ASSOCIATION OF LUNAR & PLANETARY OBSERVERS
ALPO
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THE LUNAR OBSERVER

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.
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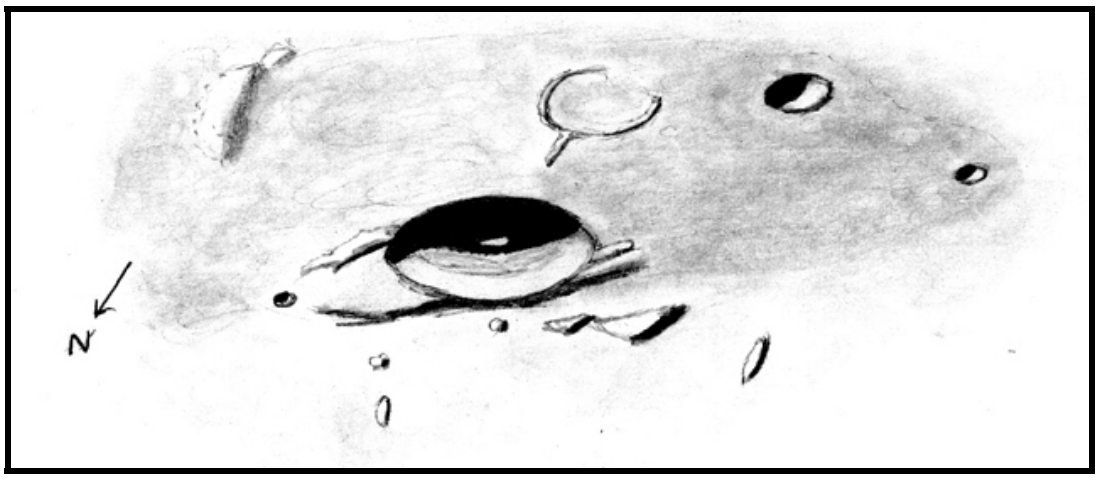
RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – JULY 2012

Markov



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
February 6, 2012 02:40-03:08, 03:22-03:34 UT, 15 cm refl, 170x, seeing 7-8/10

I observed this crater and vicinity on the evening of Feb. 5/6, 2012 after the moon hid 74 Geminorum. Markov is in Sinus Roris fairly near the limb, but, the libration was favorable for it that evening. This crater has a large central peak; it had just begun to protrude through Markov's interior shadow that evening. There are several ridges and strips of shadow extending east and west from Markov. A tiny crater is east of Markov, and several crisp peaks are to the north and west. The pit is shown but unlabeled on the Lunar Quadrant map, but these peaks are not even shown there. The ghost ring south of Markov is Markov U. This feature has a very low ridge pointing toward Markov, but it has no south rim. Markov E is the fairly large, deep crater southwest of U, and Markov F is the smaller crater southwest of E. There are a couple of very low elevations east of Markov and south of the unlabeled pit. These may be Markov theta and tau as shown on the LQ map. These peaks are much less conspicuous than the ones northwest of Markov. There is a particularly dusky lobe that takes in Markov and the lettered craters shown, but it does not include the peaks to the northwest. Markov E and F, however, do have bright interiors, despite being in a dusky area, but neither has a halo.

LUNAR CALENDAR

JULY-AUGUST 2012 (UT)

July 01	18:02	Moon at Perigee (362,361 km – 225,161 miles)
July 02	03:36	Extreme South Declination
July 03	13:00	Moon 0.99 Degrees SSE of Pluto
July 03	18:51	Full Moon
July 07	09:00	Moon 5.8 Degrees NNW of Neptune
July 10	04:00	Moon 5.0 Degrees NNW of Uranus
July 11	01:48	Last Quarter
July 13	16:48	Moon at Apogee (404,782 km – 251,520 miles)
July 15	02:00	Moon 0.81 Degrees WNW of Jupiter
July 16	01:18	Extreme North Declination
July 16	17:00	Moon 3.9 Degrees N of Venus
July 19	04:53	New Moon (Start of Lunation 1108)
July 24	21:00	Moon 4.0 Degrees S of Mars
July 25	17:00	Moon 5.7 Degrees S of Saturn
July 26	08:56	First Quarter
July 29	08:31	Moon at Perigee (367,317 km – 228,240 miles)
July 29	12:12	Extreme South Declination
July 30	22:00	Moon 1.3 Degrees SE of Pluto
Aug. 02	03:26	Full Moon
Aug. 03	19:00	Moon 5.7 Degrees NNW of Neptune
Aug. 06	14:00	Moon 4.8 Degrees NNW of Uranus
Aug. 09	18:56	Last Quarter
Aug. 10	10:53	Moon at Apogee (404,124 km – 251,111 miles)
Aug. 11	22:00	Moon 0.68 Degrees E of Jupiter
Aug. 12	09:48	Extreme North Declination
Aug. 13	21:00	Moon 0.90 Degrees ENE of Venus
Aug. 16	02:00	Moon 3.4 Degrees SSW of Mercury
Aug. 17	15:53	New Moon (Start of Lunation 1109)
Aug. 22	00:00	Moon 5.2 Degrees SSW of Saturn
Aug. 22	05:00	Moon 2.4 Degrees SW of Mars
Aug. 23	19:40	Moon at Perigee (369,730 km – 229,740 miles)
Aug. 24	13:54	First Quarter
Aug. 25	18:42	Extreme South Declination
Aug. 27	01:00	Moon 0.88 Degrees SSW of Pluto
Aug. 31	01:00	Moon 5.6 Degrees NNW of Neptune
Aug. 31	13:57	Full Moon

○

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 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.alpoastronomy.org/index.htm** 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 (**Bold items are required)**:

Name and location of observer
Name of feature
Date and time (UT) of observation
Size and type of telescope used
Magnification (for sketches)
Orientation of image: (North/South - East/West)
Seeing: 1 to 10 (1-Worst 10-Best)
Transparency: 1 to 6
Medium employed (for photos and electronic images)

CALL FOR OBSERVATIONS:
FOCUS ON: Aristillus

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 2012** edition will be **the crater Aristillus and surroundings**. 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 Aristillus to your observing list and send your favorites to:

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

Deadline for inclusion in the Aristillus article is August 20, 2012

FUTURE FOCUS ON ARTICLES:

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

Atlas time series	**TLO Issue: November 2012**	**Deadline: October 20, 2012**
Alphonsus time series	**TLO Issue: January 2013**	**Deadline: December 20, 2012**

For these Focus On articles, I would like to get images covering as wide a range of phases (colongitudes) as possible to examine variations of the albedo features in the craters. So send as many different images as you can get.

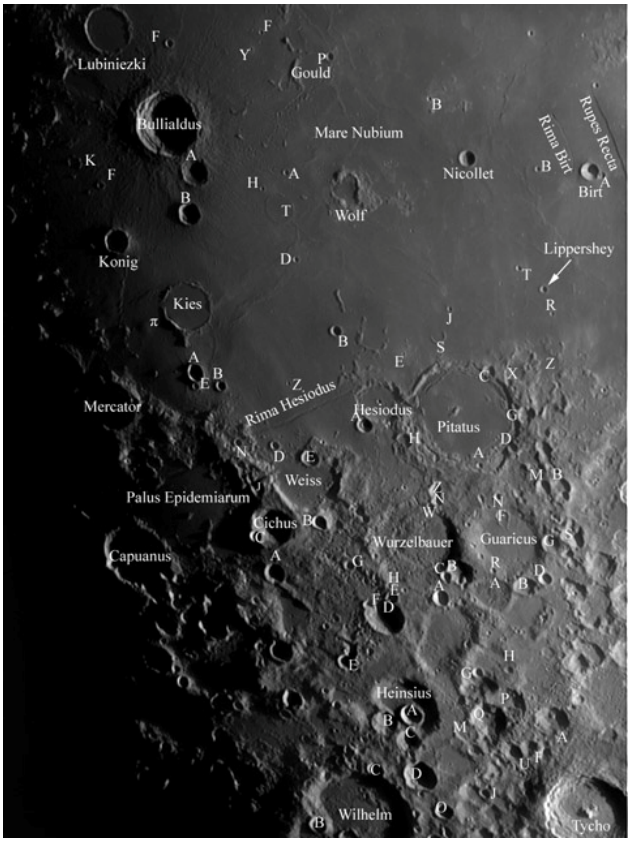
FOCUS ON: Bullialdus

By Wayne Bailey
Coordinator: Lunar Topographical Studies

Bullialdus is a medium sized (61 km/39 mile), complex crater, conspicuously located on Mare Nubium in the southwest quadrant of the moon. Although it is approximately the same size as Eratosthenes or Eudoxus, it stands out clearly from the surrounding mare (Fig. 1). Topographically, it looks like a slightly smaller version of Tycho, but shows no ray system. A smaller crater, Bullialdus A, lies just outside the southeast wall. Bullialdus B is somewhat more distant to the south (Fig. 2). A prominent ray from Tycho extends across Bullialdus B and the west wall of Bullialdus (Fig. 3).

Figure 1. Bullialdus to Clavius. Steve Berte. August 20, 2010 00:39 UT. Seeing 3/5, transparency 5/7. CPC 1100 SCT, afocal, 25mm eyepiece, Panasonic Lumix LX3 5mm lens (24mm equivalent).

The crater wall is clearly defined, although slightly softer than nearby Tycho. The inner wall has numerous terraces. The outer wall and surroundings, out to about one crater diameter from the wall, show a complex pattern of radial ridges, secondary crater chains, and ejecta blanket. A group of four peaks is centered on the (mostly) flat floor.



With a moderate sized telescope, small craters can be seen on the generally smooth appearing, possibly slightly convex, floor. A low ridge extends from the central peaks across the floor to the southeast wall adjacent to Bullialdus A (Fig. 4). The floor craters, slightly softer appearing structures, and the lack of rays show that Bullialdus is older than the similar appearing Tycho.

Figure 2. Bullialdus & Surroundings - Howard Eskildsen-Ocala, Florida, USA. December 5, 2011 01:34 UT. Seeing 8/10, Transparency 4/6. 6" f/8 refractor, Explore Scientific lens, 2X Barlow, DMK 41AU02.AS, IR block & V block filters.

Different sun elevations produce changes on the smooth appearing floor that show that it is rough on size scales that aren't resolvable with moderate sized telescopes (Fig. 5). At low sun angles, the floor appears dark, but brightens as the sun angle increases. Also dark patches, that change with sun angle, appear at higher sun angles. This is due to small scale vertical relief which casts unresolved shadows that are smaller at high sun angle. Near full moon, the rim and central peaks brighten and bright spots appear on the floor.

At least four levels of easily visible terraces line the inner walls. When the sun is low, curving dark lines on the illuminated wall show that the tops of the terraces cast shadows which indicates that they are

tilted down on the wall side. Several large blocks can be identified, along with some radial grooves and hollows on the walls.

Figure 3. **BULLIALDUS -** John Duchek-St. Louis, Missouri, USA. March 4, 2012 04:00 UT. Seeing 6/10, transparency 3/6. 8" Newtonian, f/6, 2x barlow. Canon Tli 500D. North up.

The outer walls and surroundings are covered with an intricate radial pattern of ridges, secondary craters and ejecta that will reward careful examination (Fig. 6). These extend to over a crater diameter to the northeast, .southwest, and somewhat less densely to the southeast. They extend a much shorter distance to the northwest. Bullialdus A is blanketed by these ejecta, showing that it existed at the time of the impact that formed Bullialdus. Bullialdus B, however, is superimposed on this material, indicating it is the youngest of the three craters.

Figure 4. ***Bullialdus floor ridge -*** *Orlando Benitez Sanchez-Canary Islands, Spain. March 3, 2012 21:59 UT. Seeing 7/10 transparency 4/6, Colongitude 39.1°. SCT 235mm, f/6.3, DMK21AU04.AS IR cut filter.*

Bullialdus is easily located in the southwest quadrant of the moon on Mare Nubium. It is illuminated from colongitude 24º (about 9.5 days after new moon) to 204º (24 days). This crater and its surroundings contain a lot of intricate detail that will reward careful examination at any time. Changes of the patterns on the crater floor throughout the lunation are particularly interesting and instructive concerning the effects of illumination angle on the appearance of lunar features.

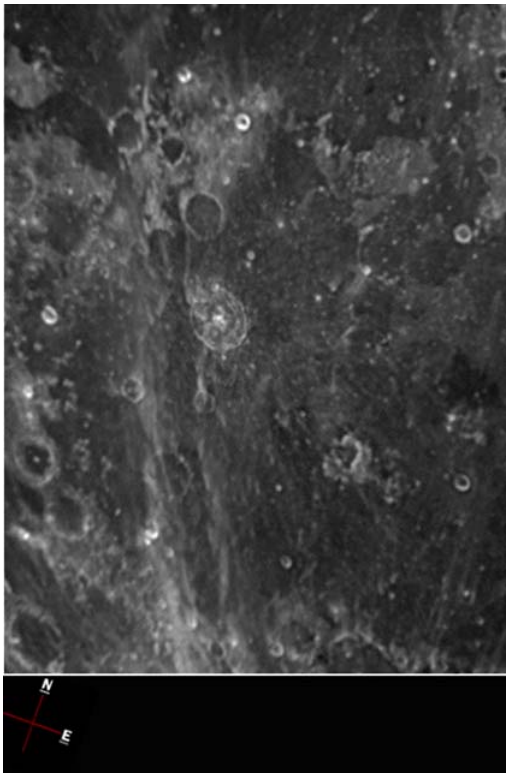


Figure 5. ***High Sun on Bullialdus -*** *Orlando Benitez Sanchez-Canary Islands, Spain. March 11, 2012 01:32 UT. Seeing 7/10 transparency 4/6, Colongitude 125.7°. SCT 235mm, f/10, DMK21AU04.AS IR cut filter.*

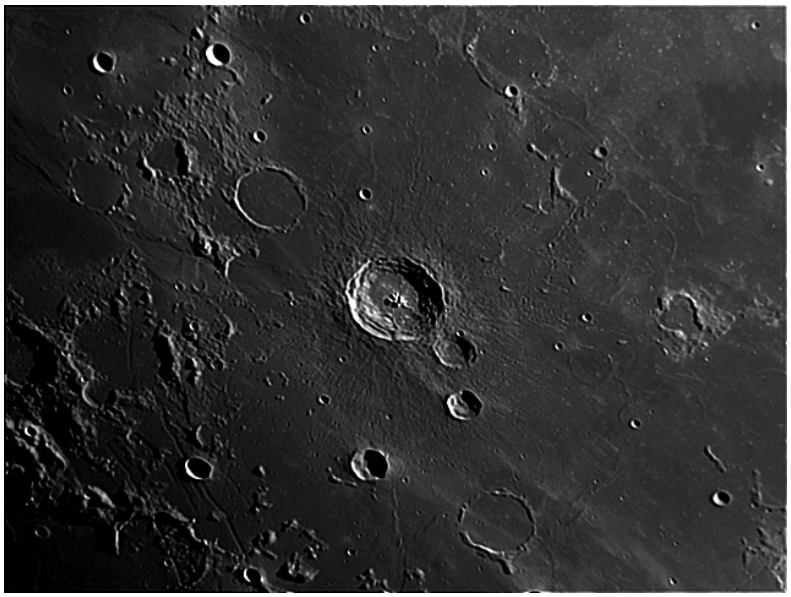


Figure 6. ***Bullialdus Ejecta*** - Hongsun Yoon – Republic of Korea. April 24, 2010 19:32 UT. Seeing 7/10, Transparency 3/6. Mewlon 300 f/11.9 Dall-Kirham, Lumenera LU075, Astronomic G dichroic filter with IR block.

ADDITIONAL READING

Bussey, Ben & Paul Spudis. 2004. The Clementine Atlas of the Moon. Cambridge University Press, New York.
Byrne, Charles. 2005. Lunar Orbiter Photographic Atlas of the Near Side of the Moon. Springer-Verlag, London.
Gillis, Jeffrey J. ed. 2004. Digital Lunar Orbiter Photographic Atlas of the Moon.. Lunar & Planetary Institute, Houston. Contribution #1205 (DVD). (http://www.lpi.usra.edu/resources/lunar_orbiter/).
Grego, Peter. 2005. The Moon and How to Observe It. Springer-Verlag, London.
North, Gerald. 2000. Observing the Moon, Cambridge University Press, Cambridge.
Rukl, Antonin. 2004. Atlas of the Moon, revised updated edition, ed. Gary Seronik, Sky Publishing Corp., Cambridge.
Shirao, Motomaro & Charles A. Wood. 2011. The Kaguya Lunar Atlas. Springer, New York
Wlasuk, Peter. 2000. Observing the Moon. Springer-Verlag, London.
Wood, Charles. 2003. The Moon: A Personal View. SkyPublishing Corp. Cambridge.
The-Moon Wiki. http://the-moon.wikispaces.com/Introduction

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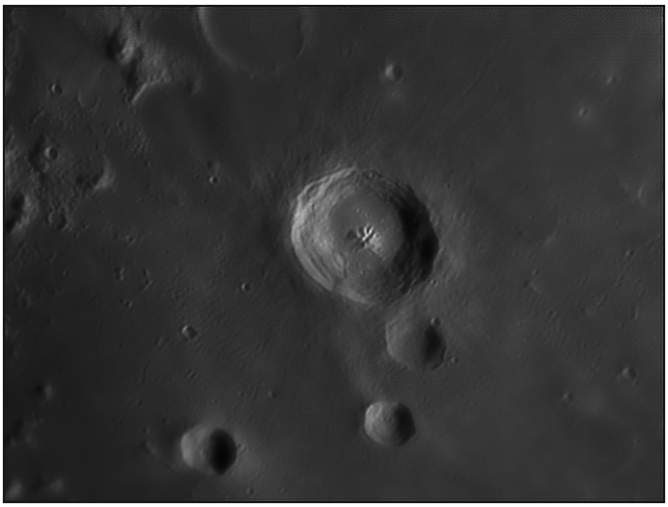
ADDITIONAL BULLIALDUS OBSERVATIONS



BULLIALDUS -Fykatas Stergios. Vienna, Austria. May 1, 2012 22:40 UT. Seeing 4/10. 8" LX-90, 2x barlow, Alccd5 camera.

ADDITIONAL BULLIALDUS OBSERVATIONS

BULLIALDUS - Michael Sweetman, Tucson, Arizona, USA, May 1, 2012 06:16 UT. Seeing 6/10 Transparency fair. 6" MAK f/12. DMK21 Orion IR cutoff filter.

LUNAR TOPOGRAPHICAL STUDIES

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

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

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

OBSERVATIONS RECEIVED

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 5, 8, 9, 10, 22 day Moon, partial eclipse(3), Schiller-Zuchius Basin – Clavius, Tycho-Clavius.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Capuanus domes, Kies, Palus Epidemiuorum, Wolf, Banded crater reports Darney & Proclus.

RICHARD HILL – TUCSON, ARIZONA, USA Digital images of Copernicus, Fra Mauro, Gutenberg, J. Herschel, Herschel-Arzachel(2), Kraft-Cardanus, Montes Apenninus & Plato-Vallis Alpes.

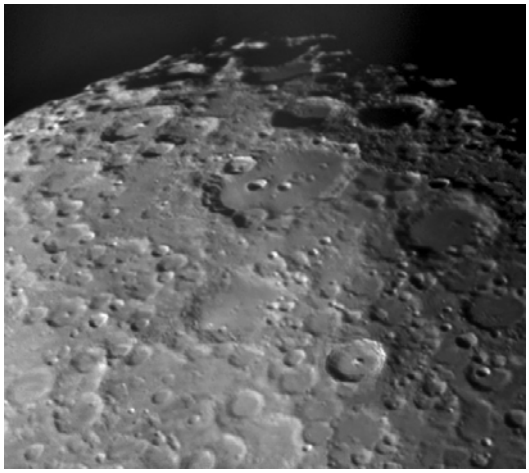
RICHARD KINNE – E. SOMERVILLE, MASSACHUSETTS, USA. Digital image of Mare Imbrium.

FYKATAS STERGIOS – VIENNA, AUSTRIA. Digital image of Bullialdus.

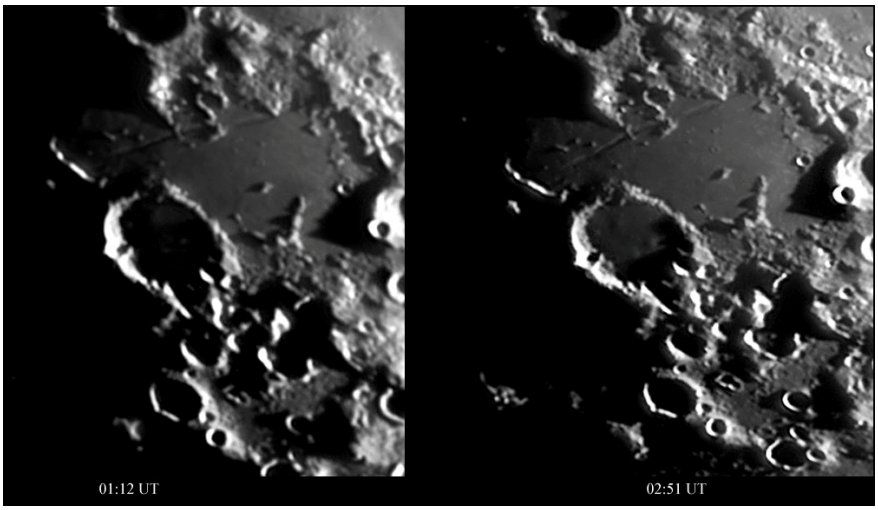
MICHAEL SWEETMAN – TUCSON, ARIZONA USA. Digital images of Janssen(2) & Bullialdus.

RECENT TOPOGRAPHICAL OBSERVATIONS

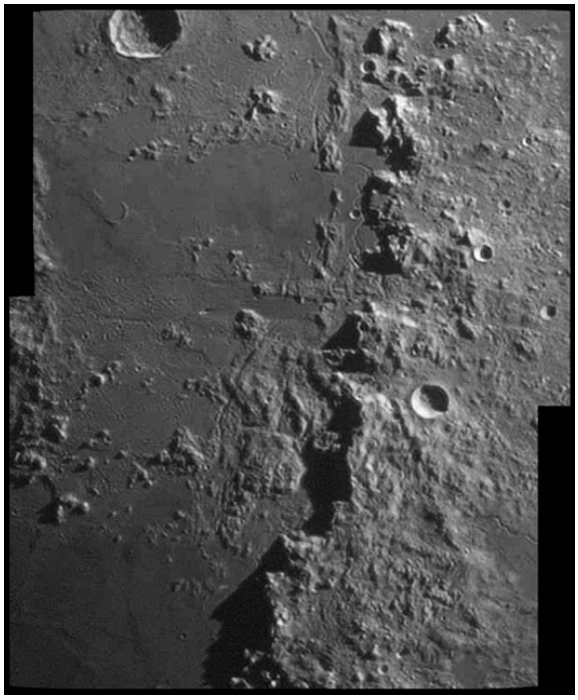
.



TYCHO-CLAVIUS - Maurice Collins-Palmerston North, New Zealand. June 29, 2012 08:00 UT. ETX-90 SCT, 2x barlow.



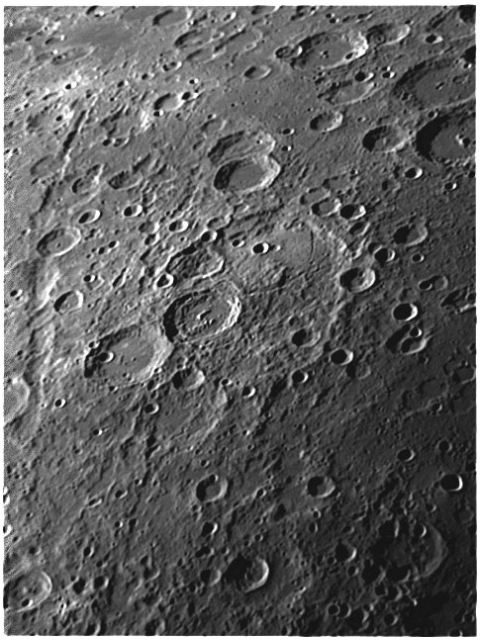
CAPUANUS DOMES - Howard Eskildsen-Ocala, Florida, USA. March 3, 2012 UT. Time on image. Seeing 7/10, Transparency 4/6. 6" f/8 refractor, Explore Scientific lens, 2X Barlow, DMK 41AU02.AS, IR block & V block filters.



MONTES APENNINUS – Richard Hill – Tucson, Arizona, USA May 29, 2012 02:42 UT. Seeing 7/10. TEC 8" f/20 MAK-CASS.. DMK21AU04. Wratten 23 filter. North up.

RECENT TOPOGRAPHICAL OBSERVATIONS

MARE IMBRIUM & SINUS IRIDUM – Richard 'Doc' Kinne – E. Somerville, Massachusetts. June 1, 2012 02:25 UT. Seeing 7/10 transparency 3/6. 150mm, f/8 Newtonian Reflector. Afocal, 9mm eyepiece (133x) Nexus One Smartphone. North down.

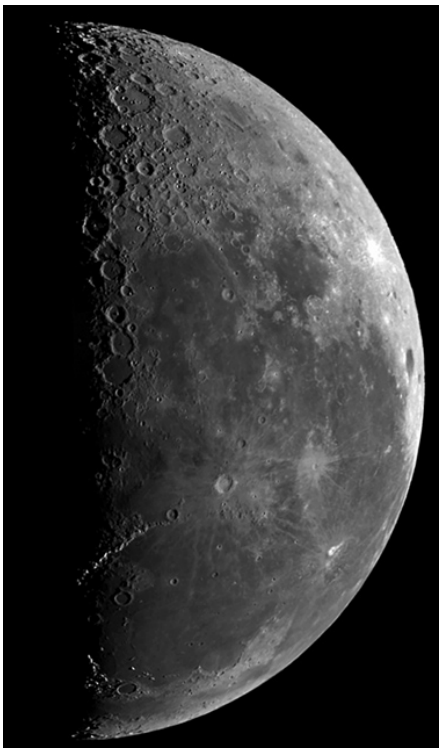


JANSSEN - Michael Sweetman, Tucson, Arizona, USA, December 31, 2012 left 02:42 UT, f/20: right 02:55UT, f/30. Seeing 6-7/10. 4" refractor. DMK21 Orion IR cutoff filter.

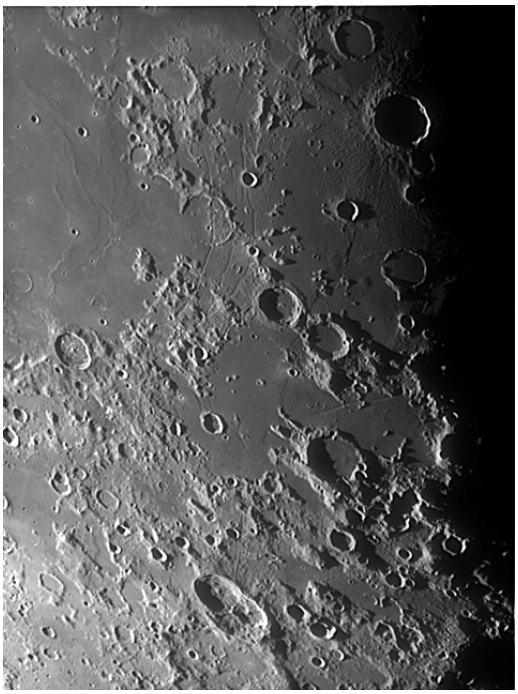
I am writing to specifically address the TLP section of the June issue and the discussion on Janssen. As most of my imaging is done from my west facing balcony I get to mostly image Lunar features early during sunrise. One of the features I get to do a lot imaging on is Janssen. One of my best was published in the April issue using the 4 inch f/10 Celestron refractor. I have been experimenting with AVI sets taken under good seeing conditions, rare on the patio, and processing two sets. One is processed to be more natural with little wavelet processing while the other is processed using more wavelets for details. The image of Janssen in the April issue was processed to be more natural. The area mentioned for a possible LTP is the area of Janssen I specifically use to judge how well my image of Janssen is. I have attached the second processed image of Janssen using more wavelets. In the area of interest there is a low contrast "X" feature. This feature shows up only on my best images of Janssen. I took another shot the same night at f/30, and though this is really pushing the 4 inch, you can just make out this feature in the area mentioned.

This might just be what the 4 inch is capable of in imaging detail and contrast in this area. I have yet to be able to image Janssen with the 6 inch Mak but I will be looking forward to seeing this feature and how it shows in my Janssen images. My thoughts would be that getting deatil in this area is very dependant on seeing more than aperature. I thought this might be of some use or consideration in this matter.

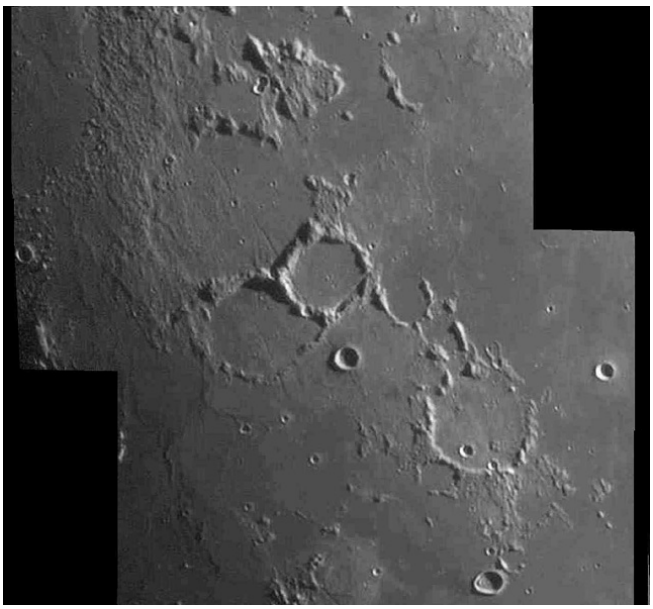
ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



22 day MOON - Maurice Collins-Palmerston North, New Zealand. June 11, 2012 19:46 19:59 UT. ETX-90 SCT, LPI.

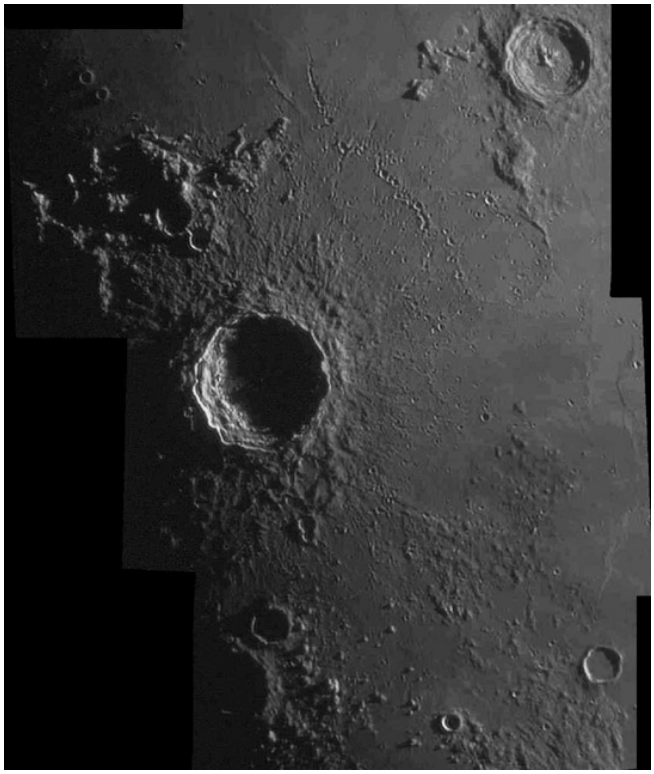


PALUS EPIDEMIARUM - Howard Eskildsen-Ocala, Florida, USA. October 2, 2010 09:54 UT. Seeing 6/10, Transparency 4/6. 6" f/8 refractor, Explore Scientific lens, 2X Barlow, DMK 41AU02.AS, no filter.

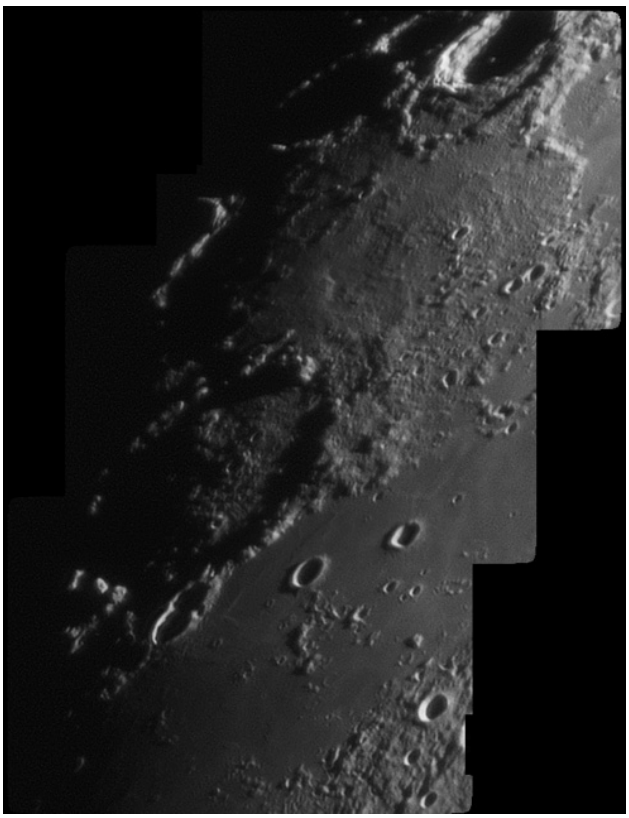


FRA MAURO – Richard Hill – Tucson, Arizona, USA May 30, 2012 02:49 UT. Seeing 7/10. TEC 8" f/20 Mak-Cass. DMK21AU04. Wratten 23 filter.

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



COPERNICUS – Richard Hill – Tucson, Arizona, USA May 30, 2012 02:44 UT. Seeing 7/10. TEC 8" f/20 Mak-Cass, DMK21AU04. Wratten 23 filter. North up.



J. HERSCHEL – Richard Hill – Tucson, Arizona, USA May 2, 2012 04:18 UT. Seeing 7/10. TEC 8" f/20 Mak-Cass, DMK21AU04. Wratten 23 filter. North up.

BANDED CRATERS PROGRAM

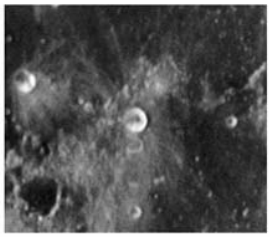
Coordinator – Wayne Bailey – wayne.bailey@alpo-astronomy.org
Assistant Coordinator – William Dembowski - dembowski@zone-vx.com
Banded Craters Program Website: http://moon.scopesandscapes.com/alpo-bcp.html

A.L.P.O. Lunar Section: Selected Areas Program Banded Craters Observing Form

Crater Observed: Darney
Observer: Howard Eskildsen Observing Station: Ocala, Florida
Mailing Address: P.O. Box 830415, Ocala, Florida, USA
Telescope: 6" Refractor, Explore Scientific Lens 152 mm f/8
Imaging: DMK 41AU02, 2X Barlow Filters: W-15 Yellow
Seeing: 6/10 Transparency: 6/6
Date (UT): 2010/11/25 Time (UT): 11:09
Colongitude: 143°
Position of crater: Selen. Long. 23.5° West Selen. Lat. 14.5°South

Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07

Image (North up):



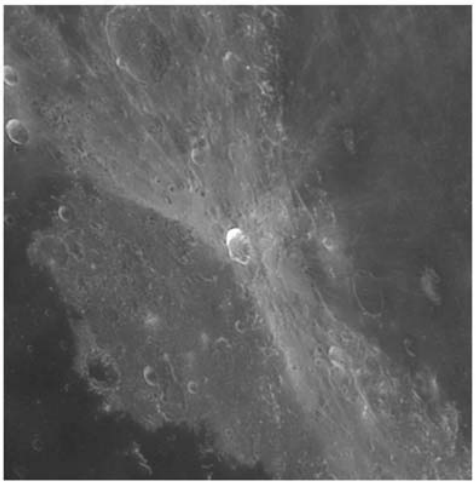
Comments:

Darney lies in center of image and Darney C on the upper left margin. Both show rays. Darney has a band extending from center towards the WSW rim with a brighter area extending downard to the southern rim and a question of find dark band angling to NW. Other images are needed to determine if this is artifact or real. Darney C appears to have a dark band angling downward towards and slightly to the right of the south crater rim. It is not on the ALPO long list of banded craters and deserves further study to see if it should be included, preferably verified (or refuted) by other observers.

A.L.P.O. Lunar Section: Selected Areas Program Banded Craters Observing Form

Crater Observed: Proclus
Observer: Howard Eskildsen Observing Station: Ocala, Florida
Mailing Address: P.O. Box 830415, Ocala, Florida, 34483
Telescope: Refractor, Explore Scientific lens, 15.2 cm f/8
Imaging: DMK 41AU02.AS, 3X Barlow, Filters: IR Block and V-Block
Seeing: 9/10 Transparency: 5/6
Date (UT): 2012/03/02 Time (UT): 01:09
Colongitude: 19°
Position of crater: Selen. Long. 46.8° East Selen. Lat. 16.1° North
Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07

Image (north up):



LUNAR TRANSIENT PHENOMENA

Coordinator – Dr. Anthony Cook – atc@aber.ac.uk
Assistant Coordinator – David O. Darling - DOD121252@aol.com

LTP NEWSLETTER – JULY 2012

Dr. Anthony Cook - Coordinator

Routine observations for May 2012 were received from the following observers: Jay Albert (Lake Worth, FL, USA) observed: Aristarchus, Hahn, Mare Tranquilitatis, Plato, Proclus, Promontorium Agarum, Ptolemaeus, and Tycho. Ralph Bradley (New Zealand) took a whole disk image of the Moon. Maurice Collins (New Zealand) took an image of Albategnius, Aristarchus, Bailly, Gassendi, Tycho, and also obtained some whole disk images of the Moon. Marie Cook (Mundesley, UK) observed: Agrippa, Alphonsus, Arzachel, and Censorinus. I captured some time lapse images of the Moon from Aberystwyth University in narrow spectral bands. Richard Hill (Tucson, AZ, USA) took images of Aristarchus, Copernicus, Eddington, Gassendi, Grimaldi, Montes Apenninus, Tycho, and several other features. George Ionas (New Zealand) took images of the Moon. Norman Izett (New Zealand) took whole disk images of the Moon. Brendan Shaw (UK) took an image of Beaumont, Plato. Proclus, and Sinus Iridum.

News and Comments: Mike Mattei sent in an image that he took of Mare Crisium, from 2005 Mar 14 UT 04:33. This shows the same bright spot (crater) on the northern shore slope that was mentioned in the May LTP newsletter. So this is a perfectly normal feature, and I have taken it off the LTP list now, so hopefully it should not be mentioned again. Concerning the Janssen image from last month, Michael Sweetman comments that he uses this area as a judge of good seeing on his 4 inch refractor. If he can see an X shaped feature (crossing rilles) here, then he knows that the seeing conditions are at their very best. So again I am pretty sure now that the lack of detail on the south east quadrant of Janssen is perfectly normal, and it has been removed from the LTP list. Nevertheless, please look out for lack of detail on other crater floors in future as this could indicate an obscuration class of LTP. However always be careful to check past images of the same area to make sure that this is not just normal, Also compare to other craters in case they are devoid of detail too, in which case the effect might be seeing related, or a due to a lack of telescope aperture. Just out of interest, I thought that it might be of appropriate to mention some common false LTP's that crop up from time to time, for the benefit of new observers (see table 1). If you can think of any others, please let me know.

Alphonsus	Ovals can be seen on the floor at sunrise - but watch for a while and you will see these are shadow related
Aristarchus	This can appear blue in color images, and also to the eye under optimal conditions
Aristarchus	This is normally bright in Earthshine - but look for brightness changes or non-visibility when other features are clearly seen in Earthshine
Bullialdus	This has a yellow-orange hue on the floor, but seen under optimal conditions
Cobra Head	The area between the Cobra Head and Aristarchus can look hazy after sunrise
Janssen	The SE quadrant can appear devoid of detail except under good seeing and large aperture
Linne	Strange visibility of shadow at times when you would not expect a shadow
Mare Crisium	A very bright spot can be seen on the northern shore slopes, for several days after sunrise
Mons Piton	At sunrise this can appear shining like a star well inside the dark part of the terminator
Plato	Under poorer seeing conditions floor craterlets can vanish
Plato	Shadow spires are normal at sunrise/set
Prom. Laplace	The shadow is visible for many days after sunrise - because it is a tall peak

Table 1. *Locations and descriptions of common false LTP effects.*

Finally, I have a correction to make, in last month's LTP newsletter, figure 1 should have said north is towards the bottom, not towards the top – thanks to Jay Albert for spotting that typo.

Routine Reports: Here is a selection of routine reports from May that were made despite the bad weather.

Figure 1. *An image and a sketch of Hahn crater with north is at the top. (Left) part of a telephoto image of the Moon by Nick Hazel showing a grey column-like feature (LTP?) in Hahn on 2012 Jan 09. (Right) an improvised sketch by Jay Albert from 2012 May 07.*

Hahn: On 2012 Jan 9 UT 21:01-21:08 Nick Hazel (UK) took a telephoto image of the Moon and found that Hahn crater had *a grey column cutting through the central floor of the crater from the west and bisecting the east rim. The effect was hinted at in other images he took that night, but was not so clear*. On 2012 May 07 Jay Albert observed under similar illumination conditions (with some poor seeing and ripple at the start, but getting better) and found the crater to be well lit with most of the floor in shadow from the west wall – the terminator was just to the east. The elongated central peak was bright along the east wall. He suspects that the "*grey column*" could have been mistaken for part of the floor just north of the central peak, which was not in shadow. He noticed that there was a very bright spot on the upper east wall that was aligned with the "*grey column*". Jay apologizes for the slight clipping of an improvised sketch that he made (see figure 1) and also for the central peak that is shown to be a bit too far south than where it actually is. Nevertheless it does show that we might have an explanation for the Hahn LTP. The original observation has a weight of 1, however I would still like to see a few more low magnification sketches of the crater, or low resolution images, at this specific illumination, before being 100% convinced that this should taken off the LTP list.

Tycho: Back in the February newsletter, I mentioned a repeat illumination observation of mine to try to detect the central peak on the floor of Tycho that Brendan Shaw imaged back in 2003 May 29 between 21:04 and 21:09, when the Sun was just 1.2° above the horizon on the floor of Tycho. The odd thing about Brendan's images were that the central peak should not have been visible because it was in shadow. There was a possibility though that it might have been seen because of scattered light off the western illuminated rim reaching the floor – hence why the repeat illumination technique was employed. Needless to say my efforts to capture the central peak at this stage in illumination failed. As we can see from Figure 2, both Maurice Collins and Norman Izett obtained images during May that covered almost the same illumination – again there is no sign of the central peak, although the Sun was half a degree lower at 0.7°, and exposures were perhaps not quite long enough to see clearly inside the shadowed area – but it was certainly worth a go just in case. A third image by Maurice Collins, at a higher solar altitude of 2.5°, shows the central peak as one would expect. Again I would like to remind readers, to please have a go at trying to see the central peak of Tycho at the dates and times given in table 1. If we fail to reproduce Brendan's 2003 May 29th image, then we will definitely have to declare the ghostly peak to be a LTP with the highest possible weight of 5.

Jun-12 UT18:32-21:32	Aug-10 UT18:21-21:21	Oct-08 UT17:23-20:23	Nov-07 UT05:19-08:19
Jun-27 UT14:06-17:06	Aug-25 UT10:55-13:55	Oct-23 UT13:16-16:16	Nov-22 UT04:33-07:53
Jul-12 UT06:39-09:39	Sep-09 UT05:50-08:50	Nov-07 UT05:19-08:19	Dec-06 UT17:54-20:54
Jul-27 UT00:00-03:00	Sep-23 UT23:18-02:18	Nov-22 UT04:33-07:53	Dec-21 UT20:27-23:27

***Table 1**. Suggested times to look for the central peak of Tycho, whilst it is still in shadow during 2012. What is the earliest that you can see, or image the peak before sunrise, and the latest that it can be detected during sunset? Note that observers must check that the Moon will be visible from their geographical observing site before attempting these.*

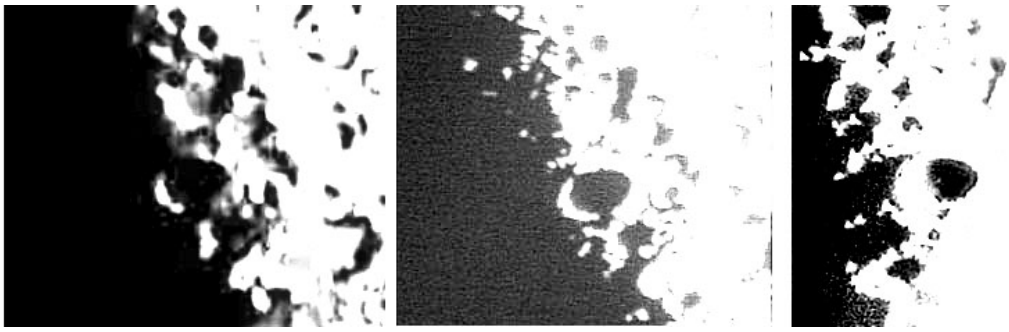


***Figure 2.** Contrast enhanced subsections of the Tycho region from image mosaics, with north at the top (Left) Image by Norman Izett 2012 May 29 UT 05:38, local solar alt=0.7° with no central peak. (Centre) Image by Maurice Collins taken on 2012 May 29 UT 05:40, local solar alt=0.7° with no central peak. (Right) part of an image mosaic taken by Maurice Collins on 2012 May 29 UT10:02-10:42, local solar alt=2.5° with the central peak visible – this is normal at this solar altitude though.*

Alphonsus: In 1966 May 28/29 UT 23:00-01:00 Smith in England, and Birney (VA?, USA) both detected color in Alphonsus with Moonblink devices. On 2012 May 29 UT 20:45-20:50, Marie Cook re-observed the crater under similar illumination and found it to be normal in appearance, namely the dark patches on the floor were seen but were not red and gave no blink. Despite this, they were very slightly lighter in the blue filter than in red, but not by enough to convince her as it could have been a scattered light effect at shorter wavelengths in our atmosphere.

Herodotus: As was mentioned in the March newsletter, Brendan Shaw had a go at imaging the floor of Herodotus, to see if he could detect a pseudo peak as seen in Bartlett in 1966 Jun 30. Well Rik Hill has also attempted to image the area and you can see what he caught on the right hand side of figure 3. Alas no sign of anything that could resemble Bartlett's central pseudo peak, so this remains a mystery. However it is interesting to compare Rik's image with an ALVIS computer simulation for the start of the 1966 LTP. It is quite remarkable how similar the simulation and the real image are, although if you look very carefully you can see some subtle differences. Note that although ALVIS is not publically available, because it is in a very early prototype stage, you can try your own computer simulations with the Lunar Terminator Visualization Tool (LTVT) which is available from: http://ltvt.wikispaces.com/Downloads .

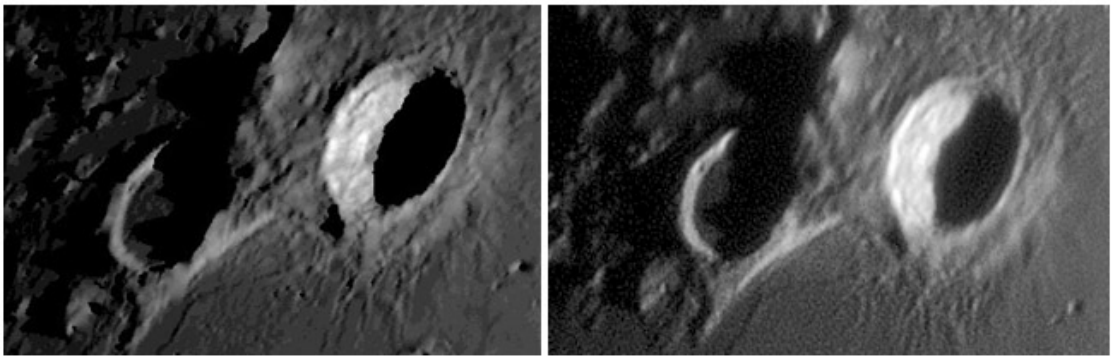


Figure 3 *Views of Herodotus with north at the top (Left) ALVIS computer simulated view to represent Bartlett's LTP at the start of the session from 1966 Jun 30; the altitude and azimuth of the Sun at the centre of Herodotus was Alt☼=3.4º, Az☼=90.2º (Right) view as imaged by Richard Hill on 2012 May 03 UT 02:39 with Alt☼=3.3º, Az☼=90.7º.*

Sinus Iridum: Back in 2004 May 29 UT 20:44 Clementelli (Rome, Italy) reported the following to the Unione Astrofili Italiani: "*A blue/violet streak, lasting ~10 minutes was seen on the floor of Sinus Iridum between the crater Bianchini and Promontorium Heraclides*". *A 102mm diameter Vixen refractor 80-160x was used with clear sky conditions and no wind.* It is possible that this may have been an effect of instrumental achromatic aberration, but there was the small possibility that the effect might have been was real. On 2012 May 1 Brenadan Shaw re-observed under similar illumination and obtained the following color image in figure 4. No blue/violet streak is visible, but I was wondering whether the effect might have been originally along one or more of the wrinkle ridges that run across the floor Sinus Iridum?

Figure 4*. Color image of Sinus Iridum, by Brendan Shaw 2012 May 1 UT 21:53-21:57. North is towards the top.*

LTP Reports: Two LTP reports were received for May, but both receive a weight of 1, as they are probably not LTP, but we cannot be sure unless we get independent confirmation:

Brenner F: On 2012 May 25 UT 05:35 *Brenner F crater was recorded in a larger area image mosaic by Maurice Collins (ETX-90 with LPI imager (monochrome mode) - seeing not good). He took a sequence of 108 images from 05:35-05:40UT, and in the 65th frame, a light spot, approximately 4 pixels wide can be seen just outside the western illuminated rim of Brenner F. It is not visible in any other frames. The exposure time was 0.125 Sec.* Because the western edge of the spot is very sharp, and the rest of the Moon is slightly blurred due to seeing, it is thought that this was most likely a cosmic ray event in the CCD camera - the 4 pixel width was perhaps contributed to by the image compression. It may also be some bright surface spot that was made invisible most of the time by poor seeing, and then during a brief period the atmosphere was sharp enough at that locality to make it visible. See Figure 5.

SW Limb: On 2012 May 26 UT21:21 *Jim Moeller (Syracuse, NY, USA, using a Konica Minolta DIMAGE Z5 digital camera, f/7.1, 1/250 sec exposure, ISO-50, 69mm focal length, digital zoom x3) captured a hand held image (See figure 6) of the Moon in daylight. On the SW limb of the dark side of the Moon a bright spot can be seen. This has a brightness comparable to that of Mare Serenitatis. There is also a fainter dark blurred marking further inside the dark side.* The bright spot is not a hot pixel because the same position was checked from an image from another day. The effect might be a cosmic ray, although it covers several pixels. It is definitely not a satellite, or a bright planet, or star, because these have been checked for. The dark area could be an out of focus bird, but is unlikely to be an aircraft at the high elevation angle of the Moon. I would be interested to hear any ideas?

Suggested Features to observe in July: For repeat illumination (only) LTP predictions for the coming month, these can be found on the following web site: http://users.aber.ac.uk/atc/tlp/tlp.htm. For members who do not have access to the internet, please drop me a line and I will post predictions to you. If you would like to join the LTP telephone alert team, please let me know your phone No. and how late you wish to be contacted. If in the unlikely event you see a LTP, 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 http://twitter.com/lunarnaut.

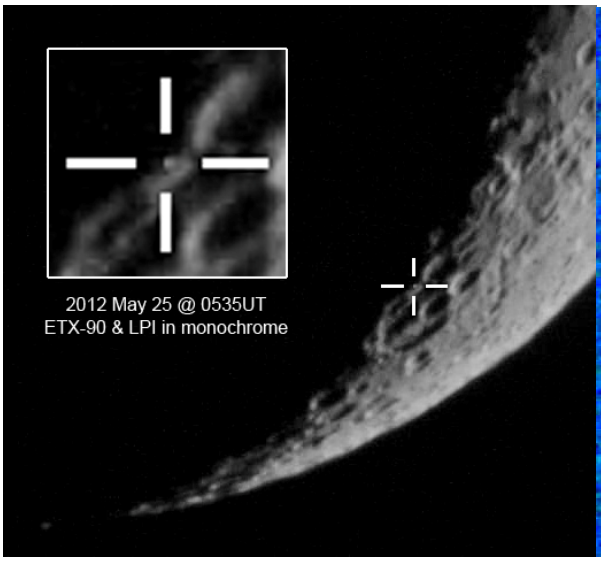


Figure 5 *Spot in Brenner F by Maurice Collins.*

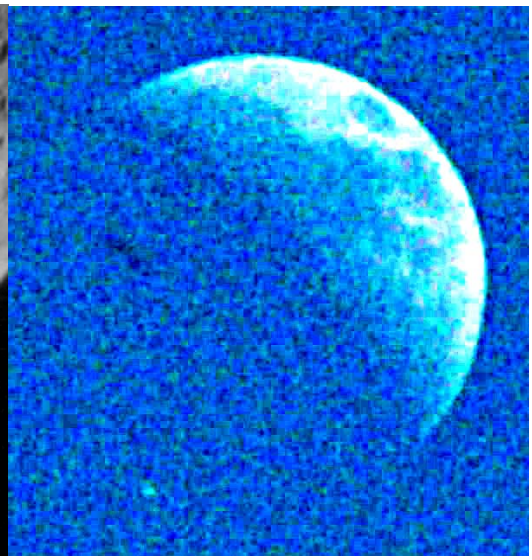


Figure 6*. Bright spot on SW limb by Jim Moeller.*

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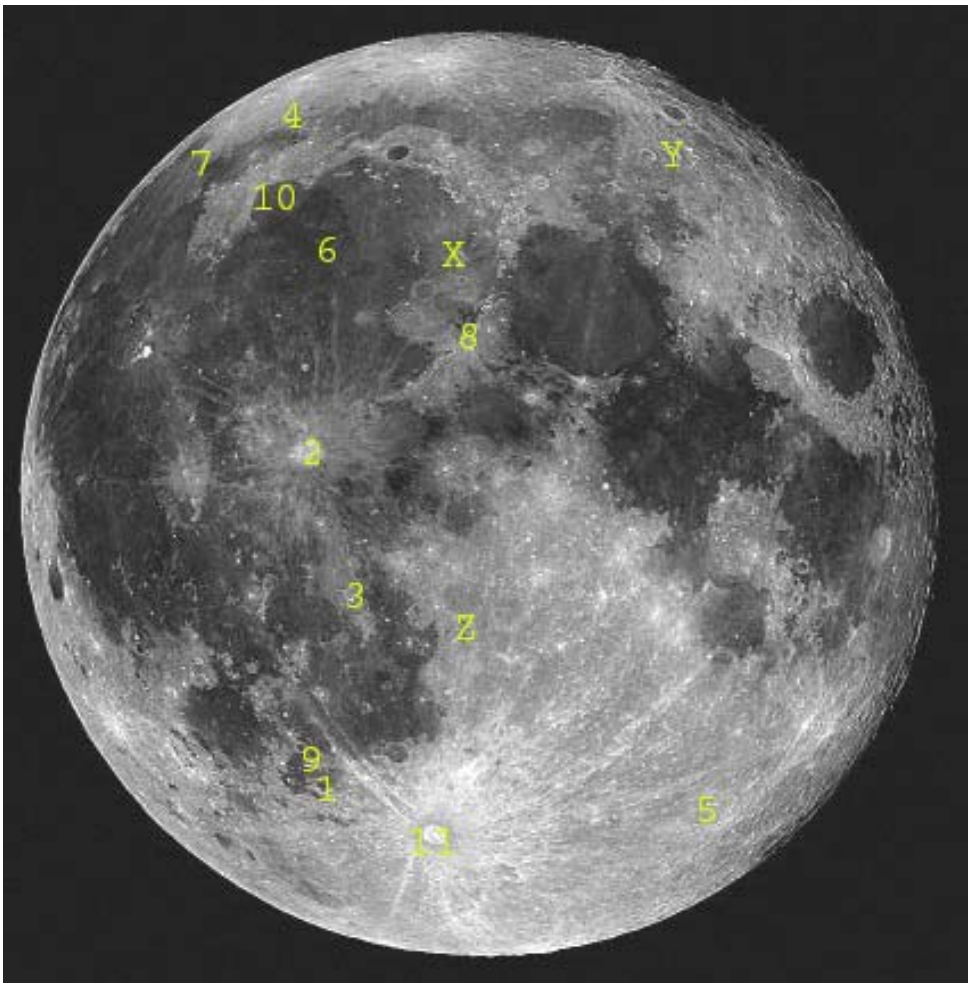
KEY TO IMAGES IN THIS ISSUE

1. **Capuanus**
2. **Copernicus**
3. **Fra Mauro**
4. **J. Herschel**
5. **Janssen**
6. **Mare Imbrium**
7. **Markov**
8. **Montes Apenninus**
9. **Palus Epidemiarum**
10. **Sinus Iridum**
11. **Tycho**



FOCUS ON targets

X = Aristillus (September)
Y = Atlas (November)
Z = Alphonsus (January)