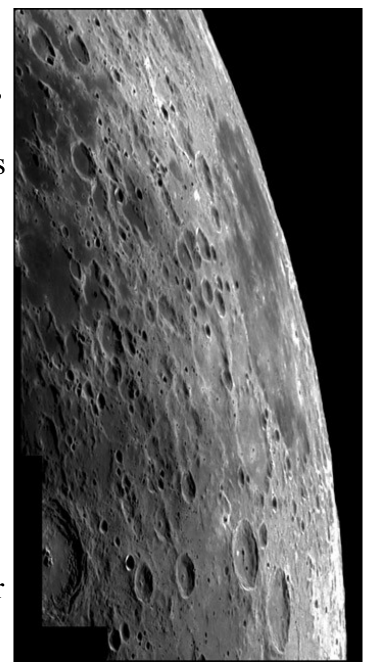

***Figure 1*. MARE SMYTHII.** *Tucson, AZ USA. June 28, 2017 03:12 UT.* Seeing 8/10. Tec 8” Mak-Cass, f/20, 656.3nm filter, Skyris 445.

In the lower left corner of this image is most of Langrenus (136km) and further in to the east (right) are the twin craters Barkla (44km) and Kapteyn (51km). They point to La Perouse (80km) with the small white spot on its floor below and east of that is the larger Ansgarius (97km). Moving north we come to the even larger Kastner (109km) a shalow flat bottomed crater.

Just west of Smythii is a nice set of twin craters. The one closest to the Mare is Van Vleck (32km) and the other is Weierstrass (34km). Well above these near the north shore of the Mare is the well defined crater Schubert (56km). The last of the landmark craters is the dark floored crater due west of Schubert. This is Dubiago (53km) and it sits between Mare Undarum to the north and Mare Spumans to the south. These are among the smallest mare on the moon. During a libration of the opposite tilt where we see more of the west limb, Schubert is on the limb and Mare Smythii is not visible at all.

PITISCUS

Richard Hill

To get our bearing on the region enclosed by this image, in the upper left corner we can see most of Maurolycus (117km diameter). Just east (right) of it is Barocius (85km), below it is Breislak (51km) and further south is Baco (71km). Above center in this image is Pitiscus (85km) with a nice little crater on its floor. Due east of that is a similar sized, but a little older, crater Vlacq (92km). Now that we we have the area mapped out we can look at a couple features.

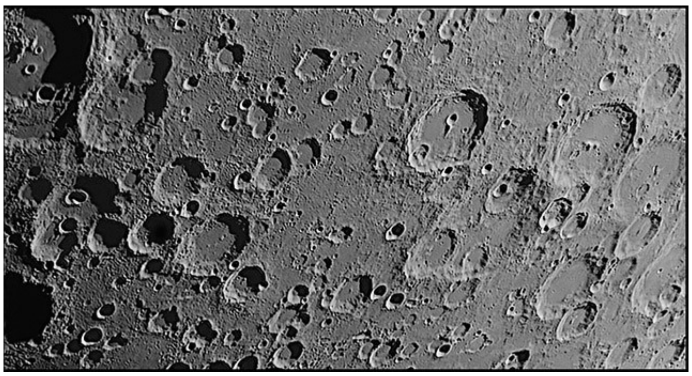

***Figure 1*. PITISCUS.** *Tucson, AZ USA. July 1, 2017 02:35 UT.* Seeing 8/10. Tec 8" Mak-Cass, f/20, 656.3nm filter, Skyris 445.

First, note the horizontal scars above and below Pitiscus. These are impact scars from one of the larger nearby impacts. South of Pitiscus is a flat bottomed crater Hommel C. This appeared to me to be at the vertex of a diamond shaped feature that stretched to the east. Turns out this is the crater Hommel a very ancient structure that may be as old as 4.5 billion years! In a crowded region like this it was a challenge to identify this crater. The whole region is overlain with 1-3km secondary craters from all the impacts, a lot of them very non-round due to their low velocity impacts. Note that the density of these pits increases to the west (left) where we have impacts like Tycho, Clavius and others.

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LUNAR TOPOGRAPHICAL STUDIES

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

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

Assistant Coordinator – Jerry Hubbell – jerry.hubbell@alpo-astronomy.org
Website: http://moon.scopesandscapes.com/

OBSERVATIONS RECEIVED

ALBERTO ANUNZIATO—PARANÁ,, ARGENTINA. Digital image of Jansen D.

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 5, 6(2), 10, 11, & 13 day moon, Alphonsus, Altai Scarp, Arago, Aristarchus, Atlas-Hercules, Bailly, Clavius, Compernicus(3), Gasseni, Grimaldi Harpalus, Langrenus, Petavius, Plato, Posidonius(2), Proclus, Schickard, Schiller, Sinus Iridum(2), Theophilus(2) Torricelli & Tycho(2).

JOHN DUCHEK – St. LOUIS, MISSOURI, USA. Digital image of Kies pi.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Bullisaldus-Grimaldi, Hipparchus-Arzachel & Mare Orientale.

RICHARD HILL – TUCSON, ARIZONA, USA. Digital images of Albategnius, Ariadaeus, Cassini, Langrenus, Mare Smythii, Mauroycus, Meton-north pole, Pitiscus, Posidonius & South pole.

MICHAEL SWEETMAN – TUCSON, ARIZONA USA. Digital images of Cauchy domes & Delambre.

DAVID TESKE - LOUISVILLE, MISSISSIPPI, USA. Digital images of Mare Tranquilitatis

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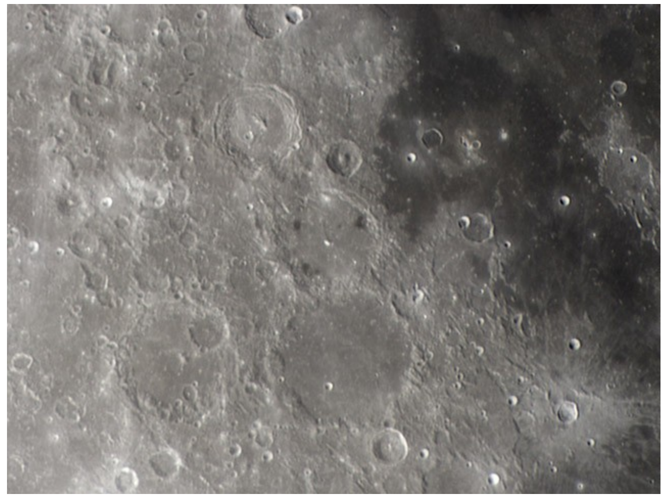
RECENT TOPOGRAPHICAL OBSERVATIONS

<u>JANSEN D</u>– Alberto Anunziato, Paraná, Argentina. April 16, 2017 03:30-04:00 UT. ETX-105 Mak-Cass, 154x.

Between Jansen and Vitruvius lies three craterlets, from north to south: Beketov, Jansen D and Jansen E. Beketov is the bigger one. It's a slighty oval formation with a 8 Km diameter. It is the craterlet with the highest contrast between shadows and the bright side. Jansen D (7 km), a circular formation, it's the smaller one and appear to be the deepest, since the shadows cover almost half of its diameter. At the northern end of the sketch appears Jansen E, similar in size to Jansen D but oval in shape. From Jansen E arises a high arc of land, slightly illuminated by the sunlight, that extends towards Beketov. Surely it belongs to the system of the Rima Jansen.

RECENT TOPOGRAPHICAL OBSERVATIONS



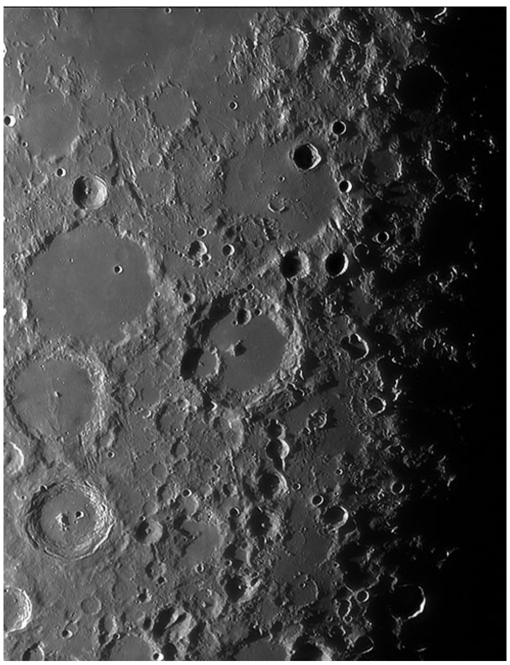
ALPHONSUS - Maurice Collins,- Palmerston North, New Zealand. July 5, 2017 07:59 UT. FLT-110 f/21, ASI120MC. North down.

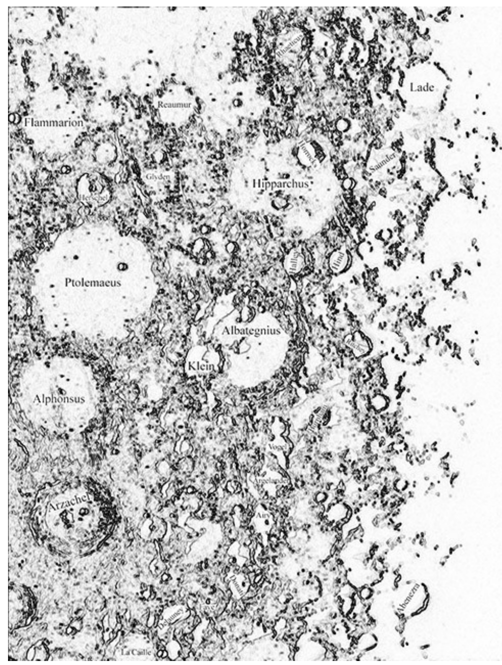
ATLAS-HERCULES - Maurice Collins,- Palmerston North, New Zealand. July 29, 2017 07:53 UT. C-8 SCT, 2x barlow, ASI120MC. North down,

GRIMALDI—Maurice Collins,- Palmerston North, New Zealand. July 7, 2017 08:40 UT. FLT-110, f/21, ASI120MC. North down,

RECENT TOPOGRAPHICAL OBSERVATIONS

SCHILLER - Maurice Collins,- Palmerston North, New Zealand. July 5, 2017 07:57 UT. FLT-110 f/21, 3x barlow, ASI120MC. North down.



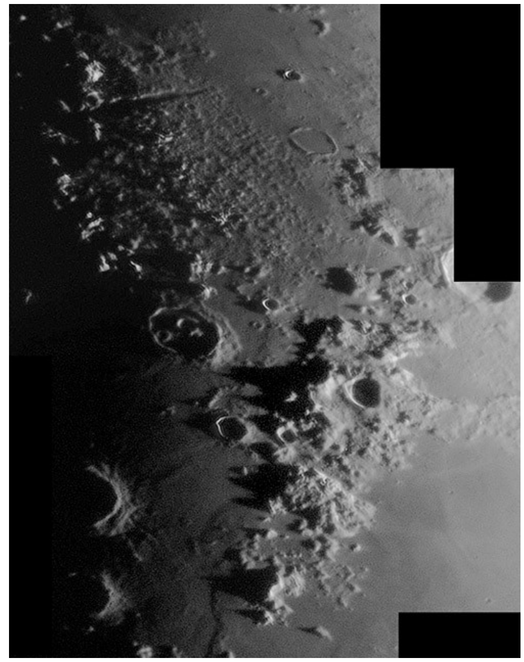


HIPPARCHUS-ARZACHEL - Howard Eskildsen, Ocala, Florida, USA. July 15, 2017 09:44 UT. Seeing 9.5/10, transparency 5/6. 6" Refractor, f/8, 2x barlow. DMK41AU02.AS.

The south central moon as it appears in the setting sun and a labeled, stylized version. For the latter, I used Photoshop to attempt the style of Wilkins and Moore, with deepest respect.

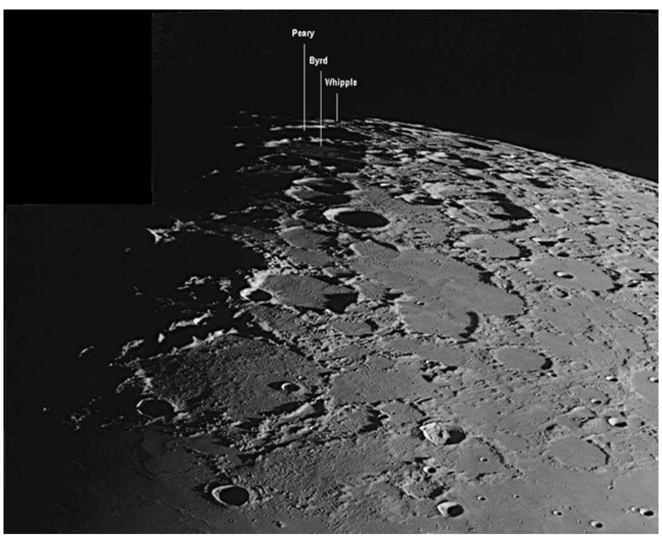
RECENT TOPOGRAPHICAL OBSERVATIONS

MONTES CAUCASUS - Richard Hill – Tucson, Arizona, USA October 20, 2015 01:23 UT. Seeing 8/10. 8" Mak-Cass, f20, 656.3 nm filter, SKYRIS 445M.



Those who have followed my posts know that I have a particular fondness for the Montes Caucasus. This image shows one of the reasons why. This is not the best resolution but I caught the lighting just right to show the beautiful shadows cast by these mountains. The crater at the top of this triangular mountain range is Calippus (34km dia.) to the lower left of this, on the edge of the range is Theaetetus (26km). Further left on the edge of darkness is Aristillus (56km) above and Autolycus (41km) below. to the upperleft of Theaetetus is Cassini (60km) with it's two included craters on its floor and that great ejecta blanket tight about the crater walls.

In the upper left corner of this image we can see the iconic Vallis Alpes just coming into the morning light. Going from Cassini to that valley we see three clusters of sparkling peaks. These are Promontorium Agassiz (closest to Cassini), then Promontorium Deville in the middle and then Mons Blanc. This latter peak reaches 3.6km above the surface of Mare Imbrium.

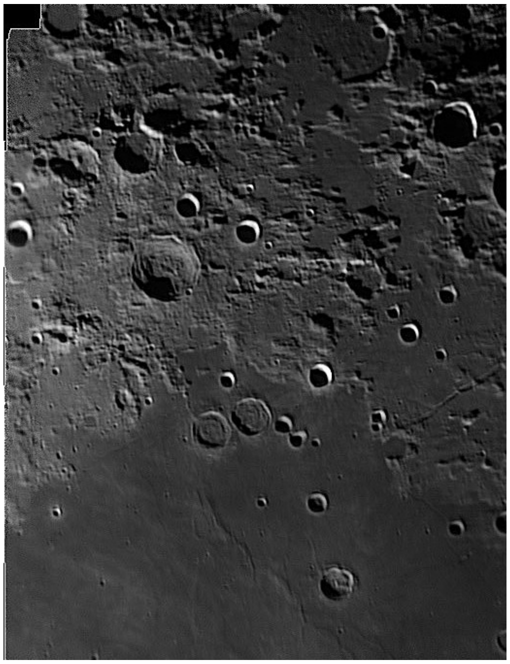


METON & NORTH POLE- Richard Hill – Tucson, Arizona, USA March 28, 2015 02:39 UT. Seeing 8/10. 8" Mak-Cass, f20, 656.3 nm filter, SKYRIS 445M.

I'm taking advantage of the monsoon season to clean up some of the backlog of images. Here we have the lunar north pole region and in fact, thanks to a favorable libration, the pole itself. Starting at the bottom on the right or west side we have the large squarish crater W. Bond listed as 163km "diameter" though it is not very round. It is very old, possibly as old as 4.5 billion years, close to 18 rotations of our galaxy! On its southwestern edge is Timaeus (34km) and due south is Archytas (32km), much younger craters.

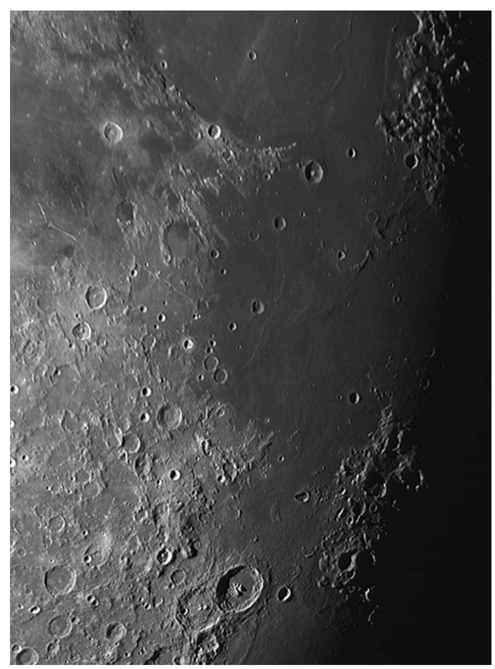
Moving north we see a nicely delineated flat bottomed "walled plain". This is Barrow (95km). This crater repays close scrutiny during sunrise as there is a nice breach in the east wall that lets the sunlight form a "V" shaped shaft of light on its floor. You can see a bit of it here but the sunlight here is high enough to illuminate most of the floor. The clover -leafed shaped feature to the upper right from Barrow is Meton and its satellite craters Meton B, C, D, E and F. The whole thing is over 120km in across. Northwest of Meton is a very clear shadow filled crater and two more above that. The lower one is Scoresby (58km) and the lower one of the pair to its north is Challis (also 58km). Above Challis is Main (48km). This latter pair points to a large dark ring that is the crater Byrd (97km) named for the famed polar explorer Admiral Richard E. Byrd. Another explorer is honored with the crater just north of Byrd. This is the slightly smaller crater Peary (77km) named for Admiral Robert E. Peary Sr. The exploits of these two men make for some entertaining reading! On the far side floor of Peary near the crater wall is the north pole of the moon. Just beyond is the small crater Whipple whose floor, 3km below the rim, is in perpetual darkness. So we are seeing the pole here and just a little beyond!

RECENT TOPOGRAPHICAL OBSERVATIONS



DELAMBRE-TAYLOR-ARAGO Michael Sweetman - Tucson, Arizona, USA, May 3, 2017 04:52 UT. Seeing 5-6/10, transparency 3/6. 5” APO f/15 refractor. Skyris 132M, Baader fringe killer filter.

MARE TRANQUILITATIS— David Teske, Louisville, MS, USA. July 13, 2017 09:40 UT. 102mm f/7 APO refractor. 2x barlow. Clear skies. Seeing 6/10. Malincam GMTm.



LUNAR GEOLOGICAL CHANGE DETECTION PROGRAM

Coordinator – Dr. Anthony Cook – atc@aber.ac.uk

Assistant Coordinator – David O. Darling - DOD121252@aol.com

Observations for June were received from the following observers: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Aristarchus and Plato. Maurice Collins (Palmerston North, New Zealand – RAS NZ) imaged: Arago, Mons Rumker, Theophilus and generated some whole Moon mosaics. Anthony Cook (Aberystwyth University and Newtown, ALPO/BAA) imaged several features. Marie Cook (Mundesley, UK – BAA) observed Maskelyne and Plato. Valerio Fontani (Italy – UAI) imaged Alphonsus. Rik Hill (Tucson, AZ – ALPO/BAA) imaged: Copernicus, Langrenus, Petavius and Sinus Iridum. Mark Illsley (NAS, UK) captured a whole Moon image mosaic. Derrick Ward (Swindon, UK – BAA) Imaged Copernicus.

News: Although this year's European Planetary Science Congress (EPSC) conference in Riga, Latvia, will not take place until Sep 17-22 (It is free for amateur astronomers), you can certainly read some of the submitted abstracts on-line. One abstract, on wrinkle ridges, suggests that a few may have been active as recently as < 30 million years ago – geologically speaking that is very recent, and implies that tectonic activity could happen in some of them even today. In terms of Impact Flash related abstracts, there are four of these: The abstract by ESA scientists Avdellidou and Kochny describe a new impact flash observatory system, NELIOTA, in Peloponnese, Greece, where they are attempting two color videoing of impact flashes which will hopefully yield the blackbody temperatures of each flash. This was actually suggested five years earlier on p20 of the Hatfield Lunar Atlas; so it will be nice to see this concept proven. Another impact flash abstract notes that there may be evidence, which suggests that occasionally lunar impact flashes appear elongated – they would normally be expected to be point-like, below the resolution limits of Earth-based telescopes? The third abstract introduces a prototype impact flash program, ALFI (Funded by the Horizon 2020, Europlanet 2020 Research infrastructure: EPN2020 - RI, http://www.europlanet-2020-ri.eu), under development, which will provide an alternative to/compliment, the existing LunarScan impact flash software, in that ALFI is also designed to work on the dayside of the Moon. The final impact flash abstract re-examines lunar flashes seen by Leon Stuart in 1953, and George Kolovos in 1985, by mapping these against virtual views of the lunar surface. Lastly there is a speculative abstract that says that it is possible to image the Moon's dusty exosphere from Earth within ±20˚ of New Moon - two example images are given. I have some serious reservations about this, but will give it the benefit of the doubt until I have seen the poster at the conference and spoken to the author.

I have been in correspondence with Jill Scambler about LTP statistics. Also with Jason Wentworth, who has pointed out that if we consider Mercury is an analogous solid body to the Moon (but with more volatiles, a hotter surface due to its proximity to the Sun, and a weak magnetosphere - which sometimes doesn't protect all of the surface), then it might be a prime place to look for the Mercury equivalent of LTP (MTP?) by comparing spacecraft images of the surface taken over time, or in different wavebands.

LTP Reports: No LTP reports have been received for June.

Routine Reports: Below is a selection of reports received for June that can help us to re-assess unusual past lunar observations.

Proclus: On 2017 Jun 02 UT 22:14-23:22 Mark Illsley (NAS) imaged the Moon under similar illumination to within ±0.5˚ to the following reports:

Proclus 1972 Oct 15 UT 20:48 Observed by Hopp (13.25E, 52.5N, 75mm refractor) "Bright flash at the NW wall but poor seeing." T=3, S=5. Ref: Hilbrecht & Kuveler Moon & Planets (1984) Vol 30, pp53-61

On 1995 Jul 06 at UT 03:22-03:57 R. Spellman (Los Angeles, USA) found that the floor of Proclus appeared to darken slightly through a blue filter. The ALPO/BAA weight=2. Source of this observation came from Spellman's web site.

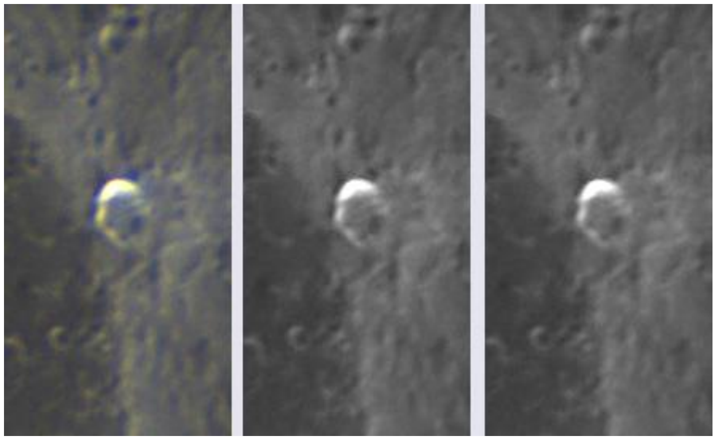


Figure 1. *Proclus, from a much larger mosaic by Mark Illsley (NAS), orientated with north towards the top.* ***(Left)*** *Original image but with color saturation set at 40%,* ***(Center)*** *A red channel view.* ***(Right)*** *A green channel view.*

John's image (Fig 1) shows that the NW wall is very bright, and this could possibly lead to a flash being seen if the seeing was especially bad during Hopp's observation in 1972, due to scintillation effects, though of course one would expect this to happen more than just once. I was unable to separate out the blue channel in a reasonably sharp state from John's image for a comparison with Spellman's 1995 report, as it is too blurry, but have included both the red (Fig 1 – Center) and green (Fig 1 – Right) channels in reasonable resolution, and you can quite clearly see that there is no darkening of the floor at shorter wavelengths. I will leave the weights of these two past LTP reports as they are.

Plato: On 2017 Jun 03 UT 20:45-21:10 Marie Cook (BAA) observed this crater under similar illumination (to within ±0.5˚) to the following report from 1970:

> *Plato 1970 Nov 8 UT 01:31-01:47 Observed by Bartlett (Baltimore, MD, USA, 3" refractor x59-300) "Only crater A seen, all others obscured. Floor = 3 deg albedo, very smooth. A had a minute shadow & no obscur. On Nov. 22 1966 at nearly same colong. 5 spots incl. A were vis." NASA catalog weight=4. NASA catalog ID #1278. ALPO/BAA weight=2.*

Marie was using a 90 mm Questar telescope under III seeing and moderate-poor transparency, and found that Plato and craters were sharp, with no signs of obscuration in any of them. We shall therefore leave the weight of Bartlett's report at 2.

Copernicus: On 2017 Jun 03 UT 22:53 Derrick Ward (BAA) imaged this crater under similar illumination (to within ±0.5˚) to the following report from Scotland:

> *On 1980 May 23 at UT 21:14-22:18 G. Blair (Bridge of Weir, Scotland, UK, 216mm reflector, seeing II-IV) found a red tinge along the western wall of Copernicus, perhaps 32km in length. This was invisible in a blue-green Wratten 44a filter, but was unmistakable in a red Wratten 25 filter. Could have been spurious color - but no other regions were affected. The ALPO/BAA weight=2.*

Derrick's image (Fig 2 – Left) shows that there is clearly no natural red color here, and once we add artificial spectral dispersion, indeed we can get red on the western rim, though blues and reds are seen elsewhere. However Grant Blair checked for this effect with filters. I do not see any reason to increase, or decrease, the weight and so will leave it at 2.

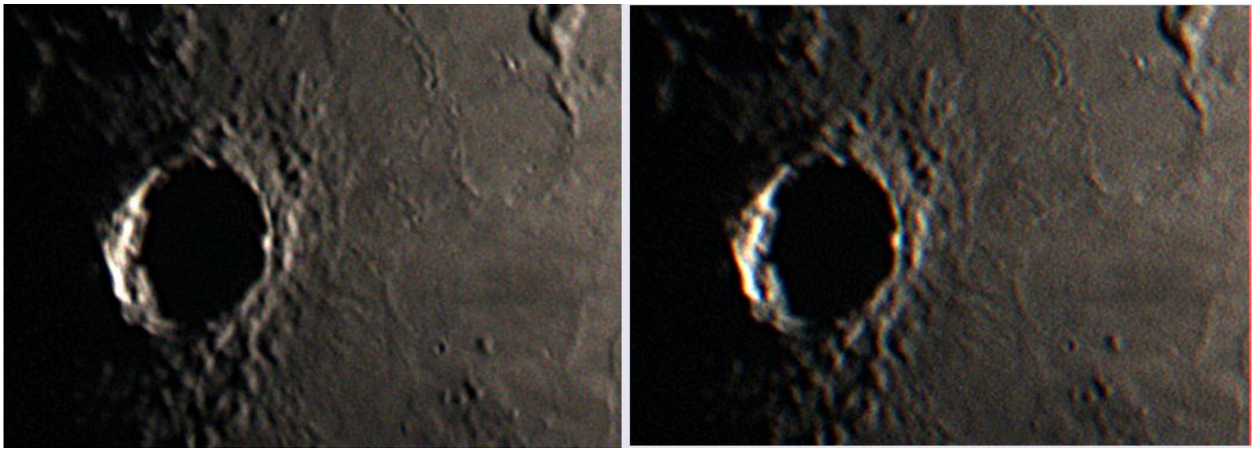


Figure 2. *Copernicus as imaged by Derrick Ward (BAA) on 2017 Jun 03 UT 22:53, orientated with north towards the top.* ***(Left)*** *A color version with saturation enhanced to 50%, following the removal of atmospheric spectral dispersion.* ***(Right)*** *A similar image but with atmospheric spectral dispersion added artificially.*

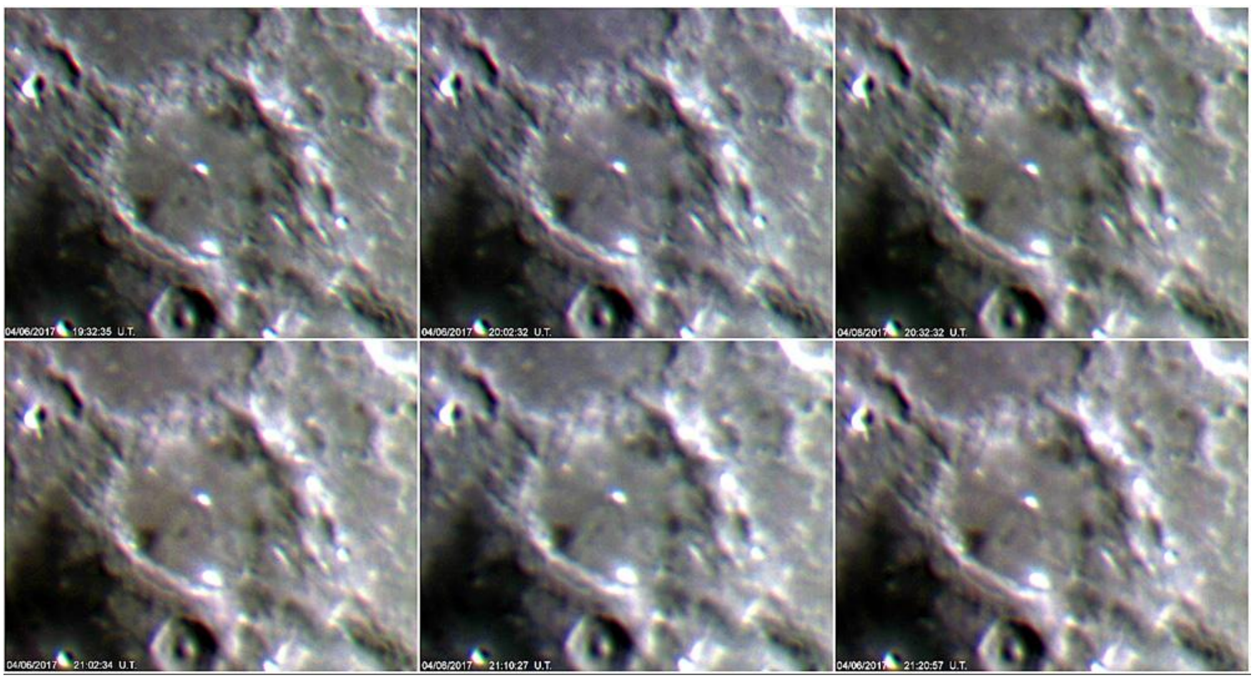


Figure *3. Alphonsus as imaged by Valerio Fontani (UAI) orientated with north towards the top. The images, top left to bottom right, were taken at: 19:33, 20:03, 20:33, 21:03, 21:10, 21:21UT. All images have had their color saturation increased to 80%.*

Alphonsus: On 2017 Jun 04 UT 19:33-21:21 Valerio Fontani (UAI) imaged Alphonsus over this time span in order to match the illumination conditions, to within ±0.5˚ to the following reports:

Alphonsus 1967 Feb 19 UT 20:30-21:11 Observed by Moore, Moseley (Armagh, Northern Ireland, 10" refractor, x360) "Blink area between 1900 & 1940 with neg. results. Suddenly at 2030 there was a bright red glow, brightest Moseley had ever seen, at Feb 17 suspected place. Moore returned at 2037h in time to see fading effect. Brief return at 2105-2111; neg. from 2120-2250h then clouds. Nothing on Feb 20. confirmation)." NASA catalog weight=5. NASA catalog ID #1016. ALPO/BAA weight=4.

Alphonsus 1966 Apr 01 UT(?) 03:00-03:20 Observed by Jenning, Harris (Coral Estates, CA, USA, 12" reflector) "Red patch from c.p. to W. wall (no confirm. from Corralitos obs. moon blink device & obs. at that time)" NASA catalog weight=3. NASA catalog ID #924. ALPO/BAA weight=2.

Valerio took a superb sequence of color images (See Fig 3) and these clearly show none of the colored effects seen in 1966 and 1967. I shall therefore leave the weights of these reports as they are.

Aristarchus and Babbage: On 2017 Jun 07 UT 08:13-08:49 Maurice Collins (RASNZ) imaged several features under similar illumination conditions (to within ±0.5˚) to the following two reports:

Aristarchus 1996 Jun 28 UT 21:04 F. Ferri and D. Zompatori (Anzio), using a 20cm f/6 reflector, reported that (translation) "Using a blue filter the area was invisible". This is a UAI observation from Italy. ALPO/BAA weight=2.

Babbage 1974 Sep 29 UT 00:00 Observed by Lord (Dundee, Scotland, 10" refractor, 125x, S=II-III) "Activity in SW floor between A & W. wall. Details not obscured in either filter, but darker than surroundings. (Luminescence by Fitton's criteria)" NASA catalog weight=2. NASA catalog ID #1395. ALPO/BAA weight=2.

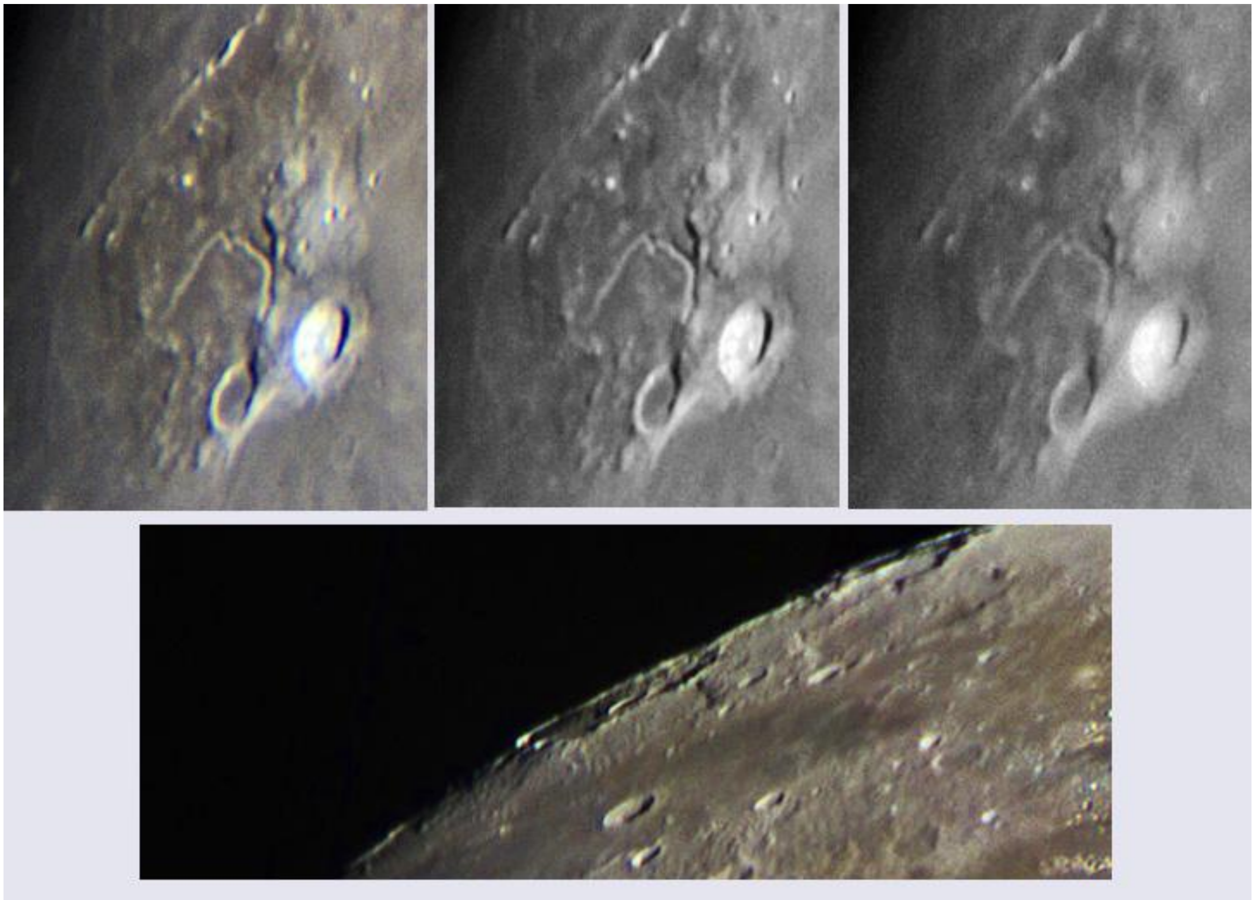


Figure 4. *The Moon as imaged by Maurice Collins on 2017 Jun 07: sub-sections from larger images/mosaics, orientated with north towards the top. Top row from an image of Aristarchus crater taken at 08:28.* ***(Top Left)*** *A color image with saturation enhanced. (Top Center) The red channel.* ***(Top Right)*** *The blue channel. (Bottom) Image from a mosaic taken 08:19-08:49 UT, showing Babbage in the center - color saturation enhanced.*

We covered the Italian observation from 1996 in an earlier 2016 Oct newsletter. Here in Fig 4 (Top) indeed we see that it is a brighter inside the crater in blue light, although the definition (at blue optical focus) is worse, perhaps from Rayleigh scattering effects in our atmosphere, thus making interior detail inside Aristarchus more difficult to see. In the 2016 Oct newsletter, the images by Valerio Fontani (UAI), in blue light, also looked slighter poorer in resolution, but the comparison there was against white light images. As the 1996 report is just a couple of lines of description, and the definition at short wavelengths looks like a probable explanation, I will lower the weight to 1.

For the Babbage report from Chris Lord in 1974, no sketches exist in the archives, just a written description: "*The activity was confined to the south easterly floor of the southern rings of Babbage between A and the east wall. Detail was not obscured in either filter but the floor was relatively darker than its surroundings in blue.*" An additional report states that "*The surface appeared darkish grey and normal in W25 but was darker grayish-black in blue, i.e. proportionally darker than its surroundings*". Chris used Kodak Wratten 25 (red) and 44a (blue-green) filters – I am assuming that his coordinates are IAU, but if not then just reverse east and west in the description. From the image that Maurice took, I see no evidence of color on the floor, though the floor is certainly darker than its surroundings. We shall leave the weight at 2 for now, though it would be helpful to have color images at both similar illumination and topocentric libration, in order to get a better view of Babbage.

Aristarchus: On 2017 Jun 09 UT 01:55-02:35 Jay Albert observed this crater under similar illumination (to within ±0.5˚) to the following three past observational reports:

1985 Feb 04 G. Amery (Reading, UK, seeing=II) saw a brilliant white rim, bands and central peak. There was also a clearly seen white glare like feature over the ESE wall that had a direction opposite to the crater interior bands. Cameron states that Foley says that this is usual. High CED brightness readings obtained. M.Cook of Frimley, UK, took CED measurements at 23:35UT and recorded a brightness of > 4.9. Reported a reversal of spurious color – Cameron suspects that this was a local effect. No spurious color noticed by anyone else. However the brightness of the crater was confirmed by other observers. Moseley suspected a brightness change on the inner east wall at a relative position of 8 O'Clock. Cameron 2006 extension catalog ID=259 and weight=4. ALPO/BAA weight=3.

On 2009 Sep 03 at UT 23:15-23:17 B. Gibbs took some hand held digital SLR images of the Moon (Sky conditions clear). Four images were taken at: 23:14:53, 23:15:59, 23:16:05 and 23:17:23 (uncertainty +/-15 sec offset from actual UT). These showed some apparent variation in the brightness of Aristarchus. However there are ways to explain this through image motion blur when the images were taken. Nevertheless we cannot be absolutely sure. The ALPO/BAA weight=1.

Aristarchus 1973 Sep 11 UT 20:48-21:06 observed by Pasternak (53deg 20'N, 7deg 30'E, 75mm reflector T=1, S=3) "reddish colors at the S of Aristarchus from 20.48-21.00 U.T., area spread to the region E of the crater at 20.57 U.T., disappeared there at 21.04U.T., no colors after 21.06 U.T." - Hilbrecht and Kuveler, Earth, Moon & Planets, 30 (1984), p53-61. ALPO/BAA weight=1.

Jay was using a 6" SCT, seeing 8/10 to 3-4/10 and transparency magnitude 1 near the Full Moon and magnitude 2 away. Concerning the 1985 Geoff Amery report, Jay found that the bright spot on the SE was easily seen and looked normal and certainly not a "glare-like" feature. The west wall and central peak could also be described as "bright" and several vertical bands were seen inside the crater – again everything normal. Jay could not see any atmospheric spectral dispersion and there were certainly no brightness variations as had been reported in 1985 or 2009. Jay did not see any of the colors mentioned in the 1973 observational description either. We shall leave the weights of all of these as they are.

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 . 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 . 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. **Alphonsus**
2. **Ariadaeus**
3. **Atlas**
4. **Delambre**
5. **Grimaldi**
6. **Hipparchus**
7. **Jansen**
8. **Luther**
9. **Mare Orientale**
10. **Mare Smythii**
11. **Mare Tranquilitatis**
12. **Montes Caucasus**
13. **Pitiscus**
14. **Schiller**