THE LUNAR OBSERVER

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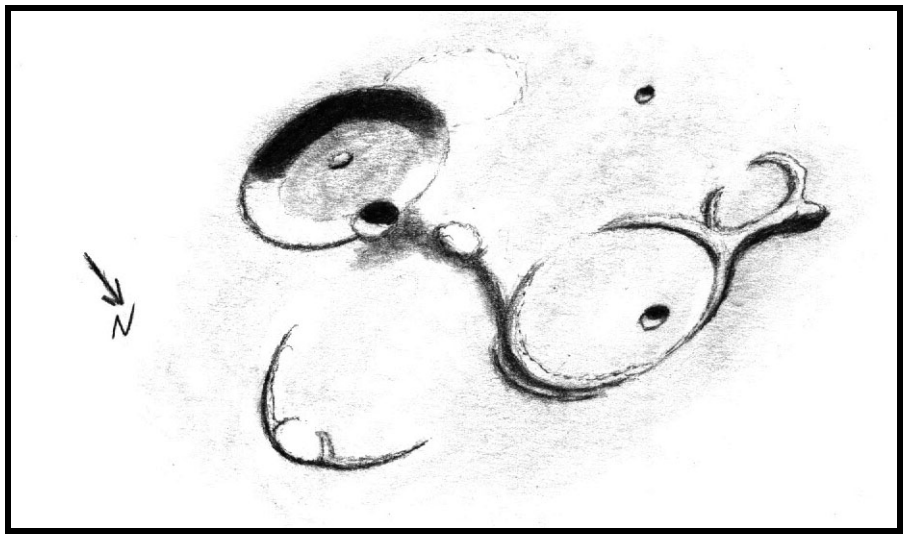
RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – FEBRUARY 2013

CEPHEUS & OERSTED



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
November 1, 2012 04:45-05:1 UT, 15 cm refl, 170x, seeing 6-8/10

I drew these craters on the night od Oct. 3l/Nov. 1, 2012 after the moon hid 43 Tauri. The area is southeast of Atlas and Hercules. Cepheus is a crisp, fairly deep crater with a peak slightly south of center. Cepheus A is on its north rim, and a vague bright area is on its west side. Oersted is similar in size to Cepheus, but is much shallower, and has a gap in its south rim. Oersted A is the pit inside the north rim of Oersted. A long ridge extends westward from Oersted, and it has curved prongs that are probably the broken ring Oersted P. The Lunar Quadrant map indicates that Oersted P is complete, but I don't see it that way. Oersted P shows a gap in its south rim, much as Oersted does. Oersted U is south of P. This pit is a slightly smaller version of Oersted A. The shadow outside the east rim of Oersted has an outer concentric arc, appearing split in two. A large ghost ring is southeast of Oersted and north of Cepheus. The west rim of this feature extends south from Oersted, and has a low hill north of Cepheus A. Its narrow east rim has little prongs and a bright, fuzzy patch. It almost gives the impression of a mini-ghost ring. The large feature has no north or south rims.

LUNAR CALENDAR

FEBRUARY-MARCH 2013 (UT)

Feb. 03	07:00	Moon 3.5 Degrees SSW of Saturn
Feb. 03	13:57	Last Quarter
Feb. 06	00:24	Extreme South Declination
Feb. 07	11:00	Moon 0.57 Degrees NW of Pluto
Feb. 07	12:10	Moon at Perigee (365,313 km – 226,995 miles)
Feb. 09	10:00	Moon 5.8 Degrees NNW of Venus
Feb. 10	07:22	New Moon (Start of Lunation 1115)
Feb. 11	01:00	Moon 5.5 Degrees NNW of Neptune
Feb. 11	10:00	Moon 9.0 Degrees NNW of Mars
Feb. 11	16:00	Moon 5.0 Degrees NNW of Mercury
Feb. 12	07:00	Comet Enke 1.1 Degrees ESE of Moon
Feb. 13	15:00	Moon 4.2 Degrees NNW of Uranus
Feb. 17	20:30	First Quarter
Feb. 18	12:00	Moon 0.90 Degrees S of Jupiter
Feb. 19	01:00	Moon 0.97 Degrees SSW of asteroid 4-Vesta
Feb. 19	07:00	Moon at Apogee (404,473 km – 251,328 miles)
Feb. 19	13:36	Extreme North Declination
Feb. 25	20:28	Full Moon
Mar. 02	15:00	Moon 3.3 Degrees S of Saturn
Mar. 04	21:54	Last Quarter
Mar. 05	06:42	Extreme South Declination
Mar. 05	23:21	Moon at Perigee (369,953 km – 229,878 miles)
Mar. 06	21:00	Moon 1.3 Degrees NE of Pluto
Mar. 10	13:00	Moon 5.5 Degrees NNW of Neptune
Mar. 10	22:00	Moon 2.2 Degrees N of Mercury
Mar. 11	12:00	Moon 5.9 Degrees NNW of Venus
Mar. 11	19:53	New Moon (Start of Lunation 1116)
Mar. 12	12:00	Moon 4.5 Degrees NNW of Mars
Mar. 13	01:00	Moon 4.0 Degrees NNW of Uranus
Mar. 18	01:00	Moon 1.5 Degrees S of Jupiter
Mar. 18	21:54	Extreme North Declination
Mar. 19	03:14	Moon at Apogee (404,261 km – 251,196 miles)
Mar. 19	17:26	First Quarter
Mar. 27	09:29	Full Moon
Mar. 29	20:00	Moon 3.4 Degrees S of Saturn
Mar. 31	03:56	Moon at Perigee (367,493 km – 228,350 miles)

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: Wrinkle Ridges & Rilles

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 **March 2013** edition will be **wrinkle ridges & rilles.** Wrinkle ridges & rilles are most easily seen near the terminator, but some are visible even under a high sun. So send images of any ridges or rilles that you see. 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 the moon for objects to your observing list and send your favorites to:

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

Deadline for inclusion in the Wrinkle Ridges & Rilles article is February 20, 2013

FUTURE FOCUS ON ARTICLES:

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

Subject	TLO Issue	Deadline
Mare Insularum	**May 2013**	**April 20, 2013**

FOCUS ON: Alphonsus

By Wayne Bailey
Coordinator: Lunar Topographical Studies

Alphonsus is another of the seven primary subjects of the ALPO Lunar Selected Areas Program (Atlas was the subject of the previous Focus On in the November, 2012 issue). The Selected Areas Program (SAP) studies the effect of changing illumination on the appearance of features. Note that these changes differ from the subject of Lunar Transient Phenomena in that they are the normal appearance of the feature under the prevailing lighting conditions. For a more complete description of the SAP see Benton (2002), which is written for visual observers, but applies equally well to imaging observers.

It has been the Focus On subject twice, in the January 2008 and May 2011 issues of TLO, so I'll try not to repeat too much. This round will concentrate on the changing appearance throughout the lunation. Back issues of TLO are available for download at http://moon.scopesandscapes.com.

Located near the center of the visible face of the moon, Alphonsus is well placed for convenient observation. Sunrise occurs slightly after 1st quarter, when the moon is high in the sky just after sunset. Sunset, with close to the opposite illumination, occurs around 3rd quarter, when the moon is high in sky just before dawn, convenient for early rising observers. These are the times to look for the small, low relief features. Since Alphonsus is close to the central meridian of the moon, lighting changes are nearly symmetrical around with respect to full moon. The images in figures 1 and 2 progress from low to high sun angles rather than by solar colongitude.

With a low sun, the eastern half of the floor appears much smoother than the western. A north-south line of low hills that seem to form a braided, ridge that includes the central peak divides the crater floor. Interestingly, this ridge aligns with the western wall of Ptolemaeus on the north and ridge that connects the outer walls of Alphonsus and Arzachel on the south. The orientation is similar to the gouges outside the northwest wall and through the southeast wall that are attributed to the formation of the Imbrium Basin. The central peak is noticeable for its brightness, although it's not large. Numerous small craterlets pepper the floor, and several long rilles are visible. The crater walls are well worth examining since they exhibit a wealth of structure, including damage from Imbrium debris.

As the sun rises, the rille that parallels the northeast and east walls appears out of the shadows. This is probably the most visible rille in Alphonsus. At times it stands out as a bright line, other times as a thin cleft. This rille makes a sudden change of direction at a small dark-halo crater below the northeast wall, as though it's two separate rilles that originate at the crater. The short branch heads northwest parallel to the wall, while the longer branch meanders south along the east wall.

Soon, dark haloes appear around several of the small craters on the floor. Three are especially conspicuous, forming a triangle that easily marks Alphonsus' position when the area is mostly featureless near full moon. The northeast member of this trio is not, however, the crater that marks the bend of the rille mentioned above although it is nearby. The rille passes just to the west of this halo. The darkest of the dark haloes are actually visible at fairly low sun angles, but are unmistakable at full moon.

To view the eastern crater floor and inner wall under low sun, it's really necessary to observe near third quarter, because the wall shadows cover much of it near first quarter. Fewer people observe during the pre-dawn hours than in the early evening, so fewer images are submitted from the last half of the lunation. The eastern wall and floor will reward those willing to make the effort to examine them though.

The area connecting Alphonsus and Arzachel is another area that's interesting to examine. There's a large ridge connecting Alphonsus' south wall to Arzachel's northeast wall. Valleys penetrate Alphonsus' wall

on each side of this ridge. The ridge seems to pre-date Arzachel, however, since Arzachel's northeast wall appears to be excavated out of the ridge. On some images it appears to be a straight ridge tangent to Arzachel's northeast wall, that begins abruptly at Alphonsus' wall and extends almost to Parrot C.

This is a fascinating area to watch throughout a lunation, as it's appearance changes from a wealth of fine detail, to some interesting albedo features, and back.

ADDITIONAL READING

Benton, Julius. 2002. A Manual for Observing the Moon: The ALPO Selected Areas Program. Association of Lunar & Planetary Observers. Downloadable version at http://moon.scopesandscapes.com/sap-hdbk-5.pdf.

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.

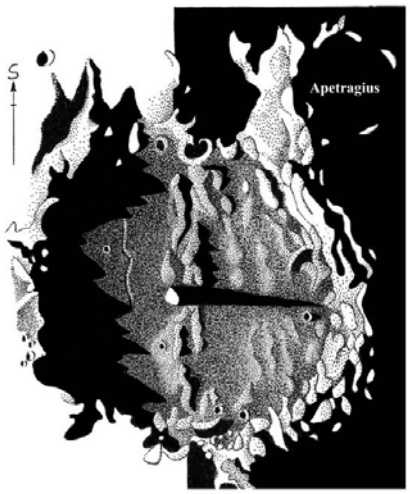
Rukl, Antonin. 2004. Atlas of the Moon, revised updated edition, ed. Gary Seronik, Sky Publishing Corp., Cambridge.

Wlasuk, Peter. 2000. Observing the Moon. Springer-Verlag, London.

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

The-Moon Wiki. http://the-moon.wikispaces.com/Introduction

Figure 1. Alphonsus at increasing solar elevation:
Upper left: colong. 5º. Rik Hill, Tucson, AZ USA. Aug. 21, 2007 03:19 UT. Seeing 6/10. C-14, 1.6x barlow. UV/IR blocking filter, SPC900NC.
Upper right: colong. 6º. Phil Morgan, Lower Harthall-Tenbury Wells, Worcestershire, England. March 26, 2007 19:00-20:15 UT. Seeing 8/10, transparency 4/5. 305mm Newtonian, 400x.
Middle left: colong. 10º. Howard Eskildsen, Ocala, FL USA. Nov. 22, 2012 01:26 UT. Seeing 6/10, transparency 4/6. 6" f/8 Refractor, 2x barlow, IR & V-block filters, DMK 41AU02.AS.
Middle right: colong. 174º. Howard Eskildsen, Ocala, FL USA. Oct. 7, 2012 10:07 UT. Seeing 8/10, transparency 4/6. 6" f/8 Refractor, 1.44x barlow, IR & V-block filters, DMK 41AU02.AS.
Lower left: colong. 11º. Bob O'Connell, Keystone Heights, FL USA. Nov. 22, 2012 02:54 UT. Seeing 4/10, transparency 6/6. C-9.25 f/10 SCT, Astronomik 742 IR pass filter, DMK42AU02.AS.

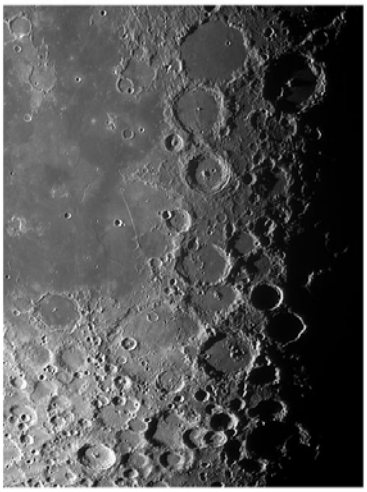
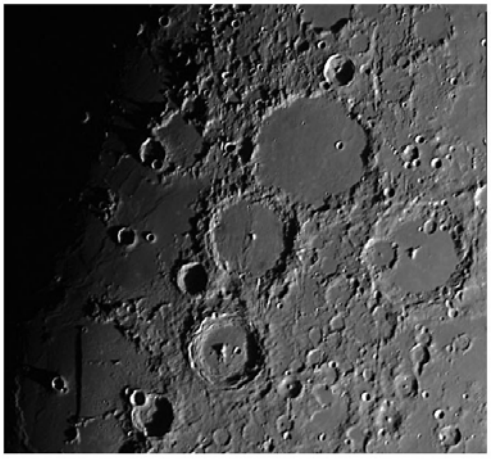




Figure 2. Alphonsus at increasing solar elevation:

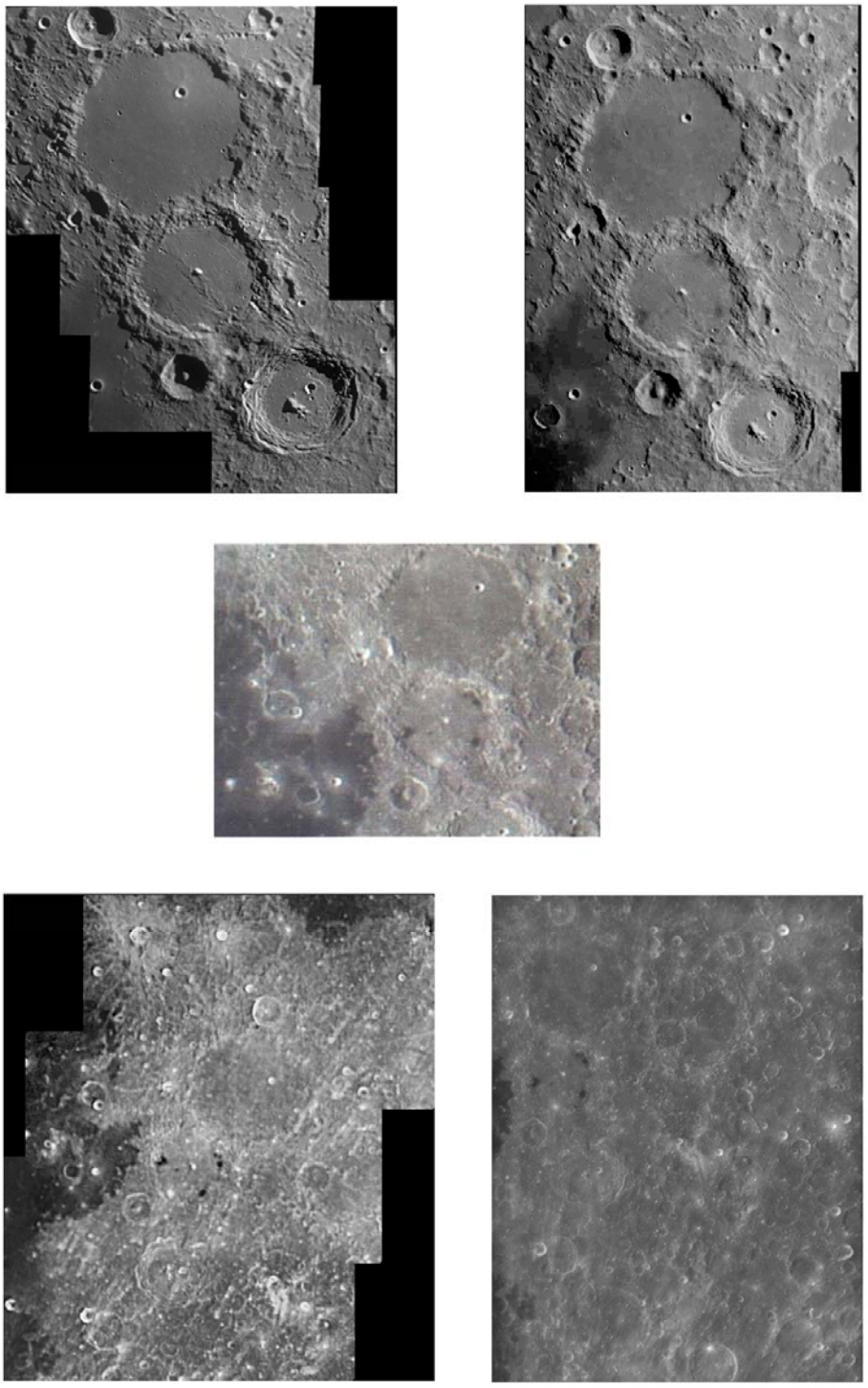
Upper left: colong. 14º. Rik Hill, Tucson, AZ USA. May 22, 2010 03:01 UT. Seeing 8/10. C-14, 2x barlow. UV/IR blocking filter, DMK21AU04.

Upper right: colong. 23º. Rik Hill, Tucson, AZ USA. May 30, 2012 02:54 UT. Seeing 8/10. TEC 8" f/20 Mak-Cass. Wratten 23 filter, DMK21AU04.

Middle: colong. 141º. Jay Albert, Lake Worth, FL USA. Nov. 3, 2012 05:26 UT. C-11 SCT, f/10, Neximage 5.

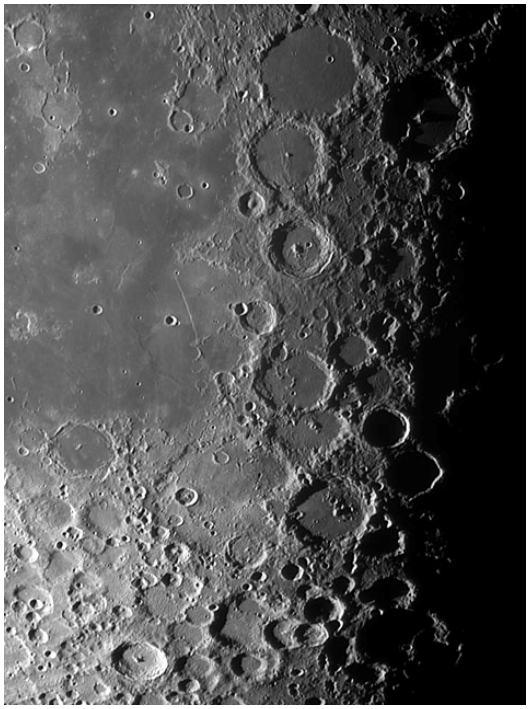
Lower left: colong. 69º. Rik Hill, Tucson, AZ USA. Sept. 13, 2008 06:24 UT. Seeing 5/10. C-14, 2x barlow. UV/IR blocking filter, SP900NC.

Lower right: colong. 113º. Howard Eskildsen, Ocala, FL USA. Aug. 4, 2012 09:42 UT. Seeing 7/10, transparency 5/6. 6" f/8 Refractor, 2x barlow, IR & V-block filters, DMK 41AU02.AS.

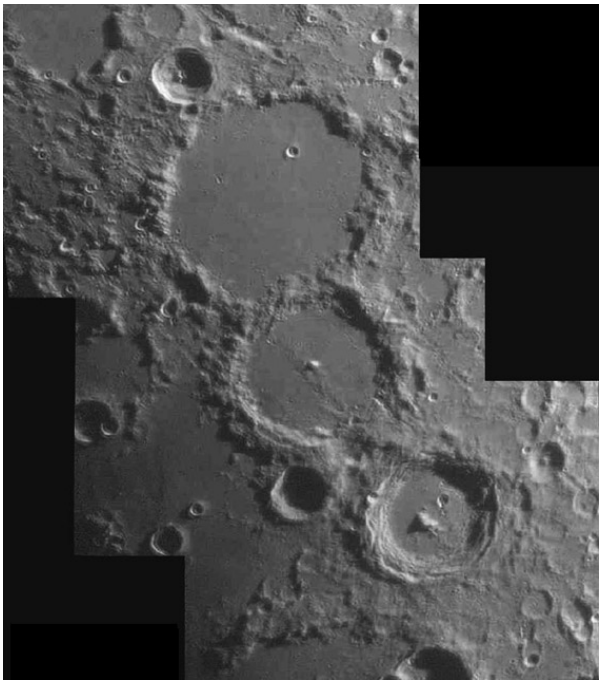


ADDITIONAL ALPHONSUS OBSERVATIONS

ALPHONSUS – Ed Crandall – Lewisville, North Carolina, USA. November 23, 2012 01:20 UT. Colong. 22º. 110 mm f/6.5 APO, 3x barlow, ToUcam.

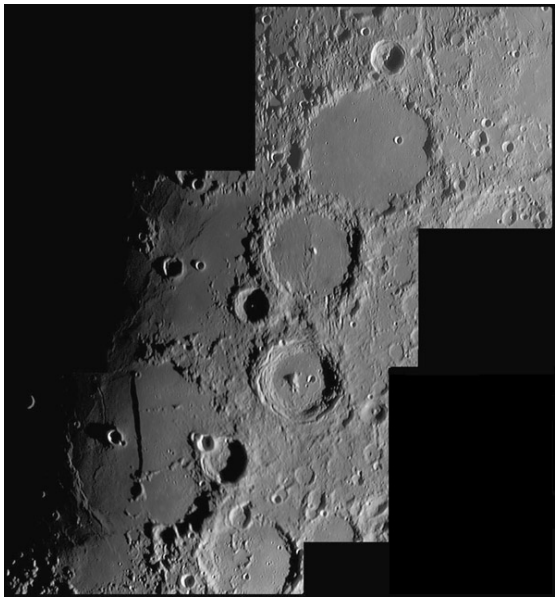


ALPHONSUS- Howard Eskildsen-Ocala, Florida, USA. October 7, 2012 UT 10:11 UT. Seeing 8/10, Transparency 4/6, Colong 174º. 6" f/8 refractor, Explore Scientific lens, 1.44x barlow, DMK 41AU02.AS, IR block & V block filters.

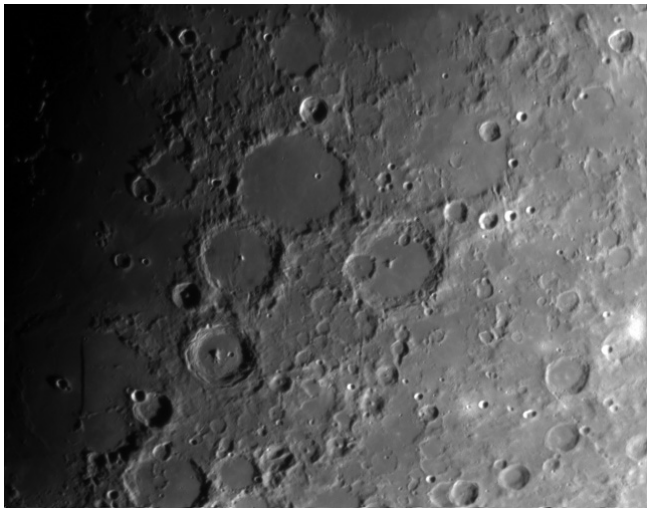


ALPHONSUS– Richard Hill – Tucson, Arizona, USA May 29, 2012 03:56 UT. Seeing 8/10. TEC 8" f/20 Mak-Cass. DMK21AU04. Wratten 23 filter.

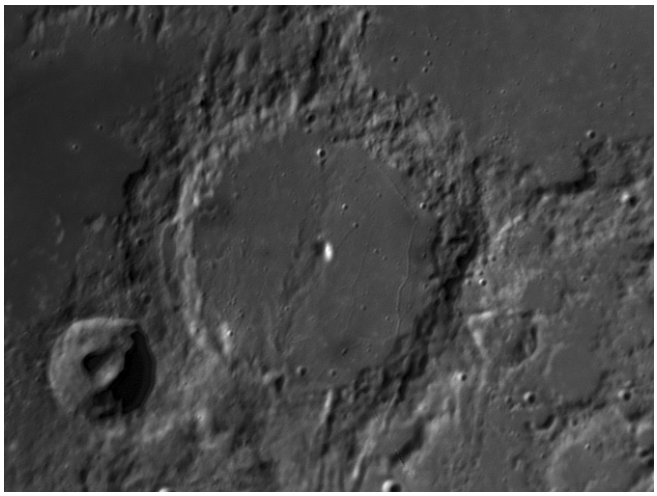
ADDITIONAL ALPHONSUS OBSERVATIONS



ALPHONSUS– Richard Hill – Tucson, Arizona, USA January 27, 2007 02:53 UT. C-14 SCT, f/10, SPC900NC. Wratten 21 filter.



ALPHONSUS- Fykatas Stergios-Vienna, Austria. April 24, 2012 22:51 UT. Seeing 6/10, Colong 16º. LX-90 8" SCT, 2x barlow, Alccd5 camera.



ALPHONSUS- Hongsun Yoon – Republic of Korea. December 18, 2007 10:51 UT. Seeing 6/10, Transparency 5/6. Mewlon 300 8" f/11.9 Dall-Kirham, Lumenera LU075, Astronomic R dichroic filter with IR block.

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 6, 7, 8, 9, 13(2), 14, 15, 19, 22 & 23 day Moon, Full Moon, Alphonsus, Aristarchus, Copernicus, Mare Nectaris, Montes Apennines & Theophilus-Mare Tranquilitatis.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Cauchy, Conan, Endymion, Glusko, Goclenius-Gutenberg Rimae, Janssen, Mare Nectaris, Petavius-Humboldt, Petavius-Snellius, Piccolomini, Romer & Seleucus

RICHARD HILL – TUCSON, ARIZONA, USA Digital images of Clavius, Copernicus, Gemma Frisius, Plato-Montes Alpes & Walther..

JERRY HUBBELL – LOCUST GROVE, VIRGINIA, USA. Digital images of 1st qtr Moon, Southern Highlands, & measurements of Rupes Recta & Tycho..

MARNIX PRAET – STEKENE, BELGIUM. Digital images of Plato & Serpentine Ridge.

ALEXANDER VANDENBOHEDE-ASSEBROEK, BELGIUM. Digital image of Crescent Moon.

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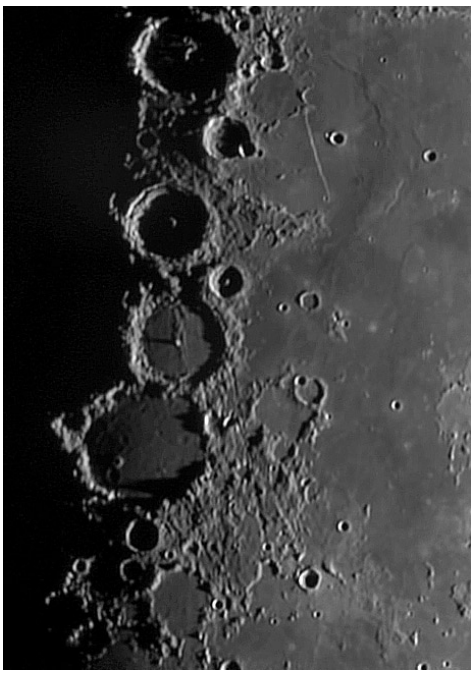
RECENT TOPOGRAPHICAL OBSERVATIONS



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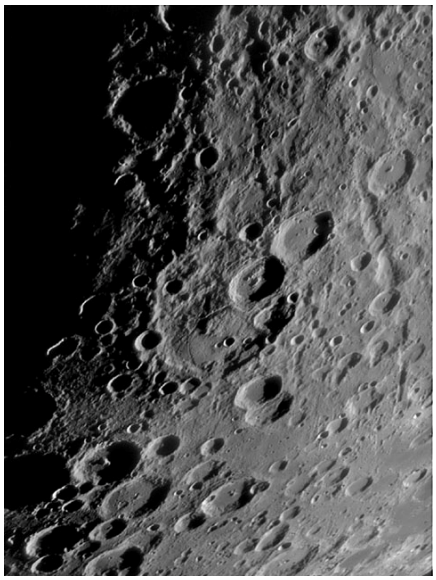
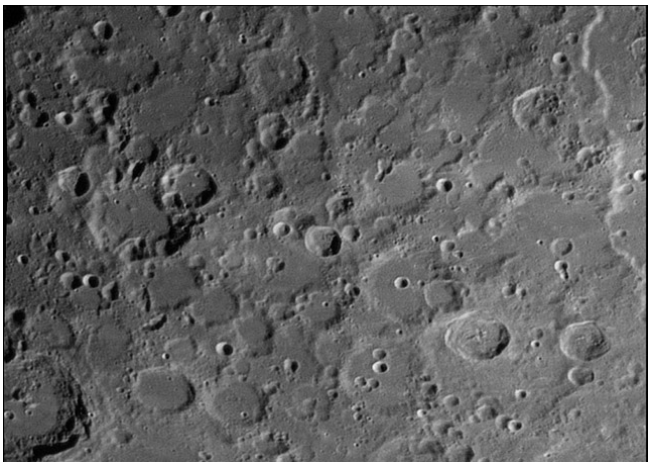
ALPHONSUS - Maurice Collins-Palmerston North, New Zealand. January 4, 2013 16:15 UT. WO FLT-110, Refr, 3x barlow, LPI.

RECENT TOPOGRAPHICAL OBSERVATIONS



JANSSEN- Howard Eskildsen-Ocala, Florida, USA. January 17, 2013 UT 00:16 UT. Seeing 6/10, Transparency 5/6. 6" f/8 refractor, Explore Scientific lens, 2x barlow, DMK 41AU02.AS, IR block & V block filters.

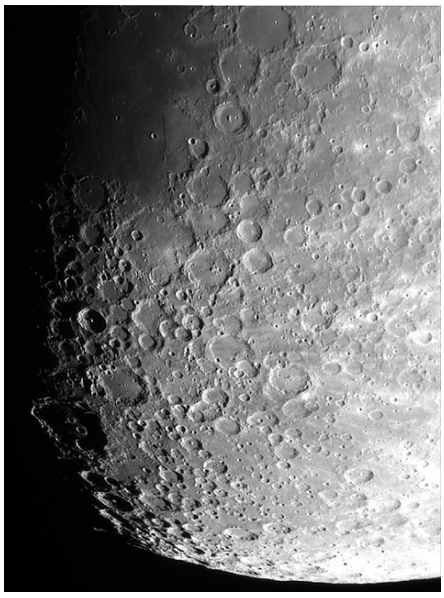


GEMMA FRISIUS– Richard Hill – Tucson, Arizona, USA January 20, 2013 01:20 UT. Seeing 8/10. TEC 8" f/20 MAK-CASS.. DMK21AU04. 656.3 nm filter.

A friend had asked if I had an image of the region containing Gemma Frisius.Nothing in my Lunar Database covered this region, I was not even certain exactly where that was! So I looked it up on my VMA 3.5 Expert.(Yeah, I know....."old school". I'll probably update this week.) and was surprised to find it near the terminator tonight, and the weather was quite good. So I did a series of 4 images of the region.

This region is chocked full of wonderful features. Gemma Frisius has very interesting mountains(?) on the south wall. Beyond this are a number of interesting anomalous craters including, Goodacre G, Gemma Frisius H, Gemma Frisius R, Gemma Frisius W, Pontanus C, Poisson U, Zagut C, Wilkins A, Rothmann H and Pons. Each one could stand its own descriptive paragraph!

I'm grateful I was drawn to this region by a simple request.



SOUTHERN HIGHLANDS– Jerry Hubbell, Locust Grove, Virginia, USA. January 21, 2013 00:07 UT. Seeing 7/10, Transparency 5/6. ED127 APO refr, ATIK 314e.

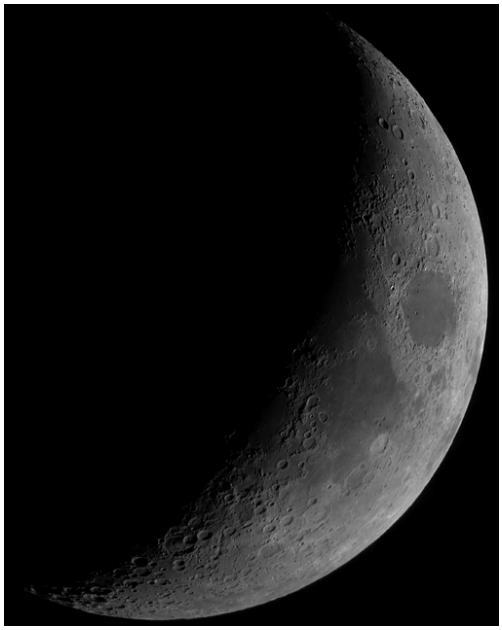
This image is dominated by both Tycho and Clavius in the southern part of the Highlands with a good view of the region around Rupes Recta. As described further below, the amount of detail on this single stacked frame shows craterlets down to around 2 km with 3 km craters easily discerned. Towards the terminator, various wrinkle ridges in Mare Nubium to the west of Rupes Recta are revealed in the low sunlight. Many small craters can be discerned in Mare Nubium including: Lippershey T, Lippershey R, Lassell E, Birt B, and Thebit D to name a few.

The terraced walls of Tycho are very obvious on the western rim, and the ray system comes into view east of Tycho with the increasing altitude of the sun over the lunar surface. The western rim of Clavius is a stark contrast to the dark side of the moon to the west of the terminator.

(see also the LTVT measurements of Tycho & Rupes Recta below)

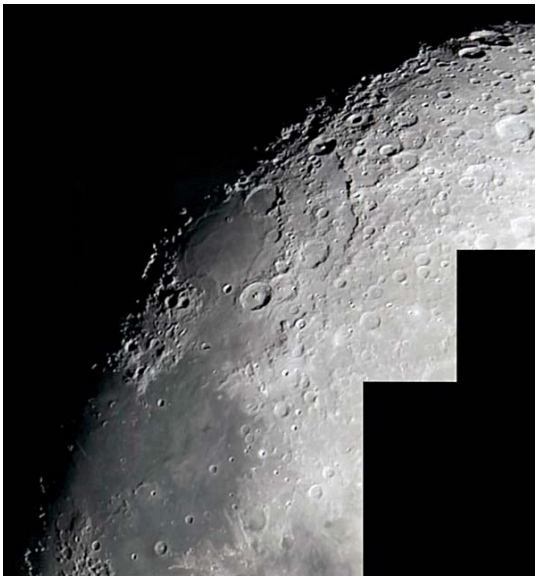
RECENT TOPOGRAPHICAL OBSERVATIONS

PLATO–Marnix Praet–Stekene, Belgium. January 22, 2013 UT. 12" SCT, 2.5x barlow, DMK21AU618, red filter .



CRESCENT MOON – Alexander Vandenbohede, Assebroek, Belgium. C-8 SCT, webcam.

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



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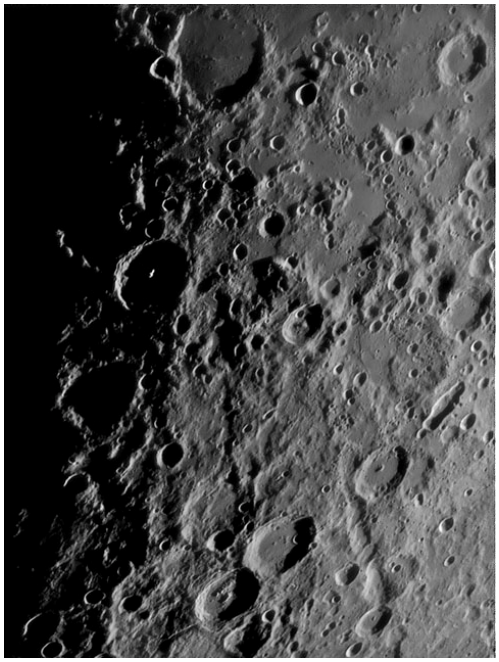
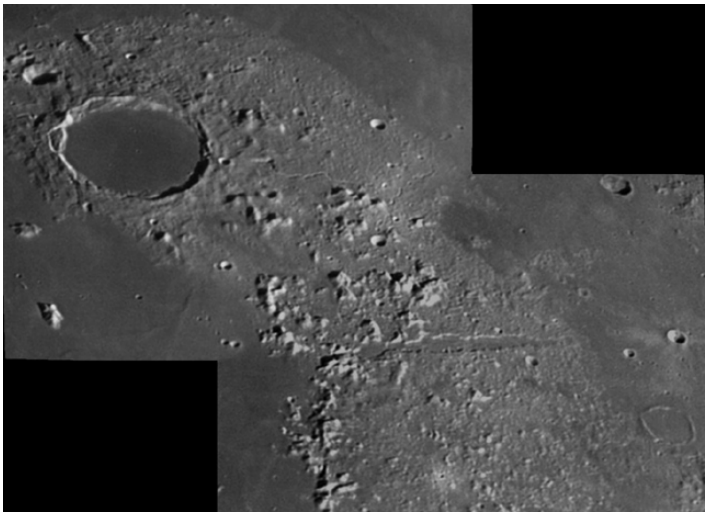
MARE NECTARIS - Maurice Collins-Palmerston North, New Zealand. January 1, 2013 11:35-11:37 UT. WO FLT-110, Refr, 2x barlow, LPI.



PICCOLOMINI- Howard Eskildsen-Ocala, Florida, USA. January 17, 2013 UT 00:15 UT. Seeing 6/10, Transparency 5/6. 6" f/8 refractor, Explore Scientific lens, 2x barlow, DMK 41AU02.AS, IR block & V block filters.



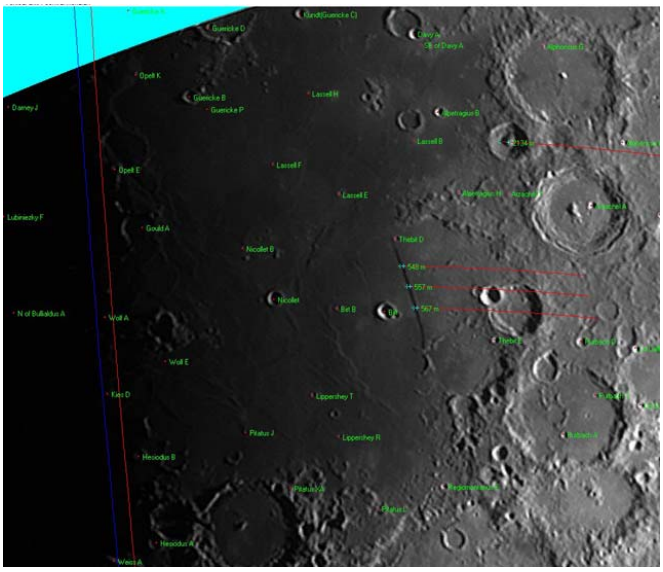
PLATO-MONTES ALPES– Richard Hill – Tucson, Arizona, USA January 21, 2013 02:35UT. Seeing 8/10. TEC 8" f/20 MAK-CASS.. DMK21AU04. 656.3 nm filter.

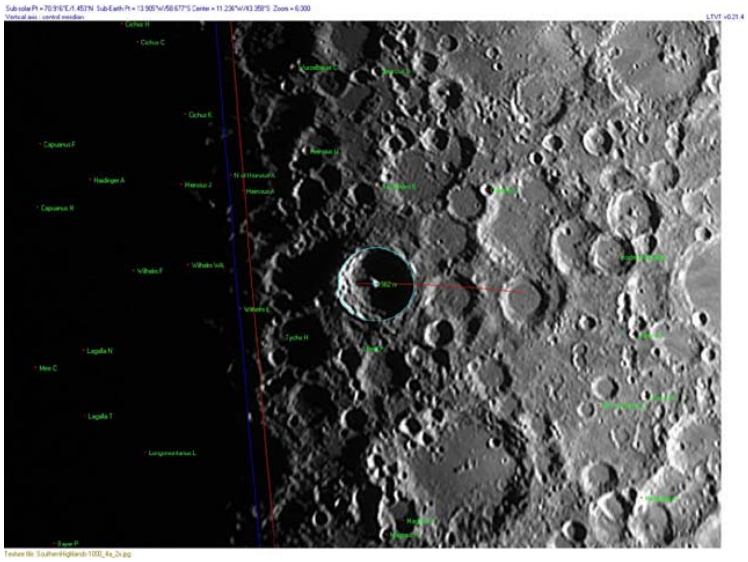
Here is an old favorite. I had a good night going on the 19/20th and couldn't resist. I'm glad I did not. There are things here that deserve comment. First, this is about the best I've ever imaged the small craters in the bottom of Plato. Also, the other thing the lunar imagers look for next, the rille in the bottom of Valles Alpes. It's there! This kind of thing was utterly impossible with an 8" aperture only a few years ago.

At this lighting Plato K and Plato Ka do not show the splash between them but instead they are at the head of a parabolic shaped brighter region of mare material. I have never noticed before but surely will be looking for it in the future. Just to the north is Mons Pico showing nice detail. I have always enjoyed this peak plus Mons Piton, just outside the limits of this image montage.

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS

1st QUARTER MOON– Jerry Hubbell, Locust Grove, Virginia, USA. January 20, 2013 00:30 UT. Seeing 6/10, Transparency 6/6. ED127 APO refr, ATIK 314e.





RUPES RECTA & TYCHO measurements– Jerry Hubbell, Locust Grove, Virginia, USA. January 21, 2013 00:07 UT. Seeing 7/10, Transparency 5/6. ED127 APO refr, ATIK 314e.

The LTVT measurement of Tycho's central peak resulted in a height of 1562 meters with a reference of 1530 meters from the LAC 112 Tycho chart. The LTVT measurements of Rupes Recta resulted in a height of about 550 meters with a reference height of 400 meters from the LAC 95 Purbach chart. Given a nominal slope of 20 degrees, the width of the Recta would be about 1.5 km.

To tell you the truth, I wouldn't have thought it would be possible to pull out this much detail with a 5" refractor. This by far is the best result I have obtained so far in prime focus imaging. I think that this was possible one, because the seeing was better last night, though not perfect, and two, I was stacking high dynamic range images (16 bit) versus the standard webcam based video frames of 8 bits each. This added dynamic range seems to pull out the small subtle gradations in the light that constitute the smaller details in the image.

LUNAR TRANSIENT PHENOMENA

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LTP NEWSLETTER – FEBRUARY 2013

Dr. Anthony Cook - Coordinator

The weather has not been kind to our observers during December 2012, and so observations received have been smaller in number. Routine observations were received from the following observers: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Carlini, Cyrillus, Hase, Proclus, Ross D, Theophilus, and Torricelli. Maurice Collins (New Zealand - RASNZ) observed: Mare Australe, Theophilus, Tycho, and took some whole disk images of the Moon. Marie Cook (Mundesley, UK - BAA) observed: Copernicus, Mons Pico, and Plato. Bob O'Connell (Keystone Heights, FL, USA - ALPO) observed Proclus.

News: Although nothing of interest LTP-wise has made it into the news recently, there has been some correspondence, as well as other information that might be of interest to you:

- Alexandre Amorim, from Brazil, has pointed out that a Harpalus observation by "Numes" in 1969 May 20 was incorrect and should have read "Nunes and Nogueira". This will be corrected in our database in due course.

- Pierre Temmerman from Belgium has enquired about LTP newsletters and the outcome of the Kolovos Proclus C flash on the Moon from 1985. I was able to let him know that although Icarus journal letters were published that suggested it was due to sunglint from a defunct US military weather satellite that just happened to be passing close to the Moon at the time, the satellite rotation rate would have had to have been unacceptably high to produce the flash. Possibly an impact flash, or a large cosmic ray detection, might have been alternative causes.

- Gerald North pointed out that for the 1985 May 30 Gassendi LTP, mentioned in the previous newsletter, that he too saw a 'notch' in the interior shadow - and it was along the edge of this notch that the ruby red color appeared. An account of this can be found in chapter 9 of his "Observing the Moon: The Modern Astronomer's Guide" book.

- Professor Arlin Crotts, from Columbia University, New York has told me that his book, on "The New Moon: Water, Exploration, and Future Habitation" will be published soon, and contains some information on LTP.

- The 21st Century Atlas of the Moon although not venturing anywhere into the realm of LTP, does provide you with some quite detailed imagery, and also goes into the geology of many of the common features that we observe on the Moon.

- Two LTP articles appeared in The Moon: Notes and Records of the BAA Lunar Section, The first concerned Herodotus and sightings of the pseudo peak, giving a range of colongitudes at which it has been very occasionally seen. Unfortunately the effect does not repeat every lunation, indeed rarely ever does, which poses a mystery as to the cause. The second article, by Chuck Wood, is critical of most aspects of LTP. I will probably write a response to this in next year's publication, as most of that paper is opinion based and we have already addressed most of the issues in this newsletter over the past few years.

- We have joined forces with the L'Unione Astrofili Italiani (UAI) to share observations and information on LTP, in a similar way to that which ALPO and the BAA already operate. We will however retain affiliation information on any reports sent in, like we try to do in this newsletter. If any other lunar observing societies, around the world, would like to join this loose federation of LTP interests, please let me know. It makes sense to share resources, especially when observing repeat illumination events, and when issuing LTP alerts.

LTP Reports: No LTP reports were submitted for December.

Routine Reports: Here is a selection of reports received during December that can help to re-assess some past LTP observations:

Theophilus: On 2012 Dec 19 UT 08:16-08:19 Maurice Collins (RASNZ) imaged Theophilus (see Figure 1) under similar illumination to the following LTP report from almost exactly 19 years earlier:

On 1993 Dec 19 at UT 16:00-17:00 S. Beaumont (Cambridge, UK, 12" reflector, x230) observed in Theophilus that the "c.p. > reddish brown tint to SW (on peak?)" but suspected that it was probably spurious color, however no color was seen later. The ALPO/BAA catalog ID=469 and the weight=3. The ALPO/BAA weight=2.

Figure 1. *Theophilus as imaged by Maurice Collins (RASNZ) on 2012 Dec 19 UT 08:16-08:19 with north roughly towards the top.* ***(Left)*** *The original image.* ***(Right)*** *Artificial spectral dispersion added.*

In Maurice's original image, no sign of color can be seen at the location mentioned by Sally Beaumont, however by adding some opposite image offsets to the red and blue channels, some artificial spectral dispersion can be simulated i.e. spurious color. This does put some red or brown tint on the floor on the south west of Theophilus, but as is often the case with the spurious color explanation (whether it be atmospheric induced, or chromatic aberration somewhere in the optics), the color fringes are usually visible on bright dark boundaries elsewhere, if one is prepared to look. Fainter color tinges (light red or light blue) can also be created on brightness gradients, so long as the gradients are in the direction of the spectral dispersion effects – however again the effect should be visible on other similar gradient areas. Although the Cameron extended catalogue description above makes no mention of searching for color elsewhere, or whether red/blue filters were tried in order to look for a blink effect (a true color LTP would blink when changing between red and blue filters, spectral spurious color effects do not – unless affected badly by Rayleigh scattering in our atmosphere), it does state that the color was not visible later. The Moon was at an altitude ranging from 31°-33° during the time of the original LTP report, quite respectable from the high latitude of the British Isles. Therefore for now, this case remains unsolved and the LTP shall remain at a weight of 2, in view of the observer's excellent record of observing based upon past observations and sketches.

Proclus: On 2012 Dec 19 UT 02:12-02:13 and 02:15-02:22 Bob O'Connell (ALPO) observed Proclus under the same illumination conditions as the following LTP report:

> *Proclus 1969 Jul 20 UT 03:55-04:15 Observed by Gergoulis, Morley, Sevra, Skinner, and Naumann (Edinburg, TX, 17" reflector, x169) "Texas group got a blink (red, Trident MB) on NW wall. Varied extremely. Increased in brightness in red. Clouds stopped obs. 5 confirmed visually. (moon nr. horizon, Apollo 11 watch. No blink if spurious?)." NASA catalog weight=3 (average). NASA catalog ID #1170. ALPO/BAA weight=3.*

The following report is largely copied from the extensive notes that Bob supplied: He observed, using a 9.25 inch Celestron f/10 SCT and DMK 41AU02.AS monochrome video camera. The setting waxing crescent Moon was 28° above the western horizon at his observing site and seeing was in the poor 2-3/10 range (breezy wind and temperature dropping). He took a 30-second video through a Wratten 29 (glass) filter at 02:12 UT, and a second 30-second video through a Wratten 44a (gelatin) filter at 02:13 UT (See Figure 2). This tried to mimic the filters used in the electronic trident Moonblink device, although he did not know at the time precisely what filters were used in 1969, but assumed that they would be a similar red and blue color. No color corresponding to the 1969 LTP location could be seen, although there was some brightness saturation on the NW rim.

After capturing the videos, because the Moon was shortly going to set below the western tree line, Bob observed visually Proclus crater with the same filters, from 02:15 to 02:22 UT, at ~130x magnification. He comments that the Wratten 44a filter let through more light than the Wratten 29 filter to his eyes. This was the opposite of what the camera detected (See Figure 2). This maybe because the CCD chip sensitivity, which has a peak sensitivity at 500 nm, falls away faster at shorter wavelengths, than at longer wavelengths, compared to the eye. Also all Wratten filters leak near IR light, which can make CCD comparisons with visual observations difficult.

Figure 2. *Proclus as imaged by Bob O'Connell on 2012 Dec 19 UT 08:16-08:19 with north towards the top.* ***(Left)*** *The blue/green Wratten 44a filter image.* ***(Centre)*** *The deep red Wratten 29 filter image.* ***(Right)*** *The Wratten 44 A image registered with, and normalized to, the red Wratten 29 image, and then placed into the green and blue channels. This is effectively a color image representation.*

From his visual observation, Bob noted that brightest area at Proclus (and in entire FOV) was the brilliant northern inner wall of the crater – this is the general area of the visual "blink" reported in the original 1969 observation and is normal at this Colongitude of 339°. Curiously, under the poor seeing conditions present for his visual observation, it also visually appeared noticeably brighter in the W44A. Given this fact, Bob, found it odd that the original LTP report noted *"Increased in brightness in the red"* which *"Varied extremely"*. He wondered if the latter original LTP description could be due to a low-altitude Moon and the

associated greater atmospheric dispersion of blue light (inversely proportional to the fourth power of wavelength). At the time of the 1969 LTP the Moon was at an altitude range of 10° to 5°, in other words very low, and probably starting to suffer noticeable refractive distortions to its shape towards the end of the session. Assuming these UTs quoted in the Cameron catalog are correct, then the Moon blink effect could not only be caused by the Rayleigh scattering effect at short wavelengths, but could also be tricked by substantial seeing/turbulence effects at this altitude above the horizon, and this might give rise to the "variations" seen when the filters were switched. Furthermore the 1969 observation ceased due to clouds, and these nearly always have turbulence associated with them. Therefore in the interest of safety, I think that the ALPO/BAA weight of 3 can no longer be justified, however in view of the fact that we do not have the observers actual notes, I would like to retain this as a LTP observation, but reduce its weight from a 3 to a 1 so that it does not contribute much to the statistics any more.

Torricelli: On 2012 Dec 20 UT 02:00-02:15 and 03:00-03:45 Jay Albert, using a Celestron 11" (transparency 4, seeing 7 to 8 to 4-5 out of 10) observed Torricelli under very nearly the same illumination conditions as the following LTP report:

> *Torricelli 2011 Dec 31 UT 16:39-17:00 R.Braga (Milan, Italy, 80mm refractor) found the north rim or Torricelli to be very bright at the start of the observing session but dimmed considerably at around 17:00UT. Observer not sure on the normal appearance of this crater. In view of the seeing conditions and small aperture, this LTP is being given an ALPO/BAA weight of 1.*

The first session was visual and lay slightly outside the similar illumination constraints of +/-0.5° by about 20 minutes. Jay noted that the north rim of the crater did not appear abnormally bright. The brightest part was where the north wall met the north wall of Torricelli R. He used 400x and observed visually at the two times listed above, the latter at 224x, and there was no apparent change. An image was taken at 02:20UT and can be seen in Figure 3. Similarly to the visual observation, it does not show the north rim to be very bright. Therefore I will increase the Braga LTP report from a 1 to a 2, but will not take it any higher due to the seeing and small aperture size being used.

Figure 3. *Torricelli as imaged by Jay Albert on 2012 Dec 20 UT 02:20 with north towards the top, This has been sharpened and contraststretched. Note the larger ghost crater that Torricelli resides within.*

Suggested Features to observe in March: For repeat illumination LTP predictions for the coming month, these can be found on the following web site: http://users.aber.ac.uk/atc/tlp/tlp.htm. By re-observing and submitting your observations, we will get a clear understanding of what the feature ought to have looked like at the time. Only this way can we really fully analyze past LTP reports. 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.

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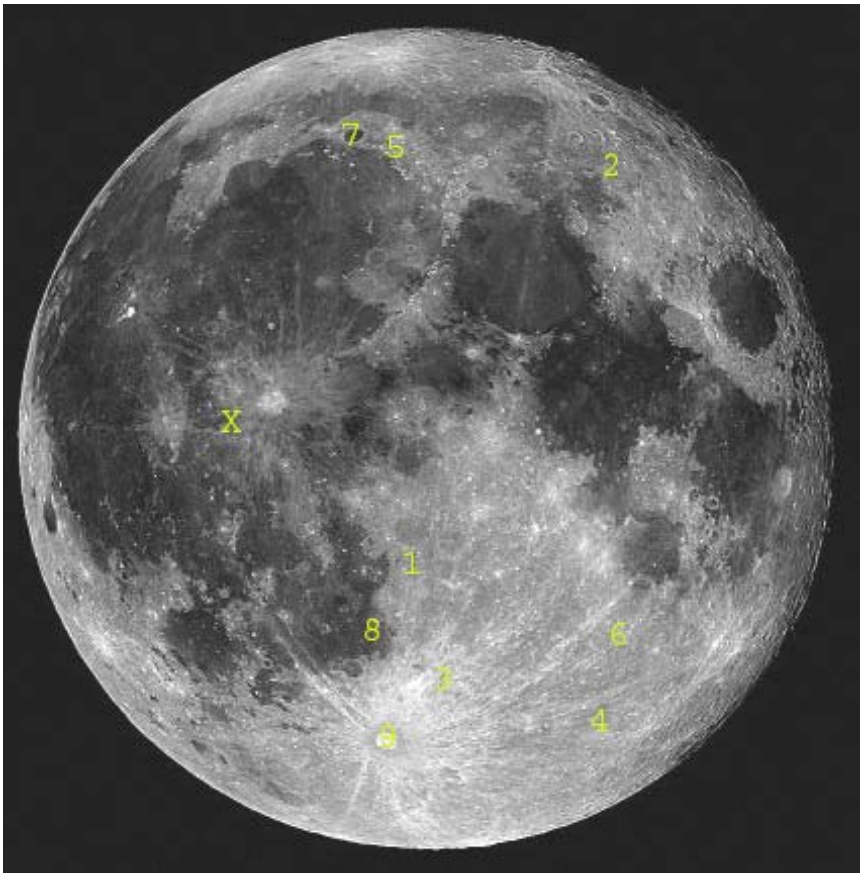
KEY TO IMAGES IN THIS ISSUE

1. **Alphonsus**
2. **Cepheus**
3. **Gemma Frisius**
4. **Janssen**
5. **Montes Alpes**
6. **Piccolomini**
7. **Plato**
8. **Rupes Recta**
9. **Tycho**



FOCUS ON targets

Wrinkle Ridges & Rilles (March)
X = Mare Insularum (May)