

THE LUNAR OBSERVER

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.

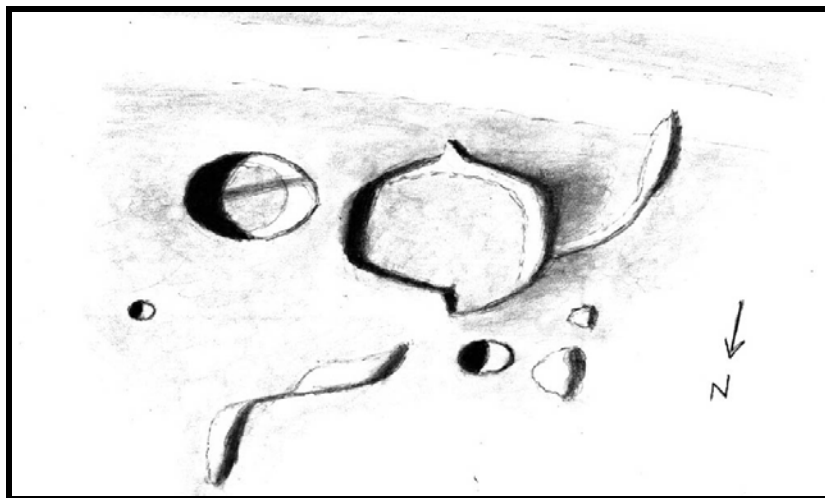
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RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – OCTOBER 2012

Sheepshanks



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA

May 30, 2012 03:30-04:06 UT, 15 cm refl, 170x, seeing 6-7/10

I drew this crater and vicinity on the evening of May 29/30, 2012. This crater is in Mare Frigoris north of Aristoteles. Sheepshanks itself is a sharply outlined crater with relatively few irregularities. The only interior detail is a dusky strip crossing it from center toward the southwest. It was always visible but never well-defined. Sheepshanks A is the small crisp crater to the Northeast. The larger, shallower crater west of Sheepshanks is C.Mayer B, and C.Mayer E is north of B. C.Mayer B has an irregular polygonal shape with projections on its north and south sides and nearly straight east and west rims. Its interior appears to be flat and featureless. There is considerable shadowing west of C.Mayer B indicating sloping terrain. A long, curved ridge extends west, then south from C.Mayer B, and has a swollen end. Two triangular peaks are west of C.Mayer E, and two elongated elevations are north of Sheepshanks. These latter two are connected by a narrow thread of shadow (may be too wide on the sketch). There is a relatively bright strip south of Sheepshanks and C.Mayer B. It looks like a ray, but I can't determine a crater of origin. This 'ray' runs approximately east-west and takes in the tip of the curved ridge west of C.Mayer B.

LUNAR CALENDAR

OCTOBER-NOVEMBER 2012 (UT)

Oct. 05	00:44	Moon at Apogee (405,161 km – 251,755 miles)
Oct. 05	22:00	Moon 1.1 Degrees SE of Jupiter
Oct. 06	01:42	Extreme North Declination
Oct. 07	03:00	Moon 1.2 Degrees SW of asteroid 1-Ceres
Oct. 08	07:33	Last Quarter
Oct. 11	15:00	Comet Gehrels-2 0.53 Degrees WNW of Moon
Oct. 12	16:00	Moon 5.9 Degrees SSW of Venus
Oct. 15	12:02	New Moon (Start of Lunation 1111)
Oct. 16	02:00	Moon 4.5 Degrees SSW of Saturn
Oct. 17	01:00	Moon 1.4 Degrees NNW of Mercury
Oct. 17	01:03	Moon at Perigee (360,672 km – 224,111 miles)
Oct. 18	14:00	Moon 2.1 Degrees NNE of Mars
Oct. 19	06:48	Extreme South Declination
Oct. 20	15:00	Moon 0.77 Degrees E of Pluto
Oct. 22	03:33	First Quarter
Oct. 24	12:00	Moon 5.8 Degrees NNW of Neptune
Oct. 27	05:00	Moon 4.8 Degrees NNW of Uranus
Oct. 29	19:49	Full Moon
Nov. 01	15:31	Moon at Apogee (406,049 km – 252,307 miles)
Nov. 02	01:00	Moon 0.93 Degrees SSW of Jupiter
Nov. 02	08:12	Extreme North Declination
Nov. 07	00:36	Last Quarter
Nov. 08	14:00	Comet Gehrels-2 0.62 Degrees WSW of Moon
Nov. 11	16:00	Moon 5.1 Degrees SSW of Venus
Nov. 13	22:07	New Moon (Start of Lunation 1112)
Nov. 14	10:00	Moon 1.2 Degrees NNW of Mercury
Nov. 14	10:23	Moon at Perigee (357,360 km - 222,053 miles)
Nov. 15	16:06	Extreme South Declination
Nov. 15	21:00	Comet Macholz-1 1.19 Degrees NW of Moon
Nov. 16	08:00	Moon 4.1 Degrees NNW of Mars
Nov. 16	24:00	Moon 0.28 Degrees ENE of Pluto
Nov. 20	14:32	First Quarter
Nov. 20	19:00	Moon 6.0 Degrees NNW of Neptune
Nov. 23	11:00	Moon 4.9 Degrees NNW of Uranus
Nov. 28	14:46	Full Moon (Penumbral Eclipse of Moon)
Nov. 28	19:36	Moon at Apogee (406,364 km – 252,503 miles)
Nov. 29	01:00	Moon 0.67 Degrees SSW of Jupiter
Nov. 29	14:30	Extreme North Declination

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](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: Atlas

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 2012** edition will be **the crater Atlas**.

In particular observations are desired at all phases, not just the most photogenic.

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 Atlas to your observing list and send your favorites to:

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

Deadline for inclusion in the Atlas article is October 20, 2012

FUTURE FOCUS ON ARTICLES:

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

<u>Subject</u>	<u>TLO Issue</u>	<u>Deadline</u>
Alphonsus time series	January 2013	December 20, 2012
Wrinkle Ridges & Rilles	March 2013	February 20, 2013

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

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.

A MORETUS PUZZLE

Richard Hill

Tonight I have a bit of a puzzle. I have attached a few images of the region around Moretus as it appeared on 2012-08-25 around 2:10 UT. I will discuss this by image:

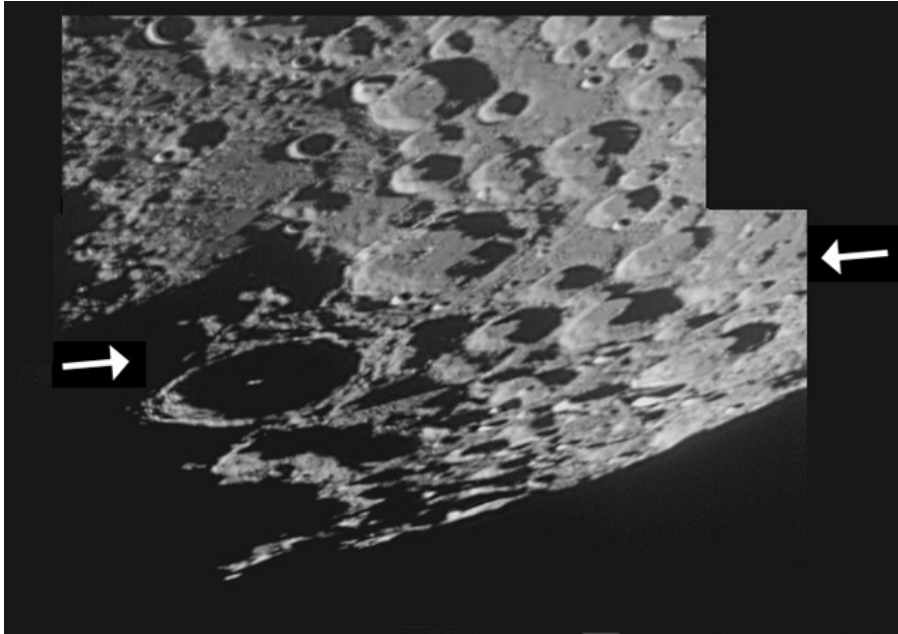


Figure 1. *Moretus—Richard Hill—Tucson, Arizona, USA August 25, 2012 02:10 UT. Seeing 7/10. TEC 8" f/20 MAK-CASS.. DMK21AU04. Wratten 23 filter. North up.*

Figure 1 was my finished montage of 4 images. I noticed that from the north rim of Moretus east through the shared rim of Simpelius and Simpelius A and a little farther east ending at Simpelius G is what appears to be a fault of some sort. In this copy of the image I use arrows to show the feature I'm talking about. Figure 2 is one of the 4 frames that shows most of the feature. Note the shadow between Simpelius and Simpelius A.

I'm curious to know if this is a known and real feature? It seems rather obvious once you see it and seems quite real with that shadow between Simpelius and Simpelius A adding to the appearance. This does not appear as a named feature in the Rukl Atlas, Virtual Moon Expert nor MROC and on the latter it appears it could be raised areas roughly aligned because of the juxtaposition of the neighboring crater rims. I'd be curious to know your impression and thoughts.

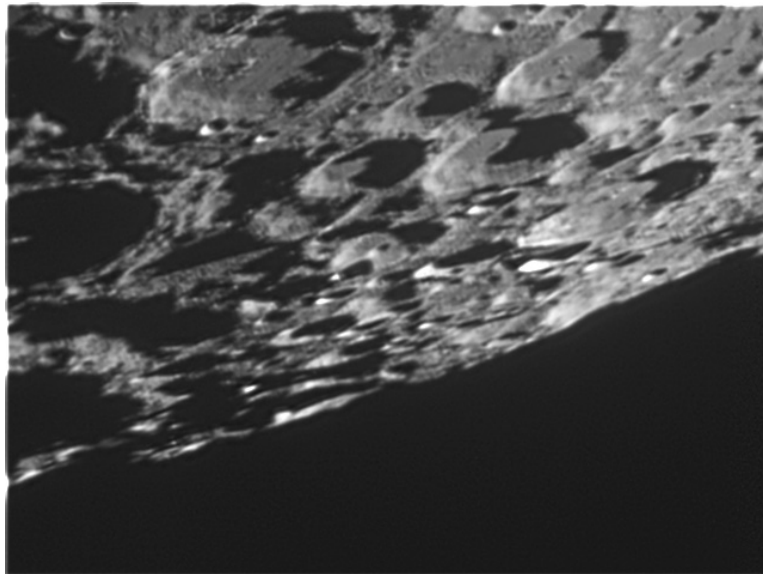


FIGURE 2. *Moretus—Richard Hill—Tucson, Arizona, USA August 25, 2012 02:12 UT. Seeing 7/10. TEC 8" f/20 MAK-CASS.. DMK21AU04. Wratten 23 filter. North up.*

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, 9, 13, 14 & 15 day Moon.

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

WILLIAM DEMBOWSKI – WINDBER, PENNSYLVANIA, USA. Digital images of Atlas(4).

HOWARD ESKILDSEN - OCALA, FLORIDA, USA. Digital images of Albategnius, Alphonsus, Atlas(4), Manilius, Orontius, Purbach, Rhaeticus-Lade, Sinus Aestuum, Sinus Medii, & Werner.

PETER GREGO – ST. DENNIS, CORNWALL, UK. Drawing of Mare Australe..

RICHARD HILL – TUCSON, ARIZONA, USA Digital images of Atlas(4), Lacus Mortis, Moretus(2), Orontius, Purbach, Theophilus, & Triesnecker..

PHILLIP MORGAN –LOWER HARTHALL-TENBURY WELLS, WORCESTERSHIRE, ENGLAND. Drawings of Alphonsus & Montes Caucasus..

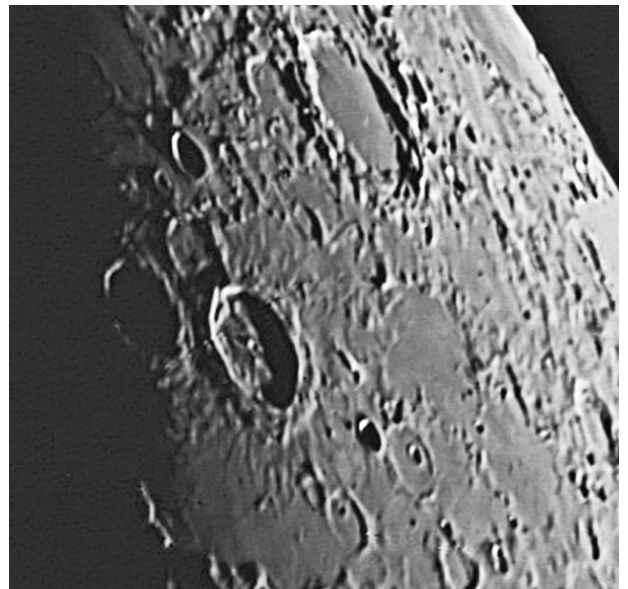
DAMIAN PEACH-SELSEY, WEST SUSSEX, UNITED KINGDOM. Digital images of Archimedes & Clavius.

RECENT TOPOGRAPHICAL OBSERVATIONS

6 day MOON - Maurice Collins-Palmerston North, New Zealand. September 22, 2012 07:32-07:59 UT. C8 SCT.



PLATO – Ed Crandall – Lewisville, North Carolina, USA. August 26, 2012 00:41 UT. 110 mm f/6.5 APO, 3x barlow, ToUcam.



HERCULES-ATLAS-ENDYMION – William Dembowski, Windber, Pennsylvania, USA. November 4, 2008 22:08 UT Colongitude 323.4, Seeing 4/10. Celestron 8" SCT f/10, Celestron NexImage, IR filter.

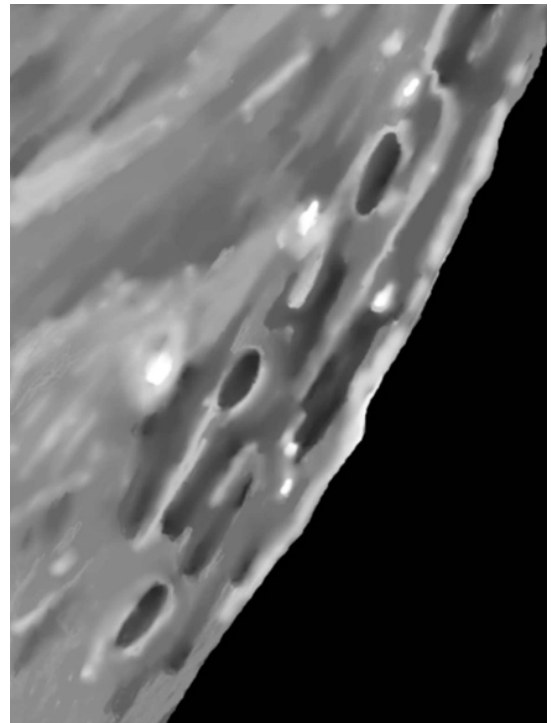
RECENT TOPOGRAPHICAL OBSERVATIONS



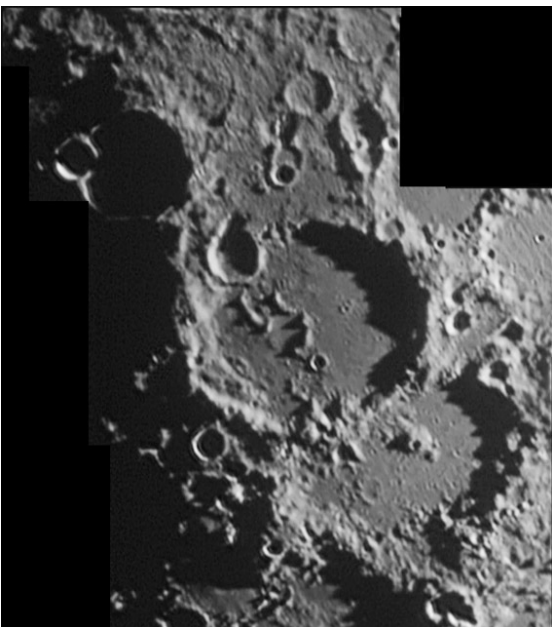
ORONTIUS - Howard Eskildsen-Ocala, Florida, USA. September 24, 2012 UT 00:45 UT. Seeing 6/10, Transparency 4/6. 6" f/8 refractor, Explore Scientific lens, 2X Barlow, DMK 41AU02.AS, IR block & V block filters.

MARE AUSTRALE- Peter Grego, St. Dennis, Cornwall, UK. August 29, 2012 23:00-23:30 UT. Seeing AII. Colongitude 65.1-65.4°. 25x100 binoculars

A general study of Mare Australe under a favourable libration ($-05^{\circ} 34-36'$ libration in latitude, $+04^{\circ} 27-24'$ libration in longitude). Several small dark floored clean-cut craters were prominent, including Brisbane Z, Hanno H and Oken, along with some larger and more irregular darker features including Lyot and several unnamed patches of mare. Streaks of ejecta from Tycho were visible crossing the high ground in the northwest of the observed area.



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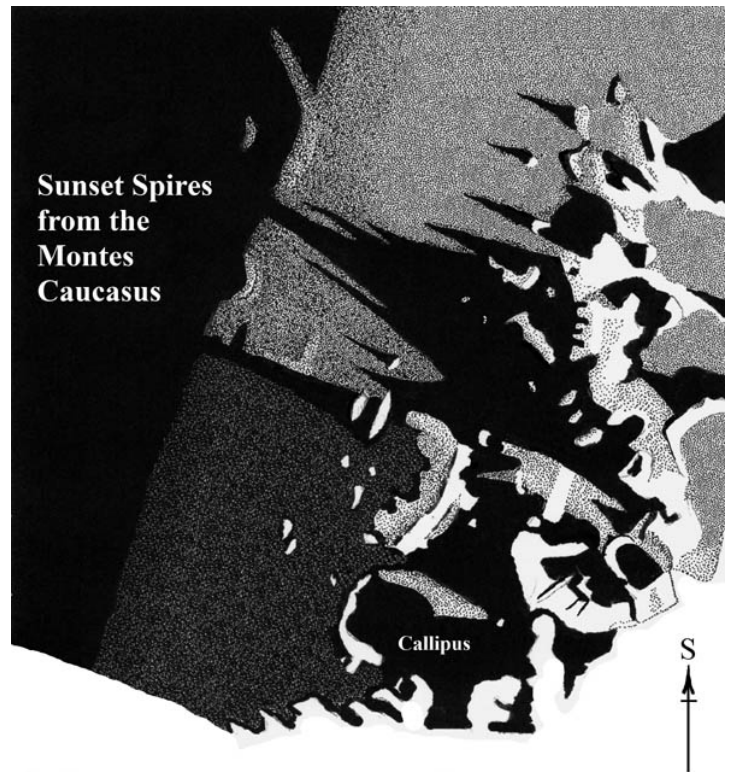


PURBACH – Richard Hill – Tucson, Arizona, USA August 25, 2012 02:27 UT. Seeing 7/10. TEC 8" f/20 MAK-CASS.. DMK21AU04. Wratten 23 filter. North up.

A montage of 2 images of the craters Purbach and Regiomontanus (below center) and Thebit in shadow above center. It's a very dramatic sunrise images with great shadows in the two larger craters and from the mountains in Purbach. Note several things in this image. First the parallel striations to the north of Purbach. I had never noticed these before but then I never observed this region under such a low sun angle. Second note the central crater in the mountain (central peak) of the badly eroded crater Regiomontanus. Evidence of volcanism?

RECENT TOPOGRAPHICAL OBSERVATIONS

MONTES CAUCASUS –Phillip Morgan –Lower Harthall-Tenbury Wells, Worcestershire, England. September 7, 2012 04:25-05:00 UT. 305 mm f/5 Newtonian, x400. Seeing 9/10 Transparency 5/6. Colongitude 165.4-165.7°.



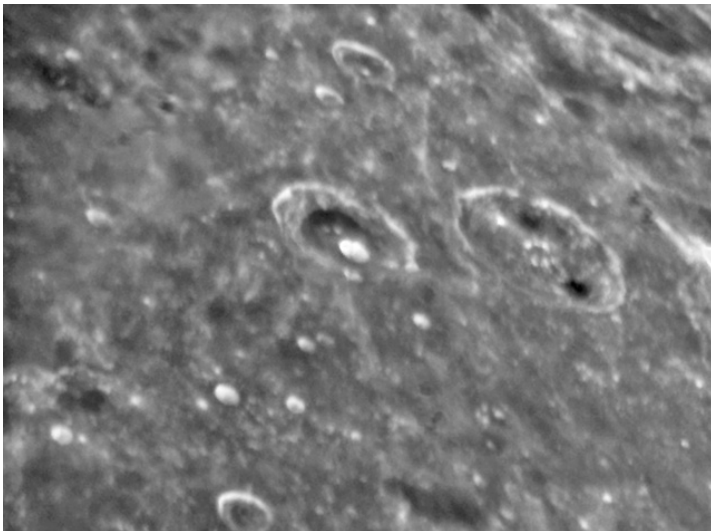
CLAVIUS –Damian Peach –Selsey, West Sussex, United Kingdom. September 7, 2012 04:00 UT. 356 mm reflector, PCR Flea3.

ADDITIONAL TOPOGRAPHICAL OBSERVATIONS

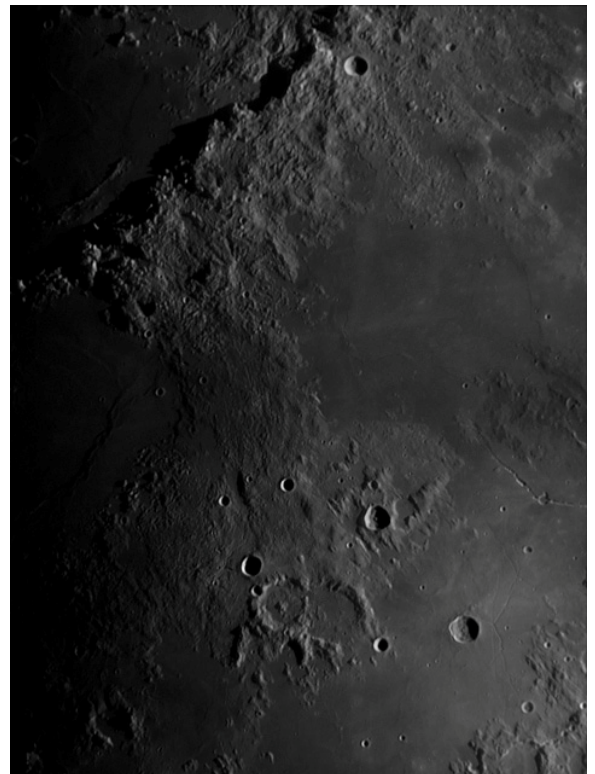
15 day MOON - Maurice Collins-Palmerston North, New Zealand. September 1, 2012 08:27-08:46 UT. ETX-90, LPI.



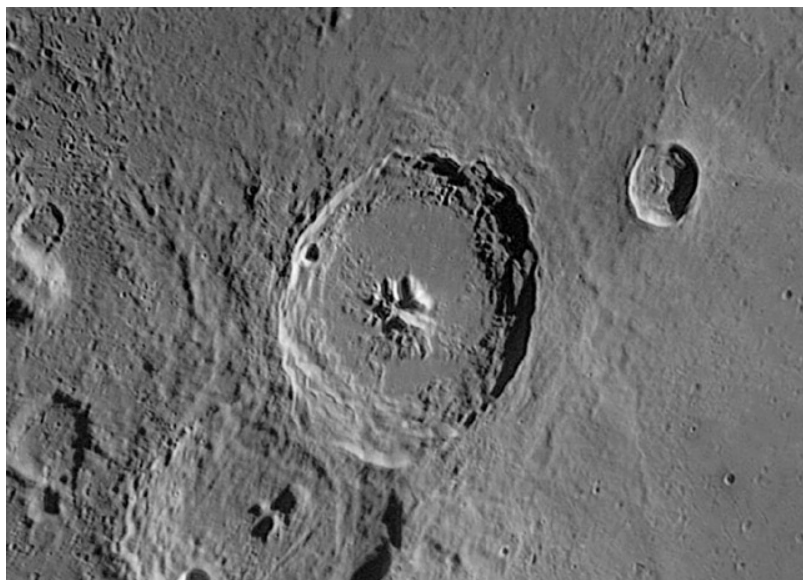
HERCULES & ATLAS– William Dembowski, Windber, Pennsylvania, USA. August 29, 2012 01:55 UT Colongitude 54.7, Seeing 5/10. Celestron 9.25" SCT f/10, DMK 41, 2x barlow, UV/IR filter.



SINUS AESTUUM - Howard Eskildsen-Ocala, Florida, USA. September 24, 2012 UT 00:42 UT. Seeing 6/10, Transparency 4/6. 6" f/8 refractor, Explore Scientific lens, 2X Barlow, DMK 41AU02.AS, IR block & V block filters.



ADDITIONAL TOPOGRAPHICAL OBSERVATIONS



THEOPHILUS – Richard Hill – Tucson, Arizona, USA May 20, 2010 02:33 UT. Seeing 8/10. C-14 SCT, f/22. DMK21AU04. 656.3 nm filter.



ARCHIMEDES –Damian Peach –Selsey, West Sussex, United Kingdom. September 8, 2012 03:36 UT. 356 mm reflector, PCR Flea3.

LUNAR TRANSIENT PHENOMENA

Coordinator – Dr. Anthony Cook – atc@aber.ac.uk

Assistant Coordinator – David O. Darling - DOD121252@aol.com

LTP NEWSLETTER – OCTOBER 2012

Dr. Anthony Cook - Coordinator

Routine observations for August 2012 were received from the following observers: Jay Albert (Lake Worth, FL, USA) observed: Aristarchus, Mons Pico, Mons Vinogradou, Plato, Proclus, and Schickard. Gary Beal (New Zealand) imaged Clavius, Copernicus, Grimaldi, Plato, Rima Triesnecker, Rupes Recta, Schickard, Schiller, Tycho, and took whole disk images of the Moon. Maurice Collins (New Zealand) imaged Montes Caucasus, Plato, and took whole images of the Moon. Marie Cook (Mundesley, UK) observed: Aristarchus, Gassendi, Plato, Torricelli B, and Vallis Schroteri. I obtained time lapse images of the Moon in narrow wavebands, using the robotic telescope at Aberystwyth University. Charles Galdies (Malta) imaged Eratosthenes. Rik Hill (Tucson, AZ, USA) imaged Archimedes, Maginus, Moretus, Orontius, Purbach, Rima Triesnecker, and also took an image of the whole lunar disk. George Ionas (New Zealand) imaged Theophilus, and took whole disk images of the Moon. Norman Izett (New Zealand) took whole disk images of the Moon and Earthshine. Andrea Mistretta (Italy, UAI observer) imaged Eratosthenes. Franco Taccogna (Italy, UAI observer) imaged Cyrillus.

News and Comments: There are at least two papers at the European Planetary Science Conference, in Madrid, to do with impact flashes, and another looking for evidence of change on the Moon. See <http://meetingorganizer.copernicus.org/epsc2012/sessionprogramme> for further details about the conference programme,.

There was an interesting mention about the visibility of Tycho's central peak in shadow, on Lunar Picture of the Day: <http://lpod.wikispaces.com/September+13%2C+2012> . We have discussed this before in the LTP newsletter, and although it looks like scattered light from the illuminated walls is the most probable cause, I am still perturbed why on so many occasions, often under good atmospheric conditions, the central peak cannot be seen in shadow at very low sun angles – especially under sunrise conditions. Please try to keep a look out for the earliest that you can detect the central peak of Tycho at sunrise, and the latest that you can see it at sunset.

I have had some correspondence from Alexandre Amorim, from Brazil, over a correction to an entry in the Cameron LTP catalog concerning J. Brazilicio de Souza's Earthshine LTP observation from 1885 May 11, made from Florianopolis, Brazil. This concerned two small red luminous spots seen near Gutenberg, somewhere between the highlands and Mare Nectaris. Additional information was that Brazilicio de Souza, also tried changing eyepiece, but the red color remained. Red spots in Earthshine are rare, Herschel's volcanoes are some early examples. Red spots in Earthshine are rather difficult to explain with conventional atmospheric or telescope optical effects, which makes them especially interesting to look out for and study.

Antonio Mercatali (UAI, Italy) has been in contact over possible collaboration with the ALPO and BAA LTP groups, and as you can see from this newsletter, we are already utilizing images from a couple of their observers, and hope to plan other collaboration activities in future.

Lastly, I welcome Alexey Mineyev, from Veliky Novgorod, Russia to our lunar work. He plans to observe at repeat illumination predicted times and has started sending in observations during September.

LTP Reports: No LTPs were seen in August, although you will see later, a routine repeat illumination report did have certain aspects of being a LTP, and will need to be re-visited at future repeat illumination events.

Routine Reports: Here is a selection of reports received during August that can help to re-assess some past LTP observations. I apologize for not including more images this month for specific observations, but as you will see, Charles Galdies has something rather interesting to show us in Eratosthenes, and this has taken up quite a lot of room in the newsletter:

Aristarchus: On 2012 Aug 01 UT 22:35-22:45 Marie Cook re-observed Aristarchus under the same illumination conditions as the following two LTP:

Aristarchus area 1955 Sep 30 UT 20:45 Observed by Firsoff (Somerset, England, 6.5" reflector, x200) "Area showed a westward yellow smear, looked darkish in red, indicating presence of green." NASA catalog weight=4 (high). NASA catalog ID #614. ALPO/BAA weight=3.

Aristarchus on 1981 Apr 18 at UT 19:50-22:10 M. Mobberley (Suffolk, UK, using a 14" reflector, seeing poor and transparency poor) observed faint-yellow streaks still visible, but less prominent. Cameron mentions that Bartlett noticed this color, but in the south floor of Aristarchus. Cameron 2006 catalog ID=133 and weight=3. ALPO/BAA weight=2.

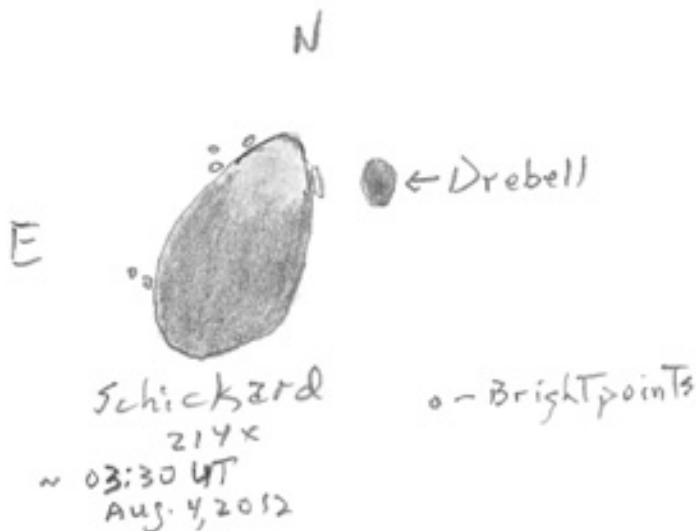
Although yellow seemed to be a key ingredient of both of these LTP, Marie failed to see any signs of color when she looked, but did find that the east and west walls of Aristarchus were not sharp, despite the atmospheric seeing being a moderate III. However the transparency was hazy. Therefore the weights of these LTP will remain the same for now. Interestingly, although in monochrome, George Ionas took an image mosaic that covered the same area, under similar illumination on 2012 Aug 31 UT 09:53, so at least we have some sort of idea of what the crater looked like back in 1969 and 1981.

Schickard: On 2012 Aug 04 UT 03:20-03:25 Jay Albert observed Schickard crater under the same illumination as a LTP seen by Sir Patrick Moore back in 1939:

Schickard 1939 Aug 02 UT 00:01 Observed by Moore (England, 12?" reflector) "Floor milky, walls almost vis. 2 bright pts. in area. not extending to extreme w.part of floor" NASA catalog weight=4 (high). NASA catalog ID #456. ALPO/BAA weight=3.

Jay reported noted that the crater's floor was dark, but somewhat lighter on the north part of the floor. It was not "milky" or in any way obscured, despite mediocre transparency and seeing. Two bright points were seen on the NE wall, two closer together on the SE wall and a small, thin, elongated strip along the NW wall. The crater walls looked flat due to the lack of relief under the full Sun. A diagram is shown in figure 1. He used 214x from 03:20 to 03:35UT.

Figure 1. Schickard Crater as drawn by Jay Albert. Date, UT and orientation as given on the sketch.



Earthshine: On 2012 Aug 20 UT 07:12 Norman Izett captured an Earthshine image of the Moon showing Aristarchus as bright. By chance the image contained a star off the northern pole of the Moon and this allowed a direct estimate of the brightness magnitude of Aristarchus. The star, integrated over 4 pixels, had a mean image brightness of 58.75, so a total flux of 235, whereas Aristarchus crater had an area of 28 pixels, and a mean image brightness of 68.43, making a total flux of 1916, or 8.2x more light, or 2.3 magnitudes brighter than the star. The star, HIP58132, turned out to be magnitude 8.9, so therefore Aristarchus was approximately magnitude 6.6. This shows the advantage of having a star nearby in that one can make such comparisons, indeed two other comparison stars off the bright limb of the Moon confirm this magnitude.

Archimedes: On 2012 Aug 25 at 02:34 Rik Hill captured an image of the area between Archimedes and Cassini. This just happened to coincide with not too dissimilar illumination to the following LTP report below from 1967.

Archimedes 1967 Jan 18/19 UT 23:00?-01:00? Observed by Delano (New Bedford?, Massachusetts, USA, 12.5" ? reflector) and by Corralitos Observatory (Organ Pass, NM, USA, 24" reflector + Moonblink) "Saw an obscuration or unusual appearance on floor. Not confirmed by Corralitos MB., but their rep't says Aristarchus)" NASA catalog weight=4 (high). NASA catalog ID #1009. ALPO/BAA weight=2.

What is rather clear from Rik's image is that the floor of Archimedes should have been completely shadow filled, so it is odd that the LTP description mentions an obscuration or unusual appearance. Is it possible that the original date was out by 1 day, as sometimes happens with reports from time zones outside the Greenwich meridian? Alas I do not have any other information about this LTP other than the above description from the Cameron catalog. In view of this uncertainty, I will lower the weight of this observation to 1.

Hyginus Nova: On 2012 Aug 25 at UT08:05 Gary Beal obtained an image of the Rima Triesnecker area (See Figure 2 (left)). This was at the predicted time when the illumination was similar to an 1877 Nov 13 LTP in Hyginus N, where N stood for "neue = new" or "Nova" (See Figure 2 (right)), and not the same crater as the modern day Hyginus N as defined by the IAU. The Cameron 1978 catalog description of this LTP is:

Hyginus Nova 1877 Nov 13 UT 20:00? Observed by Crain, Klein, Eng. officer (France?, Cologne (Germany), England?, 6" refractor?, S=E) "Standing out with such prominence, seen at a glance. No trace of it on 14th, in excell seeing. (indep. confirm.?)"NASA catalog weight=5 (very high). NASA catalog ID #198. ALPO/BAA weight=3.

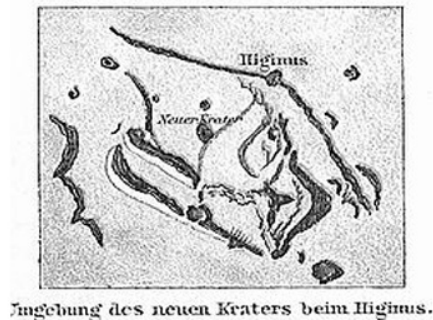


Figure 2: Rima Hyginus - north is towards the bottom (Left) Image by Gary Beal. (Right) The location of Hyginus "N" from: Map of the Moon, by Andrees Allgemeiner Handatlas, 1st edition, Leipzig, Germany, 1881 – see <http://en.wikipedia.org/wiki/File:MoonMap1.jpg>.

Reading up some references Lunar Wiki Spaces, this describes Hyginus N an inconspicuous dark-halo crater (<http://the-moon.wikispaces.com/Hyginus>). According to a paper by Neison, from the Astronomical Registrar (1879 September, No. 201, p199-208) Klein describes the 1877 Nov 13 observation thus: "The air was tolerably steady, and Hyginus N was seen at the first glance as a large spot with an ill-defined border, and about three miles in diameter". The entry from Klein for 1877 Nov 14 was: "Not a trace of N could be detected, though definition was not good". These are slightly at odds with the Cameron description above, and also differ from the Gary Beal's image. Could it be that the UT estimated by Cameron was wrong? I think for safety I will reduce the weight of this observation from 3 to 1, at least until I find out any further information. Indeed an article entitled: "The Hyginus Nova Affair – A View in Retrospect", by

Buczynski and Moseley (The BAA Lunar Section's: The New Moon, Volume 3, No. 3, June 1988, p75-88) casts doubt on whether Klein's notion that the crater had not been seen before, was really correct, as it might have just been that previous observers had not meticulously studied this area previously under similar illumination angles.

Cyrillus: On 2012 Aug 25 UT17:54-18:34 Andrea Mistretta (a UAI observer) found a curious illuminated ring on the western side of Cyrillus. This turned out to be the rim of Cyrillus A, and is perfectly normal, but looks somewhat enigmatic at sunrise.

Eratosthenes: Back in 2009 Nov 25 Paul Abel, Trevor Little, and Chris North, all observing at Selsey, using Sir Patrick Moore's 15" reflector, under II-III seeing and very good transparency reported (see figure 3):

On 2009 Nov 25 UT18:42-21:03 P.Abel, T.Little and C.North (Selsey, UK, 15" reflector, seeing II-III, transparency very good), all saw visually a brownish tinge on the north west rim of Eratosthenes crater. P.Abel made a sketch and T.Little took some high resolution CCD images, some of which were through colored filters. Checks were made for spurious color, but none was seen elsewhere on the Moon. The eyepiece was changed but this made no difference. M.C.Cook (Mundesley) was observing with a smaller scope at the same time, but saw no color, however observing conditions were worse. W.Leatherbarrow (Sheffield, UK) was observing with an instrument mid way in size, and saw a brownish tinge in the NW rim area, but saw a similar color elsewhere and put this down to spurious color. Normally multiple observers seeing the same thing would result in a weight of 4, however as this was only observers at Selsey and some of the evidence contradicts, an ALPO/BAA weight=3 is allocated.

Charles Galdies was observing under the similar illumination conditions and captured four color images on 2012 Aug 25 UT 19:45, 19:48, 19:49, and 19:51 (See figure 4) that definitely showed a brownish color on the thin terrace shadings inside the western rim. However there was considerable artificial color present, either from atmospheric spectral dispersion, or some form of chromatic aberration in the camera/optics. Therefore let us see what happens when we do a first order removal of the spectral dispersion/chromatic aberration effect.



Figure 3. Sketch of Eratosthenes showing brown on The NW rim. Drawn by Paul Abel from 2009 Nov 25 UT 18:42?-20:18. North is towards the top left.

Now to remove the most obvious effects of spurious color, the images were enlarged by a factor of three, separated into their red, green, and blue components, then these were re-registered together so that they are aligned up as precisely as possible in red, green, and blue channels at the sub-pixel level. The images were then shrunk back to their original size, before undergoing unsharp mask sharpening (radius=2 pixels), auto-color correction (normalization), and a saturation boost of 50%. The results are shown in figure 5, and rather clearly depict the brown on the western wall terrace shadings, but so too other colors on other features that are rather reminiscent of chromatic aberration. This is despite the fact that a first order correction to remove such

artificial color was applied. So what has been happening here? Using the sharpest image from UT19:48, let us spit this into its separate red, green, and blue components and see what they look like in figure 6. It is clear that at shorter wavelengths, i.e. blue (Figure 6 Right), there is less contrast in the image, and so fine scale dark areas e.g. the shadowed terraces on the illuminated western rim will be less visible in the blue channel, possibly making these areas look redder in the combined color image. However it is also interesting that the floor shadow in Eratosthenes is slightly smaller and has a fuzzy edge on its west in red light (Figure 6 Left), than in blue and green. Is this real or an artifact of the Registax processing, or the camera used? To test out

this hypothesis, I took a monochrome image by Andrea Mistretta (UAI), taken 35 minutes prior to the earliest Galdies image, and used this to experiment with combining different wavebands together by using different contrasts or sharpness in each wavebands. Unfortunately this failed to reproduce the desired effects shown in figure 5. I also asked Charles to send a couple of examples of the best raw images that went into Registax, and these confirmed that in red light the interior shadow appeared to be slightly smaller in diameter on the western side. Therefore it is not the Registax software that is to blame for the shadow effect at least.

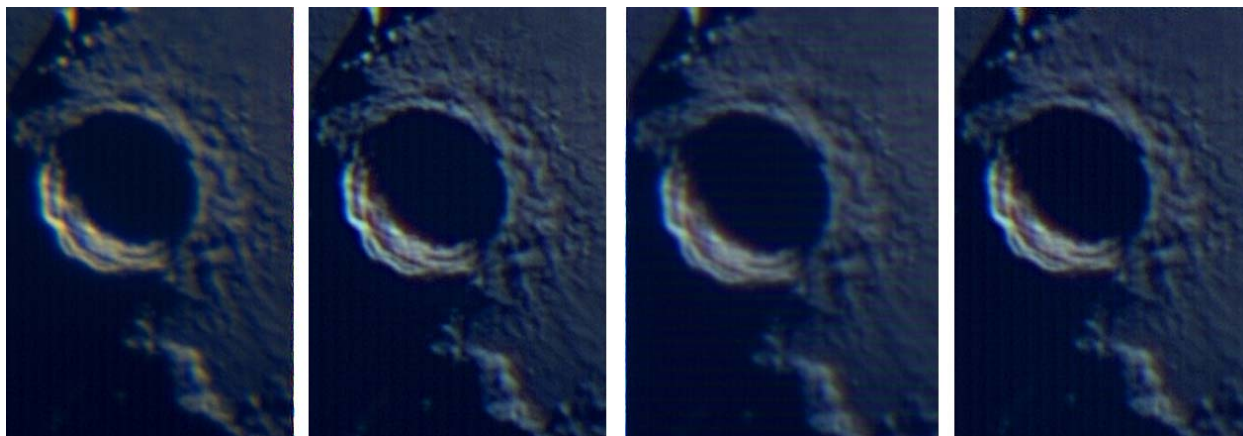


Figure 4. Color images of Eratosthenes by Charles Galdies. Philips SPC 900NC PC camera (color space/compression YUY2) on a Nexstar 8SE telescope. Air temperature 27.5C, dew point 21.8C, wind 9.3 km/h SSW, 15 km visibility i.e. a clear sky. Each image is a result of running Registax 6.0 using 3000 frames, with 95% best frames and wavelet transform. Further processed for reproduction in the newsletter, with a contrast stretch and slight increase in color saturation. North is towards the top left. (Far Left) UT19:44:11-19:45:01. (Centre Left) UT 19:47:28-19:48:18. (Centre Right) UT19:48:19-19:49:08. (Far Right) 19:50:33-19:51:23.

One thing that I did notice though when registering red, green and blue image components together was that there were many minor distortions present in the crater in one color channel that were different to small scale image distortions in another color channel. Hence although the overall color channel alignment was optimal, at the small scale a few pixels random displacement was present. Could this have been the cause of the effects seen in the Galdies images? Unfortunately this is rather difficult to replicate, and the two best quality raw images exhibited a red colour on the western rim, despite their red, green and blue channels being well aligned.

This 2012 observation remains a puzzle to me (despite this having some common features of spurious color) and I cannot replicate this effect well artificially. It is also interesting that the 19:45 image has no redness to it, although there is a slight bluish cast overall – this makes me wonder if it is something going on in the webcam used? As I am just not sure, I will add the Galdies observation to the LTP catalog, but with a weight of 1, just to encourage observers to try to replicate the effects seen. At least the color was not too dissimilar to that seen by Paul Abel and others back in 2009, and also lay in terrace shadings, but in the case of the Abel observation, was more confined to the NW.

Gassendi: On 2012 Aug 28 UT 07:40-07:57 Maurice Collins took a whole Moon mosaic not too dissimilar to the lighting conditions that matched the following LTP:

Gassendi 1969 Nov 20 UT 17:06-17:15 Observed by Duckworth (Manchester, England, 8" refractor x250) "Faint Pinkish Obscuration on floor. Event in progress at 1706h, gone on return at 1715h. No more LTP from 1734-1822h" NASA catalog weight=4 (high). NASA catalog ID #1223.ALPO/BAA weight=3.

Maurice's image mosaic fails to show any color here. So I will leave the weight at 3 for now as the observer did check again later but found the color had gone.

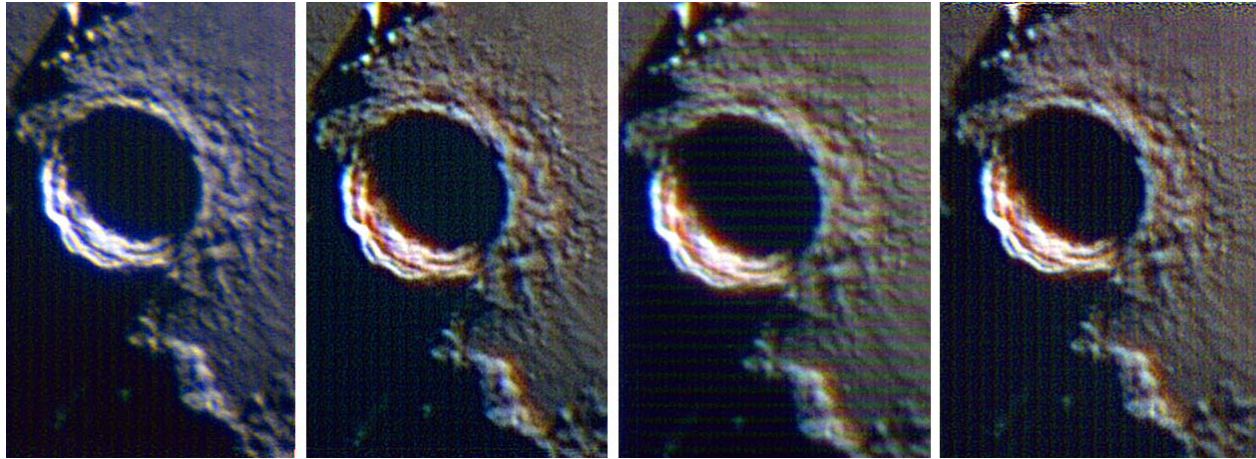


Figure 5. Color images of Eratosthenes with first order spurious color removed, followed by unsharp mask filtering (radius=2 pixels), followed by autocolor correction (normalization), followed by 50% color saturation. North is towards the top left. (Far Left) UT19:44:11-19:45:01. (Centre Left) UT 19:47:28-19:48:18. (Centre Right) UT19:48:19-19:49:08. (Far Right) 19:50:33-19:51:23.

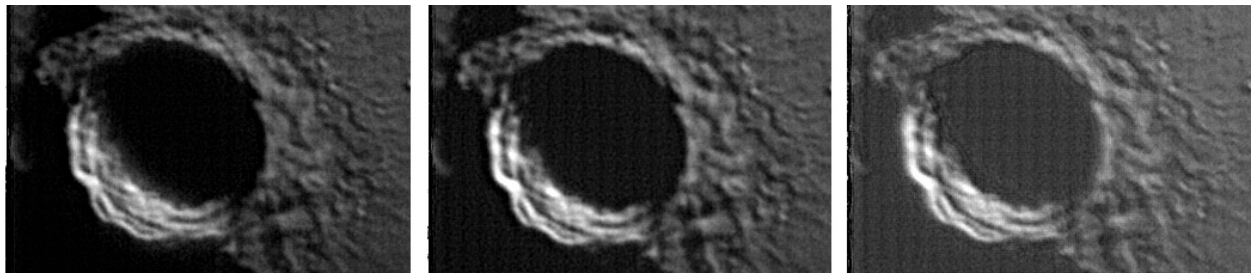


Figure 6. The UT19:44:11-19:45:01 image of Eratosthenes, but sharpened, contrast stretched and separated into (left) Red, (Centre) Green, (Right) Blue, components.

Suggested Features to observe in October: For repeat illumination (only) LTP predictions for the coming month, these can be found on the following web site: <http://users.aber.ac.uk/atc/tlp/tlp.htm>. 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. 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. Archimedes
2. Clavius
3. Endymion
4. Hercules
5. Mare Australe
6. Montes Caucasus
7. Moretus
8. Orontius
9. Plato
10. Purbach
11. Sheepshanks
12. Sinus Aestuum
13. Theophilus

FOCUS ON targets

X = Atlas (November)

Y = Alphonsus (January)

Wrinkle Ridges & Rilles (March)

