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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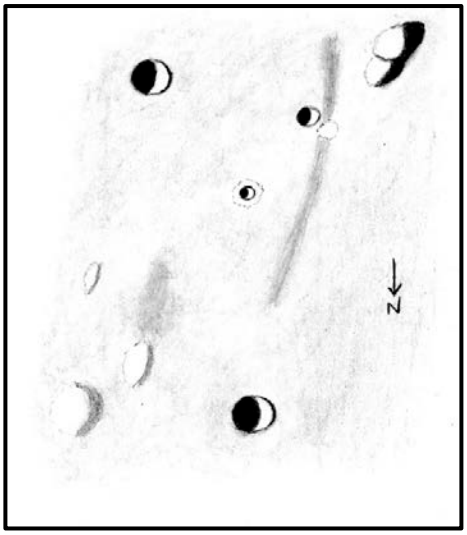
17 Autumn Lane, Sewell, NJ 08080
RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – OCTOBER 2014

ARCHIMEDES epsilon



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
June 7, 2014 02:44-03:10 UT, 15 cm refl, 170x, seeing 7-8/10

I drew this area on the evening of June 6/7, 2014 before the moon hid ZC 1731. This area is north of the conspicuous crater Archimedes. The peak Archimedes epsilon appears to be double with a slightly larger southern part. There is a fairly sharp point on its southwest end, and a strip of shadow dividing it in two. Archimedes epsilon is otherwise an isolated feature, not part of any group of peaks. Several modest but crisp craters are nearby. Archimedes D is nearest to epsilon, and Archimedes C is larger and farther to the east. The latter showed a bright interior. The small pit Archimedes U is north of D and C, and has a modest halo. Aristillus B is north of those three craters, and is much like Archimedes C, but not quite as bright. A relatively sharp wrinkle extends from just east of Archimedes epsilon toward Aristillus B, but is interrupted by a bright spot just west of Archimedes D. Three low hills are east of Aristillus B. The smallest of this bunch is the lightest and has the most distinct shadowing. An extremely vague wrinkle of sorts is south of the hill nearest to Aristillus B. The widest of these three hills is round, much like a dome, and is a short distance west of Aristillus itself (not drawn).

LUNAR CALENDAR
OCTOBER-NOVEMBER 2014 (UT)

Oct	01	19:33	First Quarter
	06	09:41	Moon Perigee: 362500 km
	08	10:51	Full Moon
	08	10:55	Total Lunar Eclipse
	08	17:44	Moon Descending Node
	12	09:58	Moon-Aldebaran: 1.4° S
	13	13:34	Moon North Dec.: 18.5° N
	15	19:12	Last Quarter
	18	06:05	Moon Apogee: 404900 km
	23	00:46	Moon Ascending Node
	23	21:45	Partial Solar Eclipse
	23	21:57	New Moon
	25	16:04	Moon-Saturn: 1.1° S
	28	01:03	Moon South Dec.: 18.5° S
	31	02:48	First Quarter
Nov	03	00:21	Moon Perigee: 367900 km
	05	03:13	Moon Descending Node
	06	22:23	Full Moon
	08	19:41	Moon-Aldebaran: 1.5° S
	09	23:12	Moon North Dec.: 18.6° N
	14	15:16	Last Quarter
	15	01:56	Moon Apogee: 404300 km
	19	08:18	Moon Ascending Node
	19	16:01	Moon-Spica: 2.8° S
	22	12:32	New Moon
	24	08:17	Moon South Dec.: 18.6° S
	27	23:11	Moon Perigee: 369800 km
	29	10:06	First Quarter

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.alpo-astronomy.org.** I invite you to spend a few minutes browsing the Section Pages to learn more about the fine work being done by your fellow amateur astronomers.

To learn more about membership in the A.L.P.O. go to: **http://www.alpo-astronomy.org/main/member.html** which now also provides links so that you can enroll and pay your membership dues online.

When submitting observations to the A.L.P.O. Lunar Section

In addition to information specifically related to the observing program being addressed, the following data should be included:

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

Full resolution images are preferred-it is not necessary to compress, or reduce the size of images. *Additional commentary accompanying images is always welcome.* **Items in bold are required. Submissions lacking this basic information will be discarded.**

Digitally submitted images should be sent to both

Wayne Bailey – wayne.bailey@alpo-astronomy.org
and Jerry Hubbell –jerry.hubbell@alpo-astronomy.org

CALL FOR OBSERVATIONS: FOCUS ON: GHOST CRATERS

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 **November 2014** edition will be **Ghost Craters.** 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 this to your observing list and send your favorites to (both):

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

Jerry Hubbell –jerry.hubbell@alpo-astronomy.org

Deadline for inclusion in the Ghost Craters article is October 20, 2014

FUTURE FOCUS ON ARTICLES:

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

Subject	TLO Issue	Deadline
Oceanus Procellarum-Reiner Gamma	January 2015	December 20, 2014.

LUNAR TOPOGRAPHICAL STUDIES

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

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

Assistant Coordinator – Jerry Hubbell – jerry.hubbell@alpo-astronomy.org

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

OBSERVATIONS RECEIVED

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 5, 11, 12, 13, 14 & 15 day Moon, Arago, Aristarchus, Hevelius, Humboldt, Langrenus-Petavius, Mare Crisium, Mare Humorum, Mare Smythii-Neper, Schickard, Tycho & Wargentin.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Bela-Tazio, Julius Caesar-Sabine, Montes Appenninus-Ina & Montes Haemus-Dorsum Buckland.

ROBERT HAYS - WORTH, ILLINOIS, USA. Drawings of Archimedes ε & Cuvier O.

RICHARD HILL – TUCSON, ARIZONA, USA. Digital images of Capella, Hainzel, Philolaus, Plinius, Stöfler, Thebit & Tobias Mayer-Encke.

PAOLO LAZZAROTTI – MASSA, ITALY. Digital images of Aristoteles-Lacus Mortis, Atlas-Hercules, eclipsed moon, Isidorus-Gutenberg, waxing Gibbous Moon & South Pole.

DAMIAN PEACH-SELSEY, WEST SUSSEX, UNITED KINGDOM. Digital images of Aristarchus, Moretus & Pythagoras.

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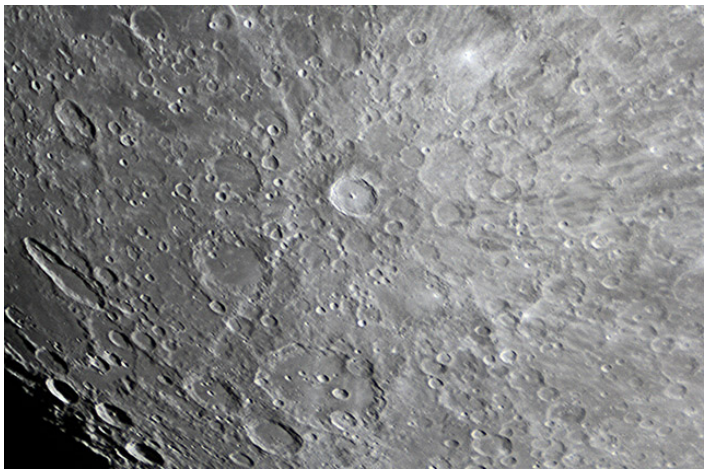
RECENT TOPOGRAPHICAL OBSERVATIONS

TYCHO - Maurice Collins-Palmerston North, New Zealand. September 6, 2014 08:33 UT. Seeing A III-IV. ETX-90 f/13.8, ASI120MC.



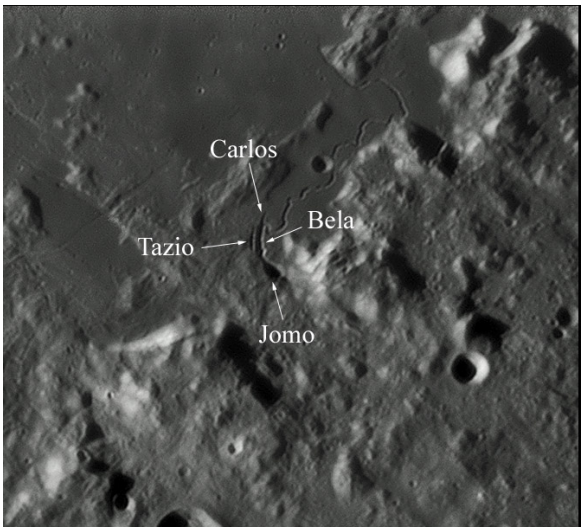
RECENT TOPOGRAPHICAL OBSERVATIONS

MARE SMYTHII-NEPER - Maurice Collins-Palmerston North, New Zealand. September 9, 2014 09:39 UT. ETX-90.

JULIUS CAESAR-SABINE - Howard Eskildsen-Ocala, Florida, USA. August 16, 2014 11:02 UT. Seeing 7/10, Transparency 4/6. Mewlon 250, 1.5x Barlow, IR block filter, DMK 41AU02.AS.

This region of the moon is particularly interesting to observe and ponder under many illuminations. However, this image was particularly difficult to process due to scattered light from passing thin cirrus clouds. I did not even realize that they were there until twilight revealed their presence. As a result the image is grainier than usual and there is a straight-line processing artifact visible from the right upper margin that angles towards the lower margin of Julius Caesar.

Or should I have stated what is left of Julius Caesar? This partly obliterated crater at the top of the image was scoured and gored by outflow from the Imbrium impact, but not quite buried and seems more like a ghost than a crater. Perhaps it is best that it was viewed through ethereal passing clouds.

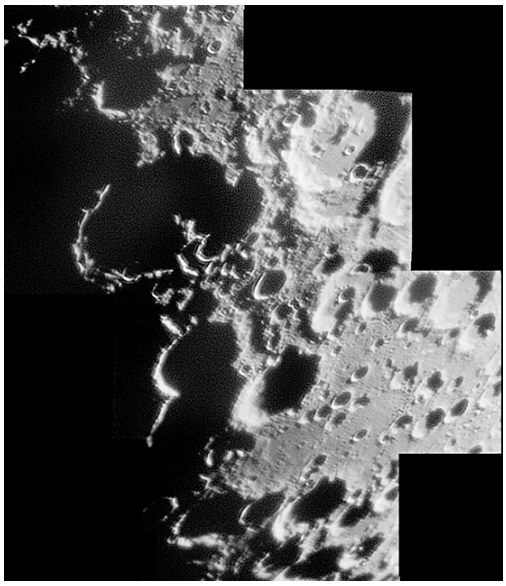


BELA-TAZIO - Howard Eskildsen-Ocala, Florida, USA. August 16, 2014 00:02 UT. Seeing 8/10, Transparency 4/6. Mewlon 250, 1.4x Barlow, IR block filter, DMK 41AU02.AS.

In the process of checking the labels, I viewed the area in the LROC QuickMap and was startled to find the named objects Bela, Carlos, Jomo, and Tazio. I had never heard of these before, and they are certainly not ordinary craters. To me they look like faults and collapse features at the head of the Hadley Rille.

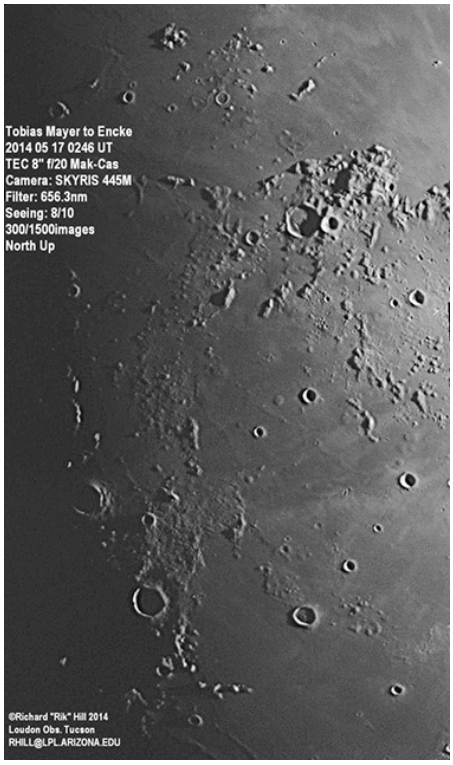
Ed. Note: I'd never heard of these 4 names either, so looked them up on the Planetary Nomenclature Gazeeteer (which is supposed to list all IAU approved names). According to it, Bela, Carlos and Taizo are approved names, but Jomo doesn't show up at all. Is Jomo an official name that just hasn't made it to the Gazeteer?

RECENT TOPOGRAPHICAL OBSERVATIONS



STÖFLER – Richard Hill – Tucson, Arizona, USA May 17, 2013 02:18 UT. Seeing 8/10. TEC 8" f/20 MAK-CASS, DMK21AU04. 656.3 nm filter.

This is the highlands area around the large crater Stofler. That crater is the one filled with shadow on the terminator just above center. The smaller Faraday is also filled with shadow just to the right of Stofler. Note the jumble of small craters on the south edge of these two craters. Above and to the right is the large crater Maurolycus. Older craters to the below and to the left were all but obliterated when this crater was formed about the same time as Stofler and Faraday (3.9 billion years ago). Now look just below Maurolycus, center right in this image, to the pummled crater Clairaut with the young crater in the bottom. Look just above that to bean shaped Clairaut D with sunlight just catching the tops of it's walls. More odd shaped craters can be seen just above the mostly shadow filled crater Jacobi at the bottom of the image.

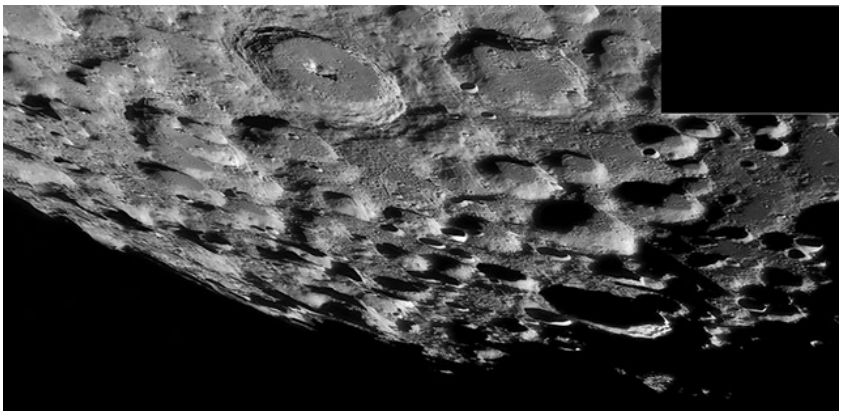


TOBIAS MAYER-ENCKE – Richard Hill – Tucson, Arizona, USA May 17, 2014 02:46 UT. Seeing 8/10. TEC 8" f/20 MAK-CASS, SKYRIS 445M. 656.3 nm filter.

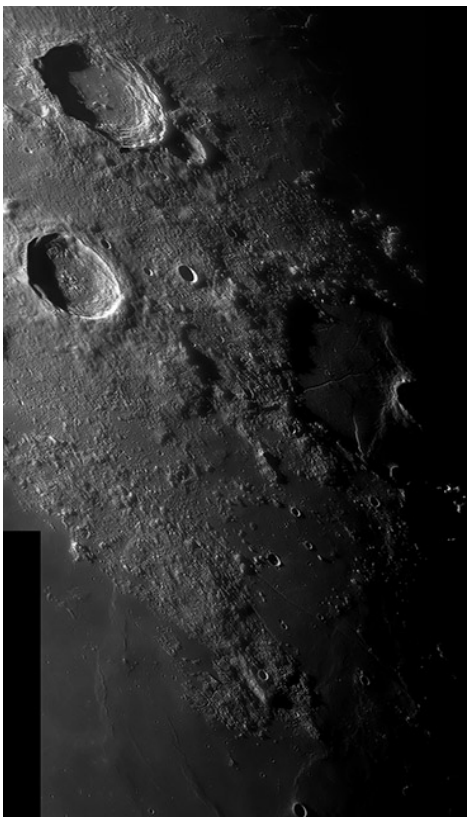
This image may contain more domes than any equivalent sized region of the moon. It's been processed with a bit more contrast than usual to bring them out. Up near the top we see the polygonal crater Tobias Mayer. Near the bottom, filled with shadow is Encke with Kepler just above. In the middle are two medium sized craters oriented at a diagonal to the image frame. The upper crater is Milichius and slightly above and between them is Dome Milichius, a 10km diameter dome. The other crater is Milichius A and just below it you can see yet another dome. Forming a long skinny right triangle with these two craters to near the right edge of the image is the crater Hortensius. You can see 5 very clear domes just above this crater. These are the largest and most obvious domes but more can be seen around Tobias Mayer. To the right of encke is the crater Kunowsky around which you can see even more domes. It's quite a region!

SOUTH POLE– Paolo Lazzarotti – Maaciano (GR), Tuscany, Italy. August 19, 2011 04:22 UT. Gladius XLI 400mm Cassegrain f/16, 2x barlow, 0.107 "/px. Experimental Sony ICX285 camera, Baader R filter.
http://www.lazzarotti-hires.com/wp/wp-content/uploads/2014/09/southpole20110819.jpg

Ed. Note: See MORETUS below for different lighting conditions.

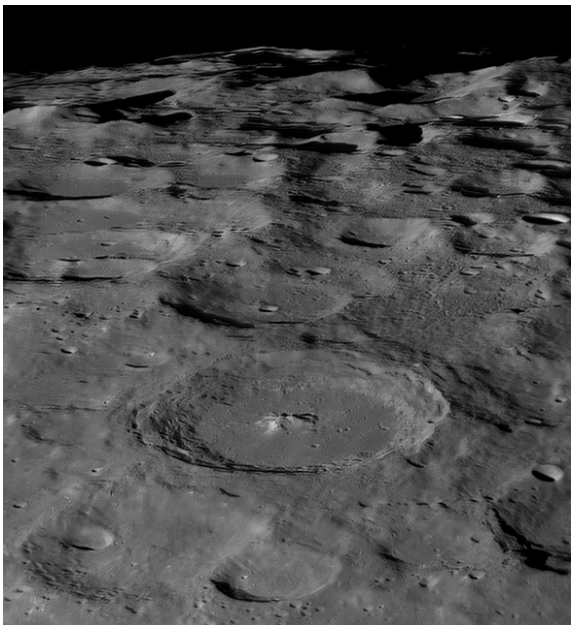


RECENT TOPOGRAPHICAL OBSERVATIONS



ARISTOTELES-LACUS MORTIS– Paolo Lazzarotti – Maaciano (GR), Tuscany, Italy. August 19, 2011 03:34-03:45 UT. Seeing 5-7/10, Transparency 5/5. Gladius XLI 400mm Cassegrain f/16, 2x barlow, 0.107 "/px. Experimental Sony ICX285 camera, Baader R filter.

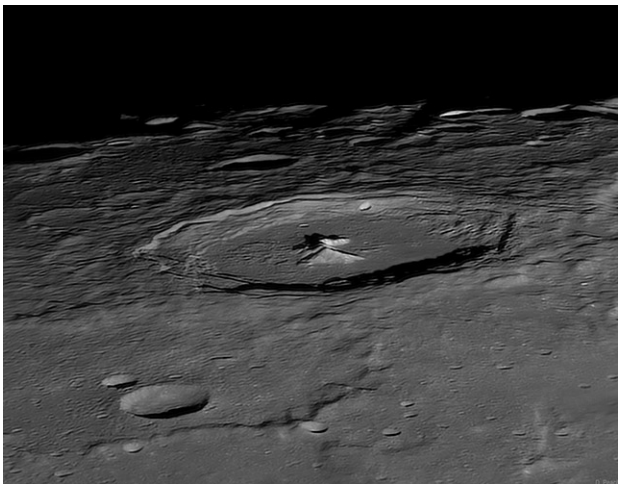
http://www.lazzarotti-hires.com/wp/wp-content/uploads/2014/09/aristoteles-eudoxus-lacusmortis20110819_lazz.jpg



MORETUS–Damian Peach –Selsey, West Sussex, United Kingdom. April 18, 2014.

http://www.damianpeach.com/lunar14/moretus_2014_04_18dp.jpg

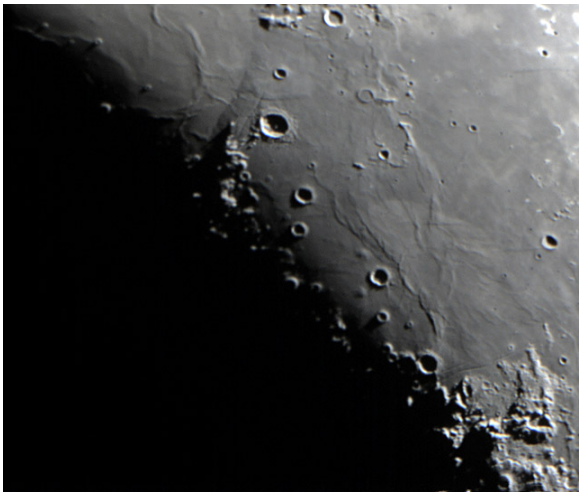
Ed. Note: See SOUTH POLE above for different lighting.



PYTHAGORAS–Damian Peach –Selsey, West Sussex, United Kingdom. April 14, 2014.

http://www.damianpeach.com/lunar14/pythagoras_2014_04_14dp.jpg

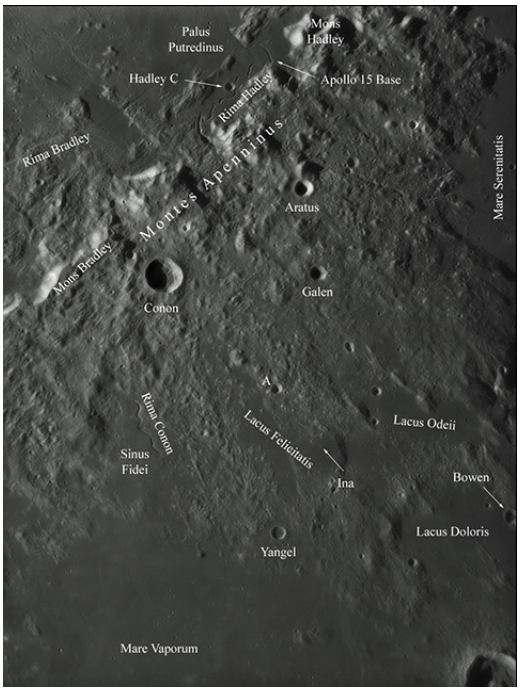
ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



ARAGO- Maurice Collins- Palmerston North, New Zealand. August 31, 2014 08:03 UT. C-8 SCT, ASI120M.
The domes around Arago were nicely on the terminator, so I grabbed an image of it. Seeing was poor so was not the best night for imaging, but visually it was fine at lower magnifications. I did have some problems with high cirrus clouds, but they eventually passed.

15 day MOON - Maurice Collins-Palmerston North, New Zealand. September 10, 2014 10:05-10:28 UT. ETX-90. North down.

Once again it was fairly clear (some high clouds), though poor seeing most of the time I was imaging, improving after the battery was flat of course! Mare Crisium was well placed near the terminator so got a good look at the hills to the east of the basin. Think the colour differences on the mare showed up nice visually, and over on the western limb NW of Aristarchus the mare was a distinct green/yellow hue, much like the Aristarchus plateau was, but more green than its yellow. Pretty colours and easily seen even with the 3.5" aperture last night. Very pretty. The images show it more as grey, wonder if the white balance is over compensating? The LPI camera used to record the colours nicely but the ASI imager is very weak on its colour response I notice. Shows that you can't beat just looking!



MONTES APPENNINES-INA - Howard Eskildsen-Ocala, Florida, USA. August 16, 2014 10:56 UT. Seeing 7/10, Transparency 4/6. Mewlon 250, 1.5x Barlow, IR block filter, DMK 41AU02.AS.

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS

MONTES HAEMUS-DORSUM BUCKLAND - Howard Eskildsen- Ocala, Florida, USA. August 16, 2014 10:58 UT. Seeing 7/10, Transparency 4/6. Mewlon 250, 1.5x Barlow, IR block filter, DMK 41AU02.AS.

Rather than label all features on this image, only a few that appeared quite meaningful were selected. At the bottom of the image the scoured remains of the southwestern rim of Mare Serenitatis appear as the Haemus Mountains. The direction of flow of the energetic ejecta from Imbrium (northwest of this image) is obvious from the shape of the modified mounds. Comparison of these scarred mountains with the rubble descending from the Apennines (visible on the upper left of the image) reveals the gradation of energy of the Imbrium ejecta. The most energetic ejecta raged across the Haemus landscape and feathered out distal to those mountains, while the less energetic ejecta piled up as the tapering remnants of the Apennines and buried part of the original Serenitatis rim.

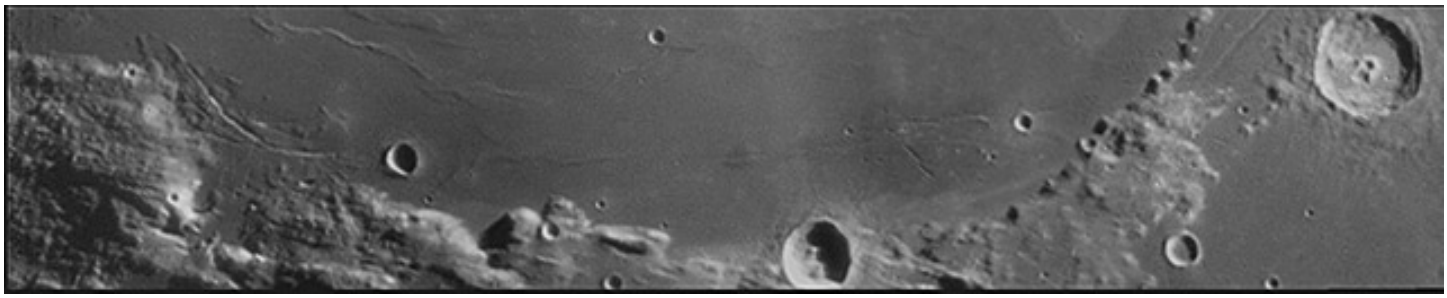
Farther north, the crater Sulpicius Gallus and rilles of the same name mark the margin of Serenitatis. Gaius Sulpicius Gallus was a Roman general, statesman, and astronomer. Wikipedia describes him as having "commanded the 2nd legion in the campaign against Perseus, king of Macedonia and gained great reputation for having predicted an eclipse of the moon on the night before the Battle of Pydna (168 BC)." He was quoted by Pliny as an expert in astronomy.

The rill has an arcuate appearance on the margin of the mare caused by settling of the massive mare lava. Most likely, this same settling led to the compressive forces that created Dorsum Buckland to the upper right of the rill.

Finally, two curious collapse features are noted in this image. The lower one appears nearly stellate and lies at the southern end of a small wrinkle ridge. The upper left linear collapse feature looks like a crater chain on this image, but review on the QuickMap reveals its true nature. Further scanning of the image and of QuickMap show other collapse features as well.

It is interesting to review all of these selenological (lunar geological) forms and compare the sequence of events that created them. The fourth dimension of time is clearly demonstrated here.

Ed. Note: Compare to PLINIUS below for opposite lighting.



PLINIUS – Richard Hill – Tucson, Arizona, USA June 20, 2010 03:01 UT. Seeing 8/10. C-14 SCT, 2x barlow, f/22, DMK21AU04. 656.3 nm filter.

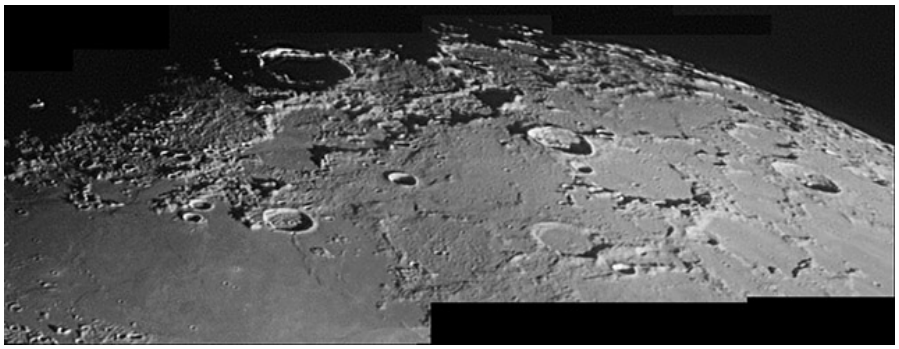
Here we have another strip of interesting features in a less noticed portion of the moon on the south "shore" of Mare Serenitatis. Bobillier is the perfectly round, 7km diameter crater in top center. Plinius is the large 44km diameter crater on the right edge with Rimae Plinius just peeking out above. This crater sits on the border between Mare Serenitatis and Mare Tranquillitatis below and to the right. Why did I not use the larger crater on the left side to define that extrema? That is the crater Sulpicius Gallus, obviously named after a Roman. That name would have made for a large image title!

Just to the left of S.Gallus are the beautiful Rimae Sulpicius Gallus. Above this is the wrinkle named Dorsum Buckland. Below S. Gallus are the round smooth Montes Haemus. The large crater in the bottom middle of this image is Menelaus with the Rimae Menelaus above and to the right. Tacquet is the small crater between Menelaus and Plinius and to the right o that crater is Promontorium Archerusia. The crater below and to the left of Plinius is Al-Bakri

Ed. Note: Compare to MONTES HAEMUS-DORSUM BUCKLAND above for opposite lighting.

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS

PHILOLAUS – Richard Hill – Tucson, Arizona, USA January 21, 2013 23:46 UT. Seeing 8/10. TEC 8" f/20 MAK-CASS, DMK21AU04. 656.3 nm filter.



This image of the northern region of the moon was taken a couple days after first quarter. Still in shadow on the terminator is the large crater Philolaus and above and to the right is the large ruined crater Mouchez. Directly below Philolaus is Fontenelle on the shores of Mare Frigoris, with a small crater nearly on center inside. Also on that floor you can just make out a couple of the rimae that ring the interior of that crater. Below Fontenelle at the bottom left of this image is the large Mare Frigoris that can be found just north of Plato.

Moving to the right of Fontenelle you can see a shallow, barely identifiable large ghost crater Birmingham. Just past it is a nicely defined, but shallow crater, Epigenes. Above and slightly right from Epigenes, is another large shallow crater, Goldschmidt with a smaller crater Anaxagoras on the left side. Below and left is the crater Barrow. This is one that bears watching during sunrise as a mountain pass in the sun ward wall casts a wedge of sunlight across its broad flat floor.

Above Barrow we have a very well defined crater, Scoresby and two more in line above it, Challis and Main. Above Main is a large depression with a flat floor named after the arctic explorer Richard Byrd with Gioja on it's lower wall. This was not a real favorable libration, so this is about as far north as you can identify features in this image.

GIBBOUS MOON– Paolo Lazzarotti – Maaciano (GR), Tuscany, Italy. August 17, 2005. AP Starfire 130mm f/6 apo, prime focus. Canon 300D.

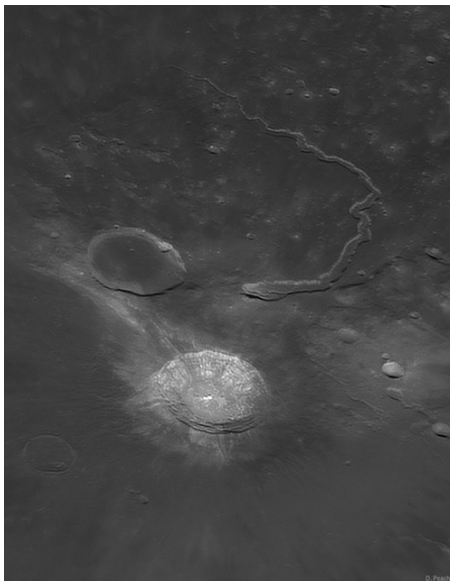
http://www.lazzarotti-hires.com/wp/wp-content/uploads/2014/09/moon20050817.jpg

Ed. Note: Notice how bright Aristarchus appears even though it's close to the terminator and has dark bands on its inner wall.

ATLAS-HERCULES– Paolo Lazzarotti – Maaciano (GR), Tuscany, Italy. September 16, 2011 00:28 UT. Seeing 5-7/10, Transparency 4/5. Gladius XLI 400mm Cassegrain f/16, 2x barlow, 0.107 "/px. Experimental Sony ICX285 camera, Baader R filter.

http://www.lazzarotti-hires.com/2014/09/atlas-hercules.html

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



ARISTARCHUS–Damian Peach –Selsey, West Sussex, United Kingdom. April 14, 2014.
http://www.damianpeach.com/lunar14/aristarchus_2014_04_14dp.jpg

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LUNAR TRANSIENT PHENOMENA

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

LTP NEWSLETTER – OCTOBER 2014

Dr. Anthony Cook - Coordinator

Observations from the following observers were received in August: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Alphonsus, Aristarchus, Bullialdus, Copernicus, Daniell, Fracastorius, Plato, Proclus, Promontorium Agarum, Ross D, Sinus Iridum, and Tycho. Maurice Collins (New Zealand - ALPO) imaged Arago, Bode, Clavius, Eddington, Kepler, Sinus Aestuum, Tycho, and obtained several whole disk image mosaics. Marie Cook (Mundesley, UK - BAA) observed Aristarchus and Plato. Rik Hill (Tucson, AZ - ALPO) observed Eratosthenes and Schiller.

News: I attended the European Planetary Science Congress in Lisbon, Portugal on 7-12 September. The Russians are planning on putting dust and electric field measuring instruments onboard their future "Luna" landers – at least some of the published LTP papers rely upon charged dust particles as an explanation, so this may be relevant to testing the feasibility of such LTP theories in future. The Luna programme will restart in 2017 with Luna 25, and they intend to fly one mission per year after that, often a combination of an orbiter and a lander. I was unable to attend the Friday session at the conference about lunar science, so was not sure whether any news of LADEE results were announced, or not. There were a couple of very good lunar impact flash papers though by well known experts in this area: http://meetingorganizer.copernicus.org/EPSC2014/EPSC2014-487-1.pdf and http://meetingorganizer.copernicus.org/EPSC2014/EPSC2014-571-1.pdf.

The real show stopper though, at the EPSC meeting were the initial results from ESA's Rosette mission to Comet 67P/Churyumov–Gerasimenko. The interesting part of this that I thought might be relevant to LTP studies was that the surface of the comet presents an interesting analogy on how the Moon might out-gas. Once the comet starts to become active, as it gets closer to the Sun, we shall see how dust plumes are kicked up above the surface, and maybe get a better handle on what morphological features to look for on the comets surface where gas is escaping, either through seepage, or

explosively. The main difference with the Moon though is that the gravity is stronger than on the surface of a comet, and the Moon is significantly less volatile rich per unit volume than a comet. But anyway it might give us some better understanding of what happens when gas is emitted from below the surface on an airless world.

After asking last month about whether anyone knows anything more about the astronomer: A. Stanley Williams, who in 1882 Aug 21 & 23 observed Curtis crater to be abnormally bright (See his detailed set of Moon's Age brightness measurements of this crater, as mentioned in the Royal Astronomical Society's Astronomical Register, Vol 21, p109-112, in 1883 (http://articles.adsabs.harvard.edu//full/1883AReg...21..109./0000120.000.html). Bill Leatherbarrow emailed about the weight of the LTP observation, to say that "*I think you are probably right to keep this at 3. However, you ask for comments on the observer's credentials: Stanley Williams was one of the BAA's legendary observers of the 19th century, skilful and usually reliable. He did make many lunar observations, but he cast his observing net wide and I would not consider him primarily a lunar observer.*"

At the end of September Prof Arlin Crotts' book "*A Future Moon*" is due to be published by Cambridge University Press. If readers remember, Prof Crotts has published several comprehensive papers on LTP in the Astrophysical Journal. So it will be interesting to see what new information, about LTP, he discusses in this book.

LTP Reports: No LTP reports were received in August.

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

Tycho: On 2014 Aug 04 UT 09:00 Maurice Collins imaged this crater with the interior mostly in shadow, and was interested to see if he could detect the central peak (See Fig 1 Left) with the Sun's altitude at 1.5° above the local lunar horizon. He was attempting this because he recalled that an earlier observation, by Brendan Shaw, from 2003 May 09 UT 21:04, showed a faint smudge of a central peak when the Sun was 1.2° above the local lunar horizon (See Fig 1 Right). If you examine the topographic profile through Tycho, then one can deduce that it is not possible for direct sunlight to reach the central peak at a solar altitude of 1.2° - even allowing for the Sun's angular diameter, therefore the light must be scattered off something, most probably the illuminated western rim – the latter should appear as a bright arc if seen from the central peak. However it is curious that if you take a look at table 1, that you see that the central peak is not always visible between these two observations at 1.2° and 1.5° solar altitude – why is this? The non-visibility of the central peak, on the second half of the 2003 May 09 observation, may be due to a low resolution image scale being used. Atmospheric conditions could perhaps explain the lack of the central peak visible on the 2011 Dec 03 Cook observation (take a look at the 2012 Feb LTP newsletter, p19), though it is odd that visual observations by Jay Albert and Peter Grego in 2013 and 2011 respectively, failed to spot the central peak, though Maurice could see it visually. Maybe CCDs can detect the weakly illuminated central peak better than the eye, at this stage in the illumination? Anyway to be sure, in Table 2, are dates and times in the next two years when the illumination conditions match those of Brendan Shaw's observation from 2003 May 09. Please have a go at trying to image, or visually observe, the central peak illuminated by internal scattered light. If we get consistent detections of the central peak closer to Brendan's 2003 observation, rather than Maurice's 2014 observation, then we can remove this 2003 observation from the LTP database. If not then we need to scratch our heads as to why no one has observed the central peak at local lunar sunrise as low as Brendan did back in 2003. I understand Maurice will be writing an article for Selenology Today, on the visibility of interior detail inside craters from scattered light off illuminated rims, so please take a look at this when its published.

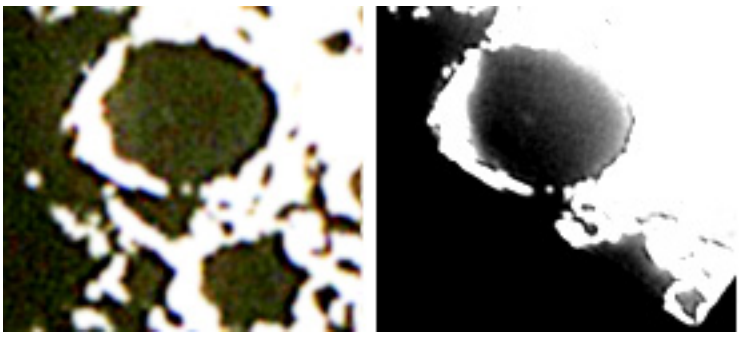

Figure 1. *Contrast enhanced images showing the central peak of Tycho, observed by scattered internal light – north is towards the top.* ***(Left)*** *As imaged by Maurice Collins on 2014 Aug 04 UT 09:00.* ***(Right)*** *As imaged by Brendan Shaw on 2003 May 09 UT 21:04.*

Date	UT_{start}	UT_{end}	Observer	$Alt_{\odot}$(start)°	$Alt_{\odot}$(end)°	Aperture	Observation	C.P. Visible?
2012 May 29	05:12	05:54	Collins	0.57	0.83	20cm	image	no
2011 Dec 03	20:57	21:07	Cook	0.69	0.75	20cm	image	no
2011 Jun 09	20:43	21:17	Shaw	0.76	0.97	?cm	image	no
2003 May 09	21:04	21:09	Shaw	1.21	1.24	13cm	image	yes
2013 Oct 13	00:51	01:25	Albert	1.23	1.43	15cm	eye	no
2011 Dec 03	22:37	22:41	Grego	1.30	1.32	20cm	eye	no
2011 Dec 03	22:42	22:42	Cook	1.33	1.33	20cm	image	no
2003 May 09	21:40	21:41	Shaw	1.43	1.44	20cm	image	no
2014 Aug 04	09:00	09:12	Collins	1.51	1.59	20cm	eye+image	yes
2014 Aug 04	09:15	09:21	Collins	1.61	1.64	20cm	image	yes

Table 1. *A list of observations of Tycho, sorted by local solar altitude, and an indication of whether the central peak was visible or not?*

Date	UT	Date	UT	Date	UT
2014 Oct 02	09:50	2015 May 26	21:42	2016 Jan 18	02:14
2014 Oct 31	22:56	2015 Jun 25	08:47	2016 Feb 16	16:39
2014 Nov 30	12:54	2015 Jul 24	19:43	2016 Mar 17	06:21
2014 Dec 30	03:27	2015 Aug 23	06:55	2016 Apr 15	19:08
2015 Jan 28	18:06	2015 Sep 21	18:45	2016 May 15	07:02
2015 Feb 27	08:17	2015 Oct 21	07:29	2016 Jun 13	18:17
2015 Mar 28	21:39	2015 Nov 19	21:09	2016 Jul 13	05:12
2015 Apr 27	10:05	2015 Dec 19	11:34	2016 Aug 11	16:14

Table 2. *A list of dates and UTs when the illumination conditions for Brendan Shaw's image from Fig 1 (Right) will repeat and the central peak should be visible by scattered light off the western rim of Tycho. Please check that the Moon will be visible in the sky from your observing site, and that it is night time, before attempting this.*

Promontorium Agarum: On 2014 Aug 12 UT 04:10-04:27 Jay Albert (C11 scope, transparency=magnitude 2 , seeing=5/10) observed this region under the same illumination and topocentric libration (to within +/-1°) to a Patrick Moore observation from 1996 Jul 31:

> *On 1996 Jul 31 at 22:40UT P. Moore (Selsey, UK, 15" reflector, x300) noticed a lack of detail in the Cape Agarum area - he would normally have expected to have seen some craterlets. However he would not rate this observation much because the seeing was only III and he did not think that it was an obscuration. However just in case he wanted to record this report in the archives. ALPO/BAA weight=1.*

Jay comments that when he viewed this area there was a lot of detail visible, despite the haze and mediocre seeing. The mountains west face was well illuminated and clearly stood out. There was a tiny craterlet on the floor of Mare Crisium, just north of the mountain, and a few more to the WSW, including the crater Fahrenheit (6 km diameter). An image was also taken later at 04:49, and shows what Patrick Moore should have seen on the night of 1996 Jul 31. Patrick Moore's observation from 1996 was made when the Moon was at an altitude of 20° above the horizon from his observatory housing his 15" reflector. Although the seeing was rated as average, Patrick was really not sure that this was an obscuration, but thought the lack of detail was worth mentioning. Perhaps if somebody else had been observing at the time this could have been eliminated as a LTP? Unfortunately I have no more detail about this observation than Patrick wrote on the back of a postcard! For now I am keeping this report at a weight of 1 on the database.

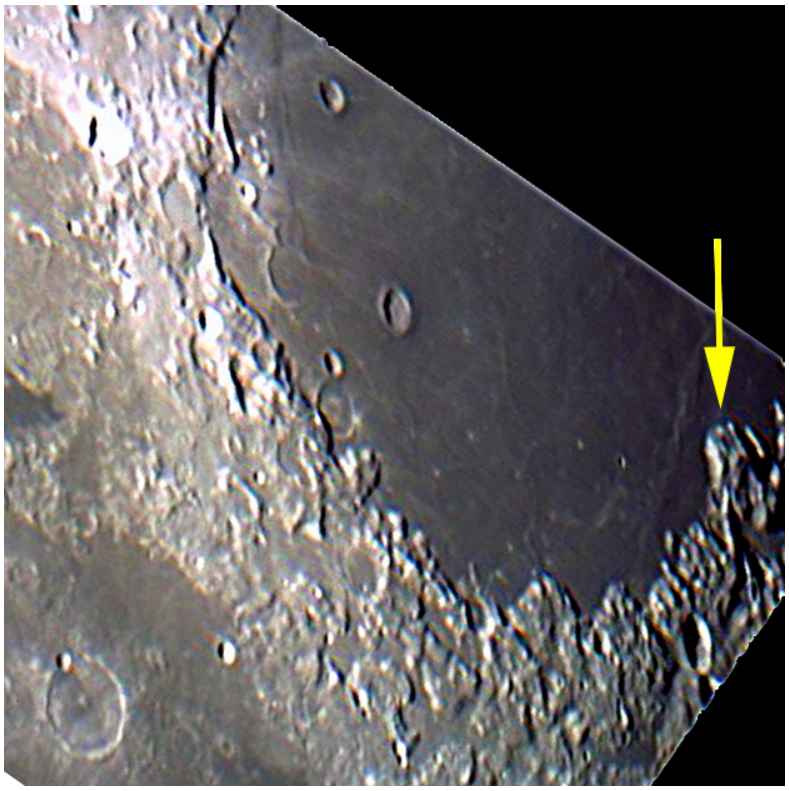

Figure 2. *Promontorium Agarum (arrowed) and W. Mare Crisium as imaged by Jay Albert on 2014 Aug 06 UT 04:49. Image has been sharpened, titled, clipped and rotated with north is towards the top,*

Aristarchus: On 2014 Aug 12/13 UT 23:50-00:00 Marie Cook observed this crater under the same illumination conditions to a couple of past LTP reports:

> *Aristarchus 1969 Jan 05 UT 19:30 Observed by M.Hardaker (Yorkshire, 3" refractor). Small blink just outside the north wall - duration 30 min. ALPO/BAA weight=1.*
>
> *Aristarchus 1969 Dec 26 UT 03:35-03:45 Observed by Kilburn (England, 6" x192) "Suspected faint blink & glow outside of SW(IAU?) wall. Large area was gray toward Herod. Another blink inside between 2 bands at 0330h. At 0345h neither blinks seen. Blink seen in blue (=red event?). Next nite crater was normal." NASA catalog weight=3 (average). NASA catalog ID #1231.*

Marie was using a 90mm Questar, under III (average) seeing conditions with transparency moderate to good. She used red and blue filters and found no blinks in the crater. I am therefore leaving the original weights as they are.

Suggested Features to observe in October: For repeat illumination (and a few repeat libration) 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.

Please note that there will be a Total lunar eclipse on 2014 Oct 08, mostly seen from the Americas, Asia, and Australia. The umbral phase starts at 09:15 UT. Totality runs from 10:25-11:24UT, and the umbral phase ends at 12:34UT. This could be a good time to look for impact flashes.

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, 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 http://twitter.com/lunarnaut.

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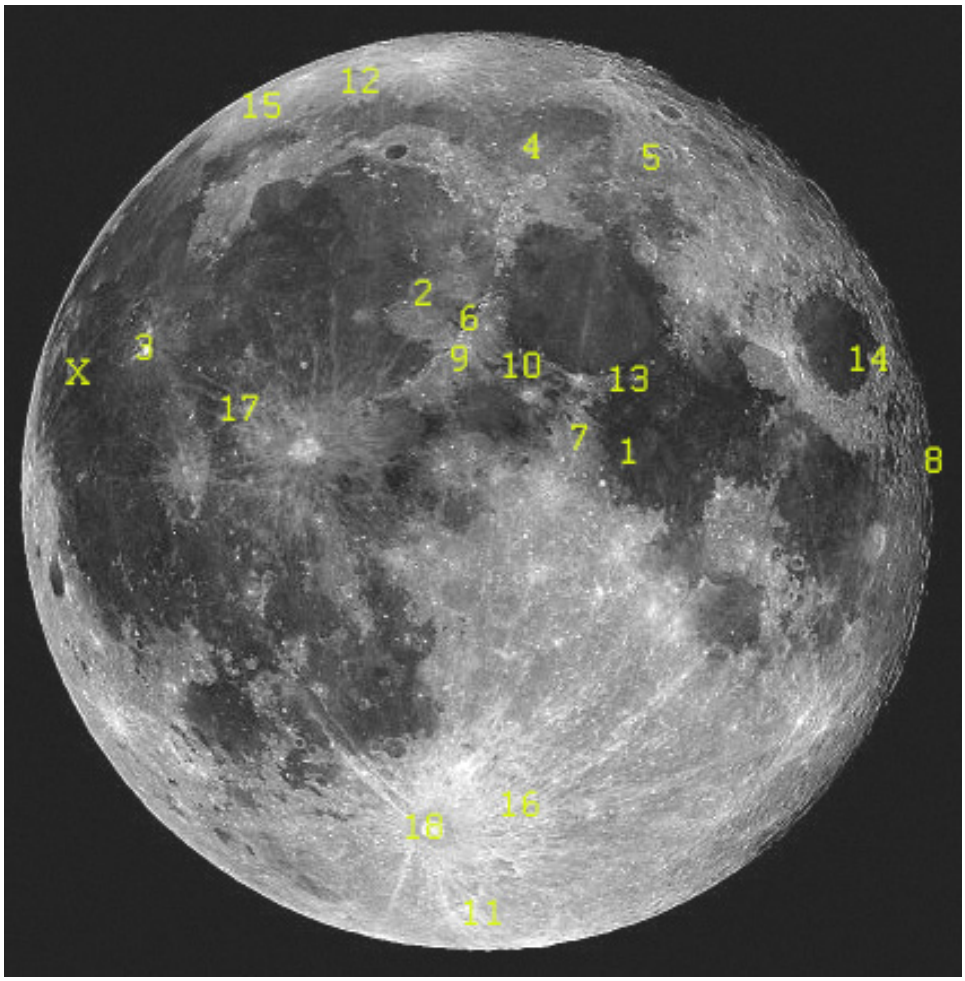
KEY TO IMAGES IN THIS ISSUE

1. **Arago**
2. **Archimedes**
3. **Aristarchus**
4. **Aristoteles**
5. **Atlas**
6. **Bela**
7. **Julius Caesar**
8. **Mare Smythii**
9. **Montes Appennines**
10. **Montes Haemus**
11. **Moretus**
12. **Philolaus**
13. **Plinius**
14. **Promontorium Agarum**
15. **Pythagoras**
16. **Stöfler**
17. **Tobias Mayer**
18. **Tycho**



FOCUS ON targets

X = Oceanus Procellarum-Reiner gamma (January)