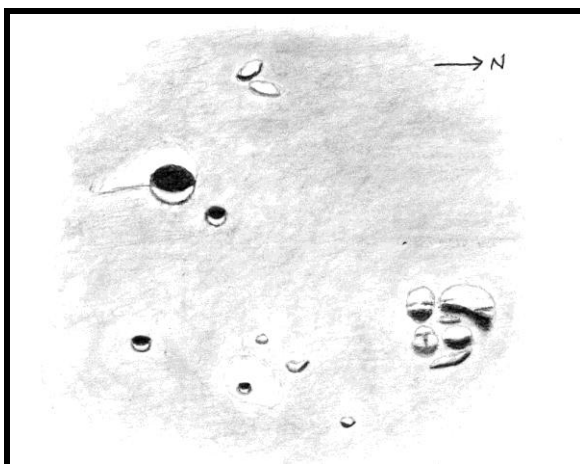




**RECENT BACK ISSUES:** [http://moon.scopesandscapes.com/tlo\\_back.html](http://moon.scopesandscapes.com/tlo_back.html)

## FEATURE OF THE MONTH – FEBRUARY 2014

## EULER $\beta$



**Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA**  
**October 28, 2013 08:52-09:16 UT, 15 cm refl, 170x, seeing 7-8/10**

I sketched this feature and vicinity on the morning of Oct. 28, 2013 before the moon hid omega Leonis. This is not an isolated peak, but a collection of hills reminiscent of Mons Rumker. The largest component is to the northwest, and tapers to a point at its north end. A large, slightly oval hill is to the southwest, and a large round hill is near the center of the complex. These peaks surround a narrow splinter. A conspicuous elongated hill is on the east side of Euler beta; its north end is not far from the north point of the largest component. All of these elevations have bright sunlit sides and dark shadowing. The same cannot be said about the hill on the south-central side. This component is grayer and with lighter shadowing than the others. Several craters and peaks are south and southwest of Euler beta. The largest crater on this sketch is Brayley B, and Brayley F is just to its north. A poorly defined bright area brackets Brayley B to the west and south, and a fuzzy strip of shadow extends southward from this crater. Brayley alpha is the double peak west of Brayley Band F. The Lunar Quadrant map shows it as one peak, but I saw two there. The southern one is brightly sunlit with dark shadow, while the other one is grayer with lighter shadow. Brayley D is east of the Brayley B and F pair, and south of Euler beta. Brayley D is about the same size as F. The smaller pit northeast of Brayley D is Euler K. An irregular bright area surrounds this crater, but it doesn't look like an ordinary halo, and Euler K isn't centered within it. There are three peaks between Euler K and beta. The middle one is chevron-shaped, and the western one looks quite bright. The area between Euler beta and Brayley alpha is very smooth. I could not discern any detail there.

# LUNAR CALENDAR

## FEBRUARY-MARCH 2014 (UT)

Feb	05	12:41	Moon Descending Node
	06	19:22	First Quarter
	08	14:41	Moon-Aldebaran: 2.6° S
	09	15:21	Moon North Dec.: 19.3° N
	12	05:09	Moon Apogee: 406200 km
	14	23:53	Full Moon
	19	14:54	Moon-Spica: 1.7° S
	19	23:59	Moon-Mars: 3.3° N
	20	03:29	Moon Ascending Node
	21	22:39	Moon-Saturn: 0.3° N
	22	17:15	Last Quarter
	24	01:24	Moon South Dec.: 19.2° S
	26	05:23	Moon-Venus: 0.4° S
	27	19:52	Moon Perigee: 360400 km
	27	21:24	Moon-Mercury: 2.8° S
Mar	01	08:00	New Moon
	04	17:45	Moon Descending Node
	07	22:07	Moon-Aldebaran: 2.3° S
	08	13:27	First Quarter
	08	22:54	Moon North Dec.: 19.1° N
	11	19:46	Moon Apogee: 405400 km
	16	17:08	Full Moon
	18	20:38	Moon-Spica: 1.8° S
	19	03:14	Moon-Mars: 3.4° N
	19	06:30	Moon Ascending Node
	21	03:40	Moon-Saturn: 0.2° N
	23	07:28	Moon South Dec.: 19° S
	24	01:46	Last Quarter
	27	09:52	Moon-Venus: 3.6° S
	27	18:30	Moon Perigee: 365700 km
	30	18:45	New 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.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](mailto:wayne.bailey@alpo-astronomy.org)

and Jerry Hubbell – [jerry.hubbell@alpo-astronomy.org](mailto:jerry.hubbell@alpo-astronomy.org)

### **CALL FOR OBSERVATIONS:** **FOCUS ON: MARE FRIGORIS**

***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 2014** edition will be **Mare Frigoris**. Part of this mare is available at most phases, so timing is a minor constraint. 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):

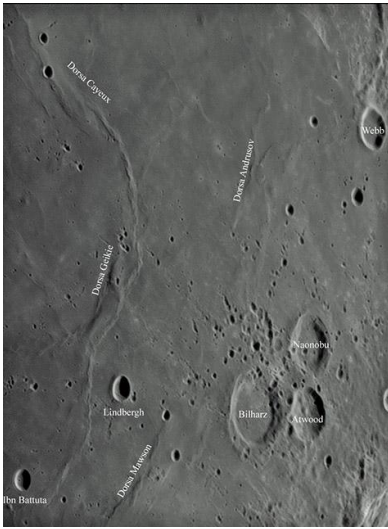
**Wayne Bailey** - [wayne.bailey@alpo-astronomy.org](mailto:wayne.bailey@alpo-astronomy.org)

**Jerry Hubbell** – [jerry.hubbell@alpo-astronomy.org](mailto:jerry.hubbell@alpo-astronomy.org)

**Deadline for inclusion in the Mare Frigoris article is February 20, 2014**

# Wrinkles and Flukes

Howard Eskildsen



Has anyone ever actually looked at this part of the Moon? There are so many other interesting distractions nearby such as the Messier pair, Crisium, Nectaris, the Western Chain, etc, that this place is about as close to nowhere on the Moon as one could seem to get. At first glance it may seem dull and uninteresting, but give it a look.

**Lindbergh-Webb** - Howard Eskildsen-Ocala, Florida, USA. January 5, 2014  
22:58 UT. Seeing 9/10, Transparency 4/6. Mewlon 250, 2x barlow,  
DMK 41AU02.AS, IR block filter.

Lava flows that were once flat dominate the area and have been contorted and squeezed into wrinkled ridges known as “dorsa.” Just imagine the forces that pressed from opposite directions to produce these ridges that have been named after scientists, geologists, and explorers.

Only a few craters dot the landscape and most are quite small. On the lower right corner of the image three medium-sized craters are peppered with smaller craters that are secondary’s from the Langrenus impact (the NW margin of Langrenus is visible in the lower right corner of the photo). Other impact secondary’s can be seen across the image, becoming smaller and fewer as the distance from the parent crater increases. The largest of the three medium sized craters is named Biharz, after a German doctor who discovered the flat worm (fluke) that causes the disease schistosomiasis.

Webb, on the upper right of the image, was an amateur astronomer known for popularizing deep sky astronomy; what a fitting reward for his dedicated astronomy outreach. Finally, Lindbergh landed in an ocean that he did not cross. It seems appropriate that such an accomplished aviator and explorer would end up in the middle of a remote region of the Moon, but perhaps it was just a fluke.

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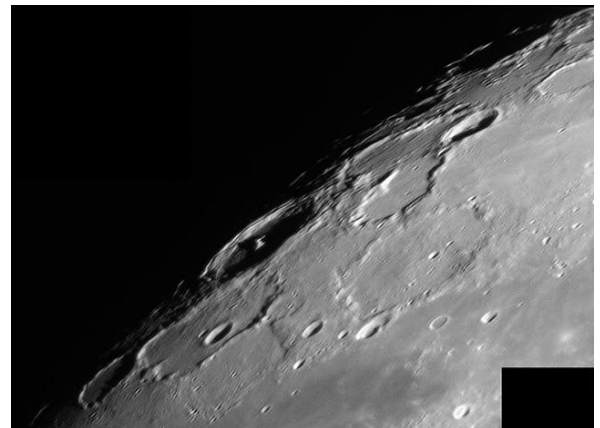
# Pythagoras On The Edge

Richard Hill

Two days before the full moon the beautifully formed crater, Pythagoras, can be seen on or near the terminator (depending on libration). It's an eye catcher to be sure. The well terraced walls and the central peak casting its shadow up those walls are always a fun view and show it to be a rather youthful crater compared to it's neighbors.

**PYTHAGORAS** – Richard Hill – Tucson, Arizona, USA January 14, 2013 04:44 UT. Seeing 7/10. TEC 8” f/20 MAK-CASS, SKYRIS 445. 656.3 nm filter.

To the north is another feature formed from 3 craters, that draws the attention. Anaximander with Anaximander B & D form the large shallow walled in plain with Carpenter, another relatively young crater, on the northern edge. Two more such shallow flooded craters are nearby, J. Herschel just off the southern edge of the Anaximander trio and Babbage roughly south of Pythagoras. I like the raised plateau between J. Herschel and Babbage with another younger crater Robinson in the middle of it.



Before leaving, notice Oenopides just to the immediate south of Babbage, another shallow flooded crater.

# LUNAR TOPOGRAPHICAL STUDIES

Coordinator – Wayne Bailey - [wayne.bailey@alpo-astronomy.org](mailto:wayne.bailey@alpo-astronomy.org)

Assistant Coordinator – William Dembowski - [dembowski@zone-vx.com](mailto:dembowski@zone-vx.com)

Assistant Coordinator – Jerry Hubbell – [jerry.hubbell@alpo-astronomy.org](mailto:jerry.hubbell@alpo-astronomy.org)

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

## OBSERVATIONS RECEIVED

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 5, 8 & 13 day Moon, Copernicus, Mare Imbrium & Mare Nectaris(2).

ED CRANDALL – LEWISVILLE, NORTH CAROLINA, USA. Digital image of Archimedes.

WILLIAM DEMBOWSKI – WINDBER, PENNSYLVANIA, USA. Digital image of Mare Frigoris.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Lindbergh-Webb, Cleomedes, Crozier, Furnerius, Hanson-Firmicus, Humboldt, LaPeouse, Langrenus, Petavius, Mare Smythii & Vendelius.

RICHARD HILL – TUCSON, ARIZONA, USA. Digital images of Agrippa, Aristoteles-Eudoxus, Mare Frigoris, Mare Humorum, Sinus Iridum, Kepler, Mare Nectaris, Plinius, Pythagoras & Rupes Recta.

JERRY HUBBELL – LOCUST GROVE, VIRGINIA, USA. Digital images of 1<sup>st</sup> qtr Moon, Aristarchus, Copernicus, Gassendi-Mare Humorum(2), Geminus-Massala, Hainzel, J. Herschel, Mare Crisium, Plato, Rupes Recta, Schiller, Sinus Iridum & Southern Highlands.

DAMIAN PEACH-SELSEY, WEST SUSSEX, UNITED KINGDOM. Digital images of Copernicus, Sinus Iridum, Pitatus-Hesiodus & Plato.

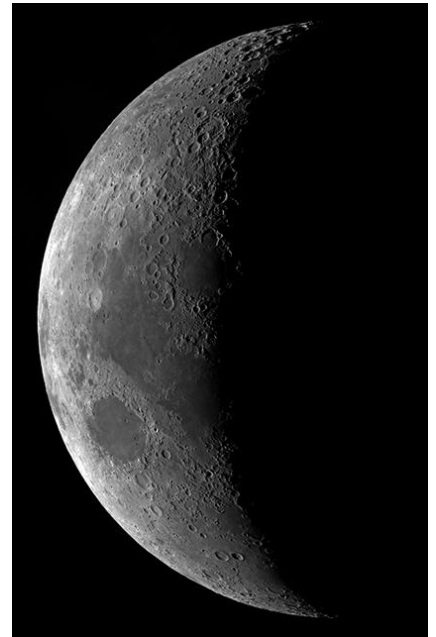
ALEXANDER VANDENBOHEDE-ASSEBROEK, BELGIUM. Digital images of Mare Humboldtianum, Mons Rumker & Schickard-Phocylides...

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# RECENT TOPOGRAPHICAL OBSERVATIONS

**5-day MOON** - Maurice Collins-Palmerston North, New Zealand.  
January 6, 2013 08:18- 08:32 UT. FLT-110, ASI120MC, 2x barlow.  
North down.



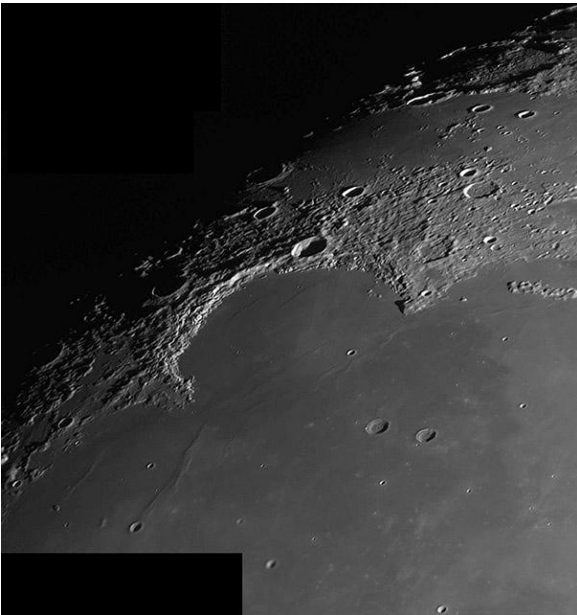
**ARCHIMEDES** – Ed Crandall – Lewisville, North Carolina, USA. November 11, 2013 23:49 UT. 110 mm f/6.5 APO, 3x barlow, ToUcam.

**CLEOMEDES** - Howard Eskildsen-Ocala, Florida, USA. January 5, 2014 23:02 UT. Seeing 9/10, Transparency 4/6. Mewlon 250, 2x barlow, DMK 41AU02.AS, IR block filtes.

Look closely at Cleomedes. Multiple rills mark the floor of the crater.



# RECENT TOPOGRAPHICAL OBSERVATIONS



**SINUS IRIDUM** – Richard Hill – Tucson, Arizona, USA  
November 14, 2013 02:25 UT. Seeing 6/10. TEC 8" f/20  
MAK-CASS, SKYRIS 445. 656.3 nm filter.

This is what the Virtual Moon Atlas calls an "Exceptional formation" and I do agree. When you see it at this lighting there's always a slight gasp at the glittering Montes Jura and the two Promentoria at the entrance of the Bay of Rainbows. Unfortunately, due to the curvature of the moon I don't think you could see both if you were standing between them. I like how Helicon and Le Verrier look in this image. The smallest features I could make out in this seeing were just under 2km.

**1<sup>st</sup> 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.

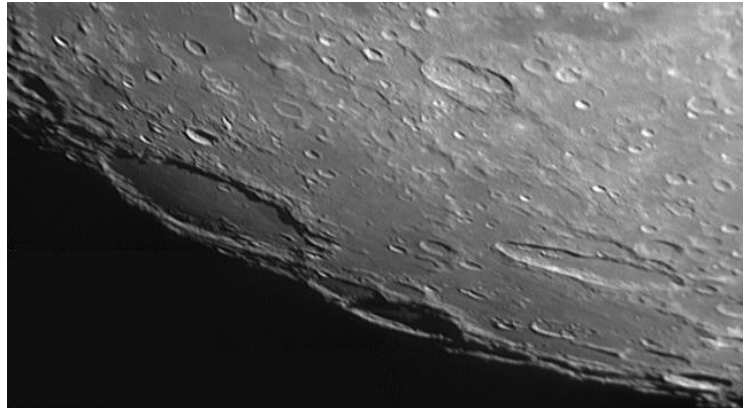


**PITATUS-HESIODUS**–Damian Peach –Selsey, West  
Sussex, United Kingdom. January 11, 2014.



## RECENT TOPOGRAPHICAL OBSERVATIONS

**SCHICKARD-PHOCYLIDES**— Alexander Vandenbohede, Assebroek, Belgium. January 13, 2014 UT. C-8 f/10 SCT.



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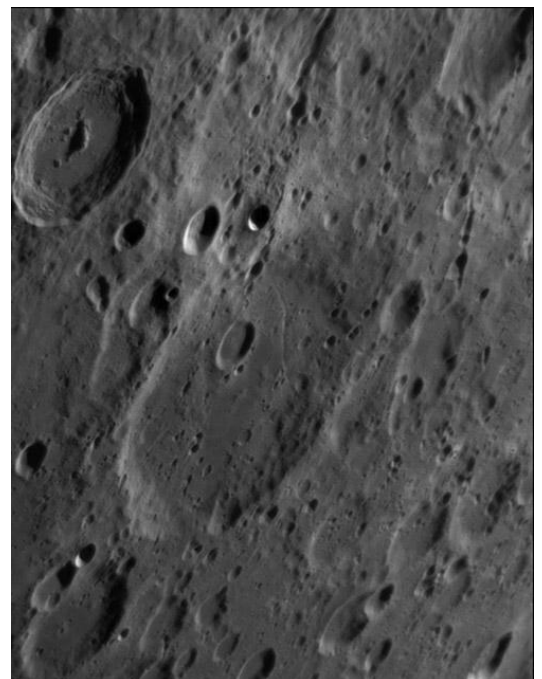
## ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



**MARE IMBRIUM**- Maurice Collins-Palmerston North, New Zealand. January 10, 2014 09:20 UT. Seeing A-IV. FLT-110, f/14, ASI120MC. North down.

**FURNERIUS** - Howard Eskildsen-Ocala, Florida, USA. January 5, 2013 23:14 UT. Seeing 9/10, Transparency 4/6. Mewlon 250, 2x barlow, DMK 41AU02.AS, IR block filtes.

Furnerius has a rill on its northern floor. Also note the curious central peak complex in Stevinus on the upper left margin



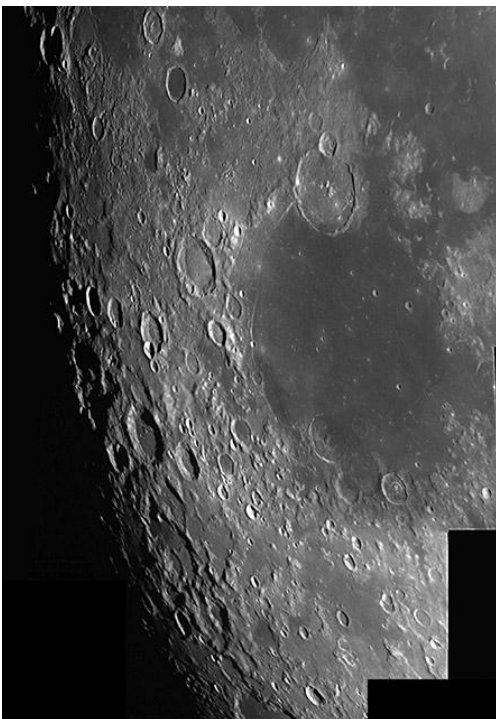
## ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



**PETAVIUS** - Howard Eskildsen-Ocala, Florida, USA.  
January 5, 2014 22:49 UT. Seeing 9/10, Transparency 4/6.  
Mewlon 250, 2x barlow, DMK 41AU02.AS, IR block  
filtres.



**HUMBOLDT** - Howard Eskildsen-Ocala, Florida, USA.  
January 5, 2014 22:53 UT. Seeing 9/10, Transparency 4/6.  
Mewlon 250, 2x barlow, DMK 41AU02.AS, IR block  
filtres.



**MARE HUMORUM** – Richard Hill – Tucson, Arizona, USA  
October 17, 2013 04:27 UT. Seeing 7/10. TEC 8" f/20 MAK-  
CASS, SKYRIS 445M, 656.3nm filter .

# ADDITIONAL TOPOGRAPHICAL OBSERVATIONS

**RUPES RECTA** – Richard Hill – Tucson, Arizona, USA  
November 12, 2013 04:14 UT. Seeing 7/10. TEC 8" f/20  
MAK-CASS, SKYRIS 445M, 656.3nm filter

This region has been a fun one for me ever since the early 1960s. I would imagine standing at the bottom of the cliff and looking up at it's 1,000 foot sides in awe. Then the Apollo spacecraft took photos and showed it wasn't all that straight after all! The Kaguya images showed sections that had collapsed and craters that perforated the fault. What a surprise that was. This image shows the formation in its classical view as a Straight Wall, or reasonably straight. Lacking my own spacecraft this 2km resolution image was the best I could do in our pea soup atmosphere.

Other features call the attention in this image. The rimae in Arzachel, the complex structures on the floor of Purbach and the badly damaged craters Purbach H and N.



**GEMINUS-MESSALA**– Jerry Hubbell, Lake Anna, Virginia, USA.  
January 21, 2014 00:07 UT. Seeing 7/10, Transparency 5/6.  
Colongitude 313.3°. Mewlon 250, Flea3 GigE. East up.

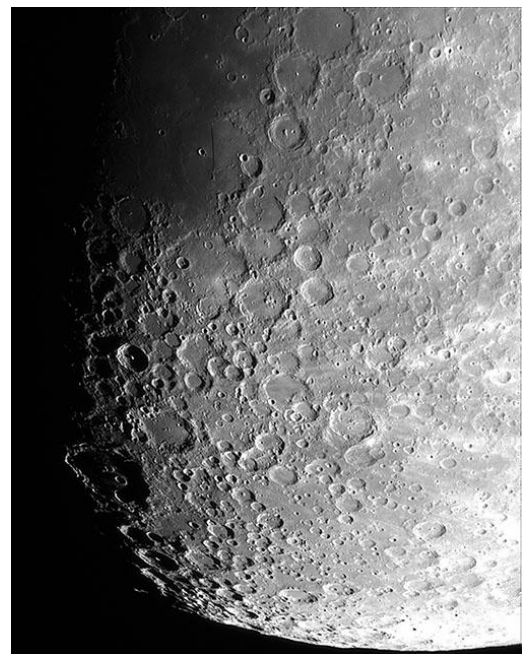
Geminus (52 miles) show excellent detail with the floor showing all types of hilly terrain and rilles. The central peak juts upward from the floor about 1500 meters. Messala A (15 miles) is deep in shadow to the west of Geminus.

Messala (75 miles) is a very interesting crater with the floor containing a Pyroclastic area. The crater Messala B (11 miles) is deep in shadow to the south.

**SOUTHERN HIGHLANDS**– Jerry Hubbell, Locust Grove, Virginia, USA. January 4, 2013 22:46 UT. Seeing 5/10, Transparency 5/6. ED127 APO refr, ATIK 314e.

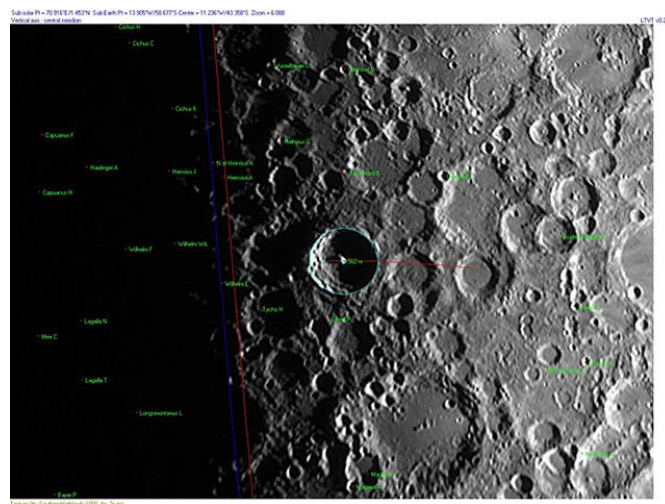
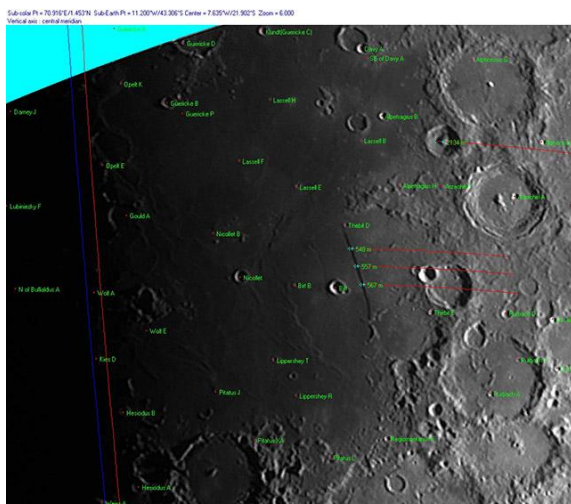
This image is dominated by both Tycho and Clavius in the southern part of the Highlands with a good view of the region around Rupes Recta. As described further below, the amount of detail on this single stacked frame shows craterlets down to around 2 km with 3 km craters easily discerned. Towards the 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.





# MEASUREMENTS



**SOUTHERN HIGHLANDS**– Jerry Hubbell, Locust Grove, Virginia, USA. January 4, 2013 22:46 UT. Seeing 5/10, 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 an 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.

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## BRIGHT LUNAR RAYS PROJECT

Coordinator – Wayne Bailey – [wayne.bailey@alpo-astronomy.org](mailto:wayne.bailey@alpo-astronomy.org)

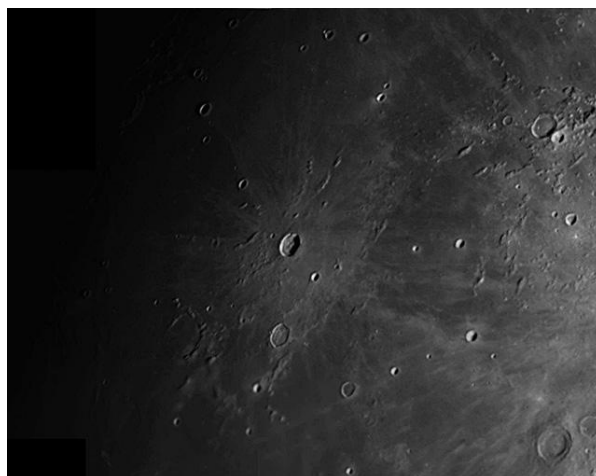
Assistant Coordinator – William Dembowski – [dembowski@zone-vx.com](mailto:dembowski@zone-vx.com)

Bright Lunar Rays Website: <http://moon.scopesandscapes.com/alpo-rays.html>

## RECENT RAY OBSERVATIONS

**KEPLER** – Richard Hill – Tucson, Arizona, USA October 16, 2013 03:53 UT. Seeing 7/10. TEC 8" f/20 MAK-CASS, SKYRIS 445M, 656.3nm filter

Overshadowed by spectacular Copernicus and Aristarchus, poor sister Kepler is often ignored by lunar observer. Yet here is a wonderful system of rays laid out on Oceanus Procellarum and Mare Insularum. Note the polygonal crater Encke south of Kepler. On the right side of the image the rays of Kepler tangle with the rays of Copernicus.



# **LUNAR TRANSIENT PHENOMENA**

**Coordinator – Dr. Anthony Cook – [atc@aber.ac.uk](mailto:atc@aber.ac.uk)**

**Assistant Coordinator – David O. Darling – [DOD121252@aol.com](mailto:DOD121252@aol.com)**

## **LTP NEWSLETTER – FEBRUARY 2014**

**Dr. Anthony Cook - Coordinator**

Observations for December were received from the following observers: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Aristarchus, Cassini, Conon, Gassendi, Hyginus, Langrenus, Mare Anguis, Mare Crisium, Mons Pico, Mons Piton, Picard, Plato, Proclus, Prmuntorium Agassiz, Rimae Triesnecker, and Theophilus. Maurice Collins (New Zealand –RASNZ) observed Aristarchus, Sinus Iridum, and took whole Moon image mosaics. Marie Cook (Mundesley, UK – BAA) observed Plato. Brian Halls (Lancing, UK - BAA) observed Proclus. Rik Hill (Tucson, AZ, USA – ALPO) imaged Agrippa, Apianus, Plinius, and the south pole area. Brendon Shaw (UK - BAA) imaged Albategnius, Censorinus, Mare Crisium, Maskelyne, Pitiscus, Posidonius, Proclus, and Theophilus. Franco Taccogna (Italy - IAU) imaged Copernicus, Mons Pico, and Theophilus.

**News:** An email was received email Alexandre Amorim (REA Brazil) concerning a definitive catalog of LTP observations as seen by Brazilian observers. This corrects some of the errors that crept into these observations as published in the NASA catalog from 1978. I would encourage other observers, to investigate historical accounts of LTPs as seen from their own countries. Having people on the ground in the countries concerned, who know about the observing heritage, and can read reports in their own native language, is the best way to clear up some descriptions that have been mis-interpreted in previous translations.

I apologize if I keep on re-stating this paragraph, but it is important in view of NASA's LADEE mission - if you want to take part in this exciting programme, searching for lunar impact flashes in Earthshine, and have light sensitive cameras, such as those used in occultation, or meteor studies, then please get in contact with Brian Cudnik ([cudnik@sbcglobal.net](mailto:cudnik@sbcglobal.net)), or visit his web site on: <http://alpo-astronomy.org/lunarupload/lunimpacts.htm> for further details. NASA's LADEE mission needs amateur observations to be able to correlate dust detection with impacts. Interestingly LADEE did not detect a measurable dust or gas emission signal from China's Chang'e 3 mission that landed in December, despite initial worries that it might pollute heavily the lunar exosphere.

A letter from Thomas Dobbins has been published in the December edition of the BAA Journal, pointing out what he considers to be some possible flaws in the paper: "Revisiting the 1963 Aristarchus Events" in the same journal two months earlier. A response to this letter has been published in the BAA Journal for their February issue. Interestingly enough Tom has also written a paper with co-author Bill Sheehan entitled "Transient Lunacy" for the Geological Research Group's (GLR) Selenology Today on-line journal [http://www.lunar-captures.com/Selenology\\_Today/selenologytoday34.pdf](http://www.lunar-captures.com/Selenology_Today/selenologytoday34.pdf). This is fairly similar to their Sky and Telescope 1999 article "The TLP Myth: A Brief for the Prosecution" albeit not restricted by Sky and Telescope page constraints. The strategy of this paper appears to concentrate mostly on pointing out the characters flaws of some past LTP observers. The information about the Russian Astronomer Kozyrev, in his later life, is disturbing. Also whilst there was some healthy debate about the emission lines reported in his spectra of the central peak of Alphonsus shortly after the observation, Dobbins and Sheehan fail to take into account the last analysis of the spectra made by Phillips and Arpigny, (<http://adsabs.harvard.edu/full/1967ApJ...149..275P>) published in the Astrophysical Journal in 1967. Phillips and Arpigny, whilst casting doubt on Kozyrev's interpretation of C<sub>2</sub> (the Swan Band) emission lines, conclude: "*Unfortunately, to the present time no alternative suggestion can be made. The principle contributor remains unknown*". To be fair the Dobbins and Sheehan article does suspect poor tracking as a cause of the emission lines, though to my knowledge this explanation has not yet made it into a scientific peer

reviewed journal. Another interesting omission is the first of a series of the recent Astrophysical Journal LTP papers by Prof Arlin Crotts, where he carried out an extensive statistical analysis on the locations of past LTP reports, before and after the era, when LTP observing became popular – see: <http://www.iop.org/EJ/abstract/0004-637X/697/1/1/> . So whilst many of the comments in the Selenology Today article, I would not disagree with (LTP observation has after all had a checkered history) it is still important to be aware of the many peer reviewed papers appearing in scientific journals such as Icarus, the Journal of Geophysical Research, and the Astrophysical Journal (see the two cases above), do discuss LTP evidence and also propose credible theories about what surface processes on the Moon are capable of producing transient effects that can be seen by Earth-based observers. – although LTPs themselves must be incredibly rare.

Lastly I heard some sad news that a good friend and colleague of mine, Wilfried Tost, had passed away in January. I knew Wilfried from when I used to work at the Institute of Planetary Exploration, DLR, Berlin, Germany, Apart from being the senior IT system manager at DLR Berlin, helping to organize the equipment and installation of software needed to analyze data from several NASA and ESA planetary missions, he also was an active amateur astronomer at the Wilhelm Forester Observatory and Planetarium in Berlin, and ran the Lunar Section there for many years. On 2001 Feb 09 he organized a world wide observing event to check out the crater Torricelli B under repeat illumination and repeat libration (to within  $\pm 1^\circ$ ) that matched a multiple observation of a LTP seen there on 1983 Jan 29<sup>th</sup>. On that date in 1983 a variety of reports by different observers had stated that the crater was at one point very bright, changing in brightness, and had color – you can read the original report here: [http://www.planetarium-berlin.de/pages/torricelli/TorrB1\\_7.pdf](http://www.planetarium-berlin.de/pages/torricelli/TorrB1_7.pdf) . If the effect seen in 1983 had been due to specular reflection from rock crystals/glass beads, then the effect would repeat under similar lighting and libration. However during the 2001 apparition, despite having 57 participating observers located at different sites around the world, these effects did not repeat (see [http://www.planetarium-berlin.de/pages/torricelli/E\\_results02.html](http://www.planetarium-berlin.de/pages/torricelli/E_results02.html) ), nor have they since on many subsequent repeat illumination and repeat libration dates. Therefore whatever was the cause of the reports filed in 1983, it was not due to specular reflection, or internal refraction from volcanic glass beads on the surface. Wilfried had an asteroid named after him: 13334 Tost. He leaves behind his widow, Doris and son Philipp, and his sisters.

**LTP Reports:** No LTP reports were received in December.

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

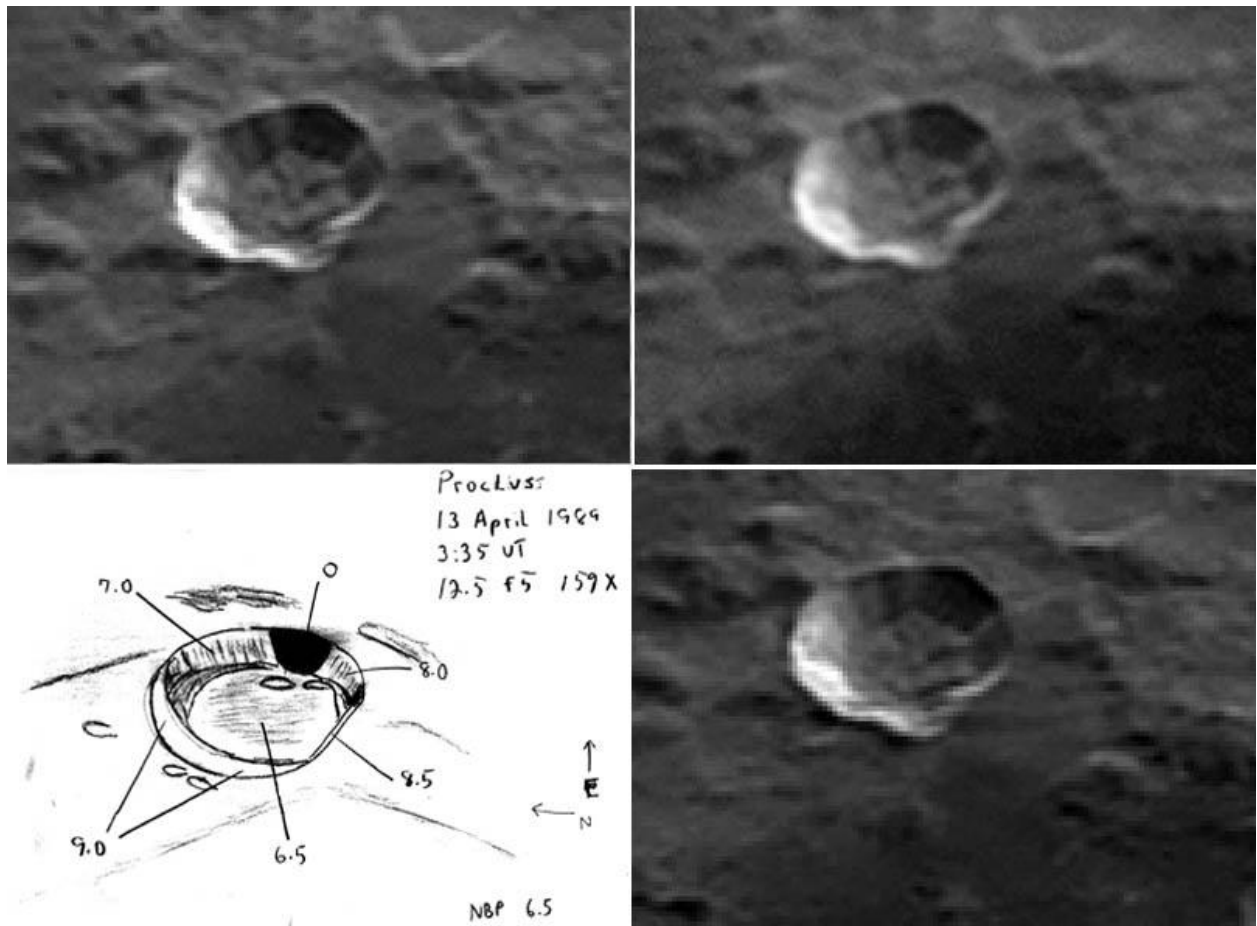
**Proclus:** On 2013 Dec 09 Brian Halls and Brendan Shaw both observed Proclus crater under similar illumination and similar libration to the following LTP report from David Darling from 1989:

*On 1989 Apr 13 at UT03:25 D. Darling (Sun Prairie, WI, USA, 3" refractor and 12.5" reflector) "found that the brightness of the north rim of Proclus was 9.0, the floor was 6.5, the southwest rim was 8.8, the south rim was 8.0, the east rim was 7.0 and a nearby plain was 7.0. He also found an intense black spot" on the south east rim, through a 3" refractor. However through a 12.5" reflector, it was just a shadow on the rim. The Cameron 2006 catalog ID=361 and the weight=0. The ALPO/BAA weight=1.*

Although the 1978 NASA catalog had a weight of 0 (i.e. a non-LTP), the ALPO/BAA weight was set at 1 because mistakes are sometimes known to crop up in the NASA catalog. The precise time that the illumination was similar to the night of 2013 Dec 09 was 18:05UT, but the time span that topocentric libration was similar too, was 16:05-19:08UT. Through the sequence of images in Fig 1, you can see the dark spot referred to, and this slowly fades over time as the Sun attains a higher altitude. As the David Darling stated back in 1989, this was probably just shadow (shading), but through a smaller telescope, with more contrast, it looked very dark. Also the intensity measurements that David Darling gave, seem to match up with what is shown in the images – a high number being brighter and a low number darker. In view of these helpful observation we can now at last be absolutely sure that this was not a LTP, as David Darling had suspected,



and should not have been in the NASA catalog either, even though it was assigned a weight of 0 there – it was just the normal appearance. Comparing the sketch with the images also illustrates how accurate David Darling’s observing and sketching skills are.



**Figure 1.** Proclus as imaged by Brian Halls and Brendan Shaw on 2013 Dec 09, and a sketch by David Darling from 1989. The images have been orientated with north towards the left to match the orientation of the sketch. **Top left** – Brendan Shaw’s image taken at 16:28UT. **Top right** – Brian Hall’s image taken at 17:01UT. **Bottom left** - a sketch by David Darling under the same illumination and libration from 1989 Apr 13 – from the American Lunar Society LTP Newsletter. **Bottom right** - Brendan Shaw’s image taken at 19:52UT.

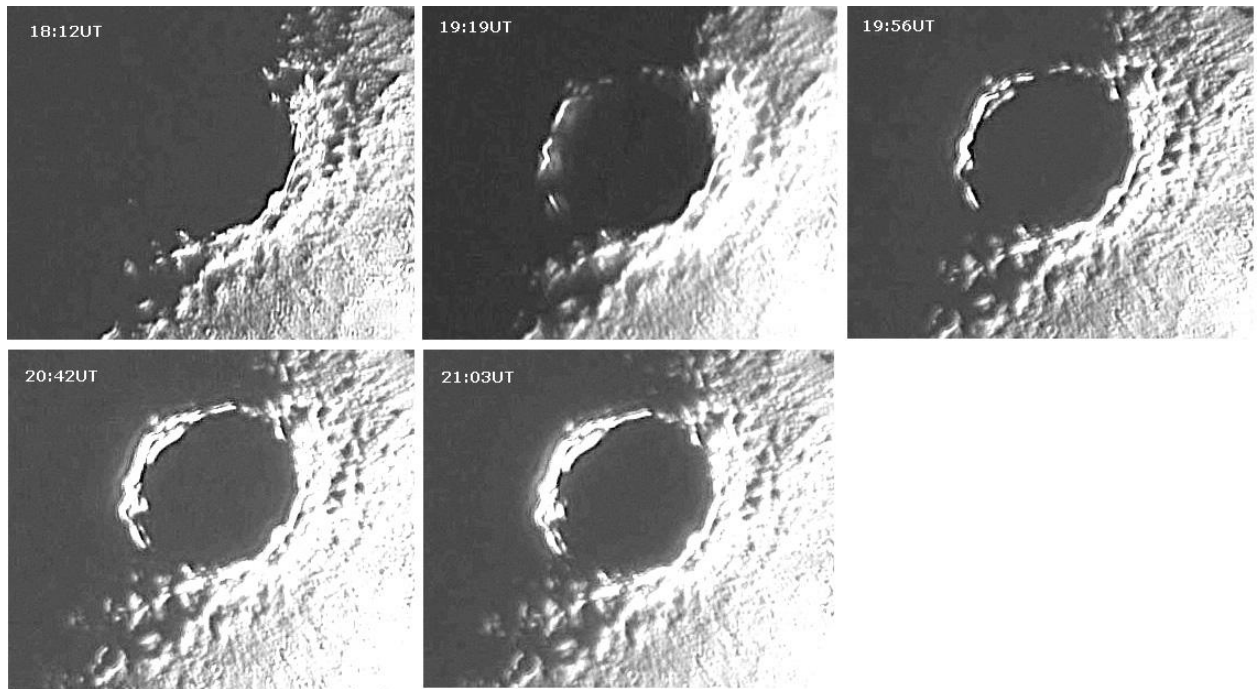


**Figure 2.** A sub-section of an image, taken by Rik Hill on 2013 Dec 10, of the area around Agrippa, showing the faint outline of Rimae Triesnecker passing through the image centre. Rima Hyginus is located at the top right corner. North is towards the top.

**Rimae Triesnecker:** On 2013 Dec 10 UT 01:04 Rik Hill imaged a region of the Moon that contained this area. This corresponded to the same illumination conditions as were seen by Gordeenko back in 1912.

*Triesnecker Rille 1912 May 23 UT 18:00? Observed by Gordeenko (Russia) "Change in shape from representation by Brenner and Krieger not accountable by lighting conditions" NASA catalog weight=0. NASA catalog ID #339. ALPO/BAA weight=1.*

The relevant section of Rik's image can be seen in Fig 2. Unfortunately I do not have access to the drawing by Brenner and Krieger to judge the appearance by, nor do I have a sketch by Gordeenko from 1912. What is more the 1978 NASA catalog gives the LTP a weight of 0 and has a "?" beside the UT given, meaning the time was estimated for the catalogue. In view of these uncertainties, the ALPO/BAA will remain at a weight of 1, at least until we can get more details of what Brenner and Krieger described, and what Gordeenko observed and when, though I generally feel that this LTP report was probably mistaken identity. The only good thing to come out of this is that we have an image that matches the illumination date/UT that Cameron gives.



**Figure 3.** Copernicus at sunrise on 2013 Dec 11, as imaged by Franco Taccogna (a UAI observer) with north towards the top right. These images have been contrast stretched to look for detail inside the shadowed interior. Some ghosting artifacts are present on either side of the bright rim.

**Copernicus:** On 2013 Dec 11 UT 18:12-21:03 Franco Taccogna (a UAI observer) imaged Copernicus during sunrise. This corresponded to the same illumination conditions as were seen by Wilkins back in 1939 for the following LTP report from the NASA catalog:

*Copernicus 1939 Mar 29 UT 19:00-19:15 Observed by Wilkins (Kent, England, 6" reflector) "C.P. diffuse light spot, faint glows as tho in a luminous mist (3h before SR) Some indication of E.terraces, then vanished." NASA catalog weight=4. NASA catalog ID #447. ALPO/BAA weight=3.*

A more precise description can be found in the ALPO's Strolling Astronomer Vol 5, No. 9, p3:

*"Copernicus was in fine relief, the interior being filled with shadow. At 19h, U.T., the group of the central mountains was faintly but distinctly seen as a somewhat diffused light spot, together with indications of inner terraces on the west (that is east IAU). This aspect lasted about 15 minutes and then disappeared, leaving the interior enveloped in shadow; and not until 22h did the first ray of direct and true sunlight strike the summit of the highest of the central peaks."*

Now it is perfectly possible for sunlit rims of some bright ray craters to scatter sunlight into the shadowed areas of the floor of these craters, but what is unusual about this 1939 observation was that the effect lasted only 15 minutes before returning to normal. Franco's images in Fig 3 have been contrast enhanced to try to reveal detail on the floor of this crater, but have failed to show the central peak here. There are slight indications of the inner eastern terraces just inside the eastern rim, but it could also be the ghosting effect which shows up elsewhere – so we cannot be certain about this. Therefore the scattered light from the illuminated west rim is not enough to light up the central peaks sufficiently for detail to be seen – at least not in these exposures. Therefore weight of this LTP will remain at 3 as what Wilkins described cannot be explained at present.



**Figure 4.** Extracts from an ASCII20MC color image mosaic made by Maurice Collins on 2013 Dec 15 at 09:35UT orientated with north towards the top. The original image mosaic has had its color saturation increased by 70% to enhance colors present. **Left** – Anaximander with a few surrounding craters. **Right** - Aristarchus.

**Anaximander and Surrounds:** On 2013 Dec 15 UT 09:35 Maurice Collins imaged the whole lunar disk in color using his William's Optics FLT-110 refractor. This corresponded to the same illumination conditions as were seen by Fisher back in 1963 for the following LTP report:

*On 1963 Nov 28 at UT 22:30-00:00 Fisher (Colefax, CA, USA, 8" Newtonian reflector) observed a yellow crater rims adjacent to Anaximander. Yellow color also seen on Aristarchus that night. The ALPO/BAA weight=1.*

Two sub-sections of the resulting image taken by Maurice can be seen in Fig 4. It is interesting to note that this indeed shows a yellow color on some of the crater rims adjacent to Anaximander – once the image has been color enhanced. However the same yellow color is also visible on thin crater rims on the SW terminator to the north of Schickard (not shown here), though not much on Schickard itself. Also unlike the 1963 report, there is no yellow color on Aristarchus – only the natural blue. Fig 4 was made from a mosaic of 6 or 7 color shots through a refractor, so I guess if there was some atmospheric spectral dispersion, or chromatic aberration, then this might explain some of the colors. Although Maurice has perhaps replicated one of the original LTP effects, his image of Aristarchus is decidedly blue and not yellow. Therefore the original LTP will remain at a weight of 1 for now, though interestingly no refractor was used in 1963, unlike Maurice's observation. In future it would be helpful to have some additional higher resolution color images of this area under similar illumination conditions.

**Aristarchus:** On 2013 Dec 19 UT 03:15-03:35 Jay Albert observed Aristarchus under the same illumination conditions to the following two LTPs:

*Aristarchus 1950 Jul 31 UT 03:55-05:00 Observed by Bartlett (Baltimore, MD, USA, 3.5" reflector x100, S=4, T=5) "Violet glare on E., NE. rim" NASA catalog weight=4. NASA catalog ID #535. ALPO/BAA weight=1.*

*Aristarchus 1978 Nov 16 UT 19:40-19:45. Observer: Mark Kidger (UK, 6" refractor x40, x133, x200, seeing poor-boiling) - saw the north wall of Aristarchus to be an electric blue. No spurious color was seen in other craters (despite the conditions). No other observers were able to confirm this due to the weather. ALPO/BAA weight=2.*

Jay used a C11 telescope at x224, his transparency was 4/10, and seeing 4/10. Jay comments that the crater was in full Sun and brilliant white. There was a lot of glare in the boiling, vibrating field, but no color...violet, blue or otherwise. Also, there was no "electric blue" on the N wall as seen by Mark Kidger. Despite the poor seeing, Jay was able to see the central peak and vertical banding in the crater. The Bartlett observation of violet glare is typical of many reports of his – and might be because he had good color sensitivity in his eyes down that end of the spectrum. The weight for this will remain at 1 though as Jay did not see this. Likewise Jay did not see the electric blue that Mark Kidger saw, and so this will remain at a weight of 2.

**Plato:** On 2013 Dec 21 UT 22:45-23:00 Marie Cook observed Plato under the same illumination conditions to a LTP:

*Plato 1966 Aug 05/06 UT 23:37-02:58 Observers: Corvan, Moseley (Armagh, N.Ireland, 10" refractor, x280) and Ringsdore (England, 8.5" reflector) "Several red glows at different places at different times. Each lasted a few min. (not confirmed by Ringsdore. Given as 8/4 in MBMW) NASA catalog weight=4, NASA catalog ID=#964. ALPO/BAA weight=2.*

Her observing conditions were Antoniadi III, and the transparency was moderate. No red glows were seen, and the crater floor was its normal shade. Therefore the ALPO/BAA weight will remain at a 2, and we encourage observers to keep on studying the area under similar illumination conditions to see if things like atmospheric spectra dispersion, or chromatic aberration in their optics could induce some of the effects described above – though the transient nature is more problematic to explain with these two standards non-lunar explanations

**Suggested Features to observe in February:** 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>. 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, advice on tests to carry out can be found on: <http://users.aber.ac.uk/atc/alpo/ltp.htm>. If you are still convinced it is a LTP then please give me a call on my cell phone: +44 798 505 5681 and I will alert other observers. Twitter LTP alerts can also be accessed on <http://twitter.com/lunarnaut>.

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## KEY TO IMAGES IN THIS ISSUE

1. Agrippa
2. Anaximander
3. Archimedes
4. Aristarchus
5. Cleomedes
6. Copernicus
7. Euler
8. Furnerius
9. Geminus
10. Humboldt
11. Kepler
12. Lindbergh
13. Mare Humorum
14. Mare Imbrium
15. Petavius
16. Pitatus
17. Proclus
18. Pythagoras
19. Rupes Recta
20. Schickard
21. Sinus Iridum
22. Tycho

**FOCUS ON targets**

**X = Mare Frigoris (March)**

