The Lunar Observer

A publication of the Lunar Section of ALPO

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Recent back issues: http://moon.scopesandscapes.com/tlo_back.html

August 2020

In This Issue

Wishing each of you the all the best in these trying times. As I write this, my niece has COVID-19, so it is starting to really hit home. Be safe out there!

In the August 2020 *The Lunar Observer*, you will find timely and interesting tours of lunar topography by Alberto Anunziato, Robert H. Hays, Jr., Rik Hill, Howard Eskildsen and David Teske. As always, Tony Cook provides an interesting look at Lunar Geologic Change with an updated format.

Next month, the Focus-On article by Jerry Hubbell will feature lunar targets 21-30 (see page 7 for details). Please be sure to send in your articles and images to both David Teske and Jerry Hubbell. We look very forward to your submissions.

Clear skies!

David Teske

Lunar Calendar August 2020

Date	Time UT	Event
August 2020 1		Moon at greatest southern declination -24.0°
2		East limb most exposed, +4.9°
2	0	Jupiter 1.5° north of Moon
2	0600	Pluto 1.1° north of the Moon, occultation eastern Antarctica
2	1300	Saturn 2° north of Moon
3	1559	Full Moon
7		North limb most exposed +6.7°
9	0800	Mars 0.8° north of Moon, occultation SE South America, Antarctica
9	1400	Moon at apogee, 404,659 km
11	1645	Last Quarter Moon
15	1300	Venus 4° south of Moon
16		West limb most exposed, -6.3°
16		Moon at greatest northern declination +24.1°
17	1800	Moon 1.7° north of Beehive
19	0242	New Moon, lunation 1208
21		South limb most exposed -6.6°
21	1100	Moon at perigee 363,513 km
25	1758	First Quarter Moon
28		East limb most exposed +5.9°
29		Moon at greatest southern declination -24.1°
29	0200	Moon 1.4° north of Moon
29	1100	Pluto 1.2° north of Moon, occultation Antarctica
29	1700	Saturn 2° north of the Moon

The Lunar Observer welcomes all lunar related images, drawings, articles, reviews of equipment and reviews of books. You do not have to be a member of ALPO to submit material, though membership is highly encouraged. Please see below for membership and near the end of *The Lunar Observer* for submission guidelines.

Comments and suggestions? Please send to David Teske, contact information page 1. Need a hard copy, please contact David Teske.

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.

Lunar Topographic Studies

Acting Coordinator – David Teske - david.teske@alpo-astronomy.org
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Observations Received

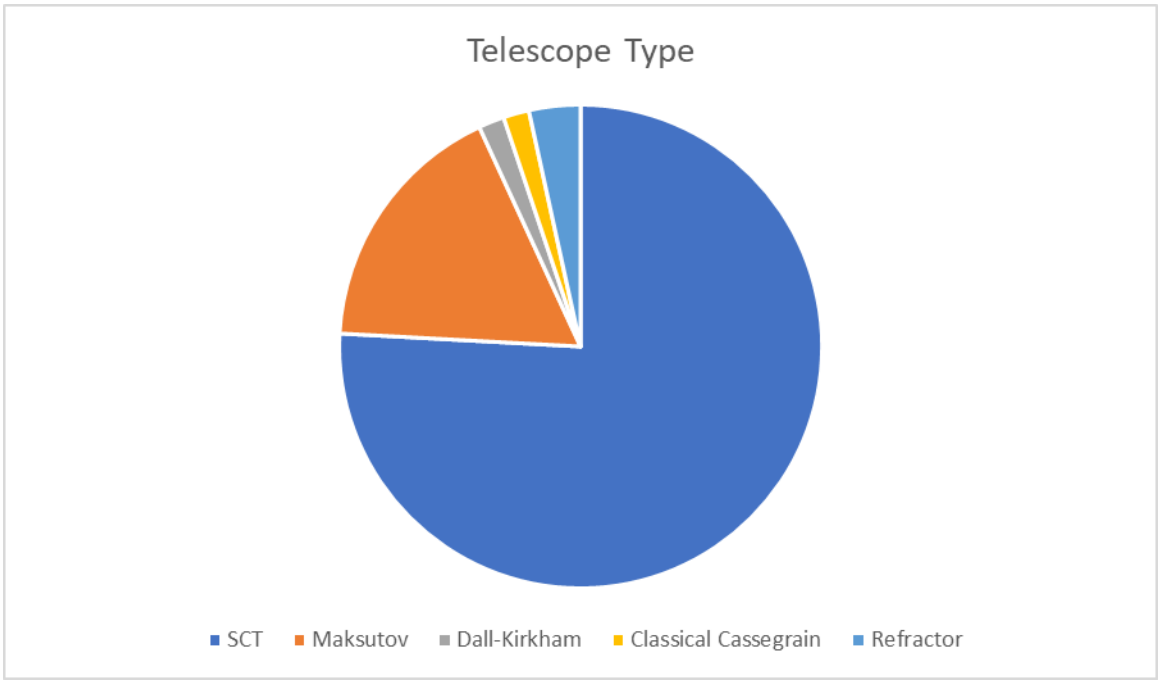
Name	Location and Organization	Article/image
Alberto Anunziato	Paraná, Argentina	Article and drawing Sinus Lunicus, Man's First Contact with the Moon.
Francisco Alsina Cardinalli and Alberto Anunziato	Oro Verde, Argentina	Article and image Between Menelaus and Theophilus, the Little and Majestic Dionysius.
Jairo Chavez	Popayán, Colombia	Image of the First Quarter Moon,
Howard Eskildsen	Ocala, Florida, USA	Articles and images The Three Amigos, Two Views of Copernicus, images of Mons Rumker and Archytas (2).
Miguel Ángel Gomez	Bernal, México	Images of Mare Serenitatis, Mare Tranquillitatis, Waxing Crescent Moon with Lunar X and Waxing Gibbous Moon.
Richard Hill	Tucson, Arizona, USA	Articles and images No Safe Distancing Here and Looking Around the Corner.
Luigi Morrone	Agerola, Italy	Image of the Waxing Crescent Moon.
Raúl Roberto Podestá	SLA, Formosa, Argentina	Images of Eudoxus, Waxing Crescent Moon, Plinius, Stevinus and Theophilus.
Guido Santacana	San Juan, Puerto Rico, USA	Images of eastern Mare Imbrium, Montes Alpes, Ptolemaeus and the Straight Wall.
Michael E. Sweetman	Sky Crest Observatory, Tucson, Arizona, USA	Images of Sinus Iridum and Rupes Recta.
David Teske	Louisville, Mississippi, USA	Article and image A Saucerful of Secrets.
Fabio Verza	SNdR Luna UA, Milan, Italy	Images of First Quarter Moon, Alpetragius, Archimedes (2), Albategnius, Aliacensis, Arzachel, Aristoteles, Cassini, Demonax, Maginus, Purbach, Vallis Alpes, Pallas, Ptolemaeus, Waxing Gibbous Moon, Plato (2), Barrow, Clavius, Pitatus, Eratosthenes, Rupes Recta, Tycho, Neper, Humboldt, Gauss, Mare Humboldtianum, Langrenus and Sinus Iridum.

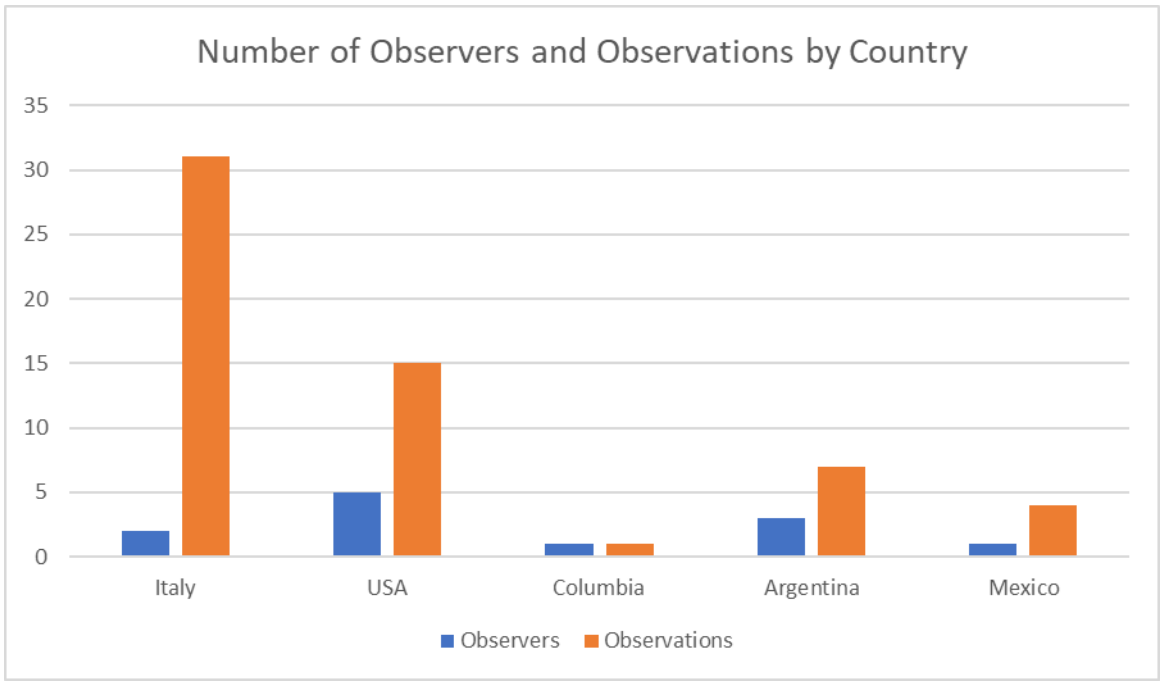
Many thanks for all these observations, images, and drawings.

August 2020 *The Lunar Observer*
By the Numbers

This month there were 58 observations by 12 observers from 5 countries.

Telescope size ranged from 3.5 to 14 inches





SUBMISSION THROUGH THE ALPO IMAGE ARCHIVE

ALPO's archives go back many years and preserve the many observations and reports made by amateur astronomers. ALPO's galleries allow you to see on-line the thumbnail images of the submitted pictures/observations, as well as full size versions. It now is as simple as sending an email to include your images in the archives. Simply attach the image to an email addressed to

lunar@alpo-astronomy.org (lunar images).

It is helpful if the filenames follow the naming convention :

FEATURE-NAME_YYYY-MM-DD-HHMM.ext

YYYY {0..9} Year

MM {0..9} Month

DD {0..9} Day

HH {0..9} Hour (UT)

MM {0..9} Minute (UT)

.ext (file type extension)

(NO spaces or special characters other than "_" or "-". Spaces within a feature name should be replaced by "-".)
As an example the following file name would be a valid filename:

Sinus-Iridum_2018-04-25-0916.jpg
(Feature Sinus Iridum, Year 2018, Month April, Day 25, UT Time 09 hr16 min)

Additional information requested for lunar images (next page) should, if possible, be included on the image. Alternatively, include the information in the submittal e-mail, and/or in the file name (in which case, the coordinator will superimpose it on the image before archiving). As always, additional commentary is always welcome and should be included in the submittal email, or attached as a separate file.

If the filename does not conform to the standard, the staff member who uploads the image into the data base will make the changes prior to uploading the image(s). However, use of the recommended format, reduces the effort to post the images significantly. Observers who submit digital versions of drawings should scan their images at a resolution of 72 dpi and save the file as a 8 1/2"x 11" or A4 sized picture.

Finally a word to the type and size of the submitted images. It is recommended that the image type of the file submitted be jpg. Other file types (such as png, bmp or tif) may be submitted, but may be converted to jpg at the discretion of the coordinator. Use the minimum file size that retains image detail (use jpg quality settings. Most single frame images are adequately represented at 200-300 kB). However, images intended for photometric analysis should be submitted as tif or bmp files to avoid lossy compression.

Images may still be submitted directly to the coordinators (as described on the next page). However, since all images submitted through the on-line gallery will be automatically forwarded to the coordinators, it has the advantage of not changing if coordinators change.

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-hhmm or yyyy-mm-dd-hhmm)
Filter (if used)
Size and type of telescope used Magnification (for sketches)
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

Resolution appropriate to the image detail is preferred-it is not necessary to 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:
David Teske – david.teske@alpo-astronomy.org
Jerry Hubbell –jerry.hubbell@alpo-astronomy.org
Wayne Bailey—wayne.bailey@alpo-astronomy.org

Hard copy submissions should be mailed to David Teske at the address on page one.

CALL FOR OBSERVATIONS: FOCUS ON: Lunar 100

Focus on is a bi-monthly series of articles, which includes observations received for a specific feature or class of features. The subject for the September 2020 edition will be the Lunar 100 numbers 21-30. 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
David Teske – david.teske@alpo-astronomy.org

Deadline for inclusion in the Lunar 100 numbers 21-30 article is August. 20, 2020

FUTURE FOCUS ON ARTICLES:

In order to provide more lead time for contributors the following future targets have been selected: The next series of three will concentrate on subjects of the Selected Areas Program.

Subject	TLO Issue	Deadline
Lunar 100 (numbers 21-30)	**September 2020**	**August 20, 2020**
Lunar 100 (numbers 31-40)	**November 2020**	**October 20, 2020**

Focus-On Announcement

We are pleased to announce the future Focus-On topics. These will be based on the Lunar 100 by Charles Wood. Every other month starting in May 2020 , the Focus-On articles will explore ten of the Lunar 100 targets. Targets 21-30 will be featured in the September 2020 The Lunar Observer. Submissions of articles, drawings, images, etc. due by August 20, 2020 to David Teske and Jerry Hubbell.

L	Feature Name	Significance	Rükl Chart
21	Fracastorius	Crater with subsided and fractured floor	58
22	Aristarchus Plateau	Uplifted region with pyroclastics	18
23	Pico	Isolated Imbrium basin-ring fragment	11
24	Hyginus Rille	Rille containing rimless collapse pits	34
25	Messier and Messier A	Oblique ricochet-impact pair	48
26	Mare Frigoris	Arcuate mare of uncertain origin	2-6
27	Archimedes	Large crater lacking central peak	12, 22
28	Hipparchus	First drawing of a single crater	44, 45
29	Ariadaeus Rille	Long, linear graben	34
30	Schiller	Possible oblique impact	71

Explore the Lunar 100 on the link below:

https://www.skyandtelescope.com/observing/celestial-objects-to-watch/the-lunar-100/

The Lunar 100: Features 1-10	May 2020 Issue – Due April 20, 2020
The Lunar 100: Features 11-20	July 2020 Issue – Due June 20, 2020
The Lunar 100: Features 21-30	September 2020 Issue – Due August 20, 2020
The Lunar 100: Features 31-40	November 2020 Issue – Due October 20, 2020
The Lunar 100: Features 41-50	January 2021 Issue – Due December 20, 2020
The Lunar 100: Features 51-60	March 2021 Issue – Due February 20, 2021
The Lunar 100: Features 61-70	May 2021 Issue – Due April 20, 2021
The Lunar 100: Features 71-80	July 2021 Issue – Due June 20, 2021
The Lunar 100: Features 81-90	September 2021 Issue – Due August 20, 2021
The Lunar 100: Features 91-100	November 2021 Issue – Due October 20, 2021

Jerry Hubbell –jerry.hubbell@alpo-astronomy.org
David Teske – david.teske@alpo-astronomy.org

Hesiodus B and X

Robert H. Hays, Jr.

***Hesiodus B and X**, Robert H. Hays, Jr. Worth, Illinois, USA. 04 March 2020 0230-0320. 15 cm reflector, 170 x. Seeing 9-7/10, transparency 6/6.*

I drew these craters and vicinity on the evening of March 3/4, 2020. This area is in southern Mare Nubium, just northwest of Pitatus. The main features couldn't be more different. Hesiodus B is a neat, crisp crater with no noticeable irregularities. Hesiodus X is a collection of peaks in a distinctly squarish pattern. The largest peak has two high points, and showed the darkest shadowing at this time. A peak along its eastern side is noticeably out of line. The north side of this 'square' is missing. Hesiodus X definitely does not show a half-circle shape. A low mound with a tiny pit is east of Hesiodus X. This pit is probably Hesiodus E, according to the lunar quadrant map. A short ridge intrudes upon this mound from the north. Hesiodus mu is the large ridge north of Hesiodus B, and two low ridges or wrinkles are farther to the north.

A Saucerful of Secrets

David Teske

The three craters that dominate the middle of the Moon, Ptolemaeus, Alphonsus and Arzachel were captured just after sunrise in the image below. I don't think that I have seen this in this exact lighting condition before. The floor of Ptolemaeus is the only floor of the three that is visible here. Usually, it looks nice and smooth. If you had to safely land on the Moon, such as in the early days of Apollo, the floor of Ptolemaeus often looks like the place to land. But, just after sunrise, the lighting show a much different story. The crater Ptolemaeus is a large (164 km diameter), ancient (Pre-Nectarian) crater that is slightly polygonal and is highly eroded. Its wall rises 2.4 km above the crater floor.

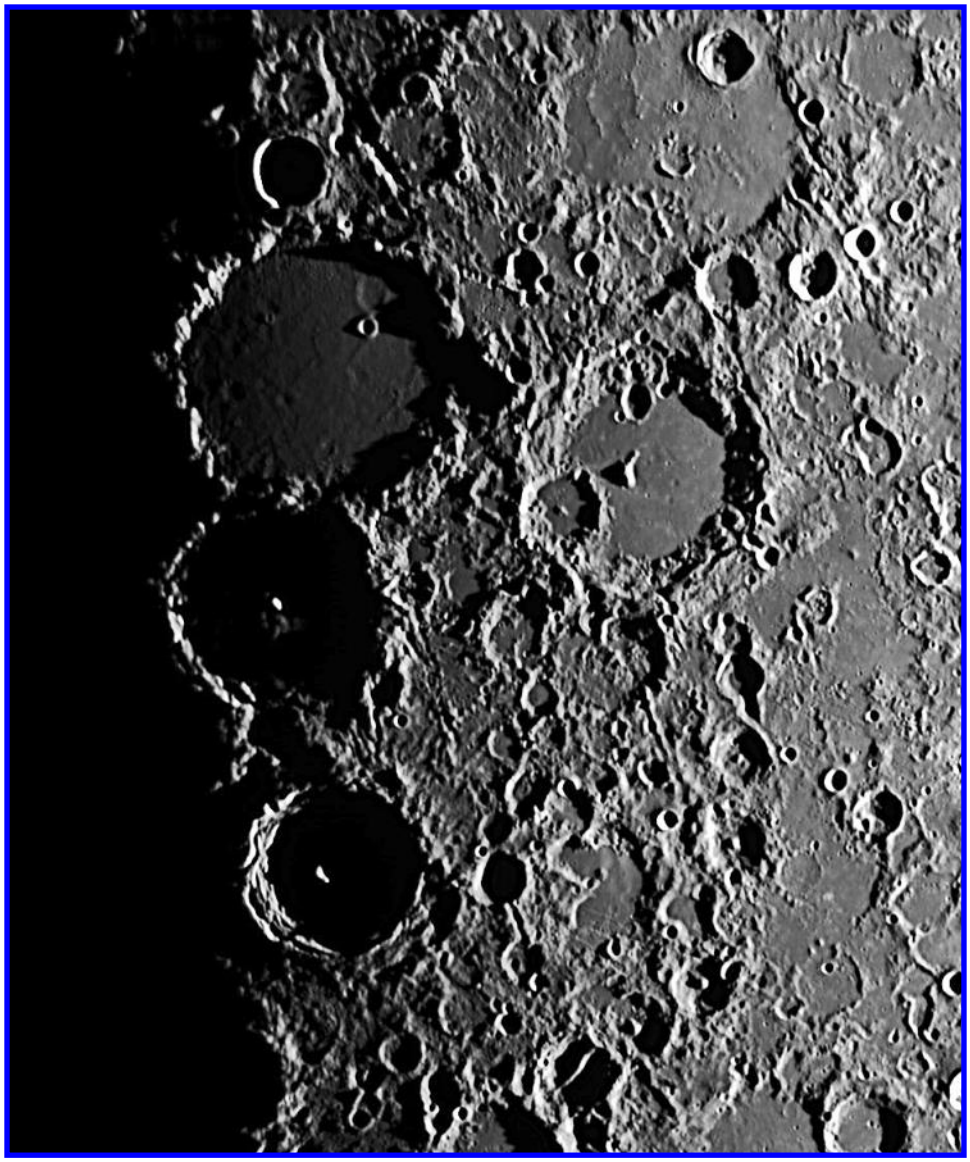
The floor of Ptolemaeus at this lighting condition is fascinating and filled with countless depressions or saucers. Ammonius is the crisp, 8 km diameter in the northeast floor of Ptolemaeus. Just north of this is the large saucer, Ptolemaeus B at 18 km in diameter. Many of the shallow saucers on the floor of Ptolemaeus are not named or lettered. These saucers were perhaps best seen by the "champion saucerologist" H. Percy Wilkens, FRAS. In his 1955 Moon map, Wilkins depicted more than two dozen saucers as dashed rings. Since the floor of Ptolemaeus is bright at Full Moon, these saucers are most likely Imbrium ejecta filling Ptolemaeus enough to hide the central peak and nearly burying earlier impact craters and gouges of the floor. Watch the floor of Ptolemaeus during the lunar day. In the 1930s, German observers reported that the floor of Ptolemaeus changes from gray after sunrise to olive green near Full Moon to a yell hue near sunset. This was cited as evidence of lichen or other lunar vegetation. Sounds like a question for our saucerologists to answer.

References

Chu, Alan, Wolfgang Paech, Mario Wigand & Storm Dunlop. 2012. The Cambridge Photographic Moon Atlas. Cambridge University Press, New York.

Moore, John. 2014. Craters of the Near Side of the Moon.

Wood, Charles. 2003. The Moon: A Personal View. Sky Publishing Corp. Cambridge.



Ptolemaeus, *David Teske, Louisville, Mississippi, USA. 30 May 2020 0159 UT, colongitude 1.7°. Takahashi Mewlon 180 telescope, ZWO ASI 120 mm/s camera, 500 frames, Firecapture, Registax, Photoshop. Seeing 8/10.*

Three Amigos: Ptolemaeus, Alphonsus, Arzachel

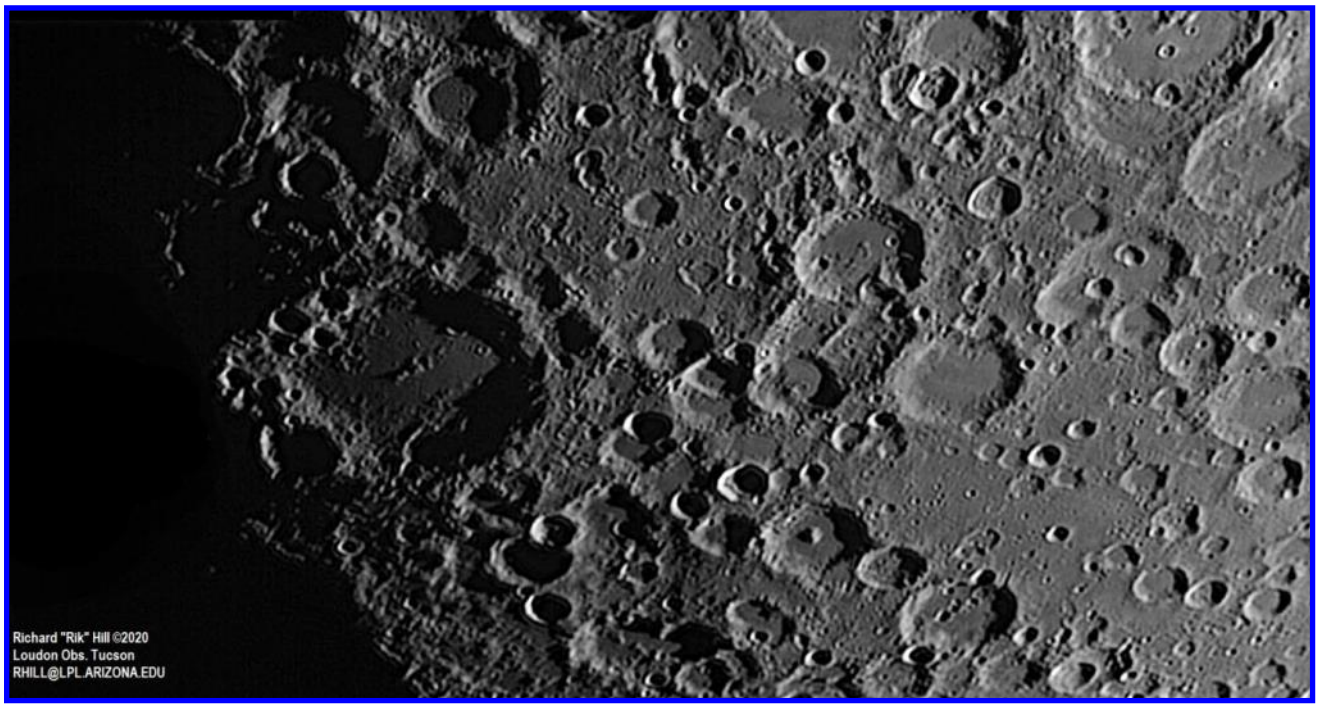
Howard Eskildsen

Ptolemaeus, Alphonsus, and Arzachel cross the center of this image, which is one of the most photographed areas of the Moon. I hadn't planned on imaging this area, but it was just too exciting to see the craters and the geologic history on vivid display. Herschel narrowly missed the northern rim of Ptolemaeus, while a crater chain creased its NE margin. On the right side of the image lies the old, battered Albategnius with Klein on its SW floor and rim. On the lower right, streaks radiate from Imbrium, ejecta scars from that massive, basin-forming impact. Rilles cross Alphonsus and Arzachel, and pyroclastics darken areas of Alphonsus. One of the pyroclastic areas at about the 4 o'clock position of Alphonsus seems to have a central uplift where it crosses a rille and resembles domes of Rima Birt, but I have not seen this listed as a dome.

Ptolemaeus, Alphonsus and Arzachel, *Howard Eskildsen, Ocala, Florida, USA. 29 June 2020, 00:39 UT, colongitude 9.8 degrees. Celestron 9.25 inch Schmidt-Cassegrain telescope, f/10, fl 2395 mm, Celestron Skyris 236 M camera. Seeing 6/10 and transparency 3/6.*

No Safe Distancing Here!

Rik Hill



Heraclitus, *Richard Hill, Tucson, Arizona, USA, Loudon Observatory. 29 June 2020 03:06 UT, colongitude 10.9°. Dynamax 6 telescope plus 2x barlow, 850 nm filter, Skyris 132M camera. Seeing 8-9/10.*

This is a crowded highland region on the Moon east of Tycho and Clavius. The large crater on the terminator with the great dramatic shadows on its floor is Maginus (168 km) with its tiny offset central peaks. Below center is a crater with a pronounced central peak, Lilius (63 km) and to the lower right of it is Jacobi (70 km) with a bunch of secondary craters on its floor. In the upper right corner of this image is half of the large cater Maurolycus (117 km). Notice the crater to the left, Faraday (71 km). On the lower left crater wall is a particularly polygonal crater Faraday C (30 km) with a curious floor infilled with ejecta from another impact. The concentric depression on the left (west) side of this crater consists of at least three merged craters again overlain by ejecta looking like thumbprints in the lunar surface. Moving south from Maurolycus is the crater Barocius (85 km) with a curious upper right rim, worthy of some investigation at different illuminations. Going even further south of this is a smaller crater, Breislak (51 km) and just south of that is Baco (71 km).

Near the center of the image is another large flat floored crater Cuvier (77 km) and just to the left of this crater is the star of the show, a crater called Heraclitus. It is an elongated depression with a long central mountain chain or ridge, a large crater on the north, Licetus (77 km) and a smaller crater on the lower end, Heraclitus D (52 km). This feature stands out when you run across it with your telescope. It is thought to be several craters merged in some fashion. There is nothing else on the Moon like it. There is a bizarre feature of the floor of Heraclitus D that consists of some deposited material in a mound with fragments of two smaller crater walls that create a spiral form on the southwest quadrant of the crater floor! Lots of strange topography in this area!!

Two Views of Copernicus

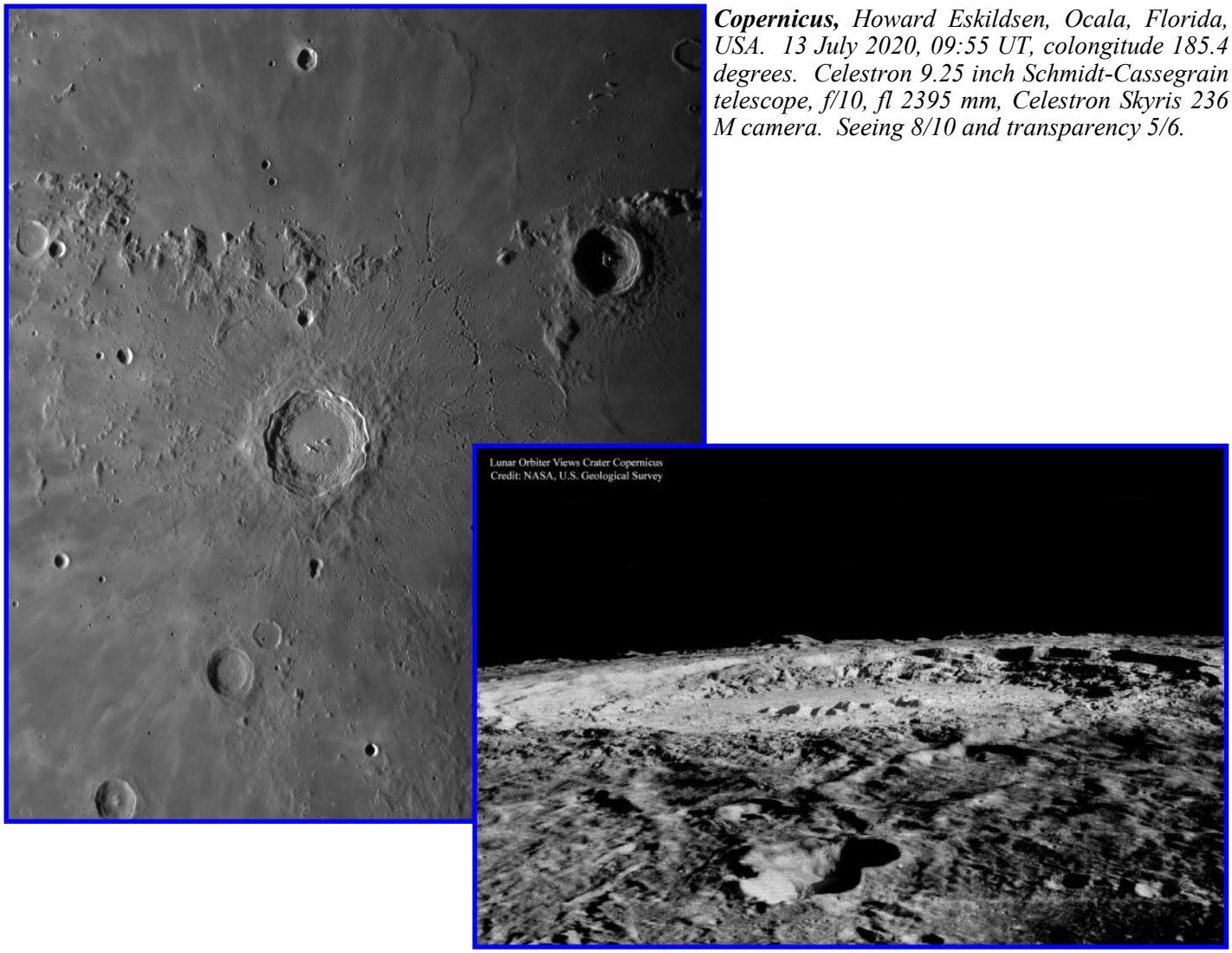
Howard Eskildsen

Two images of Copernicus are shown, one a telescopic view and the other taken by Lunar Orbiter in the 1960's. At first glance they give wildly different impressions of the crater. The telescopic view gives the impression of a slight depression surrounded by massive walls with hummocky slopes tapering into the surrounding area. The oblique orbital view, however, gives the feel of catastrophic collapse of the crater floor with minimal wall elevation surrounded by tortured terrain. It is almost as if they were two different craters.

Look closely, however. Craters Fauth, and Fauth A form a distinctive pair just south of the crater on both images. North of the crater, the largest mountain visible on the horizon of the orbiter view corresponds to the massif lying on the NE margin of crater Gay-Lussac. Also, the configuration of the central peaks confirm that they are indeed the same craters.

On the telescopic view, Gay-Lussac lies in the Montes Carpatus, and its namesake rille angles to the lower left of the crater. To the right of the image Eratosthenes embraces the end of the Montes Apenninus, and between it and Copernicus, secondary craters from the latter pock the flat basalt plains like a skirmish line. Pytheas is visible on the upper central photo. Domes are visible near the small crater Hortensius on the left margin to the lower left of Copernicus and by small craters Gambart C and B.

Copernicus is an amazing area of the Moon as seen from Earth and from orbit.



Copernicus, *Howard Eskildsen, Ocala, Florida, USA. 13 July 2020, 09:55 UT, colongitude 185.4 degrees. Celestron 9.25 inch Schmidt-Cassegrain telescope, f/10, fl 2395 mm, Celestron Skyris 236 M camera. Seeing 8/10 and transparency 5/6.*

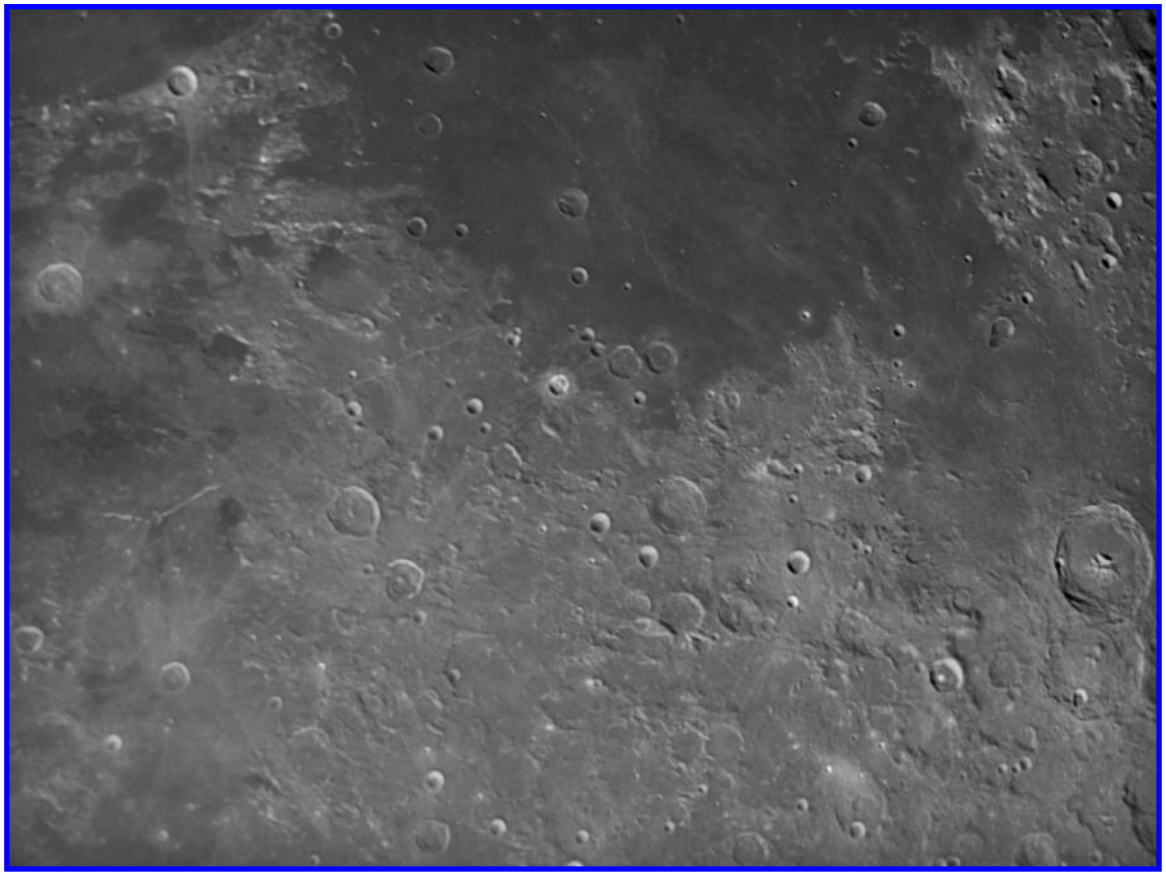
Between Menelaus and Theophilus, the Little and Majestic Dionysius

Francisco Alsina Cardinalli and Alberto Anunziato

Looking for Dionysius (or at least what I think I remember from the night is that this image was obtained) this complex landscape emerged marked by the contrast between the Mare Vaporum and Mare Tranquillitatis with Dionysius in the center (Image 1). In the upper left corner Menelaus appears, on the shore of Mare Serenitatis, with glimpses of rays, at the bottom left is Manilius and between both Lacus Lenitatis. Mare Vaporum shows a contrast of various shades that differentiates it from the greater homogeneity of the Mare Tranquillitatis. The landscape of the image appears divided from Dionysius. The western panorama (left) corresponds to the Mare Vaporum, Sinus Medii and the southern foothills of the Apenninus Mountains, the most prominent craters are the Copernican Godin and the Eratosthenian Agrippa, Rima Hyginus (left) and Rima Ariadaeus (right) are clearly distinguished although the illumination is not ideal for details. What I find most interesting in this area is the floor of two craters, Julius Caesar and Boscovich, both with floors with two very marked areas, the black north part and the lighter south part, both are old craters flooded by lava. To the right of Dionysius appears one of the best-known pairs of craters: the Imbrian twins Sabine and Ritter, who were among the last craters to be mistakenly considered to be volcanic caldera. On the right side, I found interesting the aspect of Kant, another Imbrian crater, 31-kilometer diameter, relatively close to Theophilus. What caught my attention was the bright spot in its center, slightly displaced to the left. Saturation in processing? No, because it only appears on that spot. Transient lunar phenomenon? Tempting hypothesis. But when we enlarge the image and look at the detail, comparing it with an image from the Apollo 16 mission (image 2), we see that the bright spot corresponds to the central peak, which seems quite high. The illuminations of Kant's two compared images are completely opposite. The eastern interior wall appears completely dark in the Apollo 16 image and very bright in ours, while the dark spots around the central peak in our image, which could be taken as spots of darker material and actually correspond to the lower parts of the crater slopes of the central peak.

And in the center: Dionysius. The most famous feature of this crater is the mixture of its bright and dark rays, related to its formation with an impact in a border area that generates ejections of two types of materials: “1) The dark rays of Dionysius crater are dominated by mare debris and contain minor amounts of highland material. These rays are not fully mature and are not composed of glassy impact melts. 2) The light rays east of Dionysius are dominated by highland debris and contain a large, though variable, component of mare basalt. These rays are bright because of compositional contrasts with adjacent mare-rich rays” (Lunar and Planetary Science XXXVI (2005), REMOTE SENSING STUDIES OF THE DIONYSIUS REGION OF THE MOON.T. A. Giguere et al.).

Dionysius is intrinsically famous for its dark rays formed by material ejections from a cryptomare. But we are attracted by the shape of “headphones” from the bright areas of the eastern edge, which is probably due to the “disordered” structure of the interior terraces, derived from collapses in the walls, which even reach the center of the crater, instead of a central peak that would not form in an 18 kilometer diameter crater like Dionysius. In image 3, we can see what the shadows hide in the image on the left (from the Lunar Orbiter 4 probe) in the image on the right, a close-up of image 1: a kind of slope that crosses the background of the crater from north to south, with higher areas on the edges (marked as bright) and a lower and less bright crest in the center, which contrasts with the shadow that it projects towards the east and which indicates that the terrain to the east of this crest is steeper, shady area, while to the west the terrain surely descends more smoothly.



Dionysius, *Francisco Alsina Cardinalli, Oro Verde, Argentina. 21 August 2016 04:21 UT. 10 inch Meade LX200 Schmidt-Cassegrain telescope, Astronomik ProPlanet 742 IR-pass filter, QHY5-II camera.*

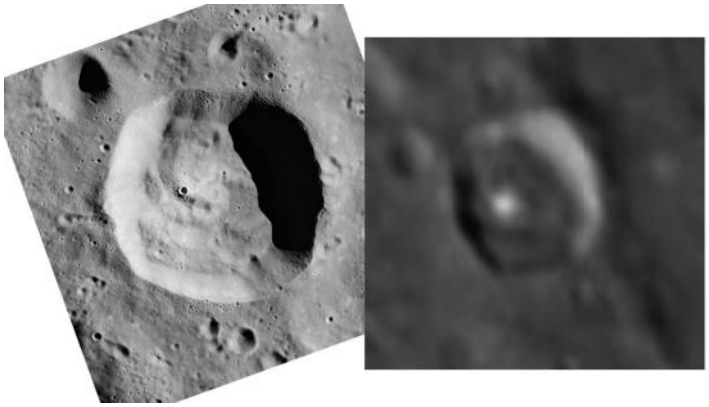


Figure 2, Kant, *Apollo 16 and enlarged from above.*

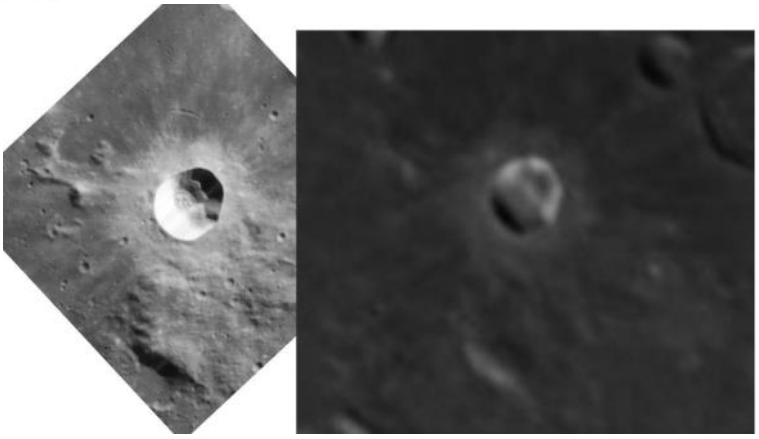


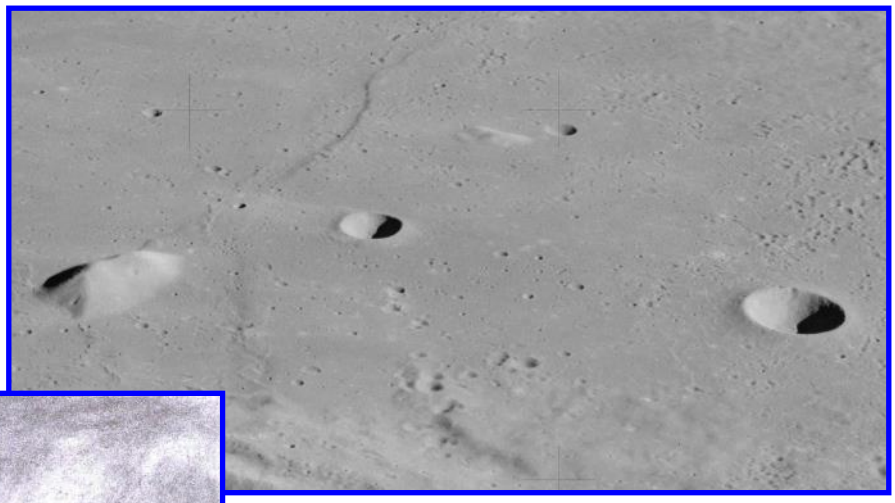
Figure 3 Dionysius, *Lunar Orbiter 4 and from above.*

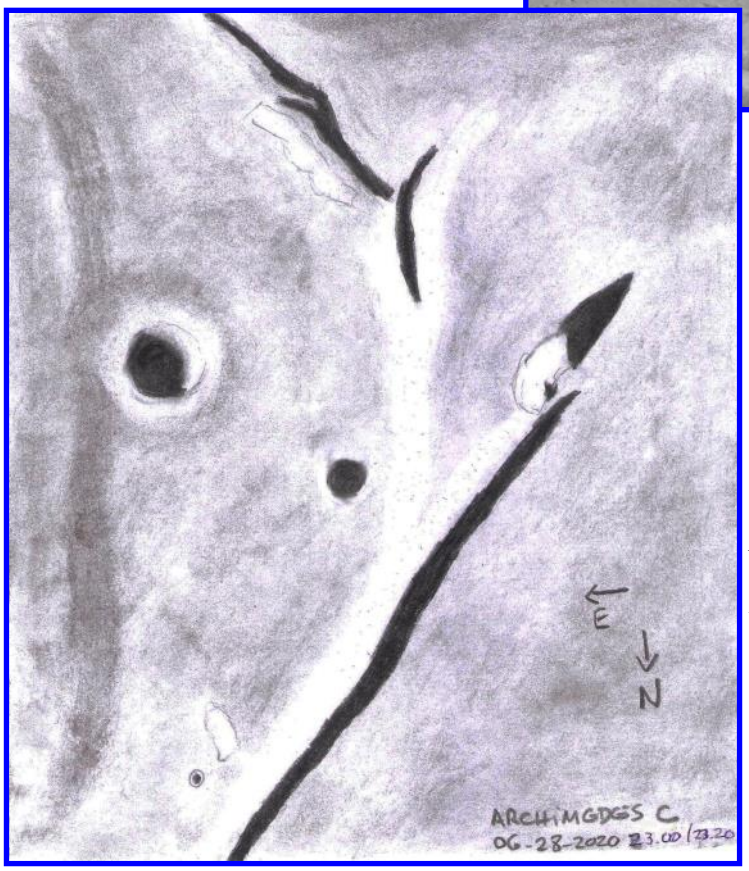
Sinus Lunicus, Man's First Contact with the Moon

Alberto Anunziato

Strolling through the terminator I couldn't resist a landscape leveled by solidified lava billions of years ago, peaks that look like islands and dorsa like gentle waves in that fictional lava sea. The location of what I was observing was simple, a little north of Archimedes. At the center of the image is a dorsum that curves from north to south and merges with the northern edge of Archimedes, identifiable by its brightness that contrasts the dark floor. Halfway, the dorsum is divided by a branch that advances west until it reaches the brightest accident on the panorama, a stretch of mountain that casts an extended shadow and that surely belongs, like the dorsum, to the wall of a crater submerged by the lavas of the Mare Imbrium. The shadow indicates that the highest part of the dorsum is precisely that is consequence of the submerged relief of the rim of a crater that emerges as a peak. The part of the dorsum that follows towards the south is lower and does not cast shadow. The shadows that appear at the top correspond to the heights of the northern edge of Archimedes. At the lower (north) end we see another peak emerging from the lava, but it is much lower than the one we see in the center, because its brightness is much weaker and does not cast shadow. To its left is a very small crater that it is only distinguished as a bright speck with a black shadow in the center. The Archimedes D craters (5 kilometers in diameter) and Archimedes C (8 kilometers in diameter) to its left, which limits with an elevation that also goes from north to south, offer more details.

The area of the drawing corresponds to what is seen in image 2, a detail of the photograph AS-15-M-2559 of the Apollo 15 mission of Archimedes. (Right)





The area I was observing, I found out later, is called Sinus Lunicus, the Bay of Lunik. The name is due to the fact that the Soviet probe Luna 2 hit the Sinus Lunicus on September 13, 1959, the first human artifact to reach another celestial body, which popularly received the name Lunik by association with Sputnik. The precise site of impact is outside the image, halfway between Archimedes C and Autolycus.

Archimedes C, *Alberto Anunziato, Paraná, Argentina. 28 June 2020 23:00 to 23:20 UT. 105 mm Meade EX Maksutov-Cassegrain telescope, 154 x.*

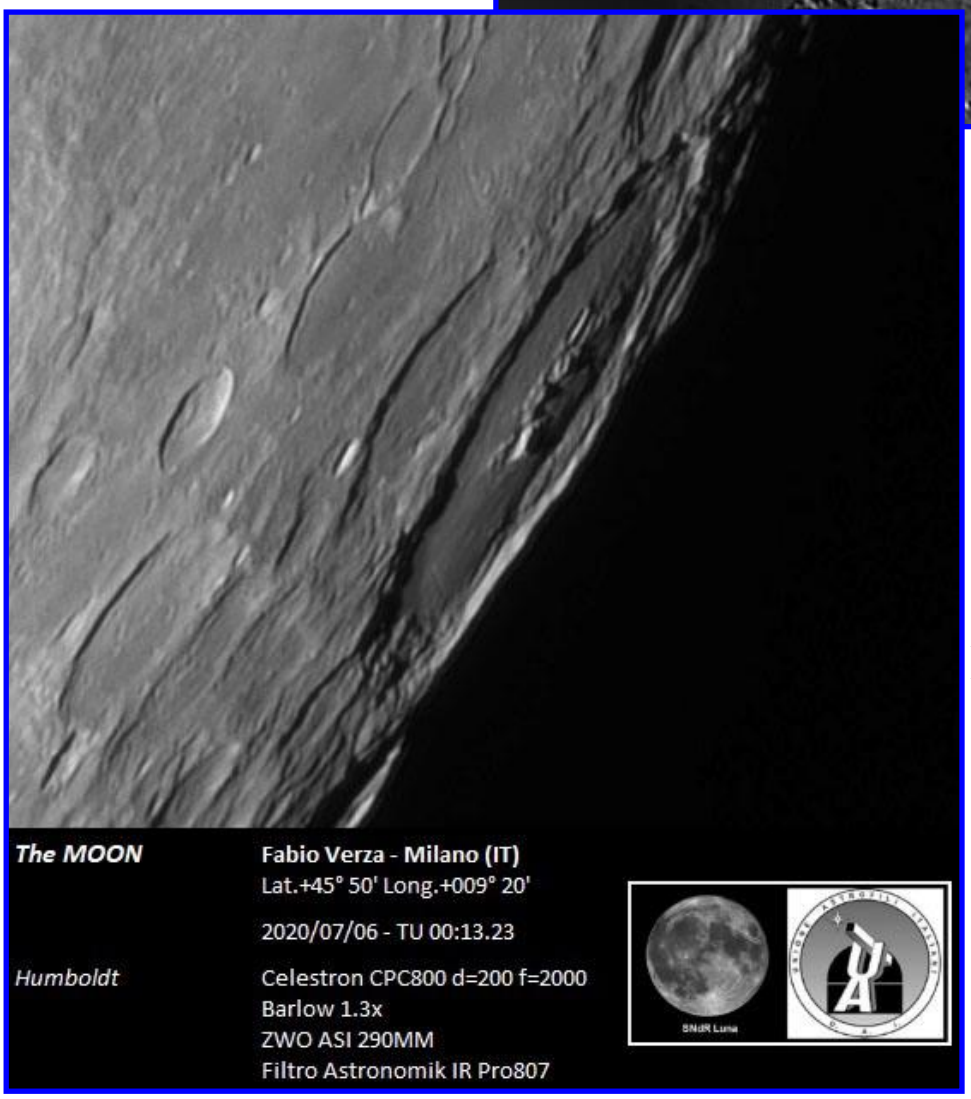
Looking Around the Corner

Rik Hill

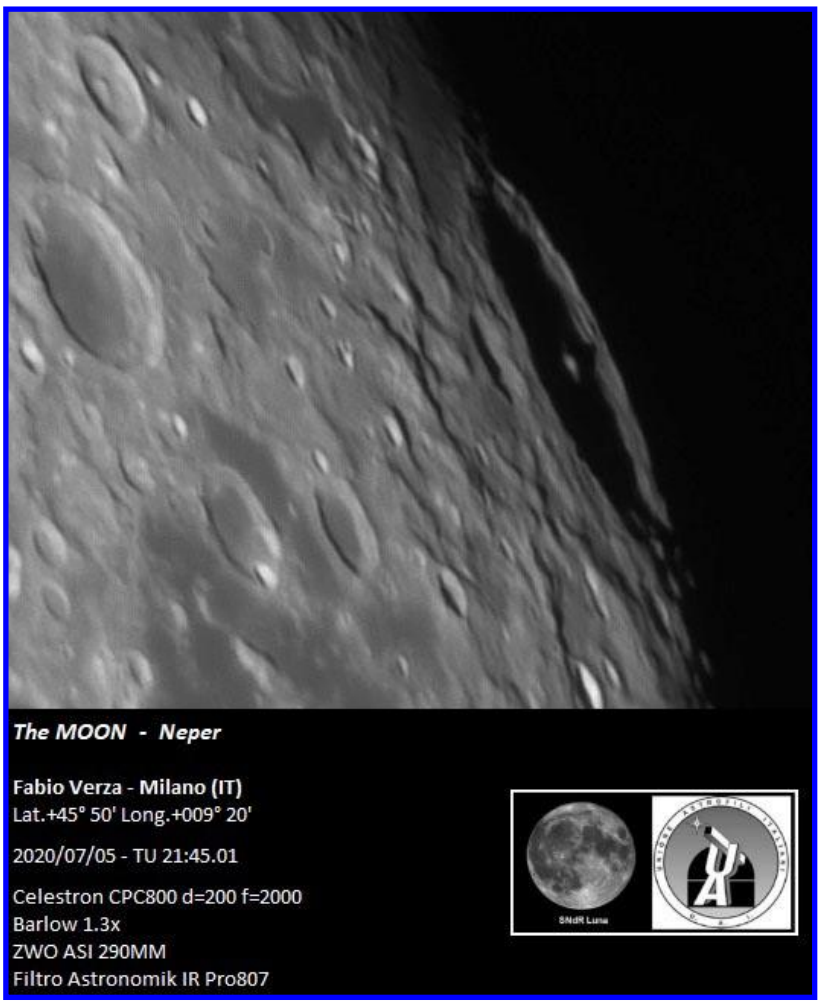
Something a little different this time to demonstrate what libration is and how it can be used to advantage. Here we have two images of the region from the crater Janssen looking east. Janssen is the largely ruined 196 km diameter polygonal crater near the terminator in the center top of each of the two images in this montage. To the right of the center of this crater is a smaller crater Fabricius (80 km) with an odd mountain range on its floor. To the right of this is the slightly larger Metius (90 km) and further on that trench that is Vallis Rheita some 515 km long. Below Janssen are two overlapping craters, the top one being Steinheil (70 km) laying on top of Watt (68 km).

Notice that in the image on the right you see a lot more terrain between Watt and the limb. This is what "favorable libration" can do for you and why you need to pay attention to that. A favorable libration on one side of the Moon means unfavorable on the opposite side. On the limb in this image on the right is a portion of Mare Australis which is completely invisible on the left. On the left in the middle of the limb is the highly foreshortened crater Hanno B (36 km) but in the July image the crater can be seen plain and clear on the nearside (west) of Mare Australis. These two images clearly show how by picking the right night you can see around the corner, or limb as it were.

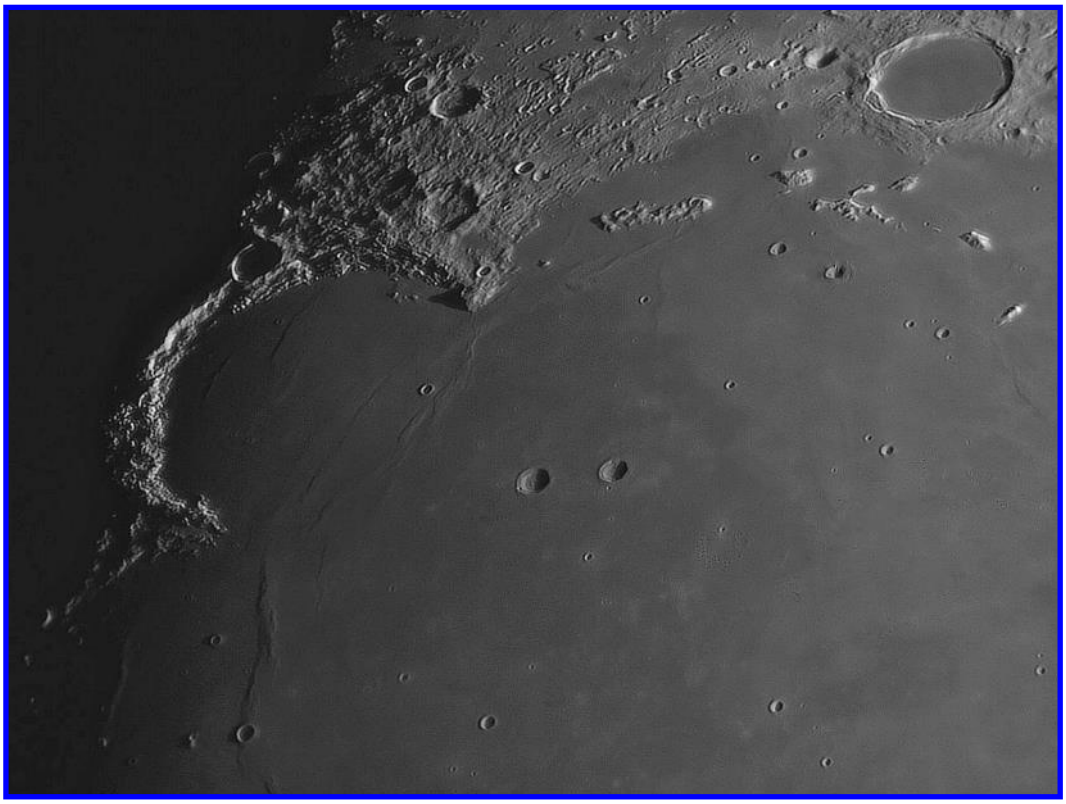
Eastern Mare Imbrium, *Guido Santacana, San Juan, Puerto Rico, USA. 01 May 2020 01:26 UT. 3.5 inch Questar telescope, f/14, Orion Star Shoot MP5 camera, 200 frames, Registax 6.*



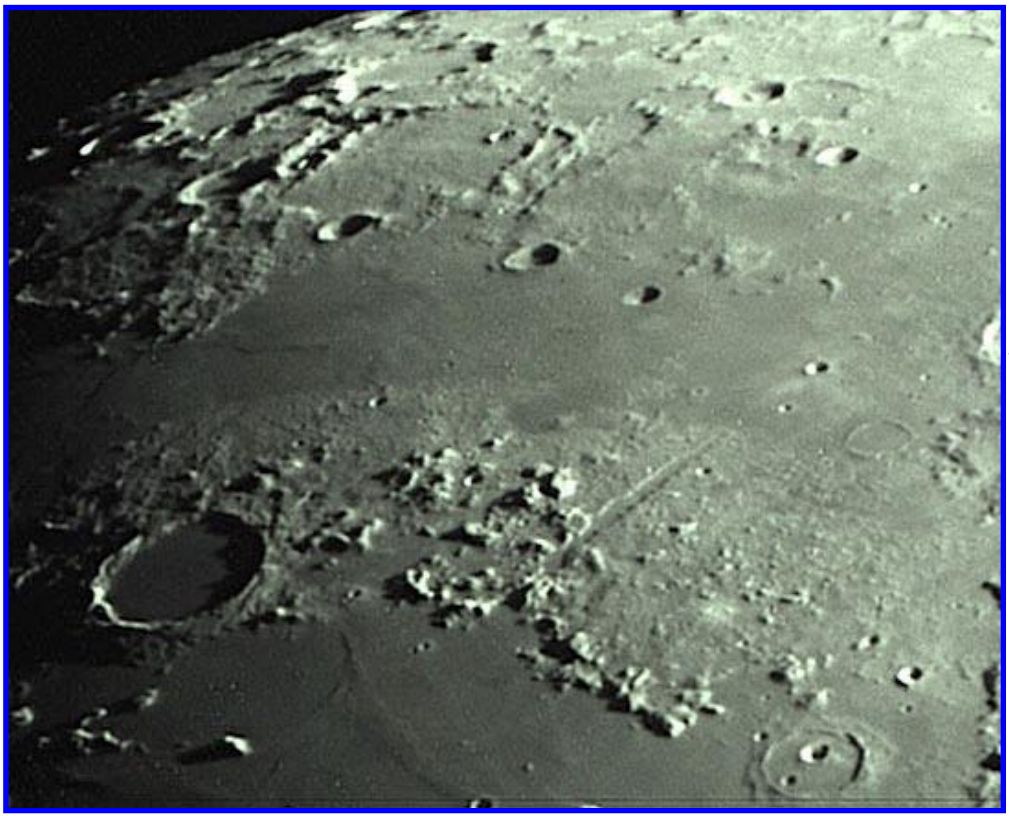
Humboldt, *Fabio Verza, SNdR Luna UAI, Milan, Italy. 06 July 2020 00:13 UT. Celestron 8 Schmidt-Cassegrain telescope, 1.3 x barlow, Astronomik IR Pro 807 filter, ZWO ASI 290 MM camera.*



Neper, *Fabio Verza, SNdR Luna UAI, Milan, Italy. 05 July 2020 21:45 UT. Celestron 8 Schmidt-Cassegrain telescope, 1.3 x barlow, Astronomik IR Pro 807 filter, ZWO ASI 290 MM camera.*



Sinus Iridum, *Michael E. Sweetman, Sky Crest Observatory, Tucson, Arizona, USA. 05 March 2020 07:17 UT. 8-inch Guan Sheng Classical Cassegrain f/12 telescope, Astronomik IR Pro 742nm, Skyris 132 M camera. Seeing 4-6/10, transparency 3/6.*

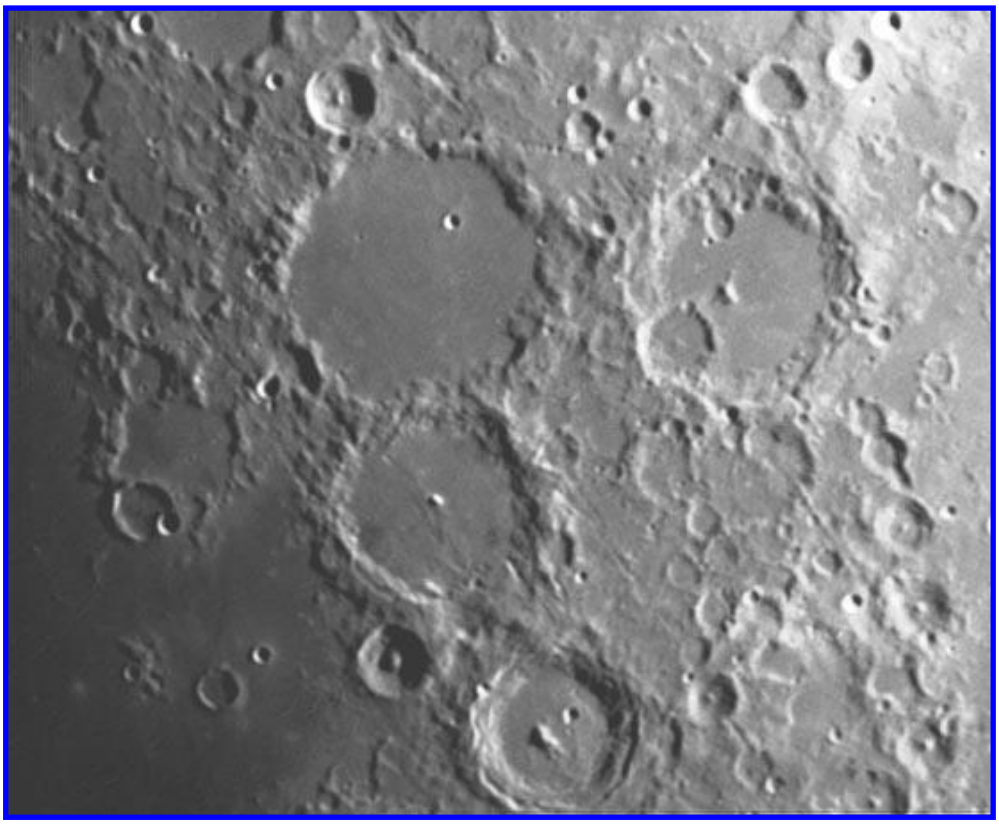


Montes Alpes and Plato, *Guido Santacana, San Juan, Puerto Rico, USA. 01 May 2020 01:59 UT. 3.5 inch Questar telescope, f/14, Orion Star Shoot MP5 camera, 200 frames, Registax 6.*

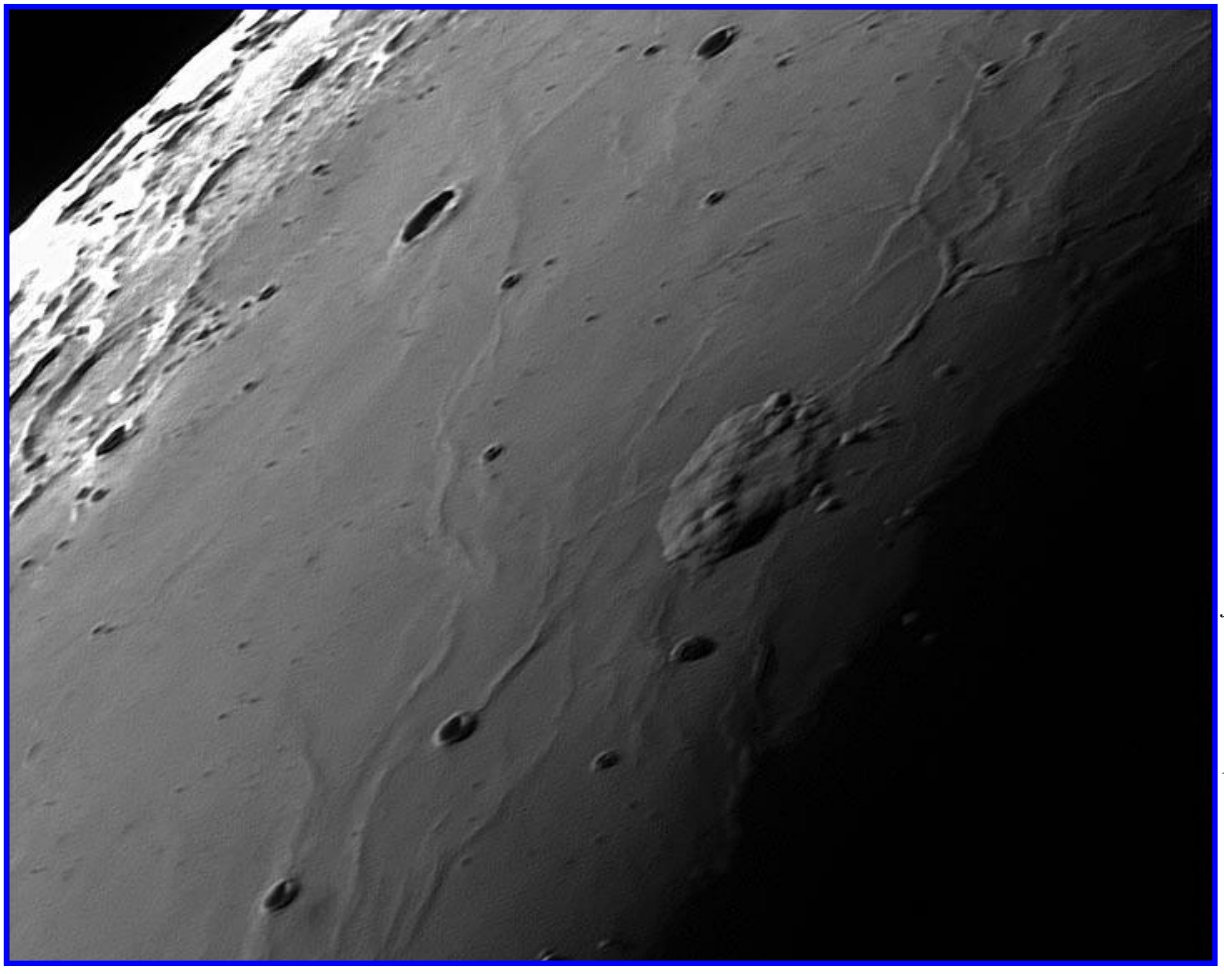
Mare Serenitatis, *Miguel Ángel Gomez, Bernal, México. 30 April 2020 02:30 UT. Celestron 9.25 inch Schmidt-Cassegrain telescope, Canon EOS 5D camera.*

Gauss, *Fabio Verza, SNdR Luna UAI, Milan, Italy. 06 July 2020 00:11 UT. Celestron 8 Schmidt-Cassegrain telescope, 1.3 x barlow, Astronomik IR Pro 807 filter, ZWO ASI 290 MM camera.*

Mare Tranquillitatis, *Miguel Ángel Gomez, Bernal, México. 30 April 2020 02:30 UT. Celestron 9.25 inch Schmidt-Cassegrain telescope, Canon EOS 5D camera.*



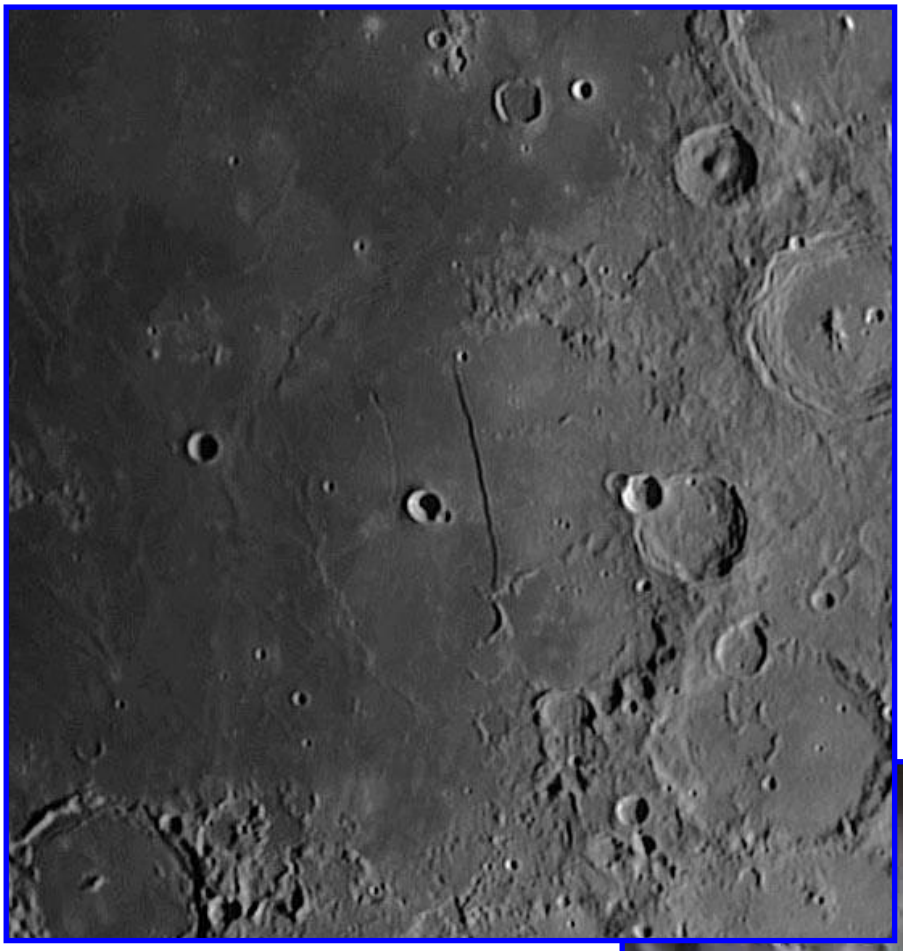
Ptolemaeus, Alphonsus and Arzachel, *Guido Santacana, San Juan, Puerto Rico, USA. 01 May 2020 01:44 UT. 3.5 inch Questar telescope, 2 x barlow, f/28, Orion Star Shoot MP5 camera, 200 frames, Registax 6.*



Mons Rumker, *Howard Eskildsen, Ocala, Florida, USA. 17 July 2020, 10:05 UT, colongitude 234.4 degrees. Celestron 9.25 inch Schmidt-Cassegrain telescope, f/10, fl 2395 mm, Celestron Skyris 236 M camera. Seeing 6/10 and transparency 5/6.*

Mare Humboldtianum, *Fabio Verza, SNdR Luna UAI, Milan, Italy. 06 July 2020 00:17 UT. Celestron 8 Schmidt-Cassegrain telescope, 1.3 x barlow, Astronomik IR Pro 807 filter, ZWO ASI 290 MM camera.*

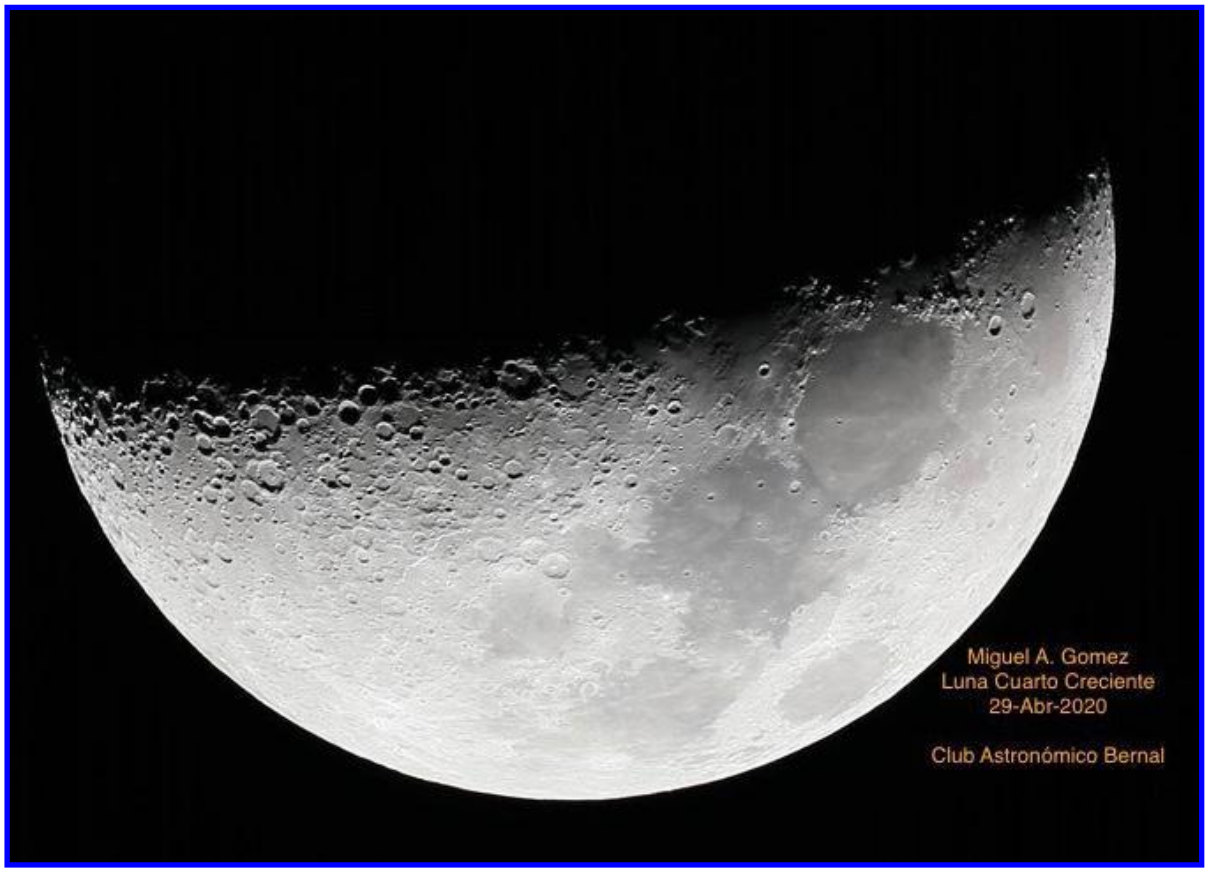
Mare Serenitatis, Mare Tranquillitatis, and the crater Plinius, *Raúl Roberto Podestá, SLA, Formosa, Argentina. 27 June 2020 22:52 UT. 127 mm Maksutov-Cassegrain telescope, Hokenn CCD Imager.*



Rupes Recta, *Michael E. Sweetman, Sky Crest Observatory, Tucson, Arizona, USA. 14 April 2019 06:56 UT.* 4-inch Jaegers achromatic refractor telescope, f/8.5 at f/17*, Baader fringe killer, Skyris 132 M camera. Seeing 4-5/10, transparency 3/6.*

Theophilus, Cyrillus and Catharina, *Raúl Roberto Podestá, SLA, Formosa, Argentina. 27 June 2020 23:10 UT. 127 mm Maksutov-Cassegrain telescope, Hokenn CCD Imager.*

Straight Wall, *Guido Santacana, San Juan, Puerto Rico, USA. 01 May 2020 02:08 UT. 3.5 inch Questar telescope, 2 x barlow, f/28, Orion Star Shoot MP5 camera, 200 frames, Registax 6.*



Waxing Gibbous Moon and the Lunar X, *Miguel Ángel Gomez, Bernal, México. 30 April 2020 02:30 UT. Celestron 9.25 inch Schmidt-Cassegrain telescope, Canon EOS 5D camera.*

Langrenus, *Fabio Verza, SNdR Luna UAI, Milan, Italy. 06 July 2020 00:20 UT. Celestron 8 Schmidt-Cassegrain telescope, 1.3 x barlow, Astronomik IR Pro 807 filter, ZWO ASI 290 MM camera.*

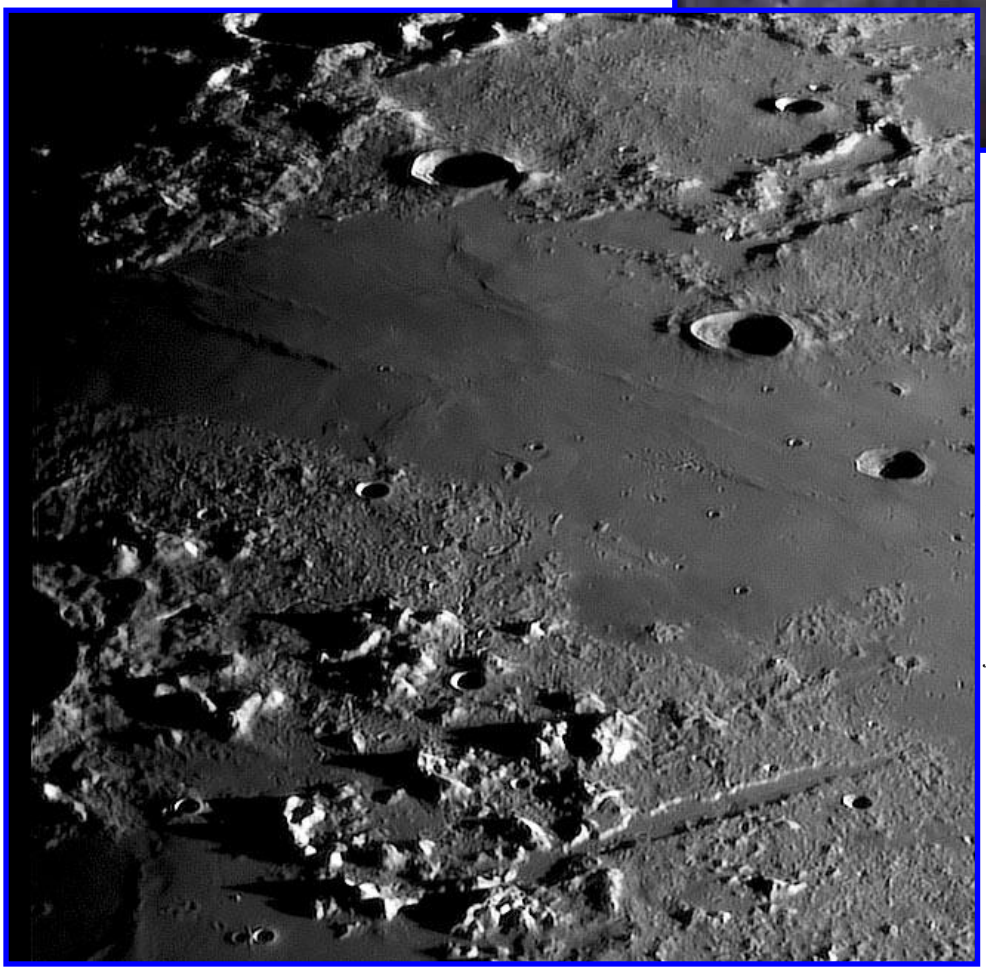
Waxing Crescent Moon, *Raúl Roberto Podestá, SLA, Formosa, Argentina. 27 June 2020 21:33 UT. 127 mm Maksutov-Cassegrain telescope, Hokenn CCD Imager.*

Waxing Gibbous Moon, *Miguel Ángel Gomez, Bernal, México. 30 June 2020 02:45 UT. Celestron 9.25 inch Schmidt-Cassegrain telescope, Canon EOS 5D camera.*

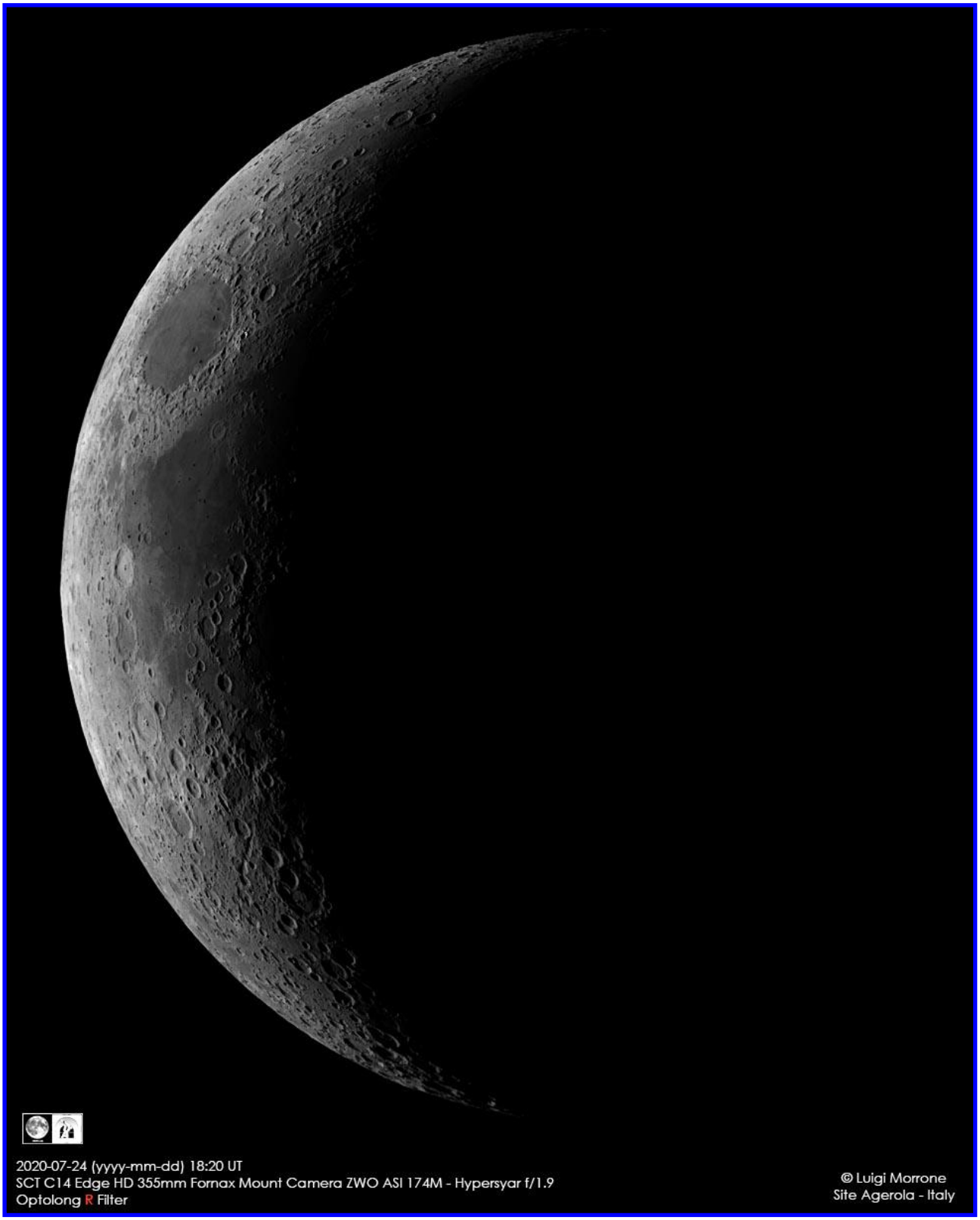
First Quarter Moon, Jairo Chavez, *Popayán, Colombia. 28 June 2020 00:09 UT. 114 mm refractor telescope, MOTO ES PLAY camera.*

Eudoxus and Aristoteles, *Raúl Roberto Podestá, SLA, Formosa, Argentina. 27 June 2020 22:39 UT. 127 mm Maksutov-Cassegrain telescope, Hokenn CCD Imager.*

Stevinus, *Raúl Roberto Podestá, SLA, Formosa, Argentina. 27 June 2020 22:33 UT. 127 mm Maksutov-Cassegrain telescope, Hokenn CCD Imager.*



Archytas G, *Howard Eskildsen, Ocala, Florida, USA. 29 June 2020, 00:42 UT, colongitude 9.8 degrees. Celestron 9.25 inch Schmidt-Cassegrain telescope, f/10, fl 2395 mm, Celestron Skyris 236 M camera. Seeing 6/10 and transparency 3/6.*



Waxing Crescent Moon, *Luigi Morrone, Agerola, Italy. 24 July 2020 18:20 UT. Celestron 14 Edge Schmidt-Cassegrain Telescope, Fornax Mount, ZWO ASI 174 M camera, Hyperstar f/1.9, Optolong red filter.*

Lunar Geologic Change Detection Program

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2020 August

Introduction: This month I will begin the new format of reporting peoples' observations – this has to be done in order to cope with the popularity of the program and the vast numbers of observations received. There will be three levels. Level 1 is a confirmation of observation received for the month in question. Every observer will have all the features observed listed here in one paragraph. Level 2 will be the display of the most relevant image/sketch, or a quote from a report, from each observer, but only if the date/UT corresponds to repeat illumination for a past LTP report, or a Lunar Schedule website request. A brief description will be given of why the observation was made, but no assessment done – that will be up to the reader. Level 3 will highlight reports, using in-depth analysis, which specifically help to explain a past LTP, and may (when time permits) utilize archive repeat illumination material.

LTP reports: No LTP were reported in June, however UAI observers have discovered a bright impact flash in archive 2017 video recording made on 2017 Sep 27 UT 18:56:12. Please check out any video recordings you have from that date and UT e.g. occultation observations, just in case it was captured by chance.

Level 1 – All Reports received for June: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Linne, Mare Imbrium, and Mons Piton. Alberto Anunziato (Argentina - SLA) observed: Alphonsus, Daniel, and Trouvelot. Aylen Borgatello Alaniz (Argentina – AEA) imaged: Messier, Plato and Proclus. Maurice Collins (New Zealand – ALPO/BAA/RASNZ) imaged: Bullialdus, Copernicus, earthshine, Longomontanus, the Moon, Plato, and several features. Alexandra Cook (Spain – NAS) imaged the penumbral eclipse. Tony Cook (ALPO/BAA) videoed the Moon in the thermal IR. Rob Davies (Mid-West Wales, UK - BAA/NAS) imaged Albategnius. Daryl Dobbs (Risca, UK – BAA) observed: Beaumont, Proclus, Sinus Iridum and several features. Walter Elias (Argentina – AEA) imaged: Aristarchus, Deslandres, Mons Piton, Plato, and Tycho. Les Fry (Mid-West Wales, UK – NAS) imaged: Clavius, Encke, Euler, Gassendi and Mee. Cian Gonzalez and David Emiliano Abel (Argentina – AEA) imaged: Aristarchus, Langrenus, Mare Crisium, Petavius and Proclus. Rik Hill (Tucson, AZ, USA - ALPO/BAA) imaged: Heraclitus and Sirsalis. Bill Leatherbarrow (Sheffield, UK – BAA) imaged: Sinus Iridum. Gabriel Re (Argentina – AEA) imaged: Aristarchus, Gassendi and Mare Frigoris. Leandro Sid (Argentina – AEA) imaged: Bullialdus, Cassini and Cassini E, Copernicus, Darney and the Moon. Bob Stuart (Rhayader, UK – BAA/NAS) imaged: several features. Fabio Verza (Italy – UAI) imaged: Mare Frigoris.

Level 2 – Example Observations Received :

Mons Piton: On 2020 Jun 01 Jay Albert (ALPO) at 01:10-01:30UT both observed and imaged (Fig 1 – Left) and Walter Elias (AEA) imaged (Fig 1 – Right) at 0:23-01:24UT, the mountain under similar illumination (to within ±0.5º) to the following report:

Piton 1958 Sep 23 UT 00:00? Observed by Moore? (UK?) "Enveloped in an obscuring cloud-like mist" NASA catalog ID 697. NASA catalog weight=2. ALPO/BAA weight=2.

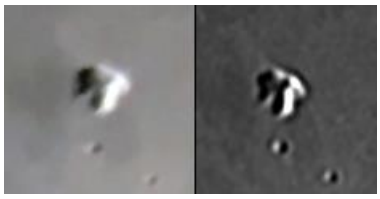

Figure 1. *Mons Piton on 2020 Jun 01 orientated with north towards the top.* ***(Left)*** *Taken by Jay Albert (ALPO) at 01:27UT.* ***(Right)*** *Taken by Walter Elias (AEA) at 01:23UT.*

Jay comments that: Contrary to the LTP description, Mt. Piton and environs were clearly and sharply seen without the slightest hint of obscuration or fuzziness, despite the overall hazy sky. The E slopes were brightly lit and the W slopes were in shadow. The mountain showed good detail. We have covered this LTP before in the 2006 Feb and Mar newsletters.

Sinus Iridum: On 2020 Jun 01 UT 21:27 Bill Leatherbarrow (BAA) imaged (Fig 2) this area under similar illumination (±0.5º) to the following LTP report:

Sinus Iridum 1996 Apr 28 UT 20:00 Observed by Brook (Plymouth, UK, 60mm refractor, x112, seeing III, slight breeze, twilight) "dark shaded area on floor ~1/4 diameter of Sinus Iridum on western interior by rim" BAA Lunar Section Observation. ALPO/BAA weight=1.

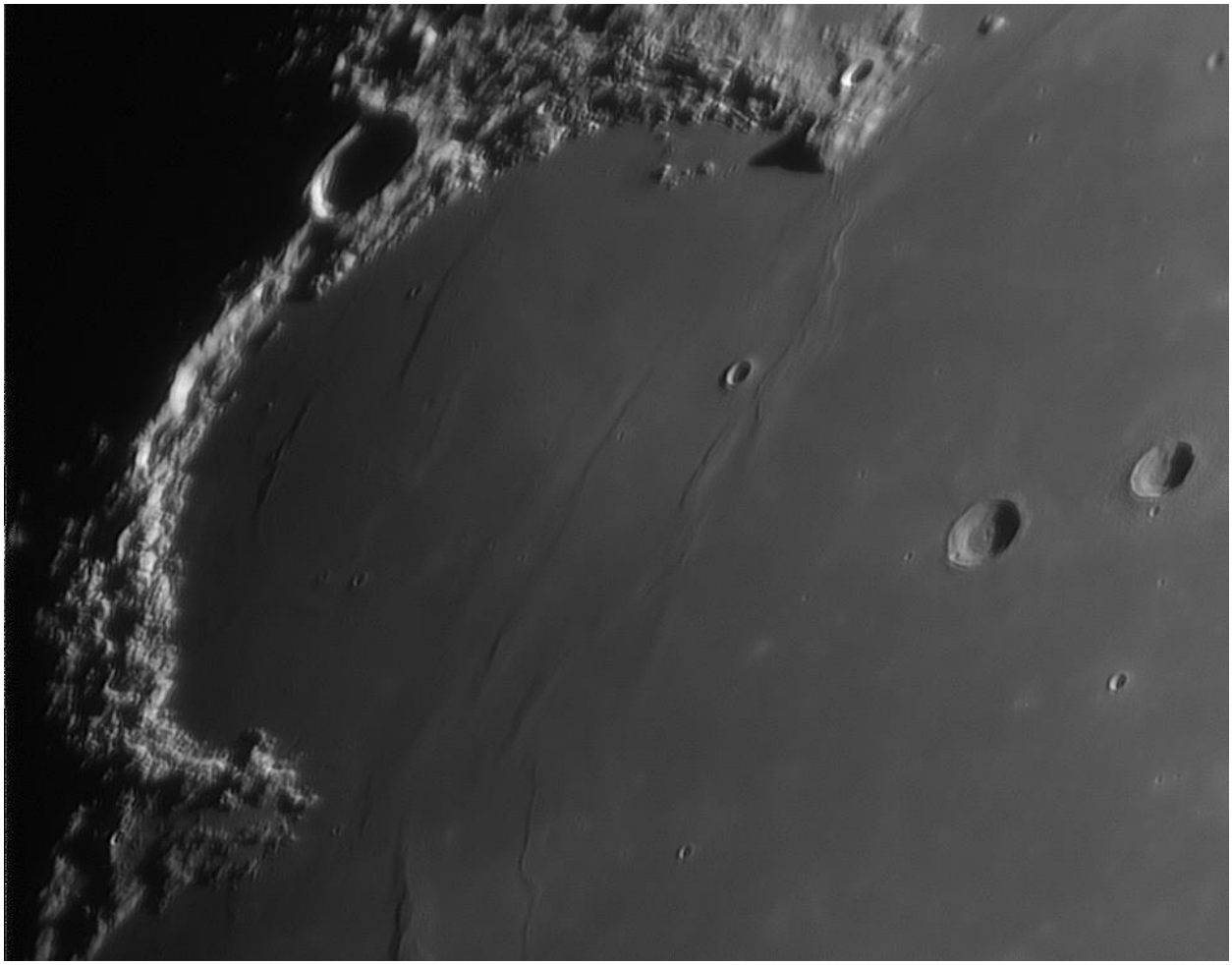

Figure 2. *Sinus Iridum on 2020 Jun 01 UT 21:27 as imaged by Bill Leatherbarrow and orientated with north towards the top.*

We have covered this TLP before in the 2015 Oct, 2017 may, 2018 Apr, 2020 Mar and Apr TLO back issues available from: http://moon.scopesandscapes.com/alpo_lunar/tlo_back.html .

Bullialdus: On 2020 Jun 01 UT 22:23 Les Fry captured an image (Fig 3) of this crater under similar illumination to the following report:

Bullialdus 1979 Aug 03 UT 21:36-21:48 Observed by Cook (Frimley, UK, seeing III, Moonblink device) "Bullialdus eastern side of the crater looked brighter in red i.e. rim and exterior, extending to the south slightly and this reddish area was slightly hazy. At 21:41 it clouded over but at 21:47-21:48 it cleared briefly and effect was noted again. Also, Darney appeared very visible through the red filter. Probably spurious color as the Moon was -18 deg in declination and the whole Moon had a slight brownish tinge" ALPO/BAA weight=1

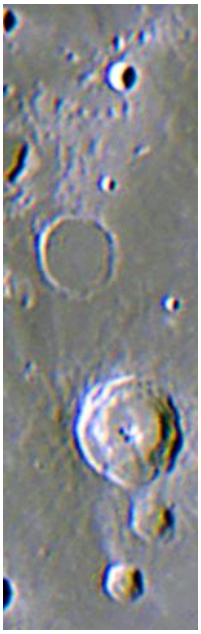

***Figure 3**. Bullialdus to Darney area as imaged by Les Fry (NAS) on 2020 Jun 01 UT 22:23 and orientated with north towards the top. This has been color normalized and had its color saturation increased to 60%.*

Penumbral Lunar Eclipse: On 2020 Jun05 UT 19:22 Alexandra Cook (NAS) from Torrevieja Spain imaged (Fig 4) the Moon during the penumbral lunar eclipse.

Figure 4. *The penumbral lunar eclipse on 2020 Jun 05 UT 19:22 as imaged by Alexandra Cook (NAS).*

Lunar eclipses are important as they are the closest, we get to zero phase angle conditions (Full Moon) before the darker umbral shadow makes photometric studies of the lunar photometric function more complex. There are also numerous LTP reports during or close to Lunar eclipses, so they are always worth imaging.

Mare Frigoris: On 2020 Jun 14 UT 08:03 Fabio Verza (UAI) imaged (Fig 5) this area (during local daylight) under a lunar schedule request for:

UAI Request: Mare Frigoris between Plato and Fontenelle (colongitude from 23-27deg or from 185-190deg), a study of the area by Maurizio Cecchini (member of the PNdR Luna UAI) for the confirmation of a probable volcanic dome in the area. The highest possible resolution achievable, with telescopes at least of 8" aperture or larger, is needed. All images, sketches and visual reports should be e-mailed to: u a i . l u n a . l g c @ g m a i l . c o m

Richiesta UAI (colongitudine da 23-27, colongitudine da 185-190 Luna in fase calante) Mare Frigoris tra Plato e Fontenelle, uno studio della zona di Maurizio Cecchini (socio UAI - PNdR Luna) per la conferma di un probabile Domo in zona. Si richiede la massima risoluzione possibile con telescopi di almeno 8" o superiori. Tutti i disegni, foto o report visivi devono essere inviali per email: u a i . l u n a . l g c @ g m a i l . c o m

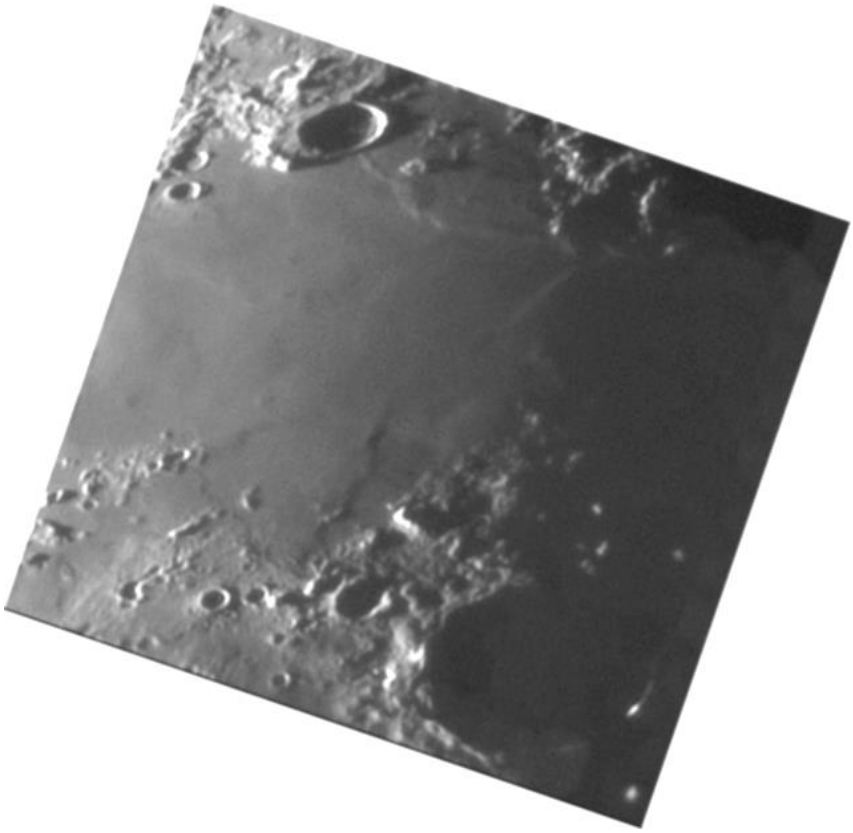

Figure 5. *Mare Frigoris as imaged by Fabio Verza (UAI) on 2020 Jun 14 UT 08:03 and orientated with north towards the top. Image taken through an Astronomik Pro IR 807 filter.*

Cassini E: on 2020 Jun 27 UT 22:27 and 22:29 Leandro Sid (AEA) imaged (Fig 6) this area under similar illumination (±0.5º) to the following report:

Cassini E 2002 Dec 11 UT 16:30-18:46 Observed by Knott (Liverpool, England, 216mm Newtonian, x216, red and blue filters used) seeing III, transparency good) "Observations carried out of the area extending from the Alpine Valley to the Crater Cassini. At 17:12 a pin point bright flash was seen NW of the rim of the crater E in white light. A 2nd pin point flash was also seen at 18:18, this time thru a blue filter. The 2nd flash was also seen on the NW rim of the crater E. The observer does not think this was a LTP as the seeing was III, but the flash was so bright as to be startling. Other peaks within the Alps were bright but were much less so in red and blue filters, where the rim of the crater E. NW edge was very bright in all filters, including white light. Incoming cloud prevented further observation." BAA Lunar Section report.

Figure 6*. Cassini (at the center of this image) taken by on 2020 Jun 27 UT 22:29. Image orientated with north towards the top.*

Proclus: On 2020 Jun 27 UT 21:21 Cian Gonzalez and David Emiliano Abel (AEA) imaged (Fig 7) this crater under similar illumination (±0.5º) to the following report:

Proclus 1877 Mar 21 UT 20:00? Observed by Barrett (England?) described in NASA catalog as: "Brilliant illum. -- not from sun". NASA catalog weight=2. NASA catalog event ID=#188. ALPO/BAA weight=1.

Figure 7. *Proclus on 2020 Jun 27 UT 21:21 as imaged by Cian Gonzalez and David Emiliano Abel (AEA) and orientated with north towards the top.*

We have covered this TLP before in the 2018 Mar TLO on p27-28.

Alphonsus: On 2020 Jun 28 UT 22:40-22:55 Alberto Anunziato (SLA) observed visually under similar illumination (±0.5º) to the following report.

Alphonsus 1968 May 05 UT 20:00 Observed by Farrant (Cambridge, England, 8" reflector, x220, Seeing: Good). "Did not see grey patch SE (ast. ?) of c.p. Noted W. (ast. ?) dark patch was invis. while S. one was seen easily, emerging from shadow. On 7th all seen easily, emerging from shadow. On 7th all 3 clearly vis. with the darkest one the invis. one on 5th." NASA catalog weight=3 (average). NASA catalog ID #1071.

Alberto commented that he could not understand completely the reference to the patches included in the original report. But he could see the southwest and south east dark patches as well as a southwest bright zone - presumably part of the rim. He sketched an extension of the shadows and two bright spots on it.

Plato, Mare Frigoris, and Montes Teneriffe: On 2020 Jun 29 UT01:35 Gabriel Re (AEA) imaged (See Fig 8 Left) this region under similar illumination (±0.5º) for Plato, under similar illumination (±0.5º), and according to the lunar schedule web site (An image (Fig 8 Right) was taken by Aylen Borgatello_Alaniz (AEA) at 03:10 UT that also corresponds to this lunar schedule request below) respectively for the following:

Plato 1886 Sep 06 UT 19:00? Observed by Valderama (Italy?) "Streak of light on dark floor of crater in shadow. (sunlight between peaks on walls?)" NASA catalog weight=0 (most unlikely to be a LTP). NASA catalog ID #251. ALPO/BAA catalog weight=1.

On 1871 Nov 20 at UT 17:30-19:30 H. Pratt (UK) saw one of the most spectacular LTP obscurations that he had ever seen in Mare Frigoris. He observed a kind of haze around the north west (NE?) slopes of Plato. This effect was not seen elsewhere and all objects in Mare Frigoris were indistinct or veiled. By 18:30 the effect was modified and by 19:30 very little trace was seen. Ref. from Corliss.

BAA Request: please image this area as we want to compare against a sketch made in 1854 under similar illumination. However, if you want to check this area visually (or with a color camera) we would be very interested to see if you can detect some color on the illuminated peaks of this mountain range, or elsewhere in Mare Imbrium. Features to capture in any image (mosaic), apart from Montes Teneriffe, should include: Plato, Vallis Alpes, Mons Pico and Mons Piton. Any visual descriptions, sketches or images of Earthshine should be emailed to: a t c @ a b e r . a c . u k

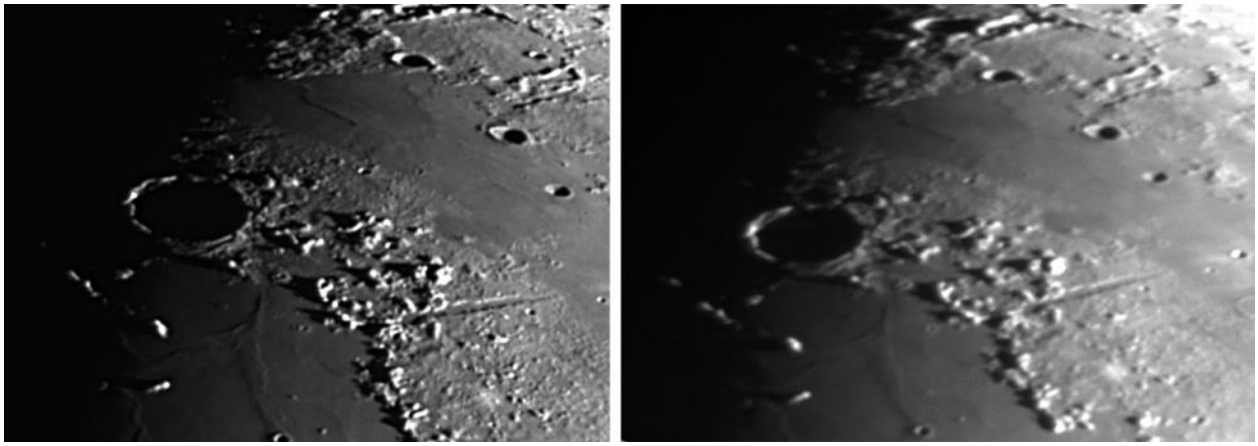

Figure 8. *Plato and surrounds on 2020 Jun 29 and orientated with north towards the top.* ***(Left)*** *Image taken by Gabriel Re (AEA) at 01:35 UT.* ***(Right)*** *Image taken by Aylen Borgatello Alaniz (AEA) at 03:10UT.*

N.B. we have covered the latter lunar schedule request before in the 2018 Jun and 2019 Feb TLO back issues on http://moon.scopesandscapes.com/alpo_lunar/tlo_back.html .

Mons Pico: On 2020 Jun 30 UT 07:26 Maurice Collins (ALPO/BAA/RASNZ) imaged (See Fig 9) this area under both similar illumination and topocentric libration (Viewing angle) to within ±1.0º to the following report:

On 1987 Mar 09 at UT20:00 M. Mobberley (Sussex, UK) obtained some video of Mons Pico - apparently these show the mountain with a puzzling appearance (not sure whether it was the observer who claimed this or someone who analysed the tape). The Cameron 2006 catalog ID=300 and the weight=5. ALPO/BAA=1.

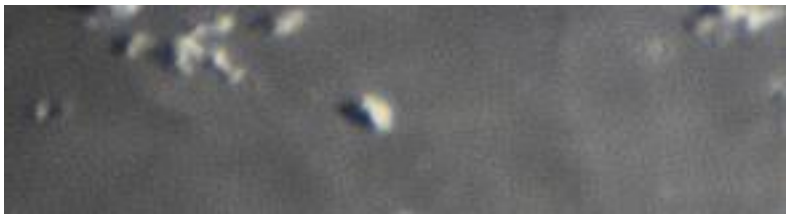

Figure 9*. Mons Piton as imaged by Maurice Collins on 2020 Jun 30 UT 07:26 and orientated with north towards the top.*

Level 3 - In Depth Analysis:

Linne: On 2020 Jun 01 UT 01:50-02:15 Jay Albert (ALPO), using an 8" SCT (x290) under transparency magnitude 1 and seeing 7 to 8 out of 10, observed visually the crater under similar illumination (to within ±0.5º) for the following Victorian era report:

Linne 1867 Mar 15 UT 20:00? Observed by Dawes (England?) "Excessively minute black dot in middle of feature. A geom. fig. boarded & centered with black that formed, dissolved & formed again" NASA catalog weight=3. NASA catalog ID #150. ALPO/BAA weight=3.

Jay comments that the "excessively minute black dot" in the middle of Linne was clearly, if unevenly, visible. The Linne crater was seen at the center of its ejecta apron and the black dot was the shadow of the crater's interior E wall. The black dot sometimes vanished then reappeared due to momentary fluctuations in seeing, especially when breezy or clouds passed nearby. It sounds like that Jay has really solved this problem in that it was just the normal appearance that Dawes observed back in 1867. We can therefore remove it from our LTP database by setting the ALPO/BAA weight to 0.

Proclus: On 2020 Jun 24 UT 20:45-21:23 Daryl Dobbs (BAA) imaged (Fig 10) the area under similar illumination and topocentric libration (viewing angle) to within ±1.0º to the following report:

West of Mare Crisium, near to Proclus 2008 Feb 10 UT 19:21 Herbie Bradley (Great Malvern, UK – 113mm Newtonian, Antoniadi II seeing) saw a pinpoint of white light almost as bright as Aristarchus. This has been assigned an ALPO/BAA weight of 2.

Figure 10. *The region around Proclus as imaged by Daryl Dobbs (BAA) on 2020 Jun 24 taken sometime between 20:45 and 21:23 UT. Orientated with north towards the top.*

Alas, we don't have much to go on from Herbie's original report, i.e. no photos or sketches, though I did have some follow up emails. Obviously Aristarchus was in shadow at the time, so the estimate as "almost as bright as Aristarchus" means it was an estimate from memory. I sent Herbie a repeat illumination image from Sep 2008 and he said that the spot was a lot brighter in Feb than in Sep 2008. Anyway, Daryl's image (Fig 10) shows that the NW rim is bright and visually it appeared to be 9 to him on the Elgar scale. Apparently there appeared to be nothing else apparent in the area of equivalent brightness. The inner wall was illuminated from the North through to the South West, the illumination was tapered from its North end to a point on the South West wall. At low magnifications this can give the appearance of a bright point. In view of the small telescope that Herbie Bradley used, and presumably a low magnification, that NW inner slope of Proclus could indeed appear quite bright, matching the visual description by Herbie and Daryl's similar brightness estimate. Also looking at Fig 10, Proclus is not too well defined as an obvious crater so at low magnification that NW illuminated inner slope might not obviously look part of the crater. There is also another bright spot, but much further away on the NW shore om Mare Crisium – see the 2008 Oct TLO, p16. I think we can probably lower the weight to 0 and remove it from our ALPO/BAA LTP database as: apart from the discussion here, and back in 2008, the telescope used in 2008 was small and relatively little detail was given in the original report.

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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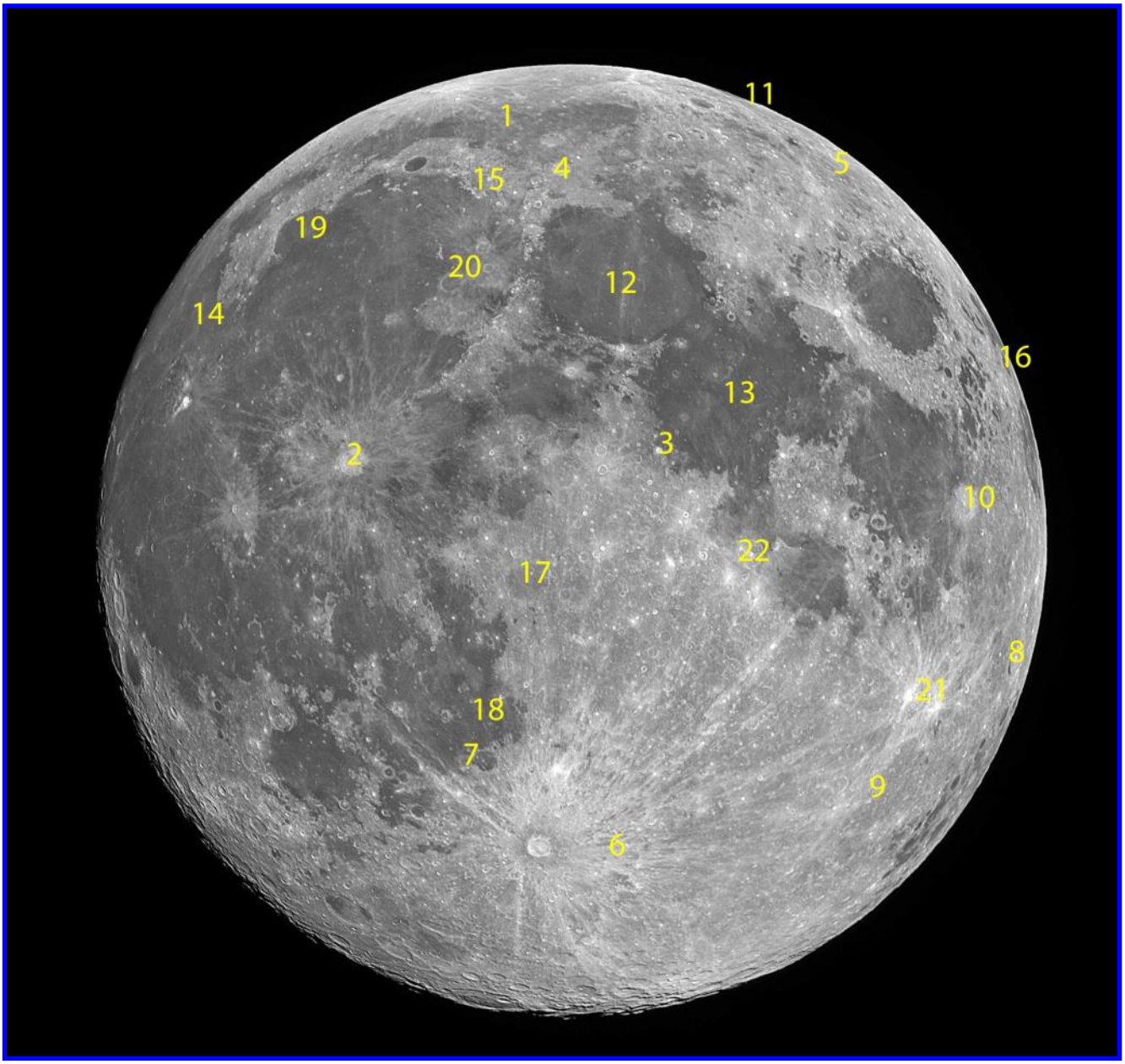
Key to Images In This Issue



1. Archytas
2. Copernicus
3. Dionysius
4. Eudoxus
5. Gauss
6. Heraclitus
7. Hesiodus
8. Humboldt
9. Janssen
10. Langrenus
11. Mare Humboltianum
12. Mare Serenitatis
13. Mare Tranquillitatis
14. Mons Rumker
15. Montes Alpes
16. Neper
17. Ptolemaeus
18. Rupes Recta
19. Sinus Iridum
20. Sinus Lunicus
21. Stevinus
22. Theophilus