



THE LUNAR OBSERVER

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

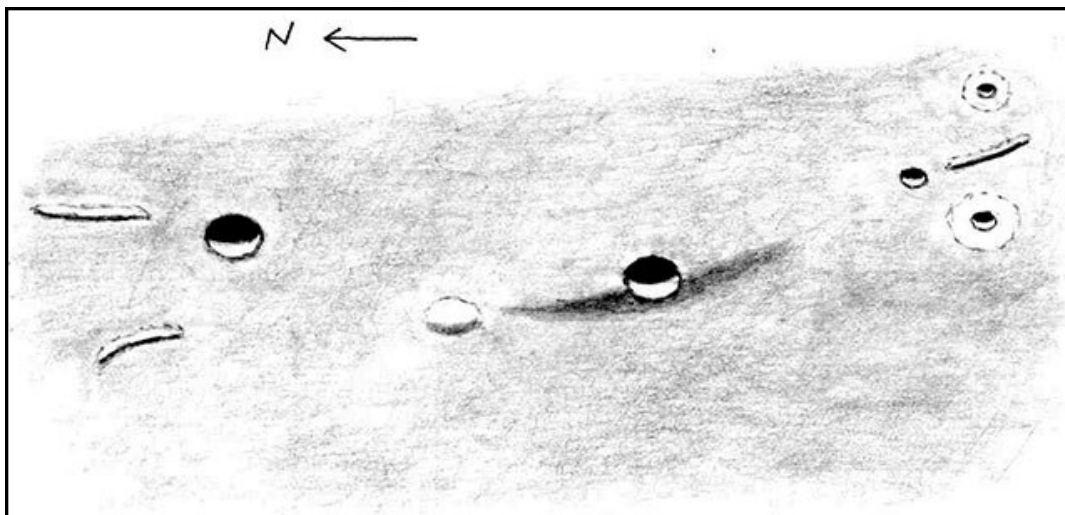
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RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – JUNE 2018

NAUMANN



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA

Dec. 2, 2017 03:14-03:30 UT, 15 cm refl, 170x,

seeing 8-9/10, transparency 6/6.

I sketched this crater and vicinity on the evening of Dec. 1/2, 2017 after the moon hid ZC 462. This area is in far northwest Oceanus Procellarum, and librations were favorable for it that night. Naumann is a crisp, mid-sized crater bracketed with an odd strip of curved shadow. Perhaps this crater is perched on the edge of a slope. A very low mound is near the north end of this shadow. Naumann B is north of Naumann, and is very similar to it in appearance. Two short ridges are north of Naumann B. Three small pits are south of Naumann. The northernmost of this trio is Naumann G, and Lichtenberg B is to its southwest. A short ridge extends southward from Naumann G. Lichtenberg B shows a halo, while Naumann G does not. A tiny crater not shown on the Lunar Quadrant map is southeast of Naumann G. This pit is smaller than its neighbors. Like Lichtenberg B, this pit shows a halo. This area of Oceanus Procellarum otherwise appears quite smooth.

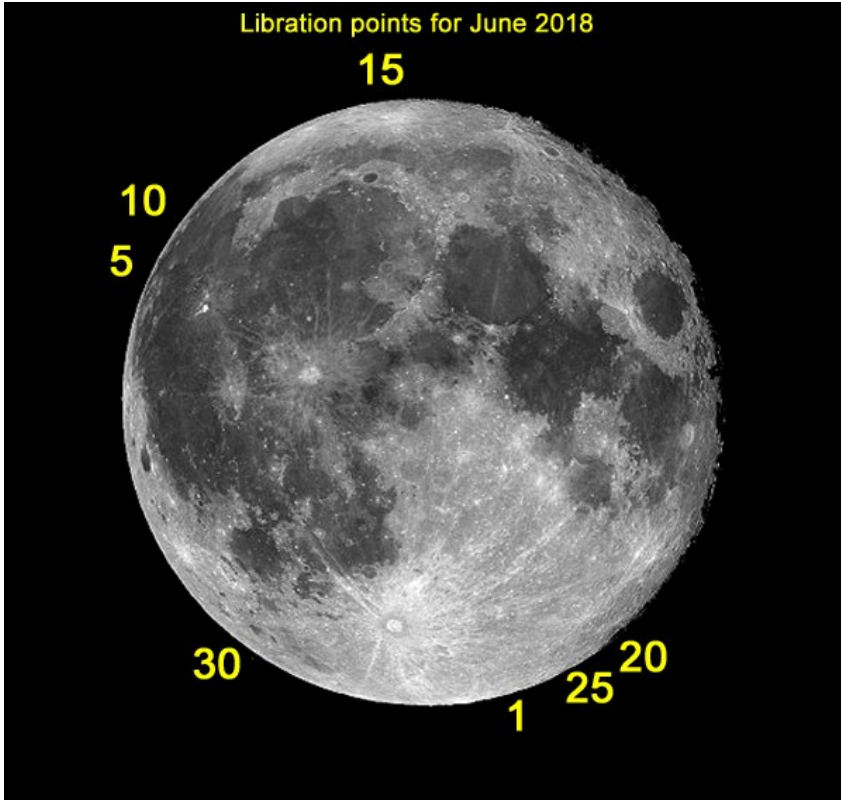
LUNAR CALENDAR

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

2018	U.T.	EVENT
Jul 06	07:51	Last Quarter
12	12:01	Moon Extreme North Dec.: 20.8° N
13	02:48	New Moon
13	03:01	Partial Solar Eclipse
13	08:28	Moon Perigee: 357400 km
14	02:50	Moon Ascending Node
14	22:04	Moon-Mercury: 2.2° S
16	03:31	Moon-Venus: 1.6° S
19	19:52	First Quarter
20	23:57	Moon-Jupiter: 4.8° S
25	06:10	Moon-Saturn: 2.2° S
25	20:55	Moon Extreme South Dec.: 20.8° S
27	05:44	Moon Apogee: 406200 km
27	20:21	Full Moon
27	20:22	Total Lunar Eclipse
27	22:40	Moon Descending Node

LUNAR LIBRATION

JUNE-JULY 2018

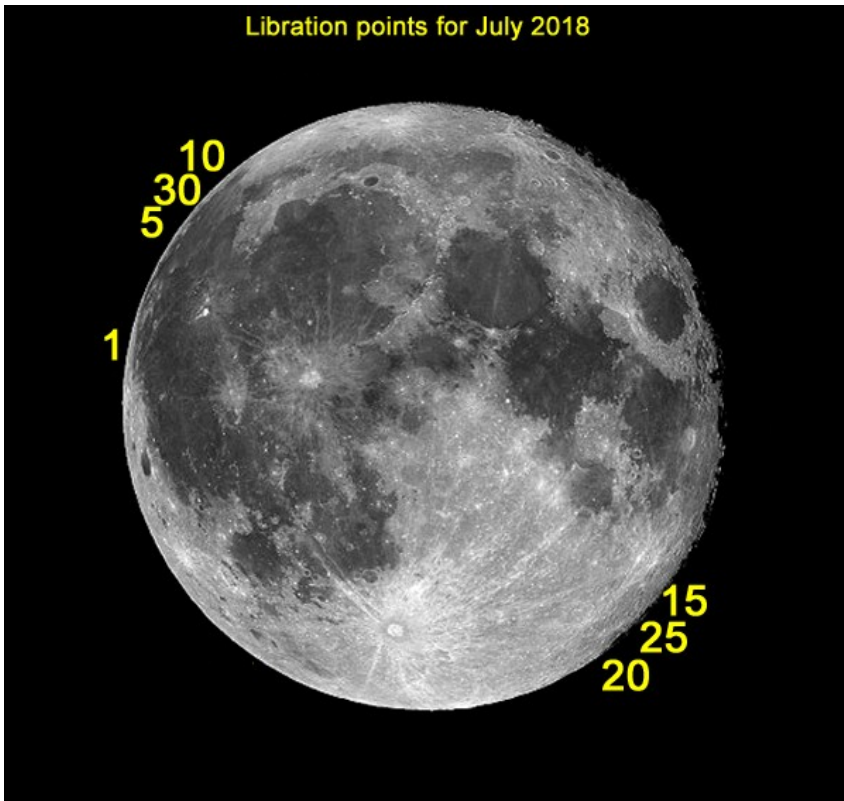


Size of Libration

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.



Size of Libration

07/01	Lat +00°23'	Long -04°41'
07/05	Lat +05°18'	Long -07°01'
07/10	Lat +06°01'	Long -06°02'
07/15	Lat -01°33'	Long +02°56'
07/20	Lat -06°47'	Long +07°14'
07/25	Lat -03°55'	Long +03°12'
07/30	Lat +02°49'	Long -03°39'

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:

<u>Subject</u>	<u>TLO Issue</u>	<u>Deadline</u>
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.

THE NORTHWEST SHORE OF MARE CRISIUM

Alberto Anunziato

Mare Crisium is, among all the lunar maria, the easiest to locate with the naked eye and, by its shape, the most recognizable as a large impact basin filled with volcanic deposits. At full moon and with the eyes of a child, it resembles a disturbing eye whose bright pupil is Proclus. Our image (fig. 1) of the northwestern shore at colongitude 119.1° shows Proclus as a regular crater of the area, stripped of its splendid bright rays so close to the terminator. In words of Peter Greggo: “Mare Crisium has imposing lofty mountain borders in the west, whose clean-cut scarp faces shine brilliantly in the morning”, and in the image we can also notice the height of the mountainous edge by the shadows that project towards the east. From top to bottom the

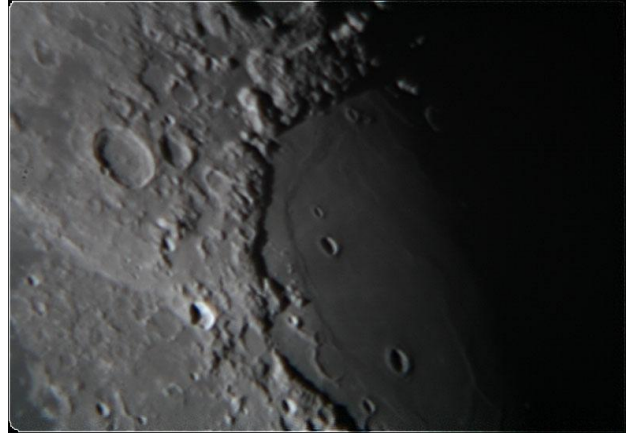


FIGURE 1. Mare Crisium— Alberto Anunziato, Paraná, Argentina. February 3, 2018 05:48 UT. Colongitude 119.1°. CPC-1100 SCT, Canon EOS Digital Rebel XS

craters that we observe inside the mare are: Greaves (14 km), Picard (23 km), the high walls that escaped the volcanic flood of Yearkes (36 km), Yearkes E (10 km), Peirce (19 km), Swift (12 km) and in the north extreme Cleomedes F (12 km) and Cleomedes H (6 km). And beyond, what is perceived as the highest peaks of a mountain range illuminated at the edge of the terminator. Near Yearkes E two small mountain ranges parallel to the shore of the mare receive the unofficial names of Promontorium Olivium (west) and Promontorium Lavinium (east) with a narrow passage between them covered by the shadows of the westernmost promontorium and in the middle of the shadows a feature unofficially called O'Neill's Bridge, an elusive pareidolia first noted by amateur John O'Neill in 1953. The limitations of our image act as a mediocre seeing and make it look like a bridge of light linking Promontorium Olivium and Promontorium Lavinium, in what looks like a romantic landscape from the paintbrush of Caspar Friedrich or William Turner. With good seeing the vision disappears and what you see are two small craters. Promontorium Lavinium is extended in lower peaks to the north. This phase of the lunation allows to clearly distinguish part of the dorsa system of Mare Crisium. In a recent paper we read: “The topography of the mare is dominated by an annulus of elevated topography, the inner edge of which is delineated by basin-concentric wrinkle ridges”. Mare Crisium, as Mare Imbrium and other maria, host a mascon (“mass concentration”), a positive gravitational anomaly “thought to be the result of some combination of mare loading within, and an elevated, superisostatic crust–mantle boundary beneath, these basins (...) a lunar mascon results from impact excavation, crater collapse, and the subsequent slow isostatic adjustment of the resultant basin”. The mascon appears structurally linked to a ring-fault system, these thrust faults, according to the cited study, penetrate up to 20 kilometers deep, into the lithosphere, much lower than the base of the volcanic deposits that formed Mare Crisium. This structure in the subsurface corresponds to the tectonic landforms formed later on the surface: the dorsa concentric to the perimeter of the basin impact. In the image we clearly see the concentric Dorsum Oppel, but we

also see radial dorsa. These dorsa were probably formed by the loading stresses from the volcanic mare deposits, and that is why they would be younger than the concentric dorsa.

Bibliography:

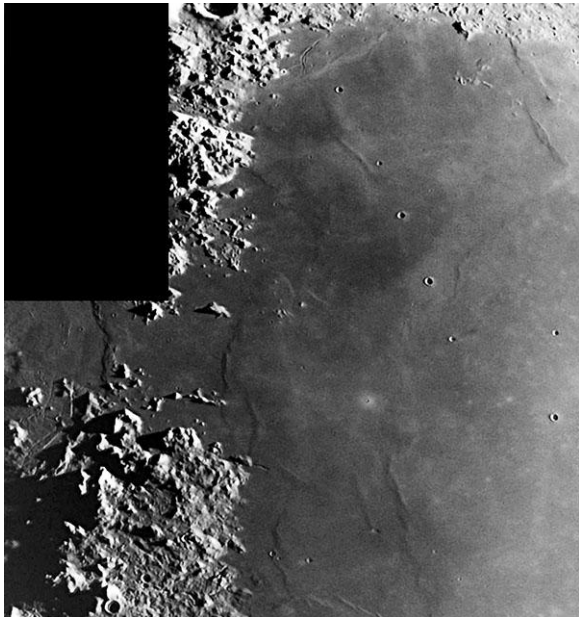
Greggo, Peter (2005): “The moon and how to observe it”, Springer. (page 143).

Byrne, Paul et al. (2015): “Deep-seated thrust faults bound the Mare Crisium lunar mascon”, Earth and Planetary Science Letters 427 (page 183).

SERENITATIS MYSTERIES

Rik Hill

An old mystery lurks here but not the one originally thought. This (fig. 1) is western Mare Serenitatis with the Montes Caucasus in the upper left and the Promontorium Fresnel and spectacular Mons Hadley in the lower right. But the star of the show is the white area out in the Mare through the pass between the two mountain ranges, just below center. This is the crater Linné (2.3km dia.), a relatively recently formed crater named after Carl von Linné (Linnaeus) by Madler in 1837. It was discovered by Riccioli during the seventeenth century, shown as a small white dot on a map in his masterwork *Almagestum Novum* (New *Almagest*). Selenographers of the 19th century recorded the crater in the center of the white patch that is the ejecta from the impact. Johann Friedrich Julius Schmidt recorded the crater in eight renderings made between 1840 and 1843. But in 1866, he announced that Linné had changed and instead of a normal, small, somewhat deep crater it was just a white patch. During 1867 numerous observers could find only the bright mound and later that year Schmidt announced that he could discern a mountain in the center of the mound! A very curious observation to be sure. A year later in 1868 observers were reporting a shallow depression at the center of the white mound. Secchi,



estimated its diameter at barely half a mile, about a third of the currently accepted value. Today, Linné can be seen in modest amateur apertures whenever it is near the terminator. The crater is easily seen here in the white spot just below center.

FIGURE 1. *Linné - Richard Hill – Tucson, Arizona, USA April 23, 2018 02:21 UT. Seeing 8/10. Colongitude 0.7°. TEC 8" f/20 Mak-Cass, 610 nm filter, SKYRIS 445M.*

Below Linné are two dorsa. The longer and better defined one is Dorsum von Cotta. The smaller one to the left is Dorsum Owen. Notice the little mark on the southern tip of this dorsum. This is a very strange feature that consists of Vallis Christel, Vallis Krishna and Rima Sung-Mei all coming together to form Aratus CA. It is an odd three pronged feature around 7-10 km across depending on the angle. Its origin is thought

to be as a possible volcanic vent. It is worth some study at highest powers but it will be a challenge. Good luck with this mystery!!

THE LESSER OF THE TRIO

Rik Hill

The southernmost and smallest of the three large craters in the center of the moon is the beautifully terraced Arzachel (97km dia.), the dominant feature in this image (fig. 1) (Ptolemaeus, Alphonsus are the other two of the trio.). It is most notable for the wonderful Rimae Arzachel on its floor. The larger curved rille shows significant vertical displacement between the two sides when the light is right. Notice the off-center "central peak" with the curved face that has been likened to Hoover damn in Clark County, Nevada . This is not a young crater being of what is called "Lower Imbrian" age between 3.75-3.85 billion years old. Even so, the crisp terraces of the walls are impressive leading to the impression of it being much deeper than it really is. An oblique view

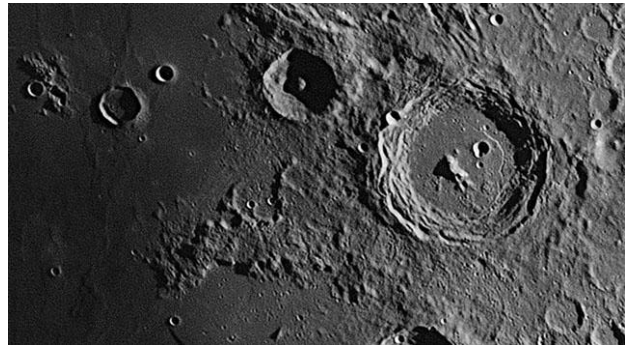


FIGURE 1. *Arzachel- Richard Hill – Tucson, Arizona, USA April 24, 2018 02:09 UT. Seeing 8/10. Colongitude 12.9. TEC 8" f/20 Mak-Cass, 610 nm filter, SKYRIS 445M.*

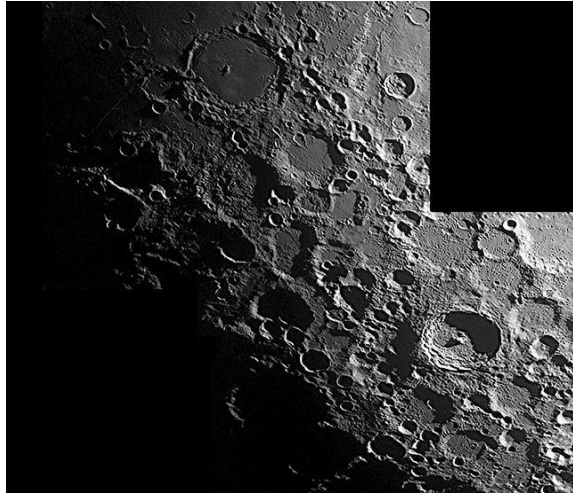
[https://en.wikipedia.org/wiki/Arzachel_\(crater\)#/media/File:Arzachel_crater_AS16-M-0712.jpg](https://en.wikipedia.org/wiki/Arzachel_(crater)#/media/File:Arzachel_crater_AS16-M-0712.jpg) gives a very different impression!

Above and to the left (west) is an odd crater, Albpetragius (40km). It is older than Arzachel by about 100 million years, has a straight wall on the northwest side, relatively sharp edges for a nearly 4 billion year old crater, and little terracing. But the central peak is the notable feature of this crater. It is a wide rounded peak, unusually large for the diameter of the crater and has been called "Egg-in-a-nest" or "Egg-in-a-basket" as I learned it in the early 1960s. Further west is the crater Lassell (24km) still largely in shadow.

NORTH OF TYCHO

Rik Hill

Here's another case where a fantastic formation, Tycho, has overshadowed very interesting surrounding features (fig. 1). Tycho (88km dia.) is seen here in the lower right portion of this image surrounded by radial lines and patches of secondary cratering. At this low sun angle the spectacular rays for which Tycho is best known, cannot be seen. Just to the north and west of the north crater wall (above right as seen here), is the crater Tycho A mostly filled with shadow. Between that crater and the north wall is the landing site of Surveyor 7 which took over 21,000 images of the area and did detailed study of Tycho's ejecta. LROC got an image of the lander



posted at: roc.sese.asu.edu/posts/534. To the lower right of Tycho is the crater Street (60km) and Pictet (65km) due east (right) of Tycho.

FIGURE 1. *Tycho* - Richard Hill – Tucson, Arizona, USA May 24, 2018 02:59 UT. Seeing 8/10. Colongitude 19.7°. TEC 8" f/20 Mak-Cass, 610 nm filter, SKYRIS 445M.

On the upper edge of this image is the flat floored "walled plain" that is Pitatus (100km) with its off-center central peak and system of rimae that run along the inside of the crater wall. To the lower right from Pitatus is another flat floored crater Gauricus (82km) and to its left (west) the tortured Wurzelbauer (90km) with a nice sinuous rima to its

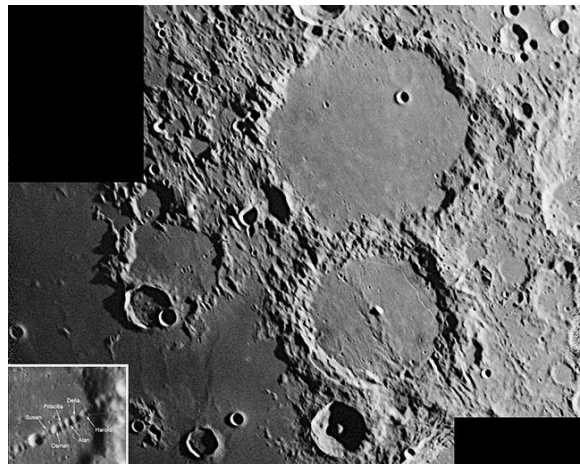
northwest. Notice the bright linear feature to the west of Wurzelbauer that is the juxtaposition of the west wall of Cichus (still in shadow) and a valley to its south. If you look just to the north you can see Rima Hesiodus just coming into the morning light and its namesake Hesiodus (44km) with a central craterlet, adjacent to the west wall of Pitatus. It's a busy area with a lot to see including a range of crater morphologies I couldn't even touch on!

DAVY'S LOCKER

Rik Hill

Here (fig. 1) you can see the largest crater is Ptolemaeus (158km dia.) in the upper middle of this image with little Ammonias' (9km) on its northern floor and unnamed rimae against the western wall. Below this monster is the beautiful

FIGURE 1. *Davy* - Richard Hill – Tucson, Arizona, USA April 24, 2018 02:08 UT. Seeing 8/10. Colong. 12.9°. TEC 8" f/20 Mak-Cass, 610 nm filter, SKYRIS 445M.



Alphonsus (121km) with its pyramid-like central peak, system of rimae on the eastern floor and dark haloed craters attesting to relatively recent volcanism. Below this is the deep crater

Alpetragius (41km) with its egg-in-a-basket central crater. West (left) of this crater is the flooded crater Lassell (24km) and above that a similar sized crater Davy (36km) with little Davy A (15km) on its southeast wall. Davy itself sits on the southwestern wall of a large unnamed squarish crater Davy Y (70km) with a string of small craterlets going from the lower center to the eastern wall. This string is known as Catena Davy. The origin of this string is controversial with some selenologists attributing them to volcanism and others, after seeing how comet SL9 was tidally disrupted suggested it was a tidally disrupted impactor that hit leaving a tight chain

since the moon has a much slower rotation rate than Jupiter where the impacts were spread over many longitudes at one latitude.

Some of the individual craters in the chain were given unofficial names in 1974 for mapping purposes. These were later made official and you can see them identified in the inset image. Their sizes are: Susan 1.0km; Osman 2.0km; Priscilla 1.8km; Alan 2.0km; Delia 2.0km; Harold 2.0km

When you consider that you can probably see 1-2 km from your front porch, that's not too bad!!

Tilted Twins: Fracastorius and Beaumont

David Teske

Fracastorius, located on the southern shore of Mare Nectaris, is one of the moon's best examples of subsidence (fig. 1). Named after Girolamo Fracastoro, an Italian physician, astronomer and poet who lived from 1483 to 1553, Fracastorius is a large, complex crater 120 km in diameter and somewhat oval in the north-south direction. Like a bay, the crater wall opens to the north onto the lava surface of Mare Nectaris. Low remnants of the wall are still detectable in the north. There is a darkish streak across the floor of Fracastorius and rays from Tycho cross the northwest portion of the crater. The height of the wall is fairly uniform except at the north end where it gradually narrows and sinks to the level of the Nectaris mare plain. On the outer edge of the western wall there is a crater (Fracastorius D) from which runs a chain of smaller craters southward. I wonder if these are secondary craters from the formation of an ancient basin. On the convex floor of Fracastorius is only a tiny central peak that can be seen poking through the smooth lavas on the floor of the crater. This implies the lava here is at least 1 km deep! A small nameless rill crosses the crater floor east to west, and splits into a "Y" shape on its eastern side.

FIGURE 1. *Mare Nectaris- David Teske - Louisville, Mississippi, USA. April 21, 2018 02:17 UT. Colongitude 333.8°, Seeing 5/10, 4 inch APO refractor, 2.5x Powermate.*

The history of Fracastorius is fascinating. Some 3.9 billion years ago, a large impact formed the Nectaris Basin. Sometime after this, a large crater formed on the basin floor. Following this, magma seeped up through fractures to flood the low parts of the basin with lava. This caused the basin floor to subside from the weight of the lava, causing the preexisting craters to tilt toward the center of the basin. Later, additional lava flows buried the lower rim of the northern wall of Fracastorius. After these lavas cooled and solidified, the basin floor subsided more, creating the small rill in the center of Fracastorius, where the bending was likely most pronounced.

To the northwest of Fracastorius is a smaller, near twin crater, Beaumont. Named after Léonce Élie de Beaumont, a French geologist who lived from 1798 to 1874, Beaumont is a lava-



filled crater, 53 km in diameter, lying on the western edge of Mare Nectaris. An excellent example of a bay, the northeastern wall is open to the mare floor. A broad ridge 115 km long connects the southeastern flanks of Theophilus with Beaumont. Both Beaumont and Fracastorius have a similar history of being formed after the Nectaris Basin but before the partial filling of the basin by lava. Each of these craters is clearly tilted towards the center of the Nectaris Basin. Beaumont does not have a rille like Fracastorius. Beaumont's rim is more complete than that of Fracastorius and its floor is rough and hummocky in appearance with some small craters.

References:

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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 - ORO VERDE, ARGENTINA. Digital image of Peirce

JAIRO CHEVEZ - POPAYÁN, COLUMBIA. Digital images of Copernicus, Euclides & Plato.

ABEL CIAN - PARANÁ, ARGENTINA. Digital image of Wargentín-Schickard.

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 10 & 11 day Moon, Alphonsus, Gassendi, Sinus Iridum & Tycho.

FACUNDO CRAMER - ORO VERDE, ARGENTINA. Digital images of Geminus, Petavius & Theophilus.

WALTER ELIAS - ORO VERDE, ARGENTINA. Digital images of Aristarchus (2), Daniell(2), Endymion, Langrenous Mare Crisium Mutus, Pitiscus, Plato(2) Timocharis.

ROBERT HAYS - WORTH, ILLINOIS, USA. Drawings of Cook, Euclides B & C, and Maestlin

RICHARD HILL – TUCSON, ARIZONA, USA. Digital images of Arzachel, Catena Davy, Linne, Marius-Reiner, Reiner gamma(5) & Tycho-Pitatus.

MICHAEL KEITH - CERRO PACHON, CHILE. Digital images of Plato & Rupes Recta.

PETER MARIANO - ORO VERDE, ARGENTINA. Digital image of Proclus.

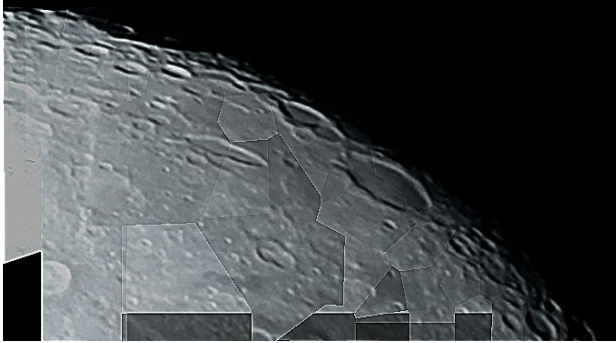
DAVID TESKE - LOUISVILLE, MISSISSIPPI, USA. Digital image of Fracastorius.

ALAN TRUMPER - ORO VERDE, ARGENTINA. Digital images of Alphonsus, Tycho-Langrenous, waning Moon & Wargentín-Schickard.

EUCLIDES– Jairo Chavez,- Popayán Columbia. April 26, 2018 01:10 UT.
10” Dobsonian, Huawei Y360 camera, ISO200.



RECENT TOPOGRAPHICAL OBSERVATIONS



WARGENTIN-SCHICKARD – Abel Gonzalez
Cian, Paraná, Argentina. April 27, 2018 02:30UT.
10" Meade Lightbridge, Nikon P900.

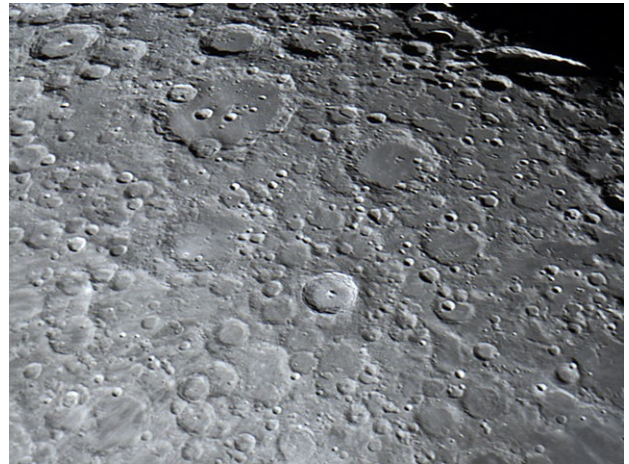
11 day MOON- Maurice Collins, - Palmerston North,
New Zealand. May 27, 2018 07:15-07:20 UT. Seeing
poor. FLT-110. ASI120M.C North down.



ALPHONSUS - Maurice Collins, - Palmerston North,
New Zealand. April 26, 2018 09:13 UT. C-8 SCT.
ASI120M.C North down.

RECENT TOPOGRAPHICAL OBSERVATIONS

TYCHO- Maurice Collins,- Palmerston North, New Zealand. April 26, 2018 09:13 UT. C-8 SCT. ASI120M.C North down.



GEMINUS– Facundo Cramer Oro Verde, Argentina. April 18, 2018 21:45 UT. 10” LX-200, 106x with teleextender, Canon EOS Digital Rebel. XS.

PETAVIUS– Facundo Cramer Oro Verde, Argentina. April 18, 2018 21:45 UT. 10” LX-200, 106x with teleextender, Canon EOS Digital Rebel. XS.

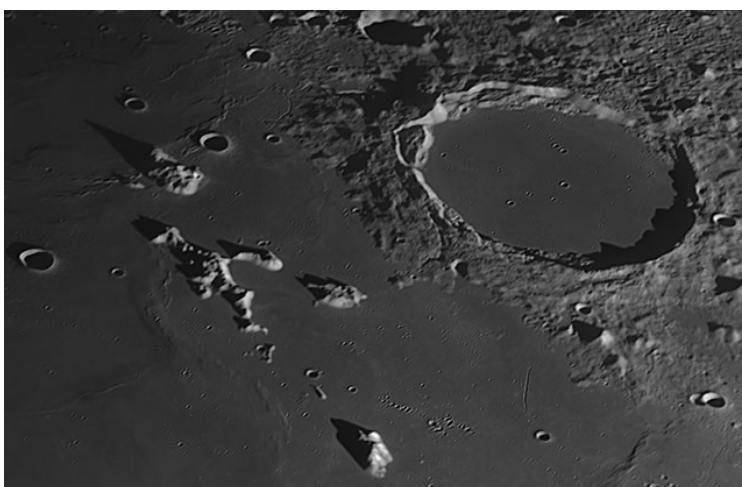


RECENT TOPOGRAPHICAL OBSERVATIONS



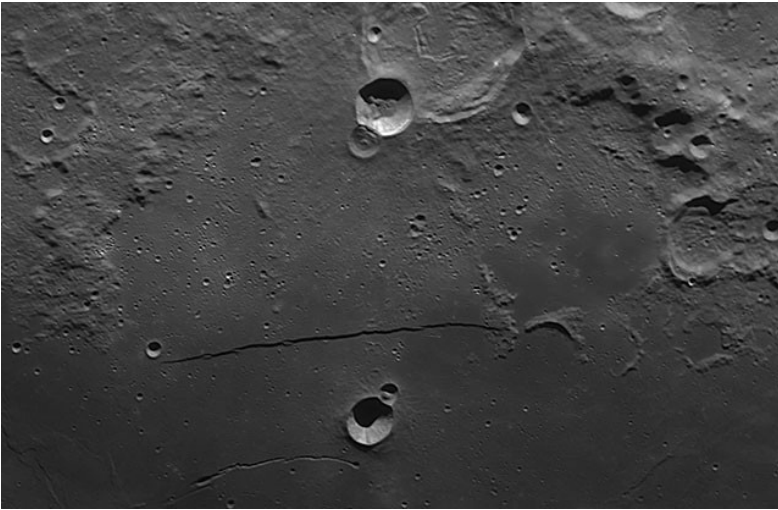
LANGRENUS - Walter Elias, Oro Verde, Argentina. April 18, 2018 21:46 UT. 10" LX-200, 106x with telextender, Canon EOS Digital Rebel. XS.

PITISCUS - Walter Elias, Oro Verde, Argentina. April 22, 2018 00:49 UT. 10" LX-200, 106x with telextender, Canon EOS Digital Rebel. XS.



PLATO, Michael Keith, Cerro Pachon, Chile. April 25, 2018 00:58 UT. 1 m, f/8, RC reflector, 2x powermate. ASI camera.

RECENT TOPOGRAPHICAL OBSERVATIONS



RUPES RECTA, Michael Keith, Cerro Pachon, Chile. April 25, 2018 01:12 UT. 1 m, f/8, RC reflector, 2x powermate. ASI camera.

PROCLUS - Peter Mariano, Oro Verde, Argentina. April 22, 2018 00:41 UT. 10" LX-200, 106x with telextender, Canon EOS Digital Rebel. XS.



TYCHO-LANGRENUS, Alan Trumper, Oro Verde, Argentina. April 28, 2018 00:46 UT. 10" LX-200, 106x with telextender, Nikon D5100.

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: Alphonsus, Aristarchus, Censorinus, Daniell, Mons Piton, Plato, Posidonius, Ramsden, Torricelli B and several features. Jerzy Bohusz (Poland – PTMA) observed Proclus. Bruno Cantarella (Italy - UAI) imaged: Mare Crisium. Maurice Collins (New Zealand – ALPO/BAA/RASNZ) imaged: Alphonsus, Descartes, Gassendi, Sinus Iridum, Tycho, and took some whole Moon images. Anthony Cook (Spain – ALPO/BAA) videoed earthshine and imaged several features. Marie Cook (Mundesley, UK – BAA) observed Gassendi. Pasquale D'ambrosio (Italy – UAI) imaged the Montes Alpes. Walter Elias (Argentina – AEA) imaged Aristarchus, Daniell, Plato and Timocharis. Valerio Fontani (Italy – UAI) imaged Copernicus and earthshine. Rik Hill (Tucson, AZ, USA – ALPO/BAA) imaged: Arzachel, Clavius, Petavius, Rupes Recta, and several features. Camilo Satler (Argentina – AEA) imaged several features. Robert Stuart (Rhayader, UK – BAA) imaged: Aliacensis, Alphonsus, Apianus, Aristillus, Aristoteles, Arnold, Arzachel, Atlas, Clavius, Cleomedes, de la Rue, Endymion, Goclenius, Heraclitus, Hercules, Macrobius, Magnus, Mare Frigoris, Messier, Ptolemaeus, Rima Birt, Sasserides, Taruntius, Triensnecker, Vallis Alpes, Vlacq, W. Bond, and several features. Alan Trumper (Argentina – AEA) imaged several features. Gary Varney (Pembroke Pines, FL, USA – ALPO) imaged Endymion.

News: This year's European Planetary Science Congress (EPSC) will be held on 16-21 Sep 2018 in Berlin, Germany. I have been involved in the writing of, and submission of, two abstracts to the conference; one on the work we do here in the Lunar Section, and another on lunar impact flashes. More about this next month, however the good news is that if you are an amateur astronomer, or a teacher, then you can get in free if you register before 31st July 2018, see: <https://www.epsc2018.eu/registration.html> . Berlin is a great place to visit as there are two observatories/planetariums ([Wilhelm-Foerster](#) & [Archenhold](#)) and another planetarium over in nearby [Potsdam](#). One of my 4th year MPhys project students, Calum Sweeney, has compiled a web site of all known lunar impact flashes drawn from sources at NASA, Europe, Asia, South America etc. This can be found on: <https://www.impactflashdatabase.com> .

In last month's newsletter, with regard to the following report:

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.

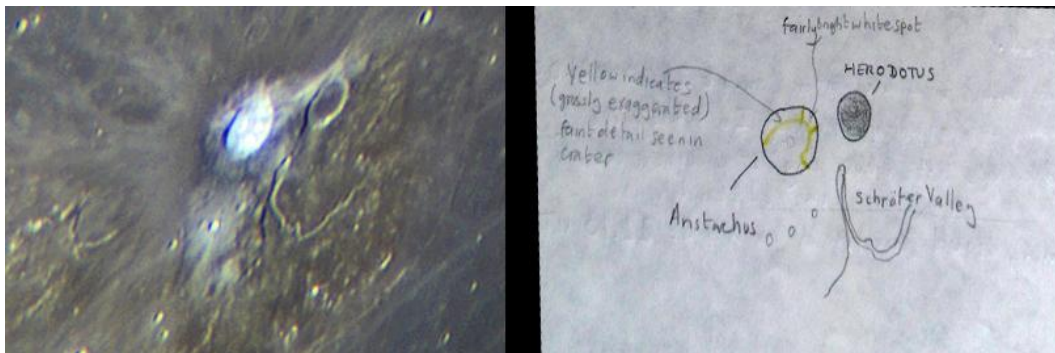


Figure 1. Aristarchus orientated with north towards the bottom. **(Left)** Image by Maurice Collins (ALPO/BAA/RASNZ) taken on 2018 Mar 30 at 09:16 UT – this has had its color saturation increased to 70% and sharpened slightly. **(Right)** A sketch of the Aristarchus area by Martin Mobberley from 1981 Apr 17 UT 22:10.

It turns out that I was mistaken when I said I the report was not in the ALPO/BAA archives, and that I had suggested that Peter Foley (LTP coordinator back in 1981) had gotten the description for 1981 Apr 17 mixed up with another report. A bit of searching through two large ring binder folders I have borrowed from Bill Leatherbarrow (BAA Lunar Section Director), showed that I had not gotten around to scanning the Mobberley report in yet, so it did not show up on the digital records. We can now see in Fig 1 (Right) what Martin Mobberley drew. He did not regard this as a LTP, but nonetheless did suspect a very slight yellow/brown coloration to the interior bands inside Aristarchus. However as we can see from the Maurice Collins image (Fig 1 Right), the interior bands should have been a darker blue than the rest of Aristarchus. Now it is just possible that what Martin was seeing was a complimentary visual (reverse) color to blue, hence he saw yellow in the darker areas, namely the bands. However although Aristarchus has a bluish cast to it, the crater may not have a sufficiently strong color to induce this reverse color effect in the eye? Alternatively the dark bands could have had color induced by chromatic aberration or atmospheric spectral dispersion – though Martin strangely does not report on seeing the effect elsewhere on the Moon? In view of this new evidence, and a partial theories, I shall raise the weight to 2, though not as high as Cameron’s 4, or our original 3, at least until we have some more visual reports of the crater at a similar selenographic colongitude.

One other correction that is certainly worth mentioning, concerning the previous newsletter, was that Luis Francisco Alsina Cardinali was credited to UAI, Italy, whereas in fact they are a AEA member in Argentina. Sorry for the confusion caused.

Finally, lunar dust is more toxic than previously thought according to a [new study](#) by scientists from Stonybrook University, NY, USA - so much so that it could cause damage to DNA. Not only can it clog up the lungs, but potentially the smaller particles could even permeate into the brain! So future moon walkers will need to do quite a bit of cleaning before climbing back in through the airlock.

LTP Reports: No LTP reports were received in April. However in addition to the [unconfirmed candidate](#) lunar flashes mentioned in last month’s newsletter (2018Apr20 UT 21:29:02 N of Mare Frigoris, 2018Apr20 UT 20:58:28 (65°W, 10°S) & 2018Apr21 UT 20:41:21 (75°W, 10°N), GLR observers; Stefano Sposetti and Marco Iten report one [confirmed](#) lunar impact flash at 20:52 UT on 2018 Apr 22, close to the NW limb of the Moon. Tim Haymes was also out observing Earthshine, but saw nothing on April 20th in short observing bursts between 20:21 and 20:51 UT. Over in Greece, at the [NEOLITA](#) 1.2m telescope ESA funded project, only one impact flash was detected during early April, namely on 2018 Apr 10 at UT 03:37.

Routine Reports: Below is a selection of reports received for April 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. Once again, due to finishing up marking of student coursework, I will not be able to spend much time analyzing the reports below, 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:

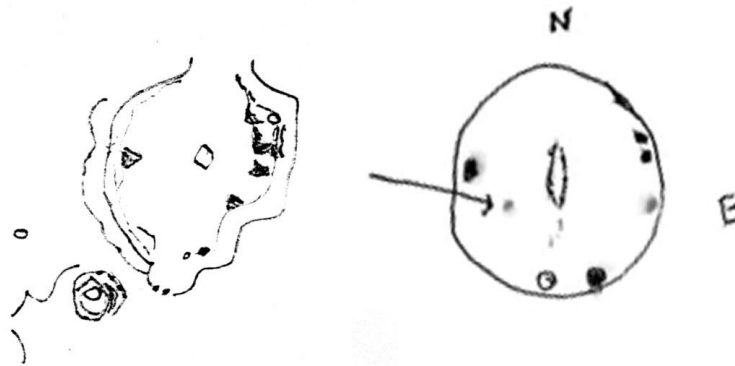


Figure 2. Two sketches of Alphonsus orientated with north towards the top – sketches have been re-aligned and mirror adjusted. **(Left)** A sketch made by Bernard Hobdell of St Petersburg, FL, USA on 1980 Jul 04 UT 10:35 under Antoniadi I seeing. **(Right)** A sketch by Jay Albert made on 2018 Apr 07 UT 09:20-10:05.

Alphonsus: On 2018 Apr 07 UT 09:20-10:05 Jay Albert observed this crater under the same illumination conditions, to within $\pm 0.5^\circ$ to the following report by another Florida observer:

Alphonsus 1980 Jul 04 10:35-10:48UT Observed by B. Hobdell (St Petersburg, Florida, 6cm refractor and 20cm reflector. x130. Seeing Antoniadi I) "A dark discoloration was seen on the east floor, adjacent to the central peak and the dark area on the west floor directly south of the prominent dark area. Hobdell thinks it was a small crater on a secondary rille with slight venting discoloration, seen in Orbiter pictures. A sketch was made and the BAA alerted. The sketch matches the dark spots in Alphonsus (normal aspects?)" Cameron comments that the sketch looks like the aspect in the Lick composite photos. Foley comments that dark at this lunar age is not normal. A UK observation made 14 hours later looked normal. Cameron 2006 catalog extension ID=99 and weight=2. ALPO/BAA weight=2.

Jay comments that: he had a "sharp, detailed view of Alphonsus. The usual three major dark areas (the double one on the NE floor, the one on the SE floor and the one on the W floor) were seen, the central peak was well lit and there were small craterlets and ridges on the floor". He then went on to say that he "did see a small, very faint gray spot fairly near, but not adjacent to the central peak between the major dark area on the SE (IAU) floor and the major dark area on the W floor. The faint spot in question was much closer to the latter than the former and appeared to possibly be a shadow from a ridge running N-S shown on Rukl Chart 44. The arrow in the diagram" Fig 2 (Right), "indicates the location of the described gray spot. There was another very tenuous gray spot at the base of the E wall between the NE and SE major dark areas which appeared to be a possible shadow. This latter area was not close to the central peak and so is probably not the feature described in the LTP".

Comparing Jay's sketch (Fig 2 Right) to Bernard's (Fig 2 – Left), there is very little difference, and at this stage in illumination, 6 or more dark spots on the floor can be visible. We shall therefore remove this from the LTP database by assigning a weight of 0!



Figure 3. Earthshine as imaged by Valerio Fontani on 2018 Apr 17, orientated with north towards the top right – 1/10th sec exposures. (Left) Image taken at 18:47 UT. (Right) Image taken at 18:58 UT.

Earthshine: On 2018 Apr 17 UT 18:18-19:07 Valerio Fontani (UAI) imaged the thin crescent Moon (Fig 3) in order to see if he could detect a bright edge to the western limb. This helps us to test out a theory that it is possible to detect a [dusty exosphere](#) of the Moon as proposed by Dr Martin Hoffmann. Although I cannot see a bright edge to the western limb here in Fig 3, my own theory is that the claimed effect is mostly caused by the bright far side highland becoming more prominent when the libration brings it across onto the nearside. Also a combination of the color pixel layout, and sharpening algorithms on cameras, may enhance the already contrasty edge; subsequent motion blur using stationary cameras, may exaggerate the effect further.

Picard: On 2018 Apr 18 UT 18:18 Bruno Cantarella (UAI) imaged the Mare Crisium area under similar illumination to $\pm 0.5^\circ$ to the following Lunar Schedule request:

On 2013 Feb 17 UAI observer: Giuseppe Macalli observed visually an orange cloud form just to the west of Picard crater, and then disappear. The effect lasted about 1 minute. Obviously we are not likely to see whatever this was (?) again under similar illumination, but just for the record it would be useful to have a high resolution monochrome or color image of this area, at the requested observing time.

Bruno's image shows Picard roughly mid way between the image centre and the bottom right. As there is nothing obviously strange just to the west of Picard (only some wrinkle ridges), there is not a lot more we can say

about the observation from 2013, but at least we now have a good quality image of what the region should have looked like, if everything was normal. We shall therefore remove the request from the Lunar Schedule web site.

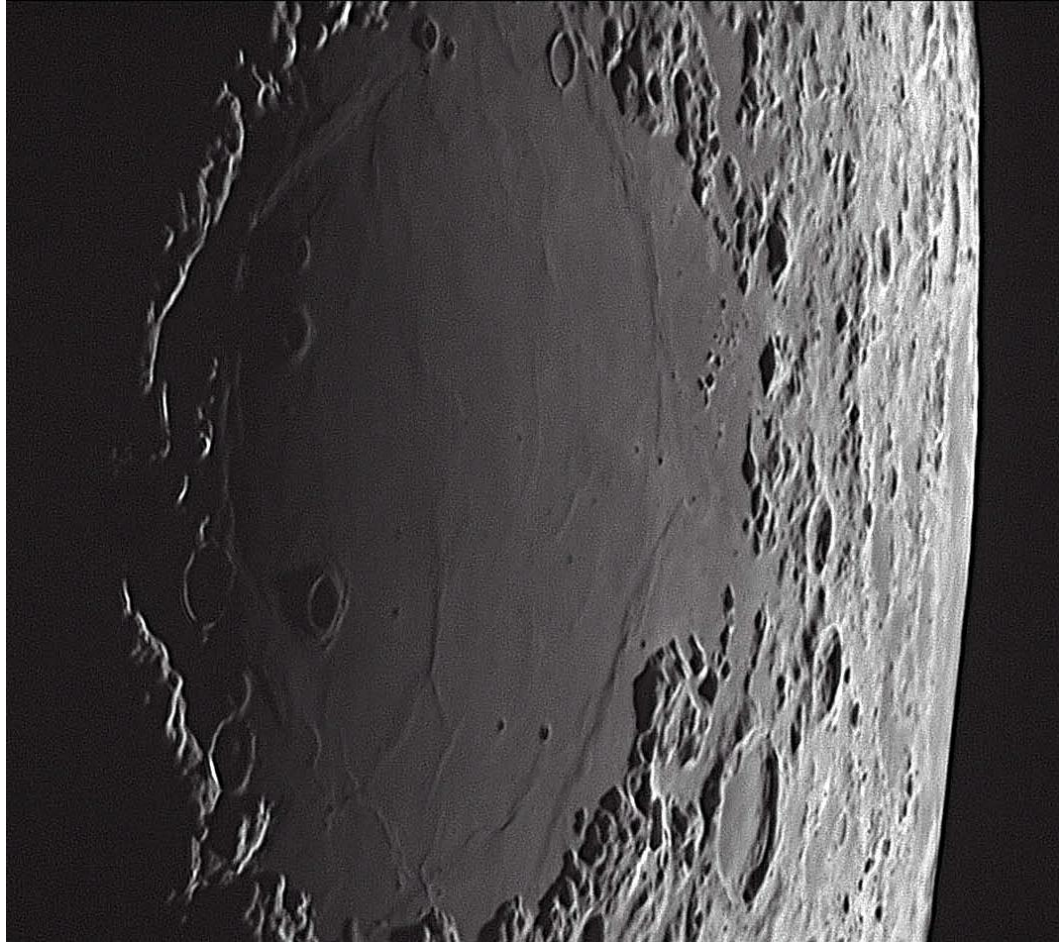


Figure 4. Mare Crisium as imaged by Bruno Cantarella (UAI) on 2018 Apr 18 UT 18:18 and orientated with north towards the top.

Earthshine and the sunlit side of the Moon: On 2018 Apr 20 Anthony Cook (ALPO/BAA) and Bob Stuart (BAA) were both imaging the Moon. I was videoing in earthshine, looking for Lyrid impact flashes, and slightly earlier Bob was imaging the dayside.

Although not strictly repeat illumination, Fig 5 has been included as it shows the first of what we hope will be many images from BAA member Bob Stewart. He has already sent in plenty of much higher resolution images, but for the day in question, 2018 Apr 20, there were no relevant dayside repeat illumination predictions. There was however account of Aristarchus varying brightness in earthshine:

On 1968 Dec 25 at UT 02:00 Taboada (Mexico) noticed that Aristarchus appeared to brighten in the dark though less intensely than Copernicus and Kepler (Cameron comments: also brightening?). Alerted for tidal predictions by Middlehurst - Apollo 8 watch. The Cameron 1978 catalog ID=1111 and weight=1. The ALPO/BAA weight=1.

My video recordings from April 20th showed no brightenings, just that sometimes when the sky became hazy, the crater, and indeed all earthshine, became difficult to see. There was also a glare effect from the day side which meant that earthshine features became more difficult to glimpse, the close one looked to the terminator – in other words the contrast decreased. We shall leave the 1968 report at 1 for now, but continue to monitor Aristarchus in earthshine.

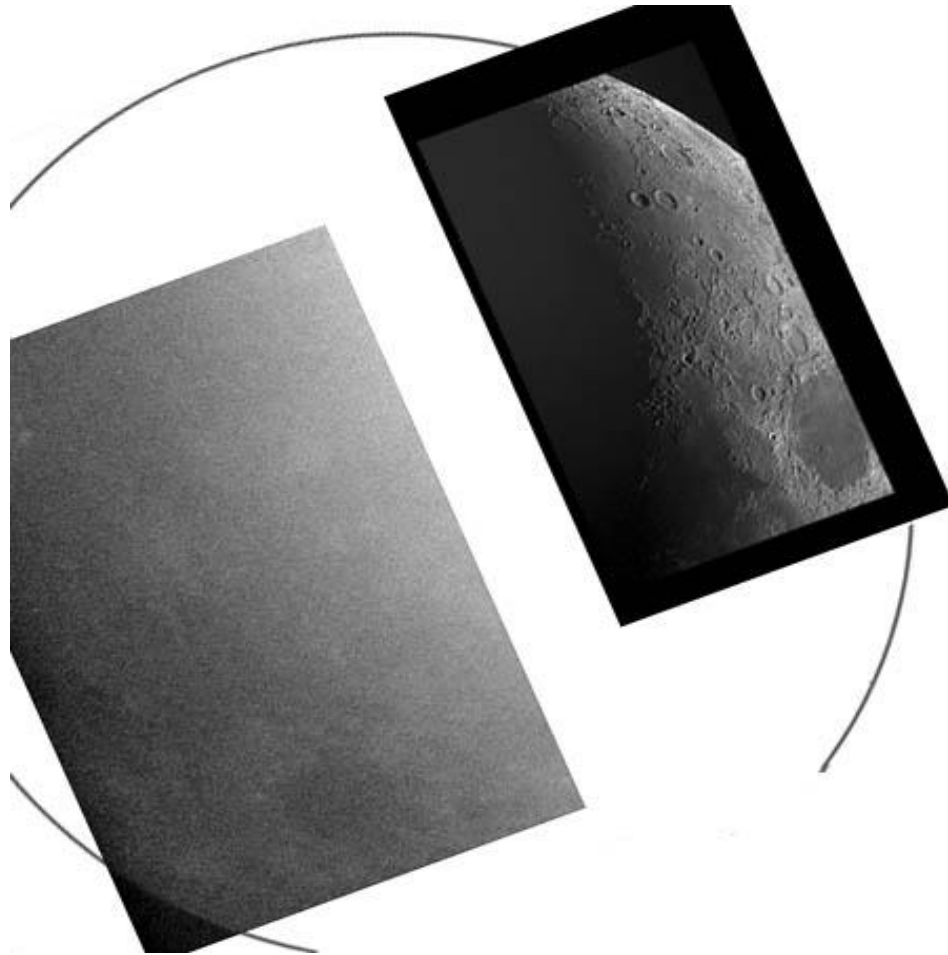


Figure 5. A composite of a dayside image of the Moon by Bon Stuart (BAA) from 2018 Apr 20 UT 18:31 and a 1/30th sec frame from a video by Anthony Cook (ALPO/BAA) of earthshine taken on 2018 Apr 20 UT 21:09. Both images have been contrast stretched by different amounts and manually fitted and scaled to an outline circular limb.

Proclus: On 2018 Apr 21 UT 21:10-21:41 Jerzy Bohusz (PTMA) observed this crater under similar illumination (to within $\pm 0.5^\circ$) to the following report:

Proclus 2003 February 8, UT 02:09-03:07 Observed by Gray (Winnemucca, NV, USA, 152mm F9 refractor Seeing 6-7, Transparency 6 305x) "Blinked Proclus with Wratten Red 25 and Blue 38A filters. Features seen through the red filter were basically seen with the same degree of clarity as in white light, in the case of sunlit walls, maybe a little bit better in the red. With the Blue 38A filter only the brightest part of the crater walls (north end) was visible-the rest of Proclus was dark shadow. At 3:07UT I compared the brightest parts of Proclus with Censorinus and Dionysius. The brightest parts of Proclus and Dionysius were comparable. Censorinus was much less bright than either of the above craters-the halo and crater were much faded over its usual brilliant appearance. Both Censorinus and Censorinus A were visible as distinct craters at 114x. The black shadow covering the east 40% of Proclus last night had broken up into three patches separated from each other by lighter bands. These were confined to the east crater wall. Only the central patch was black, the other two were considerably lighter. Running along the southwest edge of the crater floor of the crater floor appeared to be a hill to the north of which was a less elevated plateau. As the observing period progressed part of the brilliantly illuminated north crater wall developed a darker area which gradually became more prominent. As the sun is getting higher I would expect shadows and dark areas to diminish-what was happening here is unknown. However, this is not an unusual event for this part of Proclus". The ALPO/BAA weight=2.

Jerzy noted that the crater looked interesting (See Fig 6), so he decided to make a quick, sketch, mainly for training purposes. We have no sketch from Robin Gray from the 2000 report, but you can definitely see the three dark markings/bands on the inner east wall, and that the central one was darkest. There is a dark area north of the NW/N wall, and it is possible this is what Robin Gray was referring to? We cannot really comment though on the color filter effects mentioned in the 2003 observation, though these might be related to the effects of Rayleigh

scattering in our atmosphere, making things easier to see in red than in blue? I will lower the weight to 1, as we have made some progress in explaining the appearance/ from 2003.

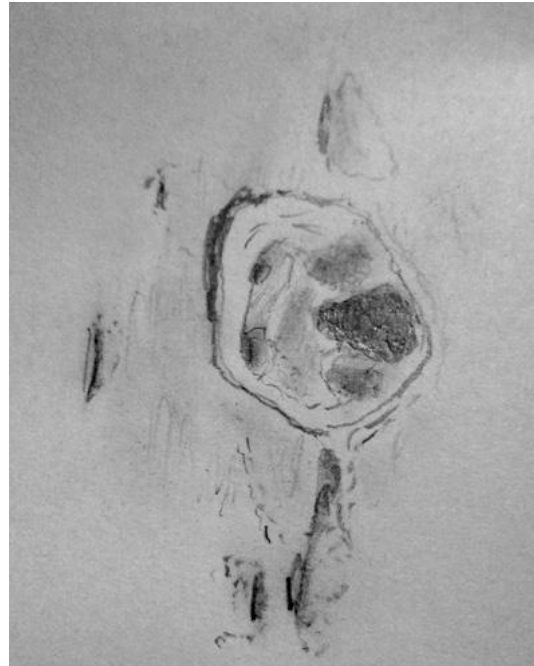


Figure 6. Proclus as sketched by Jerzy Bohusz (PTMA), orientated with north towards the top. The telescope used was a Maksutov 180/2700 mm x208. Transparency good. Seeing 6-7/10. Sketch made on: Apr 21 UT 21:10-21:41.

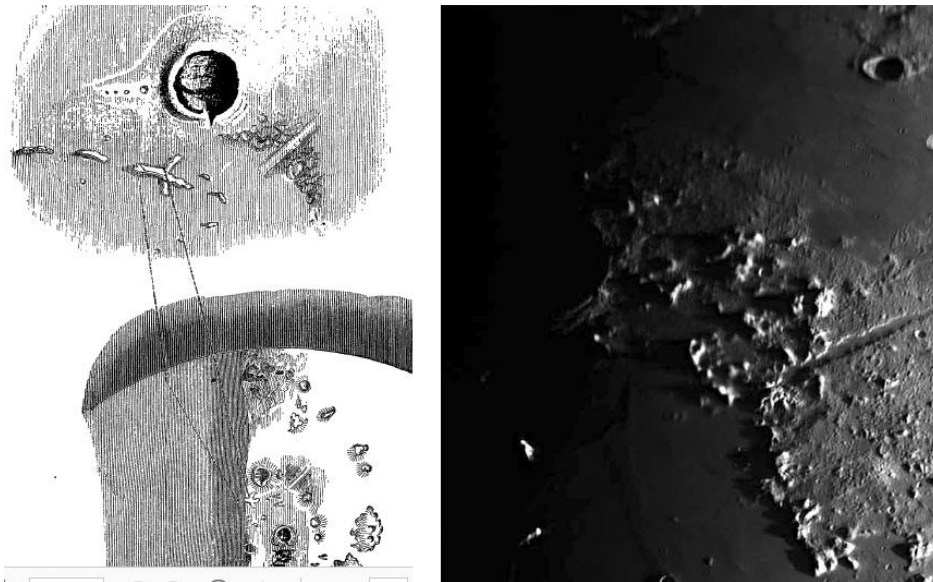


Figure 7. The northern Mare Imbrium area of the Moon, orientated with north towards the top. **(Left)** A sketch from Robert Hart's "On a Telescopic Appearance seen in the Moon" ([MNRAS \(1855\), 15, p162-164](#)) made on 1854 Dec 27 UT 18:00-23:00. **(Right)** an image by Pasquale D'ambrosio (UAI) taken on 2018 Apr 23 UT 20:14.

Montes Teneriffe: On 2018 Apr 23 UT Pasquale D'ambrosio (UAI) imaged the Monte Alpes region and part of this included the Montes Teneriffe area under a similar selenographic colongitude (8.2° - 10.7°) prediction on the lunar schedule [web site](#) in respect to the following report:

nr. Plato in Teneriffe Mountains 1854 Dec 27 UT 18:00-23:00 Observed by Hart & others (Glasgow, Scotland, 10" reflector) "2 luminous fiery spots on bright side on either side of a ridge, contrasting color. Seemed to be 2 active volcanoes. Ridge was normal color. Spots were yellow or flame color. Never seen before in 40 yrs. of observing." NASA catalog weight=4. NASA catalog ID #129. ALPO/BAA weight=3.

As you can see the shadow has not gotten far enough west if Pasquale's image to reach the Montes Teneriffe. Therefore the date/UT range (more likely the UT) of the 1854 report are likely wrong. The current selenographic range is set between 8.2° and 10.7°. We shall now set the lower limit to be 9.9°, or what it was when Pasquale observed in 2018, and set the upper end to 12.4°, based upon a similar appearance image to the 1854 report on p144 (plate 6d) of the [Hatfield Lunar Atlas](#).

Censorinus: On 2018 Apr 26 UT 01:13 Camilo Satler (AEA) imaged the Moon under similar illumination to the following report:

Censorinus: 2007 Oct 21 at approximately 18:43UT G. North noticed that the crater, and its bright apron, appeared particularly brighter than normal. There was some spurious color present - but just a redness along the southernmost extent of the apron visible; could not detect any blue along the northern edge however, he did do not suspect the color to be anomalous. A re-examination at 18:51UT revealed that the crater had faded and was seen to fade visibly in real time to normal levels (over about a minute) by 18:53UT. Other features remained constant and so too did the apparent spurious color.

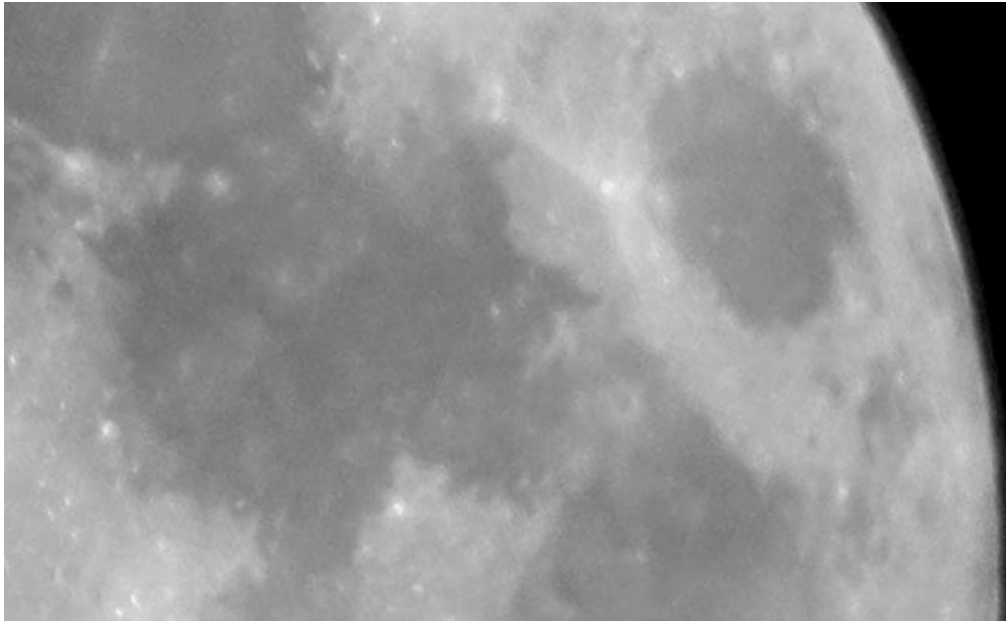


Figure 8. The region in the vicinity of Censorinus and Proclus, from a whole disk image by Camilo Satler (AEA), taken on 2018 Apr 26 UT 01:13.

The resolution of Camilo's image is not sufficient to resolve the apron around Censorinus or to give us some sense of color, close up, however you can see visually that it looks about as bright as Proclus. I checked the digital images as well and this is mostly the case though part of the rim of Proclus is perhaps 1-2% brighter. We shall leave the weight of the 2007 report as it is.

Gassendi: On 2018 Apr 26 UT 09:15 Maurice Collins imaged this crater under similar illumination (to within $\pm 0.5^\circ$) to the following two reports:

Gassendi 1977 May 28/29 UT 20:45-21:15 Observed by D. Sims(Dawlish, Devon, UK) saw a hazy area on the south east floor that was normal in red and white light but darker in blue. This was partly confirmed by J-H Robinson (Devon, England, 10" reflector) 21:24-23:12 who saw the south east floor of Gassendi to have a loss of detail - but no color seen, although at 21:57-21:58 it was slightly brighter in red than in blue briefly. P. Doherty (22:45-23:15) did not see anything unusual. D. Jewitt (22:22-22:55) did not reveal anything unusual, apart from spurious color. The Cameron 1978 catalog ID=3 and ID=1463. The ALPO/BAA weight=3.

On 1990 Sep 30 at D. Darling (Sun Praire, WI, USA, 12.5" reflector, x150) observed a red spot on the west wall (bright in red filter and faint in the blue filter. No filter reactions were found elsewhere. Gassendi had much detail visible. A sketch was made. BAA observers in the UK were alerted but they could not observe due to cloud. Cameron 2006 extension catalog ID=411 and weight=5. ALPO/BAA weight=3.

Maurice's image (Fig 9 Top) shows nicely the location of the "X" marked in Hedley Robinson's sketch (Fig 9 Bottom), where Hedley claimed to have seen a LTP, though Maurice's image shows the location just to be a

cluster of four or more hills, and exhibits nothing unusual. Neither does Maurice's image exhibit any color on the SE floor (other than atmospheric spectral dispersion), unlike what Sims reported in 1977. Concerning the 1990 observation, according to Maurice's image there is a bright spot here, as also depicted in space artist: Paul Doherty's sketch (Fig 9 Right) too; however there is no obvious color. At least we get a sense of how cartographically accurate David Darling's depiction of the shape of the crater and its shadows is. We shall leave the 1977 and 1990 reports at their current weights as there is still a lot to explain.

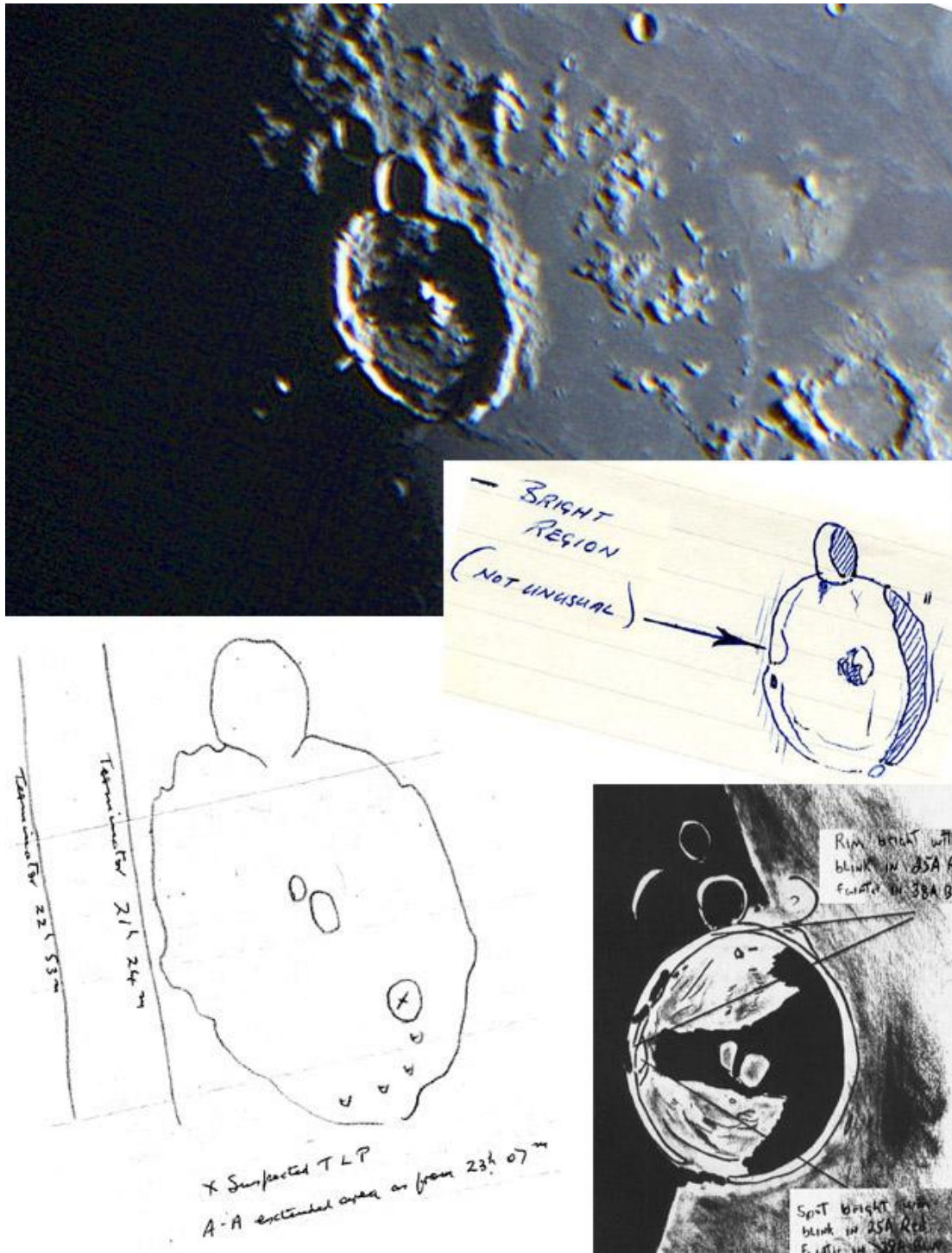


Figure 9. Gassendi with north orientated towards the top. **(Top)** as imaged by Maurice Collins on 2018 Apr 26 UT 09:15. Color saturation has been increased to 80% and a non-linear contrast stretch has been performed. **(Centre Right)** A rough sketch by Paul Doherty made using Patrick Moore's 15" reflector at Selsey, UK on 1977 May 28 UT 23:00. **(Bottom Left)** A sketch made by J-Hedley Robinson on 1977 May 28 UT 23:07. **(Bottom Right)** A sketch made by David Darling on 1990 Sep 30 UT 03:55 – annotation has been rotated.

Gassendi: On 2018 Apr 26 UT 19:30-19:55 Marie Cook (BAA) observed this crater under similar illumination to the following report:

Gassendi 1969 Nov 20 UT 17:06-17:15 Observed by Duckworth (Manchester, England, 8" refractor x250) Faint Pinkish Obscuration on floor. Event in progress at 1706 - left telescope at 1715 to report it, but LTP gone upon return. Gassendi was normal from from 1734-1822h. NASA catalog weight=4. NASA catalog ID #1223. ALPO/BAA weight=3.

Marie found the crater sharp and clear. A lot of detail was seen, but no sign of any obscuration or color noticed. We shall therefore leave the weight at 1.

Aristarchus: On 2018 Apr 28 UT 00:46 Alan Trumper (AEA) imaged the Moon under similar illumination ($\pm 0.5^\circ$) to the following report:

1978 May 19 - P. Foley of Kent, UK, using a 12" reflector, seeing=III-II, noticed that initially that the crater was pretty dull and that the floor was a slate blue-gray in color at 22:45UT. A noticeable green spot inside the crater on the south east appeared at 22:25UT and vanished vat 00:50UT. Cameron notes that one doesn't get green with spurious color. Crater Extinction brightness measurements were made at 22:00 UT (reading=2.8) and at 23:45UT (reading=3.7). The crater dropped in brightness from 3.7 to 2.8 at 23:50UT and remained lower until 3.0 at 23:50-03:15 UT. A graph was produced and showed Proclus and Censorinus at similar brightness's, but Aristarchus variable. The Earthshine was 0.3. Cameron 2006 Extension catalog ID=31 and weight=5. ALPO/BAA weight=3.

Aristarchus does not appear especially dull on Alan's image (Fig 10) as the crater is just coming out of sunrise, so there is no reason to alter the weight of the 1978 observation for now.



Figure 10. An image of the lunar disk, from 2018 Apr 28 UT 00:46, taken by Alan Trumper (AEA). Image orientated with north towards the top.

Plato: On 2018 Apr 29 UT 03:42 & 03:56 Walter Elias (AEA) imaged the crater under similar illumination, to within $\pm 0.5^\circ$, to the following 1970's report:

Plato 1971 Nov 01 UT 19:35-20:35 Observed by Kidd (S.Shields, England, 16" reflector, S=G), Kirsopp (England), Fitton (Lancashire, England, 8" reflector x200) "NW (IAU?) rim, small area of obscur. & bright spot adjacent to it. Was normal at 2035h. Kirsopp confirmed. Fitton saw nothing unusual in blink patrol. (blink device detects color rather than brightness)" NASA catalog weight=4. NASA catalog ID #1318. ALPO/BAA weight=3.

As you can see from Walter's image (Fig 11 – Left), the bright spot in D.J. Kidd's sketch (Fig 11 – Right) is perfectly normal. Although Walter's image is not tip-top in terms of resolution, there is a hint of lack of detail on the NW rim. Perhaps the variability described in terms of detail, on the NW rim in 1971, could just be explained away as terrestrial atmospheric seeing effects and maybe even refraction too? I will therefore lower the ALPO/BAA weight down to 1 for now as I would like to see a more detailed image under similar illumination, to be sure.



Figure 11. Plato, orientated with north towards the top. **(Left)** A color image by Walter Elias (AEA). Taken on 2018 Apr 29 UT 03:42. **(Right)** A sketch by D.J. Kidd (SSAS) from 1971 Nov 01 UT 19:35-20:35.

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> .

,Dr Anthony Cook, Department of Physics, Aberystwyth University, Penglais, Aberystwyth, Ceredigion, SY23 3BZ, WALES, UNITED KINGDOM. Email: atc @ aber.ac.uk. .

KEY TO IMAGES IN THIS ISSUE

1. Alphonsus
2. Aristarchus
3. Censorinus
4. Davy
5. Euclides
6. Gassendi
7. Geminus
8. Langrenus
9. Linné
10. Mare Crisium
11. Mare Nectaris
12. Montes Teneriffe
13. Naumann
14. Petavius
15. Pitiscus
16. Plato
17. Proclus
18. Rupes Recta
19. Tycho
20. Wargentin



FOCUS ON targets

X = Reiner gamma

Y = Apollo 17 Mare Serenitatis

Z = Apollo 16 Descartes-Cayley Plains