THE LUNAR OBSERVER

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

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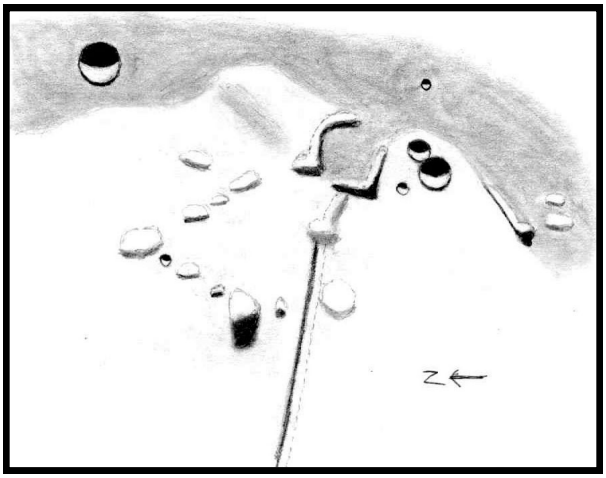
RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – MAY 2018
ARIADAEUS & SOSIGENES A



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
Nov. 25-26, 2017 23:38-00:08, 00:26-00:40 UT, 15 cm refl, 170x,
seeing 7-8/10, transparency 6//6.

I observed these craters and vicinity on the evening of Nov. 25/26, 2017. Ariadaeus is a very bright crater near the western edge of Mare Tranquillitatis. It makes a tight pair with Ariadaeus A to its northeast. They appear to abut each other, but I could not determine if one actually overlapped the other. Ariadaeus A does not have its neighbor's bright appearance, but is otherwise a smaller version of it. Ariadaeus D is the small pit just northwest of Ariadaeus, and Ariadaeus F is the pit to the east out onto the mare. A ridge with a knobby west end is along the mare boundary south of Ariadaeus, and two mounds are farther to the south. Ariadaeus E is the large broken ring north of the tight pair. It has clearly been flooded by Mare Tranquillitatis, though the Lunar Quadrant map does not show it as such. This feature opens onto the mare to the southeast, and there is a gap in its northwest side near a large peak. A low ridge and hill west of Ariadaeus E morph into the Rima Ariadaeus. This is a wide, easy rille that extends well west of the sketched area. Sosigenes A is the largest intact crater on this sketch. It is a larger version of Ariadaeus except that it is not as bright.

A cluster of peaks are between Sosigenes A and Rima Ariadaeus, and the pit Julius Caesar D is tucked among them. One triangular peak is quite large, and a low mound is just across the rille from it. The peaks are not shown as such on the map, but it does show some unlabeled ghost rings in that area.

The brightness of Ariadaeus became more evident in succeeding nights as the moon neared full.

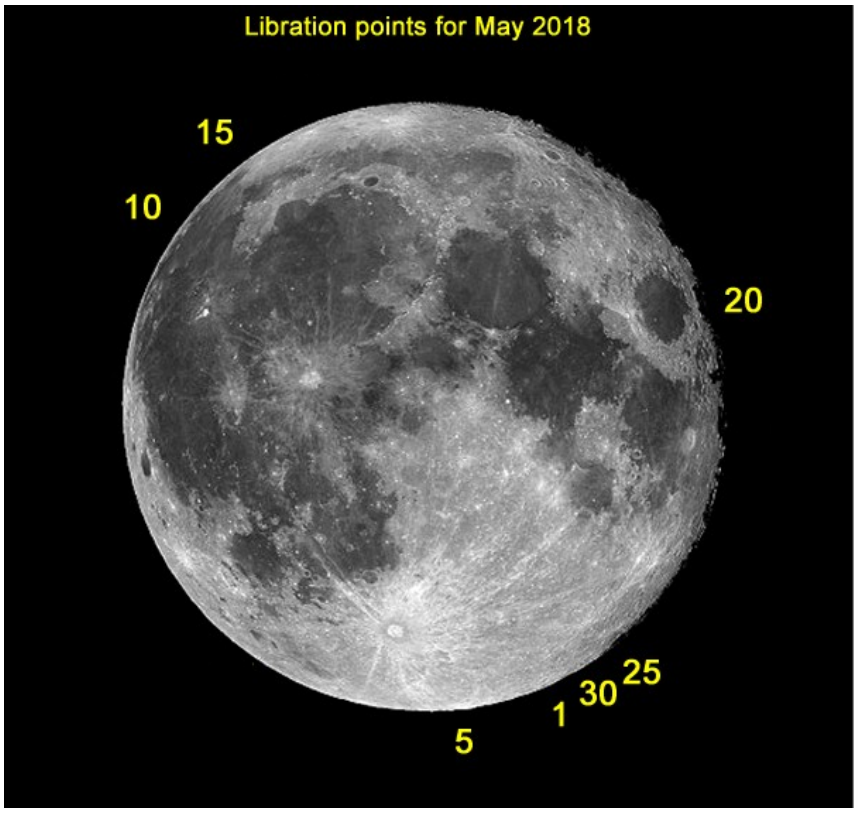
LUNAR CALENDAR

2018	U.T.	EVENT
May 04	20:31	Moon-Saturn: 1.9° S
04	23:00	Moon Extreme South Dec.: 20.6° S
06	00:35	Moon Apogee: 404500 km
06	07:24	Moon-Mars: 3° S
07	10:24	Moon Descending Node
08	02:09	Last Quarter
13	17:21	Moon-Mercury: 2.5° N
15	11:48	New Moon
17	18:11	Moon-Venus: 4.8° N
17	21:06	Moon Perigee: 363800 km
18	15:02	Moon Extreme North Dec.: 20.7° N
20	13:13	Moon Ascending Node
22	03:49	First Quarter
27	17:39	Moon-Jupiter: 4.3° S
29	14:20	Full Moon

2018	U.T.	EVENT
June 01	01:20	Moon-Saturn: 1.8° S
01	07:09	Moon Extreme South Dec.: 20.7° S
02	16:34	Moon Apogee: 405300 km
03	11:58	Moon-Mars: 3.5° S
03	12:39	Moon Descending Node
06	18:32	Last Quarter
13	19:43	New Moon
14	23:55	Moon Perigee: 359500 km
15	00:52	Moon Extreme North Dec.: 20.8° N
16	13:13	Moon-Venus: 2.3° N
16	17:50	Moon Ascending Node
20	10:51	First Quarter
23	18:47	Moon-Jupiter: 4.6° S
28	03:59	Moon-Saturn: 2° S
28	04:53	Full Moon
28	14:30	Moon Extreme South Dec.: 20.8° S
30	02:43	Moon Apogee: 406100 km
30	16:44	Moon Descending Node

LUNAR LIBRATION

MAY-JUNE 2018



Size of Libration

05/01 Lat -06°25' Long +04°00'

05/05 Lat -03°12' Long +00°17'

05/10 Lat +03°23' Long -05°59'

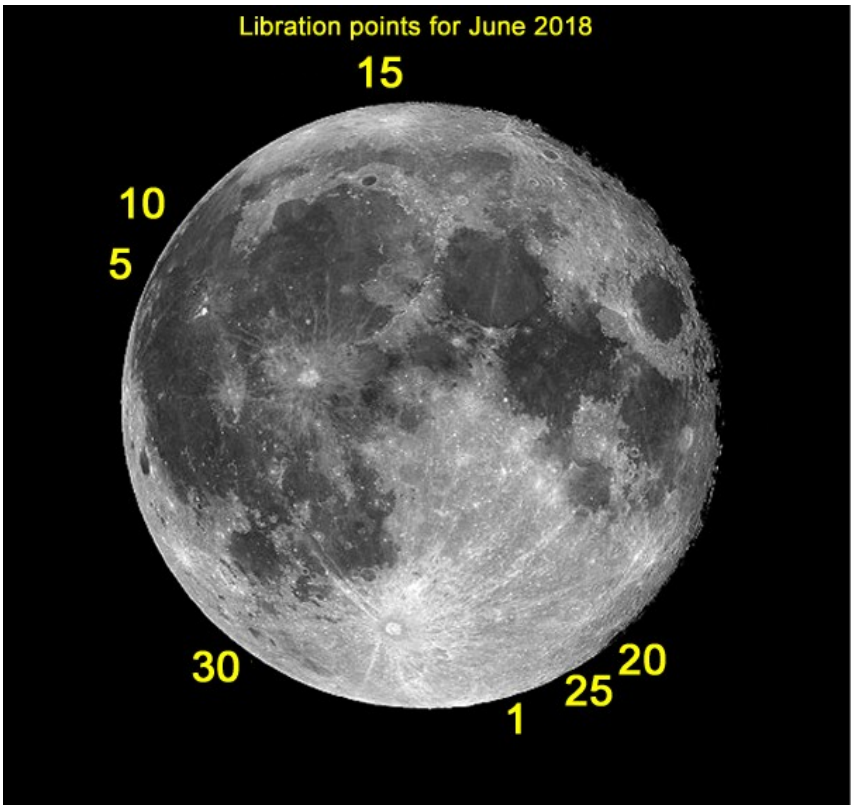
05/15 Lat +06°30' Long -04°53'

05/20 Lat +00°57' Long +02°12'

05/25 Lat -05°47' Long +05°14'

05/30 Lat -05°25' Long +03°06'

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



Size of Libration

06/01 Lat -03°22' Long +00°53'

06/05 Lat +01°57' Long -04°37'

06/10 Lat +06°35' Long -07°22'

06/15 Lat +03°00' Long -00°23'

06/20 Lat -04°51' Long +06°03'

06/25 Lat -06°18' Long +05°04'

06/30 Lat -01°01' Long -00°48'

NOTE:
Librations are based on a geocentric position at 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: Magnetic Anomalies-Reiner Gamma

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 2018** edition will be **Magnetic Anomalies – Reiner Gamma.** 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 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 Reiner Gamma article is June 20, 2018

FUTURE FOCUS ON ARTICLES:

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

Subject	TLO Issue	Deadline
Apollo 17 Region - Sea of Serenity	September 2018	August 20, 2018
Apollo 16 Region – Descartes and Cayley Plains	November 2018	October 20, 2018
Apollo 15 Region – Mare Imbrium and Hadley Rille	January 2019	December 20, 2018
Apollo 14 Region – Fra Mauro	March 2019	February 20, 2019
Apollo 12 Region – Ocean of Storms	May 2019	April 20, 2019
Apollo 11 Region – 50th Anniversary – Sea of Tranquility	July 2019	June 20, 2019

Invitation to the
Society for Astronomical Sciences 2018 Symposium
and
ALPO 2018 Conference

The SAS Program Committee invites you to participate in the Society for Astronomical Sciences' 37th Annual Symposium. The Symposium is the premier annual conference devoted to small-telescope astronomical research. This year will be a joint meeting with the Association of Lunar and Planetary Observers (ALPO).

The Symposium brings together amateur astronomers who are engaged in scientific research, professional astronomers, educators and students, for in-depth discussions of topics related to small-telescope research. It is an excellent venue for presenting recent results, discussing targets of observational campaigns, describing instrumentation and data reduction/analysis methods, developing collaborations, and bringing together the community of practice to share expertise and experience. Almost any topic related to astronomical research using modest telescopes is of interest to SAS. You need not be an expert to benefit from participating in the Symposium: one goal of SAS is to provide a mentoring environment where you will learn how you can contribute to astronomical science.

Date & Location: The 2018 SAS Symposium will be held on Thursday-Friday-Saturday, **June 14-15-16, 2018** at the Ontario Airport Hotel, Ontario CA.

Workshops: Educational workshops are being planned for Thursday (June 14). Details will be on the SAS website soon (*www.SocAstroSci.org*).

Technical Presentations: Friday and Saturday (June 15-16) will be the Technical Sessions, including both presentations and poster papers. Presentations and Posters will span the wide range of topics of interest to the small-telescope research community: solar-system objects, variable-stars, and binary stars; instrumentation for photometry, astrometry and spectroscopy; and related subjects.

You can read the Proceedings from recent SAS Symposia, and view videos of many recent Presentations, on the SAS website (*www.SocAstroSci.org*).

Sponsors: SAS Sponsors – developers, suppliers, and retailers of astronomical equipment – will be on hand with displays of their featured products.

Registration information for SAS 2018 will be on the SAS website (*www.SocAstroSci.org*) beginning February 20, 2018.

Focus On: Craters – The Latest & Greatest – Copernicus, Tycho, Aristarchus

Jerry Hubbell

Assistant Coordinator, Lunar Topographical Studies

The topic of this month's Focus On article is about some of our most favorite craters to observe. These are the most recent and brightest craters on the moon, and the one of the greatest, most interesting craters, there is. There were many images received on this topic this past month and I am glad to have our fellow members and contributors provide their thoughts on their contributions.

Copernican Period Craters - Asociación Entrerriana De Astronomía (Argentina)

"It was a very profitable experience, and with some nostalgia, to review the images of the database of our Lunar Section looking for the youngest craters of the Moon, those that belong to the Copernican period. Our objective was to exemplify the main features of the Copernican craters, following the guidelines of "The Geological History of the Moon" by Don Wilhelms (United States Government Printing Office, Washington, 1987) on page 267: "In summary, the brightest rays , most highly contrasting albedos of other crater materials, highest thermal anomalies, freshest morphologies, most coherent ejecta blocks, deepest floors, and fewest superposed craters indicate a Copernican crater age ".

In Figure 1 we find some of the brightest rays: in the foreground the rays of Aristarchus merging with those of Kepler on the right and those coming from the east of Copernicus.

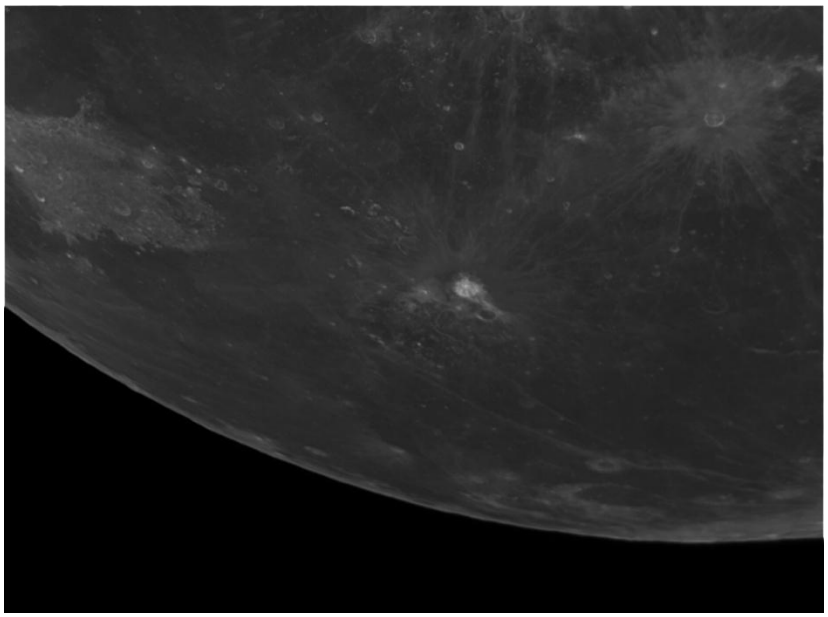


***Figure 1*. *Aristarchus**, Juan Manuel Biagi, Oro Verde, Argentina, April 21, 2016 2209 UT, 25-cm Schmidt-Cassegrain (Meade LX200), QHYCCD QHY5-II CCD video camera, north/up, east/right.*

In Figure 2 we see Copernicus as an example of complicated morphologies not yet altered by space weather: The Sun begins to illuminate the stepped slopes of the rim of a Copernicus still in shadows. We can also observe the ejecta from the impact that formed the crater almost intact.

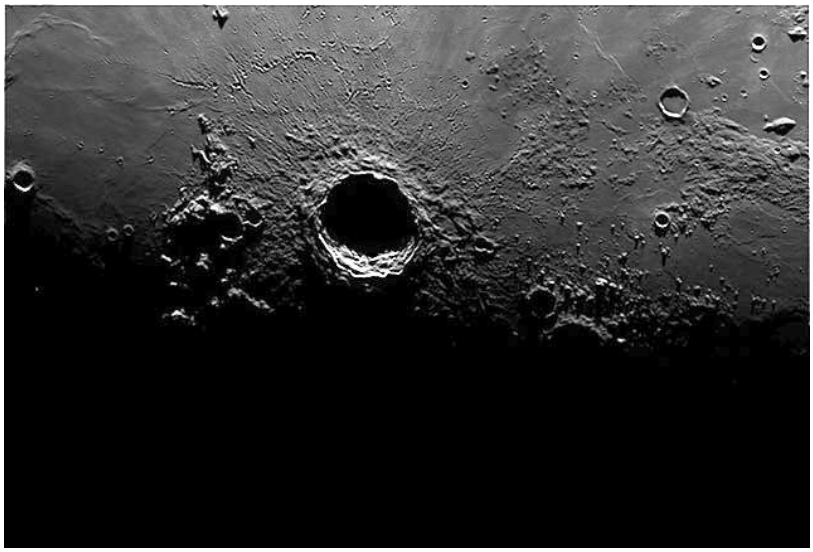


Figure 2. Copernicus*, Alberto Anunziato, Oro Verde, Argentina, August 12, 2016 0534 UT, 25-cm Schmidt-Cassegrain (Meade LX200), QHYCCD QHY5-II CCD video camera + Astronomik ProPlanet 742 IR-pass Filter, east/up, south/right.*

In Figure 3 Tycho shows not only its deep floor but also its stepped slopes with its lighter and darker areas ("the rim of the young crater Tycho is surrounded by both bright and dark zones", page 266) and the very high central peak projecting a sharp shadow…" (ed. This is the most striking image of Copernicus we received this time, and shows in great detail the splatter field of small impact craters east of the main crater.)

Figure 3. Tycho*, Francisco Alsina Cardinalli, Oro Verde, Argentina, December 20, 2015 0045 UT, 25-cm Schmidt-Cassegrain (Meade LX200), Canon Eos Digital Rebel XS, north/up, east/right.*

Atlas and Hercules – David Teske

"With a diameter of 87 km, Atlas is 2 km wider than Tycho but only half as deep. Named after the Greek Titan, its rim averages 3 km above its rough and

hummocky floor. Tips of a central peak are visible, and the floor is rough and fissured. As a floor-fractured crater, there is an extensive system of concentric rilles on its floor. A rille system, Rima Atlas, is of volcanic origin. There are at least two dark spots on its floor, which are likely pyroclastic ash deposits and suggest volcanic activity occurred at a time long after impact. These two dark spots are centered on tiny pits that occur along the rilles. These dark spots are made of volcanic glass and lava fragments. Atlas probably started out as a normal crater in the Early Imbrium Period, 3.85 to 3.75 billion years ago, but at some later time, magma rose up under the floor, lifting and cracking the floor. Some of the most gas rich magma escaped creating the dark halo ash deposits.

A bit smaller, with a diameter of 69 km, Hercules displays terraced inner walls and a flat floor with a central peak that is just visible. The floor has some interesting contrasts in albedo. A dark arc of lava can be seen on its northern end. A sharp rimmed bowl crater dominates the floor and may have destroyed the central peak. Named after the hero of Greek mythology, Hercules appears to be of Eratosthenian Period, 3.15 to 1.1 billion years old. “

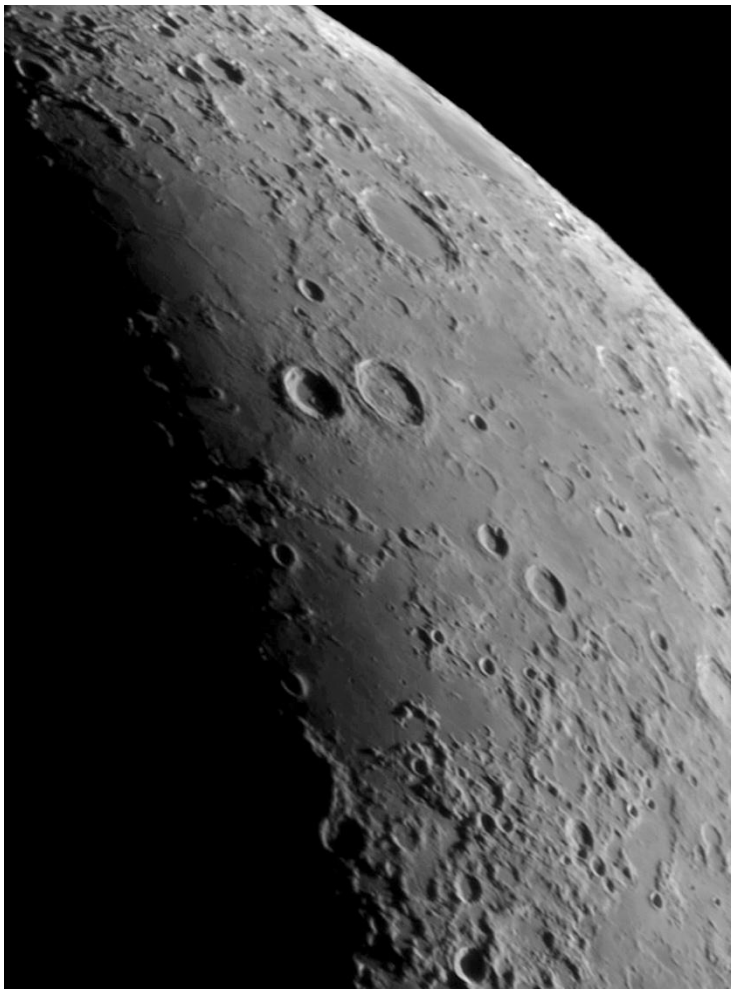


Figure 4. Atlas and Hercules*, David Teske, Louisville, Mississippi, USA, March 22, 2018 0123 UT, 4-inch APO refractor, 2.5 x Powermate, CCD Video Camera, Colongitude 327.8 degrees, Seeing 4/10.*

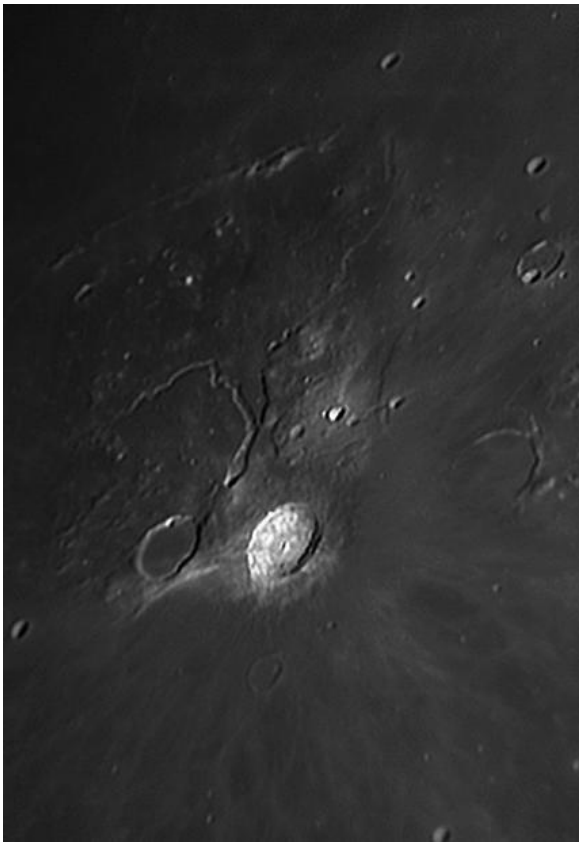


Figure 5. Aristarchus and Vallis Schroteri*, Jerry Hubbell, Locust Grove, Virginia, January 7, 2012 0057 UT, 5-inch. APO Refractor (Explore Scientific 127 ED) + TeleView 4x Power Mate, Imaging Source DMK21AU04.AS CCD video camera, north/up, east/right. Seeing 7/10, Transparency 5/6*

Figure 6. Aristarchus, Vallis Schroteri, and Montes Agricola*, David Teske, Louisville, Mississippi, USA, 01 December 2017 at 0302 UT. Colongitude 58 degrees, Seeing 5/10, 4 inch APO refractor.*

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TWO LIGHTHOUSES ON THE SOUTHEAST QUADRANT

Alberto Anunziato

The nights of full moon, nights of bright rays on the selenite surface, are especially charming for me. With the rays of the high sun striking the surface directly, huge craters are barely visible and small wonders appear fleetingly. It was the case of the March 30th observation from the Oro Verde Observatory (fig. 1). The power of two lighthouses in the Moon's southeast quadrant immediately caught our attention. The identification at 67.6º colongitude is always difficult, but these two bright ray craters flank a recognizable crater,

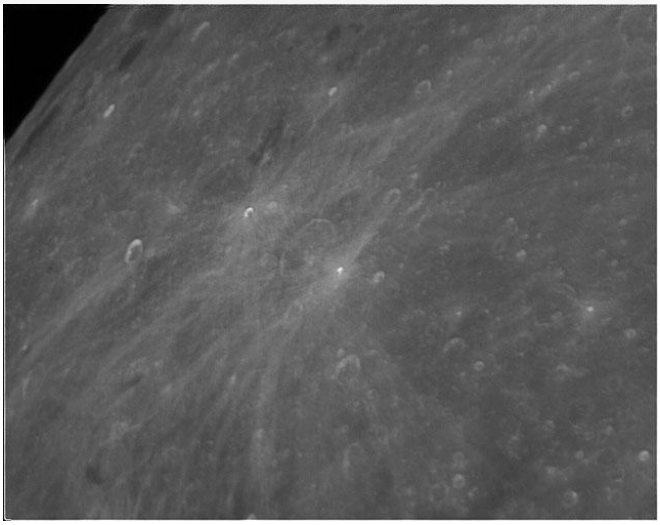

FIGURE 1. Stevenus A & Furnerius A– *Alberto Anunziato, Paraná, Argentina. March 30, 2018 03:40 UT. C-11 Edge HD, QHY5-II.*

Stevinus, even when Stevinus's details are impossible to discern. In the area covered by the photograph is the impact site of the Japanese probe Hiten in 1993, between Stevinus and Furnerius. At first it seemed that the rays seen in the image belonged to the nearby Tycho, but they were not. Stevinus A and Furnerius A, on both sides of Stevinus, are very small but very bright. Stevinus A, on the west side, has an 8 km. diameter. Its ray system seems to have a fan pattern with more ray material to the north and west. The east wall appears ostensibly brighter. Furnerius A, on the east side of Stevinus, is 12 km. in diameter, but appears less prominent than Stevinus A, surely the ray material that hides the shape of the crater prevents seeing its real size. The rays of Furnerius A also extend irregularly, mainly towards the north. It seems that both bright ray craters are results of oblique impacts. The next day, visually observing the Moon with a smaller telescope (105 mm Maksutov-Cassegrain) for the Lunar Geological Change Detection Program, I observed again (Colongitude 82.3º) both bright ray craters to verify a Lunar Transient Phenomenon past report about "glittering points" near Stevinus, and Stevinus A and Furnerius A presented the same appearance as the night before, extending their rays to the north. Don't you think that these wonders deserve a name of their own?

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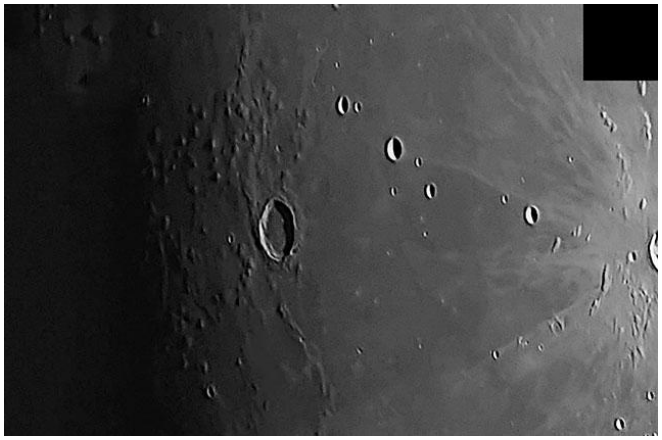
LUNAR PUSTULES

Rik Hill

One day after Kepler emerges from the terminator another crater appears about the same lunar latitude. This is Marius (43km dia.) seen just left of center (fig. 1). But what follows Marius is more interesting. Note that it looks like the mare has some sort of moon hives. This is the Marius Hills, Marius Dome Field or more properly Domes Marius.This is the thickest concentration of lunar domes on the moon. There are over three dozen domes in this region. How



many can you count? You can see the edge of Kepler on the right edge of this images and the beautiful ray system spread across the right half of the image. Above Marius is

FIGURE 1. Marius *- Richard Hill – Tucson, Arizona, USA March 29, 2018 05:05 UT. Colongitude 57.3º. TEC 8" f/20 Mak-Cass, 610 nm filter, SKYRIS 445M.*

a pair of smaller craters, Marius C (11km) and S (7km), noted as CB on the Rukl Atlas. To the upper right of this pair you can see the beginning of Rima Marius. This rima winds for over 280 km across the mare but gets vanishingly thin after a few tens of kilometers. There are a number of very thin, and unnamed rimae around Marius. They are good challenges for the observer with a moderate sized telescope.

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A DIFFERENT VIEW

Rik Hill

Here's an old friend, Petavius, a handsome 182km diameter crater with a well formed central peak and spectacular rimae. But it might look a bit odd, rather close to the limb and strongly foreshortened. This is due to an unfavorable libration where this portion of the moon is rotated a bit away from our line of sight. To demonstrate this a portion of another image from 2016-07-09 at a more favorable libration has been inserted in the lower right. The differences in foreshortening can easily be seen but even more, look on the insert near the limb and you will see a large crater partially cut off. This is Barnard. Now notice that it's completely missing in the larger image having rotated onto the limb.

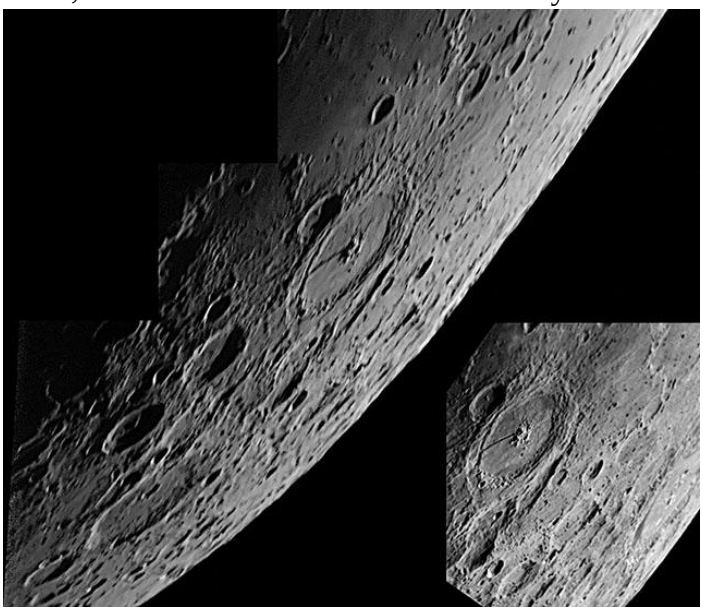

FIGURE 1. Petavius *- Richard Hill – Tucson, Arizona, USA April 19, 2018 02:18 UT. Seeing 7/10. Colongitude 311.8. TEC 8" f/20 Mak-Cass, 610 nm filter, SKYRIS 445M.*

Looking around, south of Petavius are two similar sized craters, Snellius (85km) and farther out Stevinus (77km). Just to the left of Petavius on the western wall is Wrottesley (60km). To the lower left is the crater Hase (85km) with a smaller crater on its floor, Hase A (14km). Below them is another crater deep in shadow. This is Hase D (56km). Now look at these last two on the insert. Quite a difference. It pays to know your libration!

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

JAY ALBERT - LAKE WORTH, FLORIDA, USA. Digital images of 3rd Qtr Moon & Albategnius.

ALBERTO ANUNZIATO - ORO VERDE, ARGENTINA. Digital images of Copernicus, Godin-Dionysius & Stevinus A-Furnerius A(4).

FRANCISCO CARDINALLI - ORO VERDE, ARGENTINA. Digital images of Aristarchus(3), Copernicus, Pythea & Tycho(3).

JAIRO CHEVEZ - POPAYÁN,COLUMBIA. Digital images of Janssen, Mare Crisium, Mare Fecunditatis, Mare Nectaris & Petavius.

ABEL CIAN - PARANÁ, ARGENTINA. Digital images of Aristarchus(2), Byrgius, Copernicus, Copernicus-Kepler, Hevetius, Lohrmann-Cavelarius, Mare Crisium, Mare Humorum, Plato, Rimae Gassendi, Rocca & Schickard-Gassendi.

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 3 & 13 day moon, Aristarchus, Descartes, Grimaldi, Pythagoras, Schickard & Tycho-Bailly.

WALTER ELIAS - ORO VERDE, ARGENTINA. Digital images of Aristarchus, Copernicus, Mare Crisium, Plato(3), South Pole, Proclus & Torricelli.

LAWRENCE GARRETT - FAIRFAX, VERMONT, USA. Digital image of Montes Alpes.

RICHARD HILL – TUCSON, ARIZONA, USA. Digital images of Aristarchus, Clavius, Copernicus, crescent Moon, Gassendi, Marius, Petavius & Rupes Recta.

LUIS MANSILLA - ROSARIO, ARGENTINA. Digital images of Copernicus, Proclus, Tycho(2), Plato & Manilius.

DAVID TESKE - LOUISVILLE, MISSISSIPPI, USA. Digital image of Atlas-Hercules.

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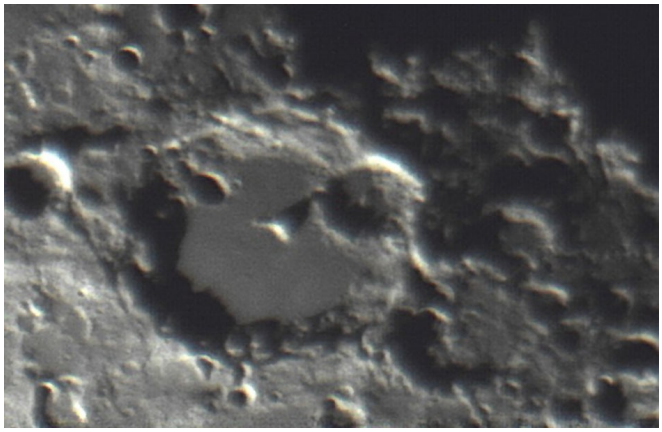
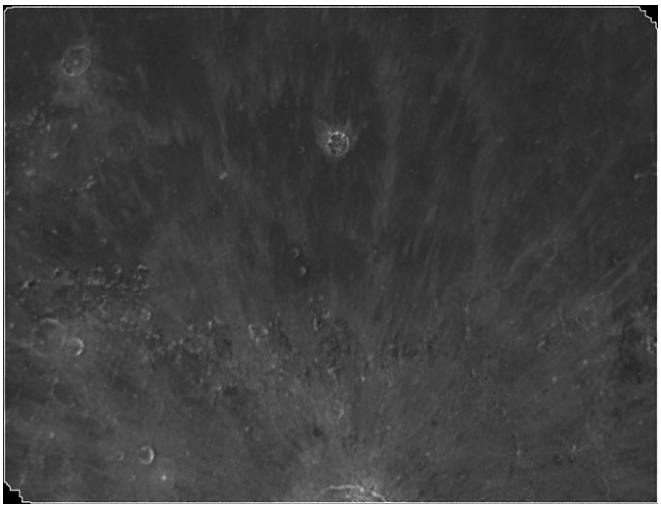


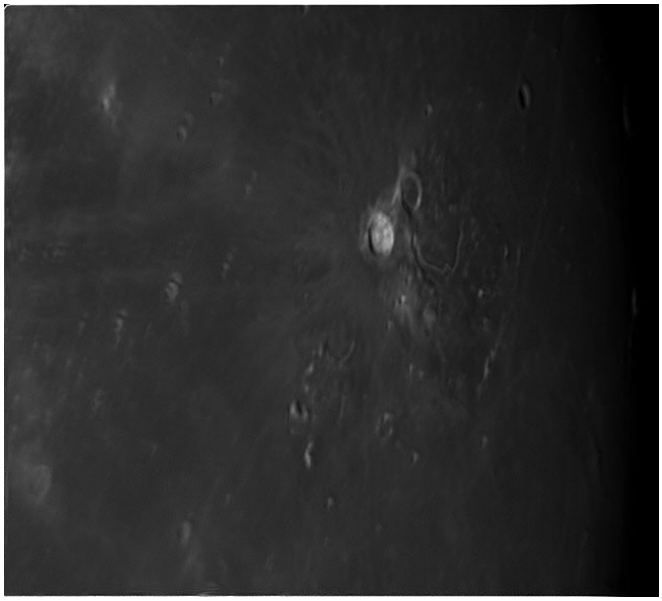
ALBATEGNIUS - Jay Albert, Lake Worth, Florida USA. February 2, 2017 03:08UT. Seeing 7/10. NexStar 6" SCT, Neximage 5.

RECENT TOPOGRAPHICAL OBSERVATIONS

GODIN-DIONYSIUS– Alberto Anunziato, Oro Verde, Argentina. August 21, 2016 04:13 UT. 10" LX-200, QHY5-II, Astronomik 742 IR-pass filter.

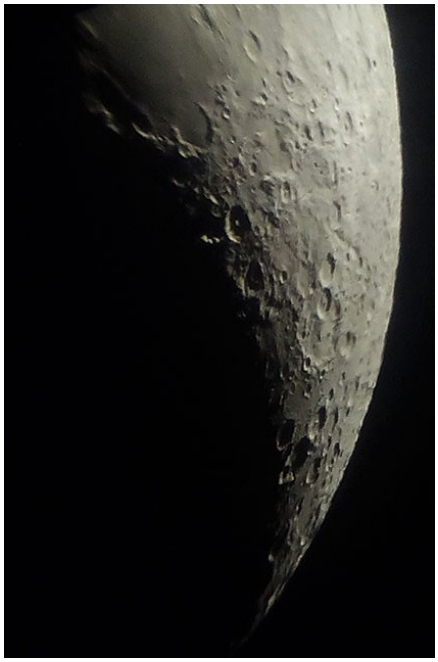


PYTHEAS, Luis Francisco Alsina Cardinalli, Oro Verde, Argentina, September 10, 2016, 23:05 UT, C-11 Edge HD SCT, QHY5-II.



ARISTARCHUS, Luis Francisco Alsina Cardinalli, Oro Verde, Argentina, March 30 2018 01:56, UT, C-11 Edge HD SCT, QHY5-II.

RECENT TOPOGRAPHICAL OBSERVATIONS



JANNSEN – Jairo Chavez,- Popayán Columbia. March 22, 2018 2101:20 UT. 10" Dobsonian, Huawei Y360 camera, ISO200.

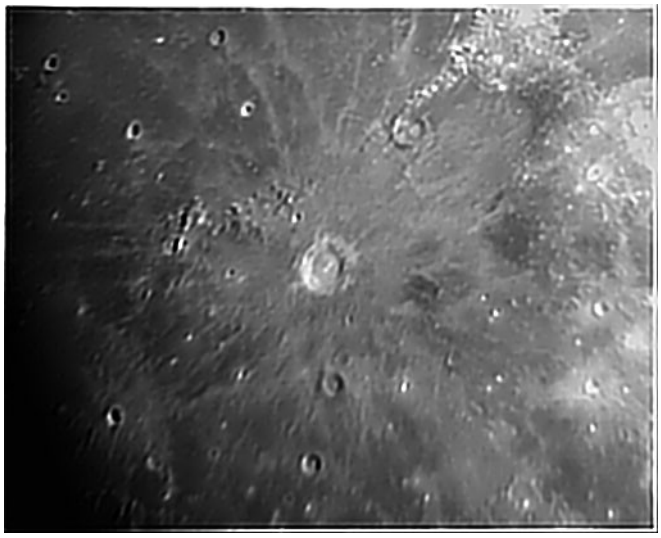
LOHRMANN-CAVELARIUS – Abel Gonzalez Cian, Paraná, Argentina. March 29, 2018 02:48UT. 10" Meade Lightbridge, Nikon D3100.

ROCCA – Abel Gonzalez Cian, Paraná, Argentina. March 29, 2018 02:468UT. 10" Meade Lightbridge, Nikon D3100.

RECENT TOPOGRAPHICAL OBSERVATIONS

DESCARTES- Maurice Collins,- Palmerston North, New Zealand. April 22 2018 07:39 UT. C-8 SCT. ASI120M.C North down.

GRIMALDI - Maurice Collins,- Palmerston North, New Zealand. March 30 2018 09:15 UT. FLT-110., f/14, ASI120M.C North down.



COPERNICUS Walter Elias, Oro Verde, Argentina. March 28, 2018 03:44 UT. 900mm Helios reflector, 2x barlow Motorola XT1563.

RECENT TOPOGRAPHICAL OBSERVATIONS

MONS PITON & MONTES ALPES– Lawrence Garrett,- Fairfax, Vermont USA April 22 2018 UT. Orion XT6.

Crescent MOON- Richard Hill – Tucson, Arizona, USA April 18, 2018 02:20 UT. Colongitude 357.9º. Seeing 4-5/10. TEC 8" f/20 Mak-Cass, 610 nm filter, SKYRIS 445M.

TYCHO - Luis Alberto Mansilla,- Rosario, Argentina March 27 2018 23:41 UT. NexStar 102mm, f/6.5, ASI120M.M.

LUNAR GEOLOGICAL CHANGE DETECTION PROGRAM

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

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

Reports have been received from the following observers: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Aristarchus, Copernicus, Gassendi, Kant, Mare Crisium, Montes Spitzbergen, Plato, Proclus, Santbech, Theophilus, Torricelli B, Tycho, and imaged several features. Alberto Anunziato (Argentina - AEA) observed: Censorinus, Eratosthenes, Gassendi, Plato, Proclus, Stevinus, and several other features. Bruno Cantarella (Italy - UAI) imaged: the Mare Serenitatis area. Luis Francisco Alsina Cardinali (Italy - UAI) observed: Aristarchus and Plato. Jario Andre Chavez (Columbia - LIADA) imaged: several features. Abel Gonzalez Cian (Argentina, AEA) imaged: Aristarchus, Gassendi, Plato and Proclus. Maurice Collins (New Zealand – ALPO/BAA/RASNZ) imaged: Aristarchus, Grimaldi, Pythagoras, Schickard, Tycho and Several Features. Anthony Cook (Newtown, UK – ALPO/BAA) videoed: earthshine. Marie Cook (Mundesley, UK – BAA) observed Herodotus. Walter Elias (Argentina – AEA) imaged: Aristarchus, Censorinus, Eratosthenes, Furnerius, Gassendi, Mare Crisium, Plato, Proclus, Riccioli, Schickard, Torricelli , Torricelli B, and Tycho. Les and Kris Fry (West Wales, UK - NAS) imaged Earthshine. Rik Hill (Tucson, AZ, USA – ALPO/BAA) imaged Aristarchus, Copernicus, Gassendi and Marius. Camilo Satler & Marino Peter (Argentina – AEA) imaged several features. Franco Taccogna (Italy – UAI) imaged several features. Gary Varney (Pembroke Pines, FL, USA – ALPO) imaged several features.

News: Marcelo Zurita (APA) has emailed to say that several observers in Brazil have been very active videoing earthshine, looking for Lyrid impact flashes, and they will let me know if they detect any, in the subsequent analysis going on as I write this.

Maurice Collins emailed to point out a new theory about Herschel's volcano effect – a dull red glow seen on the night side of the Moon in April 1787. According to the paper, it may have been the result of impact melt from a very small impact crater, which radiated its heat away long after the main impact. I have some doubts as I was under the impression that Herschel's three volcanoes were mistaken to be Aristarchus, Kepler and Copernicus, and that perhaps he was not used to studying the night side of the Moon with his large f/No. scope. But if you would like an interesting read, then see: https://arxiv.org/abs/1804.08716 as maybe that the theory could explain a few other red colored LTPs?

I received some sad news from ALPO's Ken Poshedly, to say that he had heard that Takeshi (Ken) Sato, from Japan's version of ALPO had passed away. Ken Sato had been an active lunar observer at least since the 1950's and had taken part in several LTP observing campaigns. Ken was also famous for reporting a buried saucer like crater, and I quote this story from an email I received from him in 2013:

> *"I'm very glad to know, in your note in "Lunar Observer 2013 October", that Avani Soares(Brazil) emailed you about an article they have written on a ghost, or buried, 50 km diameter crater they found near Wollaston D. Also I'm very grateful to you for quoting, in your note, my short article in BAA Lunar Section circular (1969 Apr Vol 4 p25-26). By the way my report on this ghost crater ('saucer' in my terminology) first appeared in Strolling Astronomer (JALPO) Vol. 16 Nos. 1-2 (1962), then another one in Strolling Astronomer Vol. 16 Nos. 5-6 (1962). Also it was reported in a number of Japanese publications.*
>
> *The story of the discovery of this ghost crater (saucer) is as follows: In 1960 I was donated by Dr. Shotaro Miyamoto 'Photographic Atlas of the Moon' by Miyamoto and M. Matsui. Soon I noticed the existence of this saucer; but I thought that it must be widely known among lunar observers because it is too large and too obvious to be unnoticed by experienced observers. In 1961 I fell ill and entered into a hospital. At the sickbed I compared the photographic atlas with Wilkins' great map. To my surprise I found that this saucer is not shown in this great map. I sent letters of inquiry to Walter Haas and Dr. Gilbert Fielder, and their answers were both "I don't know it." But later I received another letter from Haas. This time he wrote that he remembered that Dr. Joseph Ashbrook of Sky and Telescope reported to him an object probably the same*

object as the saucer in question. I sent a letter to Dr. Ashbrook, and his answer was that he reported about the saucer to Haas, but his report had not been published perhaps due to some mistake. Also Ashbrook wrote to me that he sent a letter of inquiry to Dr. H.P. Wilkins. Ashbrook wrote to me that Wilkins' answer was that he already know that saucer. However the saucer is not shown in his great lunar map. Also, I don't know any published report of Wilkins' discovery of the saucer. In my opinion Wilkins must be excluded from the discoverers"

LTP Reports: Only one suspected LTP was reported, although probably was just an instrumental effect? But just for the record, on 2018 Mar 24 sometime between 21:00-22:00 UT Julien Quirin (Strasbourg, France - Société Astronomique de France) obtained a Registax'ed color image of the Alphonsus region, and in the floor area was a was a tinge of a dull blue – only visible when the image was contrast stretched. This was captured with a 20cm f/5 Newtonian with a Barlow X5 Powermate Televue and camera ASI 224 MC. The Barlow suggests immediately that it may have been some sort of internal reflection, however just to be sure, we would like to see if anybody else was imaging the crater in color that night.

Jonathan Doupe (ALPO) has alerted me to a report of a naked eye flash seen on the Moon by E. Hedman on 2018 Apr 25 UT 00:10. However we have to be careful because as with cameras detecting flashes resembling impact flashes, caused by muons from cosmic ray air showers, the eye can similarly be fooled. Only a second independent observation would confirm whether the naked eye flash was lunar in origin.

From the UK, myself and Calum Sweeney, one of my MPhys students, have been searching for Lyrid impact flashes. I possibly detected one over two TV de-interlaced fields, north of Mare Frigoris on 2018 Apr 20 UT 21:29:02, however the flash in the 2nd of the TV fields was close to the noise levels, so it may not be very convincing. Two slightly more promising detections were by my MPhys student on 2018 Apr 20 at 20:58:28 UT (65°W, 10°S) and on 2018 Apr 21 at 20:41:21 UT (75°W, 10°N). Unfortunately we did not cover the same areas of the Moon, or were interrupted by cloud, and so were unable to confirm these reports. We therefore request confirmation from independent observers who may have been videoing the Moon at the time?

Routine Reports: Below is a selection of reports received for March that can help us to re-assess unusual past lunar observations – if not eliminate some, then at least establish the normal appearance of the surface features in question. Alas, due to finishing up marking of student coursework, I will not be able to spend much time analyzing these, so the onus will be on the reader to compare the original LTP descriptions with the modern day repeat illumination observations of the normal appearance of these features:

Aristarchus: On 2018 Mar 01 UT 06:11 Walter Elias (AEA) imaged the crater under the same illumination (±0.5°) to a report from 1955 by Firsoff:

Schroter's Valley 1955 Jul 03 UT 22:00 Observed by Firsoff (Somerset, England, 6.5" reflector x200) "Drawing contains a star-like pt. at N. part of valley." NASA catalog weight=4. NASA catalog ID #597. ALPO/BAA weight=2.

At the location that Firsoff arrows the star like point (Fig 1 Left) there is no star-like point in Walter's image (Fig 1 Right). However a little further to the north is Mons Herodotus. In terms of cartographic accuracy, Firsoff's sketch has a few issues, and I propose that he may have misplaced Mons Herodotus to further south and placed it on the northern part of Vallis Schroteri? I will lower the weight from 2 to 1, as its only a theory, but has some plausibility, indeed in a sketch that he made on 1955 Jul 01 (not shown here) he also arrows a star-like point, beyond the terminator, which again looks very much like Mons Herodotus.

Aristarchus: On 2018 Mar 02 UT 19:57, 20:27-21:21, and 21:09 Franco Taccogna, Aldo Tonon, and Paolo Moramarco, (UAI) imaged respectively the whole Moon to aid our long running project to monitor the

brightness of Aristarchus. I have measured the digital number brightness of nine features that we have used in past months, and taken an average of the above three observer images. In order of brightness from dark to light, for 2018 Mar 02 these go: Mare Crisium (50), Plato (75), Kepler (134), Copernicus (149), Tycho (170), Censorinus (181), Proclus (181), Aristarchus (188) and Hell (195). This is pretty much in agreement with the sequence found back in the January 2017 newsletter when the ordering from dull to mid range was: Mare Crisium, Plato, Kepler, Copernicus, but for the brighter craters it went in a different order from bright to very bright: Aristarchus, Tycho, Proclus, Hell and Censorinus. However we have to be very careful in interpretation as some of these differences may result from image resolution factors, camera sensitivity to wavelength, and atmospheric conditions.

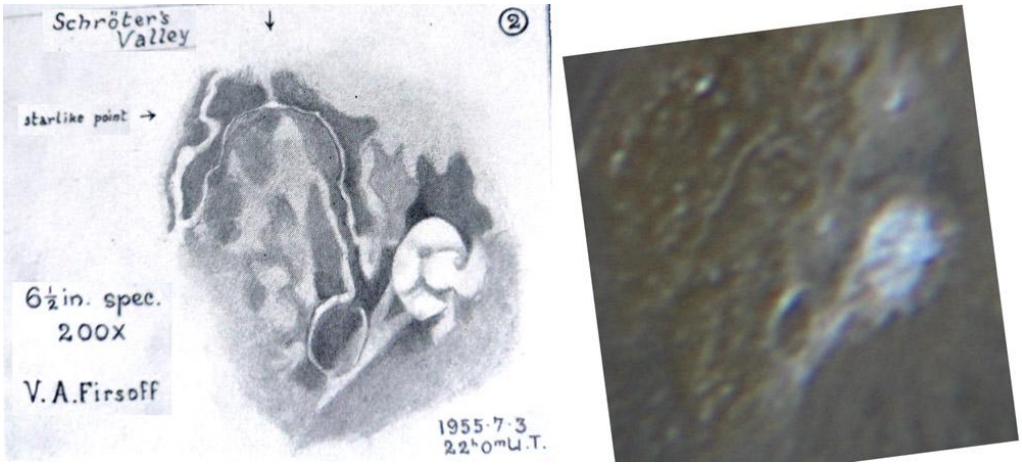


Figure 1. The Aristarchus area, orientated with north towards the top. **(Left)** A sketch by V.A. Firsoff from 1955 Jul 03 UT 22:00, made with a 6.5" reflector, x200, from Plate X from the Strange World of the Moon, by V.A. Firsoff, 1959, published by Hutchinson's of London – N.B. the annotation has been rotated so that the sketch matches Walter's image to the right. **(Right)** A color image by Walter Elias (AEA) with color saturation enhanced to 50%.

Earthshine: On 2018 Mar 19 UT 19:05 Les & Kris Fry (NAS) took a Canon 1100d (75mm lens, ISO 800,1/4 sec exposure of the crescent Moon under similar illumination (±0.5°) to the following Japanese report:

In 1950 Jan 21 at UT 09:00 T.Saheki (Osaka, Japan) and S. Murayama observed several bright patches on the western limb region in Earthshine. These were not the same as patches observed by them on Jan 20. A tiny bright spot on the SW limb was about mag 8. The ALPO/BAA weight=1.

Figure 2. Earthshine as imaged on 2018 Mar 19 UT 19:05 by Les and Kris Fry (NAS) taken with a Canon 1100d camera with a 75mm lens, ISO 800, and a 1/4 sec exposure.

Although limited by resolution of the telephoto lens, there are no obvious signs of bright patches on the western limb (Fig 2), though there is a light arc around the western edge caused by highland material. There is no

sign of a bright spot on the SW limb either. We shall leave the weight of the LTP report at 1.

Picard: On 2018 Mar 22 UT 02:50 Jario Andre Chavez (LIADA) imaged Mare Crisium 1h20m after the similar illumination (±0.5°) observing window for the following event:

E. of Picard 1909 Mar 26 UT 19:15-20:20 Observed by Neate (England, 4" refractor x170) "Bright spot. (feature is similar to Linne. Rays difficult to see till high sun). Hazy ill-defined brighter in S. (Draw.)." NASA catalog weight=1. NASA catalog ID #329. ALPO/BAA weight=1.

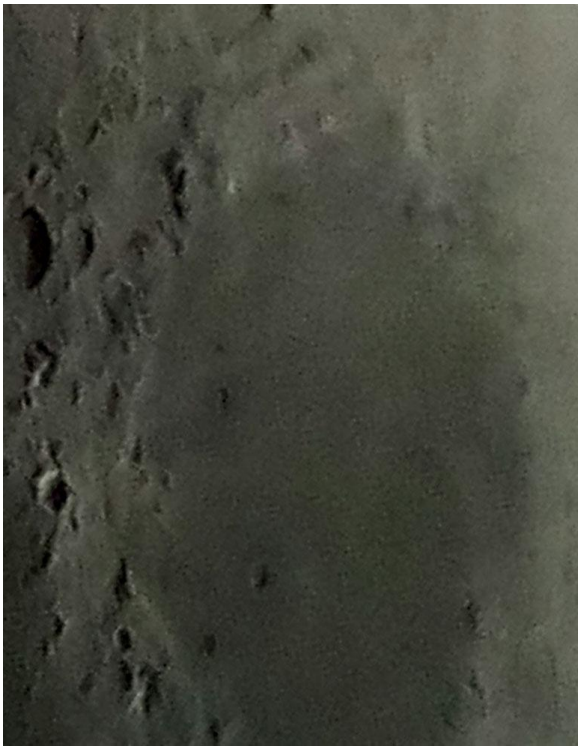


Figure 3. Mare Crisium 2018 Mar 22 UT 02:50 as imaged by Jario Andre Chavez (LIADA) and orientated with north towards the top.

Jario's image (Fig 3) does not show any obvious white spot to the east of Picard, though at other stages in illumination (not shown here) we find the ejecta blanket from the bright 2.6 km diameter ray crater, Curtis. We shall leave the weight at 1.

Censorinus: On 2018 Mar 22 UT 20:46 Aldo Tonon (UAI) imaged the crater in color to see if they could detect a slight blue tinge which is visible before the brilliance of this ray crater gets going at higher sun angles. This study is often mentioned on our Lunar Schedule website. In Aldo's image in Fig 4, there is a hint of blue present. So we at least know that this is present in a colongitude as earlier as 340.0°.

Kant and Torricelli B: On 2018 Mar 23 Gary Varney and Jay Albert (ALPO) observed these two features under repeat illumination to the following two reports:

Kant 1873 Jan 04 UT 23:00? Observed by Trouvelot (Cambridge, Mass, 8" refractor) "Luminous purplish vapors" NASA catalog weight=3. NASA catalog ID #180.

On 1983 Feb 18 at 19:00?UT P.W. Foley (Kent, UK) noted that Torricelli B was steel blue in color and this spread 10-15 miles outside the crater. This was odd because Torricelli B was only 6 miles in size. Cameron 2006 catalog extension ID=205 and weight=3. ALPO/BAA weight=2.

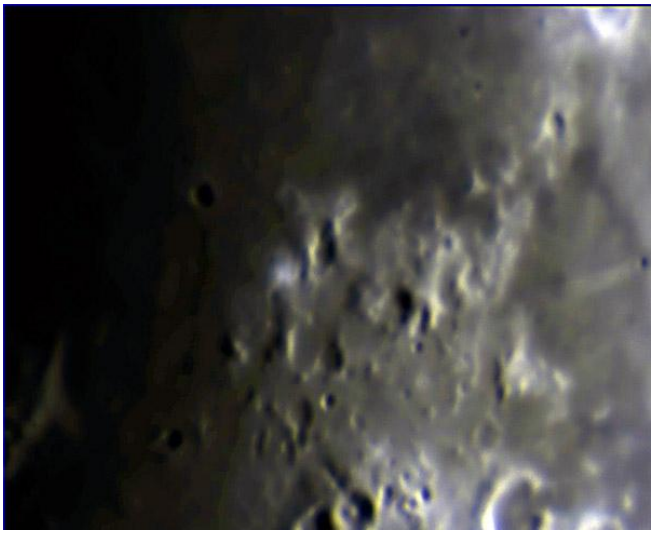


Figure 4. Censorinus taken on 2018 Mar 22 UT 20:46 by Aldo Tonon (UAI). The red and green channels have been re-centred, and the image colors normalized and then the color saturation increased to 50%. The image is orientated with north towards the top.

Figure 5 The Theophilus area taken on 2018 Mar 23, and orientated with north towards the top. Key: K = Kant crater, TB = Torricelli B crater. **(Left)** Taken by Gary Varney at 02:05 UT. **(Right)** Taken by Jay Albert at 03:15 UT.

The 1873 Kant repeat illumination event is covered in the 2018 Mar 23 observing window from 00:00-01:54UT. So Gary Varney's image (Fig 5 – Left) is just outside the ±0.5° observing window, but clearly shows no luminous purplish vapours. Jay Albert however did make a visual observation of this crater at 01:15-01:35 UT and commented: "*I saw no "luminous purplish vapors" in or near the crater. The crater interior was in black shadow and its large central peak was not visible. Only the inner W rim was brightly sunlit*". So I think that we had better leave the weight of the original report at 3, though I do wonder if the original description of purplish vapours might refer to a combination of atmospheric spectral dispersion/chromatic aberration, and seeing flare? It would be interesting to dig up the original report.

Concerning the Torricelli B report, the repeat illumination for this ran from 01:39-03:04 UT, and this covered Gary Varney's image (Fig 5 – Left), but Jay Albert's image was 11 minutes outside. Although both

images show Torricelli B, the resolution is not good enough to resolve the crater, we do at least just see it as a dark marking. However Jay made a visual observation at 01:50-02:00UT: *"The crater's floor was filled with black shadow while its W wall was sunlit. There was no "steel blue" or other color seen in or around the crater. I did, however, note that the area immediately around the outside of the crater was very slightly darker than the surrounding mare. The color was still gray and not steel blue".* We shall keep this at a weight of 3 as the effect did not re-occur.

Montes Alpes & Montes Caucasus: On 2018 Mar 23 UT 21:11 & 21:16 Bruno Cantarella (UAI) was attempting to image the Montes Spitzbergen area for a Lunar Schedule study. However as you can see from Fig 6, this region of the Moon clearly is not illuminated, and I have found a mistake in the Lunar schedule database, which I will be correcting. However the UT at which Bruno observed is useful nevertheless because it coincides with repeat illumination (±0.5°) to the following past 1789 LTP report:

> :*On 1789 Sep 26 at UT 03:30 Schroter (Lillienthal, Germany) observed close beneath Mons Blanc at the west foot, in the dark, a small 5th magnitude, speck of light. Its round shadow was sometimes black, sometimes grey. Cameron suspects that this is the same as her LTP report No. 50. the Cameron 1978 catalog ID=62 and weight=4. The ALPO/BAA weight=3.*

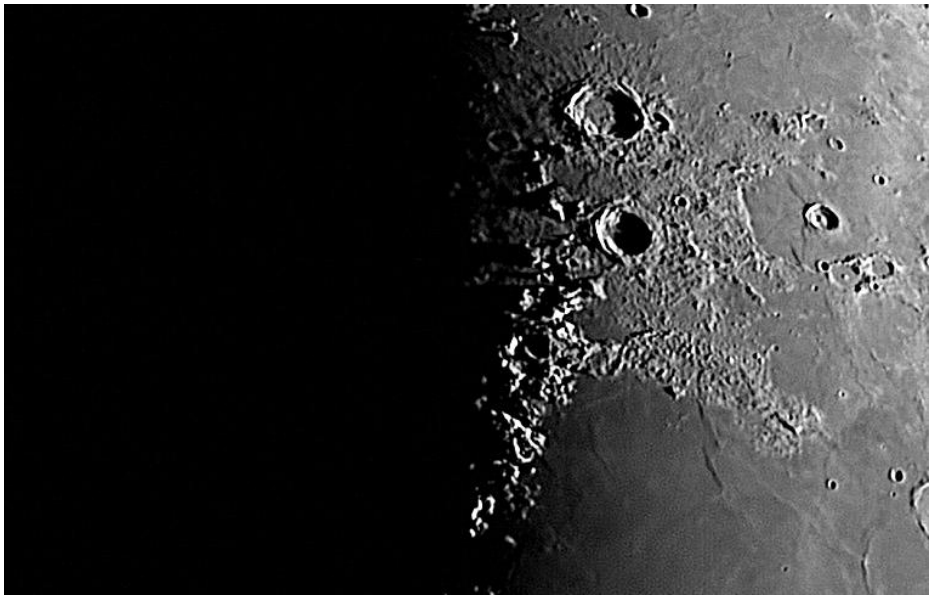


Figure 6. The north western Mare Serenitatis, bordered by the Montes Caucasus – image taken on 2018 Mar 29 UT 21:16 taken by Bruno Cantarella (UAI) and orientated with north towards the top.

This too shows no sign of the feature, Mons Blanc, that is supposed to be there. Therefore we can assume that either the date or the UT given in the Cameron catalog is wrong. Looking at Plate 2E in the Hatfield Lunar Atlas, it is quite clear that the colongitude needs to be earlier than 1.4° for the mountain to appear. I will see if I can find the original reference for the 1789 observation in order to correct this, but for now will lower the weight to 1 so that it has less effect on any statistical analysis we do on the LTP database.

Proclus and Censorinus: On 2018 Mar 25 UT Alberto Anunziato (AEA) observed Proclus from 00:45-00:55 & Censorinus 01:40-01:45 & Camilo Satler imaged the whole Moon, under similar illumination to the following two LTP reports:

> *On 1987 Nov 28 UT at 20:14 (possibly earlier)-20:44 M. Mobberley saw the northern rim of Proclus very bright for first quarter. There were streaks half way up the*

wall and these seemed to vary in brightness and length in seconds. Seeing was at first suspected but became doubtful over this being a cause. There was also another bright streak that changed brightness over 5 minute intervals (Cameron says that this is not atmospheric) Apparently video was taken and confirms the effects. A sketch was also made. M. Cook detected a blink with colored filters i.e. being brighter in red light (Also apparently confirmed by Louderback). Estimated the north west wall was x3 brighter than Censorinus. Censorinus itself varied in brightness as measured using CED devices. P. Foley decided that the north was much brighter than Proclus (beyond the limits of the scale. However both Moore and Mason agreed that the north wall of Proclus was very bright but shimmering around in the bad seeing. They did not see any bright spots either. A.C. Cook (20:18-20:44UT) confirmed that the north wall of Proclus was very bright. Towards the end of the observing period the north wall had faded from this maximum brightness - Cameron suspects that this might have been as a result of an eyepiece misting up. The LTP was also observed by Foley (Maidstone, Kent, UK) and he reported: "Bright spot on north wall, Moon blink reaction". A BAA Lunar Section report, with extracts from the 2006 Cameron catalog. Cameron 2006 catalog ID=315 and weight=4 (or 5?). ALPO/BAA weight=3. Apart from Louderback, all observers were based in the UK and had a variety of telescopes and observing conditions.

On 1987 Nov 28 M. Cook (Frimley, UK) found Censorinus varied in brightness as measured using CED devices. P. Foley decided that the north was much brighter than Proclus (beyond the limits of the scale). However both Moore and Mason agreed that the north wall of Proclus was very bright but shimmering around in the bad seeing. They did not see any bright spots either. A.C. Cook (20:18-20:44UT) confirmed that the north wall of Proclus was very bright. Towards the end of the observing period the north wall had faded from this maximum brightness - Cameron suspects that this might have been as a result of an eyepiece misting up. The LTP was also observed by Foley (Maidstone, Kent, UK) and he reported: "Bright spot on north wall, Moon blink reaction". A BAA Lunar Section report with extracts from the 2006 Cameron catalog. Cameron 2006 catalog ID=315 and weight=4 (or 5?). ALPO/BAA weight=2. Apart from Louderback, all observers were based in the UK and had a variety of telescopes and observing conditions.

Figure 7. Part of Mare Tranquilitatis as imaged by Camilo Satler & Marino Peter (AEA) on 2018 Mar 25 UT 01:20-01:21, and orientated with north towards the top. Taken through a 28 cm Celestron CPC 1100 with a Samsung Galaxy J7 mobile phone.

Whilst the image that Camilo & Marino (Fig 7) took does not have sufficient resolution to address many of the issues raised in 1987 reports, it does at least show that on this repeat illumination in 2018, that Proclus was

the brighter of the two craters. Visual observations by Alberto, using a Meade EX 105 (x154) under 5/10 seeing, found that only the north wall of Proclus was bright, but less bright than Censorinus at 00:45-00:55, however he comments later at 01:40-01:45 that Proclus (as a whole) seemed a bit brighter than Censorinus – though this was made difficult to estimate for sure due to the seeing. We shall keep the weights of the 1987 report as they are at 3 and 2 respectively.

Herodotus: On 2018 Mar 28 UT 21:20-21:35 Marie Cook (BAA) observed this crater under similar illumination (±0.5°) to the following two separate reports by Walter Haas:

On 2002 Feb 24 UT 06:05-06:20 W. Haas (Las Cruces, NM, USA) observed that the shadow was, almost, but not completely black. This might have been related to the observing conditions. ALPO/BAA weight=2.

On 1954 Aug 11 in Herodotus - Observed by Haas (Las Cruces, NM, USA) "Temporary greyness seen in interior shadow." ALPO/BAA weight=3.

Marie was using a 90mm aperture Questar telescope under Antoniadi III seeing and moderate transparency. At x80 & x130 she found that the shadow on the floor of the crater was black in both cases. We shall therefore leave the weights at 2 and 3 respectively.

Proclus: On 2018 Mar 29 Jay Albert (ALPO) observed visually (01:50-02:05 UT) and Abel Gonzalez Cian (AEA) imaged (02:45 UT) this crater under similar illumination (±0.5°) to the following report by Bartlett:

Proclus 1976 Sep 06 UT 02:00 Observed by Bartlett (Baltimore, MD, USA, 4.5" reflector 45-300x, S=3, T=5) "Nothing vis. on floor of 2deg brightness. Usually floor ray & Proc. A are vis. at this col. & c.p. is 5 deg bright. (must have been 2 deg tonite)." NASA catalog weight=4. NASA catalog ID #1450. ALPO/BAA weight=2.

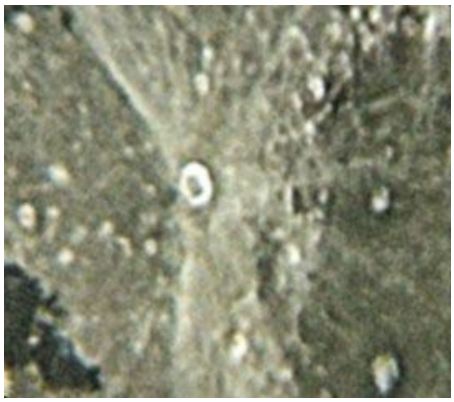


Figure 8. Proclus as imaged by Abel Gonzalez Cian (AEA) on 2018 Mar 29 UT 02:45 and orientated with north towards the top.

Jay comments that the crater floor was not as dark as the floor of Mare Crisium. The false central peak was easily seen slightly off-center to the E and not as bright as the crater walls. Very bright spots were noted on the E and NW walls. Although not detailed enough to see details inside Proclus, Abel's image (Fig 8) does at least confirm Jay's note that the floor of Proclus was not as dark as Mare Crisium. We shall leave the weight at 2.

Aristarchus: On 2018 Mar 29 UT 05:00 Rik Hill(ALPO/BAA) took a monochrome image of this crater which was just outside the repeat illumination window (±0.5°) for the following two reports – being closer to the first (5 min) than the second one (27 min later):

Aristarchus 1972 Oct 19 UT 17:55-18:05 Observed by Gabriel (Wettern, Belg. 4" refractor, x166, S=E), Hitchens (Stamine Locks, Eng., 8.5" reflector, S=F), Peters (Kent, Eng., 10" reflector), Amery (Reading, Eng. 10?" reflector), Flynn (England, 12" reflector) "At 17:55h noted bluish-purple color area just N. of Aris. & it reached just over N. wall, lasted 2 min. At 1800h color noted again, but not as brilliant & gone at 1801h. Seen again at 1804h & now was on E. (ast. ?) wall, lasting M 1min. Sure of its reality but not of lunar origin. All gone at 1805h. Hitchens noted a very bright spot on W. (IAU?) wall between 2 prominent bands. Blue darkening in W#38 filter, neg. in W#8,25,58 & integrated light. Other areas gave similar but lesser effects. May be due to damp geletin. (Moore thinks not LTP but many obs. have rep't blue in Aris.) Others obs. later (2100, 2215-2300, 2305h) & noted nothing unusual." NASA catalog weight=2. NASA catalog ID #1346. ALPO/BAA weight=2.

On 1993 Sep 28 at UT 04:30-06:10 S. Beaumont (Cambridge, UK) observed that the north east edge of Herodotus appeared as a "highland area spilling over into" the Cobra's Head border or "overlook". The shadow on the elevation was contiguous with a similar shadow over the Cobra's Head "like a darkening of the terrain. Shadow appears softer diffused without sharp bounds of most Lunar shadows. sketch. S. edge of crater started to appear at 0615". The Cameron 1978 catalog ID=468 and the weight=2. The ALPO/BAA weight=1 as the date or UT are wrong.

Figure 9 Aristarchus – from a larger image mosaic, taken on 2018 Mar 29 UT 05:00 by Rik Hill (ALPO/BAA) through a 510 nm filter. Orientated with north towards the top.

As Rik's image (Fig 9) is monochrome it cannot tell us much about the 1972 LTP, though we could use it to create some artificial atmospheric spectral dispersion and compare with some of the descriptions of color. It does however show a nice bright spot between the two centre bands on the western inner rim of the crater. This agrees with what Hitchens saw – so at least we know that is normal. We shall keep the weight of this report at 2.

For the 1993 report about Herodotus, Sally Beaumont's description certainly sounds similar to what we can see in Rik's image. The reason why the ALPO/BAA weight was lower than the Cameron Catalog weight was that at the date and UT given, the Moon was below the horizon, as viewed from the UK. Alas I cannot find a sketch of the original report in out archives. I would like to keep this in the LTP in the database a little longer, at least until we can find out the correct date/UT and perhaps see if anybody has a copy of the original sketch. However I suspect that we will probably end up setting the weight to 0 eventually.

Plato: On 2018 Mar 30 UT 02:16 Luis Francisco Alsina Cardinali (AEA) imaged this crater under repeat illumination (±0.5°) to the following report:

Plato 1978 Aug 16 Peter Foley (Kent, UK, 8" reflector, seeing=II) noticed that the floor beneath the north wall, and the area over the north wall were indistinct (almost out of focus). Despite looking elsewhere in the crater and surrounds, no other blurring (obscuration of detail) could be seen, indeed everywhere else was sharp and detailed. Foley tried several eyepieces but this made no difference. He used a crater extinction device but found no variations in brightness. There was a slight darkening when he used a red filter in the Moon Blink device. The obscuration effect weakened between UT20:56 and 21:10, was difficult to see at 21:13 and had finished by 00:15. Patrick Moore (12" reflector, Dublin, Ireland) saw nothing unusual when he started observing at UT 22:00. Cameron says "Photos marked at location of phenomenon". Cameron 2006 extension catalog ID=37 and weight=5. ALPO/BAA weight=3.

In Luis' image (Fig 10) there is some slight indistinctiveness on the northern wall, though it is more likely to be due to image and seeing quality as other areas also have a similar appearance – so we cannot say one way or another whether what Peter Foley described was anything other than due to atmospheric seeing conditions, though he does seem to have decided that the northern wall was more obscure in appearance than elsewhere. To be on the safe side we shall leave the weight at 3 as Foley describes the effect lessening but only affecting the northern rim area.

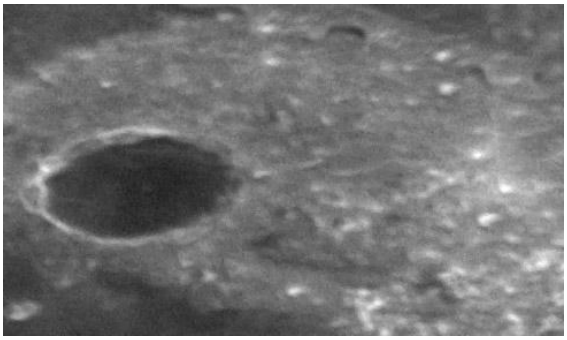


Figure 10. Plato on 2018 Mar 30 UT 02:16 as imaged by Luis Francisco Alsina Cardinali (AEA) and orientated with north towards the top.

Aristarchus On 2018 Mar 30 UT 09:16 Maurice Collins (ALPO/BAA/RASNZ) observed this crater under both similar illumination and topocentric libration (±1°) to a Martin Mobberley LTP report from 1981, and under similar illumination (±0.5°) to one of my own LTP reports from 1989:

Aristarchus 1981 Apr 17 UT 22:10 Mobberley of Suffolk, UK, and using a 14" reflector and seeing=I-II saw yellowish/brown streaks within Aristarchus. A sketch indicates that these extended from a region on the east floor to the north west corner, and then finally onto the bands on the west wall. Cameron 2006 extension catalog ID=132 and weight=4. ALPO/BAA weight=3.

Aristarchus 1989 Oct 13 UT 21:00 Observed by Cook (Frimley, Surrey, UK, 20cm reflector (visual and video)) "Aristarchus had what appeared to be a outline of a ghost crater on it's eastern side - quite large and bright". Cameron 2006 extended catalog LTP ID No=378 and weight=5. ALPO/BAA weight=3.

Figure 11. The whole Moon as imaged by Maurice Collins (ALPO/BAA/RASNZ) on 2018 Mar 30 UT 09:06-09:09. The inset of Aristarchus, also taken by Maurice Collins, was taken at 09:16 UT and has had its color saturation increased to 70% and sharpened slightly. North is towards the top and slightly to the left.

Concerning the Martin Mobberley report – in the BAA Lunar Section Circular from 1981 Jun (p49) it states: "*1981 April 17th. Martin Mobberley, Bury St. Edmunds, Suffolk 14" Cassegrain/Newtonian. Seeing I-II … 22.10 UT Aristarchus; noticed yellowish/brownish streaks in crater. (Sketch supplied which locates this color extending from a point on eastern floor around foot of walls to the northwest corner with ingress into bands on the west wall.)".* Alas I cannot find this important sketch in the BAA Archives. All I have is a letter from Martin Mobberley which says (in reference to a LTP report by Fred Butler, from later that night): "*I didn't see any 'orange yellow' but what I did see is contained in the report. I have only just finished off the color film I was using that night, but I will certainly have a good look at Aristarchus photos, (if there any good), when I get the film back.*" & his report which covered the period: 20:10-21:00 with a break at 21:00-21:15, and then resumed observing. Observations were both visual and photographic. The only comments that Martin makes about Aristarchus were: that here was no spurious color, no abnormal color, no loss of focus or other abnormalities. He did note however that the crater was extremely bright and could just about be made out with the naked eye (no telescope). So I think that the write up by Peter Foley somewhat embellished the description that Martin gave, and maybe was getting mixed up with the Fred Butler report from later that night? As you can see from the inset in Fig 11, Aristarchus there is no sign of yellow-brown streaks on the floor. In terms of Aristarchus being very bright – the whole Moon image in Fig 11 shows it apparently (to the eye) to be reasonably bright. What I will do is to lower the weight of this report to a 1, and change the report to say that Aristarchus was very bright, and just visible to the naked eye. This should be easy to confirm whether or not this was unusual by asking people to look for Aristarchus with their naked eye at this selenographic colongitude, and similar topocentric libration.

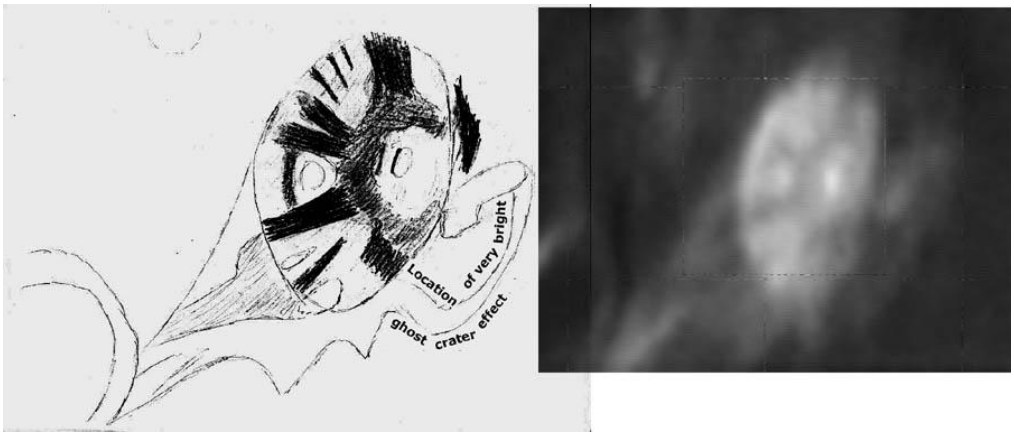


Figure 12. Aristarchus from 1989 Oct 13, orientated with north towards the top. (Left) A sketch made by Anthony Cook showing the location of a LTP close to the start of the observing session. (Right) A CCD image, by Tony Cook, from later on that evening, after the ghost crater like effect had died down.

Concerning my own report from 1989, Fig 12 (Left) shows one of the sketches (partly made from a later video recording), and I have added labels to show the approximate location of where I saw visually what appeared light the bright rim of a ghost crater. Fig 12 (Right) is from the video that I later managed to record successfully, after the effect had died down – this was Registax processed by Thierry Speth from a few years ago. We have covered this event previously during repeat illumination in the Aug 2016 newsletter (p15) and are nowhere nearer to solving why earlier on in the night of 1989 Oct 13 that this feature looked so bright? We shall leave the weight at 3.

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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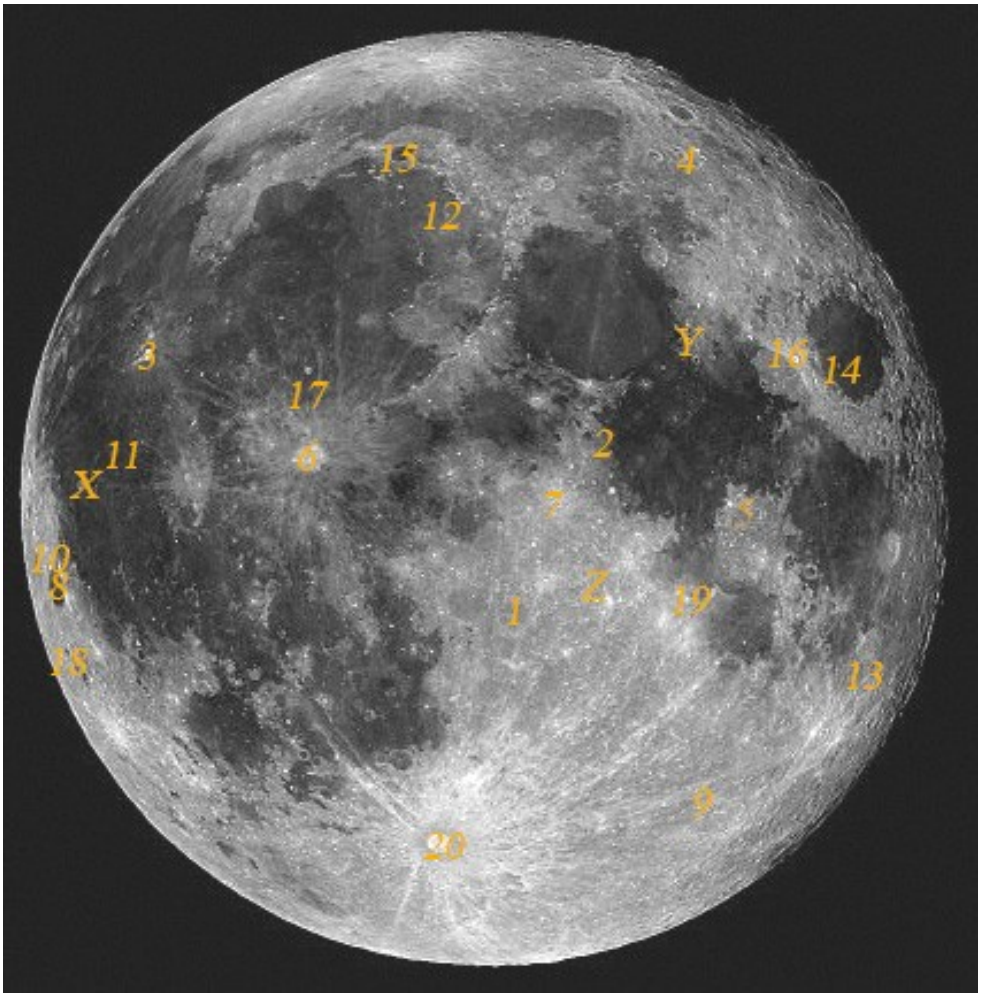
KEY TO IMAGES IN THIS ISSUE

1. **Albetegnius**
2. **Ariadaeus**
3. **Aristarchus**
4. **Atlas**
5. **Censorinus**
6. **Copernicus**
7. **Godin**
8. **Grimaldi**
9. **Janssen**
10. **Lohrmann**
11. **Marius**
12. **Petavius**
13. **Picard**
14. **Plato**
15. **Proclus**
16. **Pytheas**
17. **Rocca**
18. **Stevenus**
19. **Theophilus**
20. **Tycho**



FOCUS ON targets

X = Reiner gamma
Y = Apollo 17 Mare Serenitatis
Z = Apollo 16 Descartes-Cayley Plains