



THE LUNAR OBSERVER

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

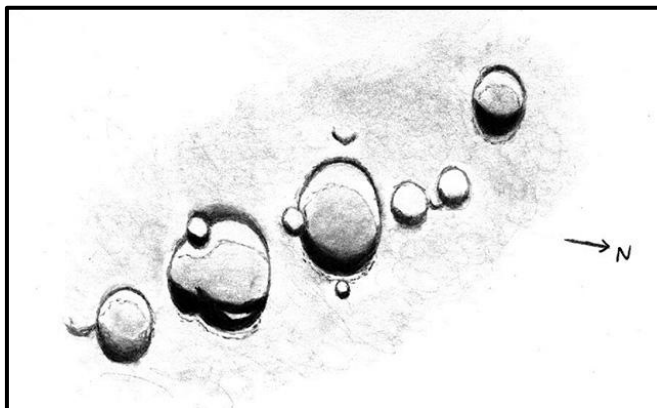
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RECENT BACK ISSUES: http://moon.scopesandscapes.com/tlo_back.html

FEATURE OF THE MONTH – DECEMBER 2015

BACO J,K,E



Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
September 22, 2015 00:50-01:18 UT, 15 cm refl, 170x, seeing 5-7/10

I drew these craters and nearby ones on the evening of Sept. 21/22, 2015 before the moon hid ZC 2680 (near M25). Baco K is the most conspicuous crater of this group. This one is actually two overlapping craters, the northern one being larger. Both lobes had dark interior shadowing at this time, and a bright sunlit strip was inside the north lobe. The two areas of shadow did not merge cleanly. This may be the result of a remnant wall, though I did not see any. Baco G is the small, crisp crater intruding into the west side of Baco K. The interior west walls of Baco K (facing the sun) were quite bright at this time. Baco J is the sizable crater south of K. This crater must be quite shallow, judging from its pale interior shadowing. A dull, grayish arc is just south of Baco J, and appears to be the east rim of a ghost crater. Baco E is north of K, and is about the same size. The interior shadow of Baco E was not as dark as that of K, and appeared to be intermediate between those of Baco K and J. A modest, shallow crater intrudes into the south rim of Baco E, and a similar, but smaller saucer is just to its east. Neither of these craters is labelled on the Lunar Quadrant map. A partial ring is just west of Baco E, and is labelled Baco Z on that map, though it isn't much more obvious than the feature south of Baco J. It certainly isn't as conspicuous as the craters south and east of Baco E. Two shallow saucers are north of Baco E. The LQ map shows three overlapping rings there, but I saw only two with a hint of rim between them. Cuvier B is the deep, crisp crater to the northwest. This crater is nearly symmetrical except for a slightly pointed east end. The fresh appearance of Cuvier B is in contrast to many of the other craters in this sketch.

LUNAR CALENDAR

DECEMBER 2015 - JANUARY 2016 (UT)

2015		UT	
Dec	03	07:41	Last Quarter
	04	06:21	Moon-Jupiter: 2° N
	04	18:33	Moon Ascending Node
	05	14:56	Moon Apogee: 404800 km
	06	02:40	Moon-Mars: 0.1° N
	07	16:55	Moon-Venus: 0.7° S
	11	10:29	New Moon
	12	08:15	Moon South Dec.: 18.4° S
	18	15:13	Moon Descending Node
	18	15:14	First Quarter
	21	08:53	Moon Perigee: 368400 km
	23	19:09	Moon-Aldebaran: 0.7° S
	25	07:30	Moon North Dec.: 18.4° N
	25	11:11	Full Moon
	29	20:30	Moon-Regulus: 2.9° N
	31	17:55	Moon-Jupiter: 1.6° N
	31	20:19	Moon Ascending Node
Jan	02	05:30	Last Quarter
	02	11:53	Moon Apogee: 404300 km
	03	18:45	Moon-Mars: 1.6° S
	06	23:57	Moon-Venus: 3.3° S
	07	04:57	Moon-Saturn: 3.6° S
	08	17:56	Moon Extreme South Dec.: 18.4° S
	10	01:30	New Moon
	14	15:48	Moon Descending Node
	15	02:10	Moon Perigee: 369600 km
	16	23:26	First Quarter
	20	02:16	Moon-Aldebaran: 0.5° S
	21	16:41	Moon Extreme North Dec.: 18.4° N
	24	01:46	Full Moon
	26	05:10	Moon-Regulus: 2.8° N
	27	23:58	Moon Ascending Node
	28	01:14	Moon-Jupiter: 1.6° N
	30	09:10	Moon Apogee: 404600 km

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 Journal of the Association of Lunar and Planetary Observers-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: 0 to 10 (0-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: Mare Nubium

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 **January 2015** edition will be **Mare Nubium** and surroundings. Observations at all phases and of all kinds (electronic or film based images, drawings, etc.) are welcomed and invited. Keep in mind that observations do not have to be recent ones, so search your files and/or add 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 Mare Nubium article is December 20, 2015

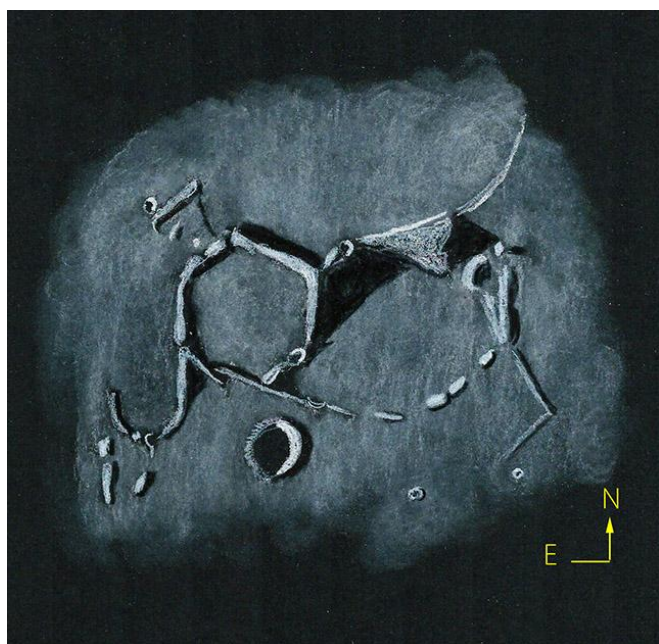
FUTURE FOCUS ON ARTICLES:

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>
Your Favorite Feature (Photogenic, curious, strange, or ? Why?)	March 2016	February 20, 2016
Kepler	May 2016	April 20, 2016

PARRY & BONPLAND

David Teske



I made this sketch on the early evening of 21 October 2015 (22 October 2015) using a 60 mm f/16.7 fl 1000 mm Moon Raker refractor telescope. A 5 mm Baader Planetarium Hyperion eyepiece was used with a magnification of 200. The telescope was mounted on a Losmandy GM8 mount. The observation was made between 2357 and 0112 UT. Seeing was 7/10 under mostly clear skies except for some passing cirrus clouds. The moon was first quarter phase. Medium was white and black pastel with white a white pencil on black cardstock. The observation was made by David Teske in Starkville, Mississippi.

Parry is the polygonal, degraded crater on the east side of this study with a remarkably hexagonal shape. On the northern extremity of Parry was a gap in the wall. Moving southeast of this the wall has a blocky hill followed by a small gap as indicated by the shadow. The eastern wall of Parry is relatively

thin with more width to the south. The south wall of Parry is made by two thin hills. The westernmost of these hills extends past Parry to make the southeastern wall of Bonpland. The southwestern wall of Parry consists of a blocky region that appears bright. A fresh impact crater with rays, (not visible) is in this area. Northwest of this is crater E with a diameter of 5.7 km. The western and northwestern wall of Parry is a continuous wall that seems to be the highest wall of the crater. In this study I did not note features on the floor of Parry. Southeast of Parry is the half-ring Parry M with a diameter of 25 km. North northeast of Parry was a hilly region. Just northeast of this was a small crater. West of Parry is the crater remnant Bonpland with a diameter of 59 km. Bonpland's eastern wall is Parry's western wall. The northern wall of Bonpland moving westward has a small depression (crater?) that then widens to a large hill. This hill comes to a rather blunt end with a crater in its shadow. West of this is a crescent-shaped hill. Moving south from this are two ridges that converge to a point. Southeast of this, I observed three small hills. East of this, the southern wall of Bonpland has a low hill then a ridge that extends to the southeastern wall of Parry. Southwest of Bonpland is crater D with a diameter of 5.3 km near the end of a narrow ridge. South of Bonpland is C with a diameter of 4 km. South of Parry is the 13 km diameter crater Tolansky which has its floor in shadow and its western wall in sunlight. North of Parry and Bonpland is the large crater Fra Mauro, which is not drawn.

PALUS EPIDEMIARUM

Richard Hill

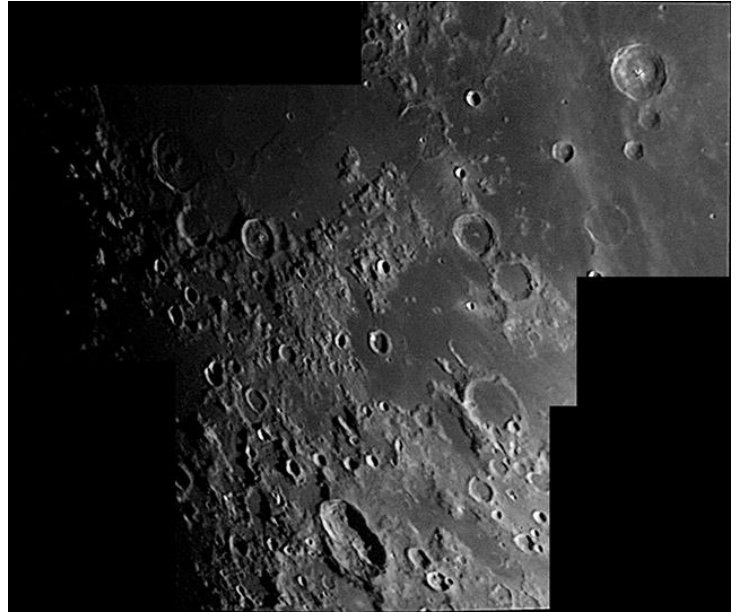
Palus Epidemiarum, quite a mouthful. But that is the mare-like region in the center of this montage. It is nestled between and to the south of Mare Humorum (upper left) and Mare Nubium (right), just below the great 63km diameter crater Bullialdus in the upper right of this image. There are many treats in store here like Bullialdus with its remarkable central peak much like that of Theophilus.

PALUS EPIDEMIARUM – Richard Hill, Tucson, Arizona USA. October 24, 2015 02:51 UT. TEC 8" Mak/Cas, f/20, Skyris 445M, 656.3 nm filter. Seeing 7/10.

On the northern edge of the Palus is a pair of 49km craters. The upper one is Campanus and the lower is Mercator. Rupes Mercator runs from the north edge of Mercator down to the lower right and off the image. South of Mercator is the flooded and ruined 61km crater Capuanus. I like the three fingers of mountains that reach up and to the left of this crater making it very distinctive. These 3 fingers point to a crater on the opposite side of the Palus. This is Ramsden (26km) with its fascinating system of rimae all around it. Note the 'X' of rimae just above the crater itself. Going further north note the curvilinear rimae, the result of the mare Humorum impact. These are the Rimae Hippalus with Hippalus itself being the ruined and half buried crater walls to the upper right end of the rimae. Just above the Rimae is an obvious dark gash in the mountains running from the upper right to the lower left ending just below the nice 43km crater Vitello. This gash is Rupes Kelvin and is well shown by the lighting on this night. Vitello is a crater with a strange central peak. Note that it appears to sit on a plateau in full resolution!

Before leaving this area it is worth pointing out the footprint shaped crater Hainzel. Actually this is the merge of two craters with another odd central peak or rather central range of mountains in the southern component and an offset peak in the northern. Lastly, to the right of Hainzel is the tiny mare-like are Lacus Timoris.

Each image in this 4 image montage was made from a stack of 500 frames of 3000 frame AVIs. This was chosen because of the mediocre seeing. Each image was processed with GIMP and IrfanView and the montage made with AutoStitch.



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

ALBERTO ANUNZIATO - ORO VERDE, ARGENTINA. Digital images of Plato & Sinus Iridum. Drawing of Santbech.

JUAN MANUEL BIAGI - ORO VERDE, ARGENTINA. Digital images of Aristarchus & Copernicus.

FRANCISCO ALSINA CARDINALI-ORO VERDE, ARGENTINA. Digital images of Gassendi & Mare Nubium

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND. Digital images of 11 day moon & Mare Humorum.

ROBERT HAYS - WORTH, ILLINOIS, USA. Drawings of Baco J K E & Galilei.

RICHARD HILL – TUCSON, ARIZONA, USA. Digital images of Montes Apenninus, Rupes Recta, Stadius, Theophilus, Torricelli & Vitello.

DAVID JACKSON - REYNOLDSBURG, OHIO, USA. Drawings of Plato (3).

FRANCO TACOGNA - GRAVINA IN PUGLIA (BA), ITALY. Digital image of Mare Nubium.

DAVID TESKE - STARKVILLE, MISSISSIPPI, USA. Drawing of Parry-Bonpland.

RECENT TOPOGRAPHICAL OBSERVATIONS

SINUS IRIDUM- Alberto Anunziato-Oro Verde, Argentina.
October 24, 2015 04:42 UT. LX200 250 mm SCT, Phillips
SPC900NC. Seeing 7/10.

In the center of the image we can observe Sinus Iridum, the lunar feature most similar to an authentic bay and one of the prettiest. In the arc formed by the Montes Jura the sun light illuminates the west section (taking crater Bianchini as the center), wich finishes at the Promontorium Heraclides, also known as the “moon maiden”, because of the pareidolia of a girl with thick hair formed by the terraced hills (west of Heraclides). The east section is slightly shadowed, the darkest tone is the shadow of the Promontorium Laplace, east end of Sinus Iridum. From one promontory to the other there are 260 kms. The craters at the Montes Jura are clearly differentiated. Bianchini, Sharp and Mairan (from left to right) are superposed, dark shadowed, younger and deeper than La Condamine and Maupertuis, the bigger craters westwards of Bianchini, formed before the impact that formed the Iridum Crater (now partially buried) and partially filled with material ejected by the impact. The upper part of the image shows some highlights of the northern part of the Mare Imbrium, outside the Sinus Iridum. Near Promontorium Laplace are the Montes Recti, a remnant of the Imbrium basin’s inner ring that could escape the lava flooding that formed Mare Imbrium. In this mare we see from left to right the craters Le Verrier, Helicon, C. Herschel, Heis and Delisle. Somewhere westwards Promontorium Heraclides lies the inactive soviet rover Lunokhod 1, the first remote-controlled planetary vehicle, that wandered the Mare Imbrium for ten months between 1970 and 1971.





COPERNICUS- Juan Manuel Biagi-Oro Verde, Argentina. October 24, 2015 04:47 UT. LX200 250 mm SCT, Phillips SPC900NC. Seeing 7/10.



GASSENDI- Francisco Alsina Cardinali-Oro Verde, Argentina. October 24, 2015 03:43 UT. LX200 250 mm SCT, Phillips SPC900NC. Filter O III narrow-band. Seeing 7/10.



11-day MOON - Maurice Collins, Palmerston North, New Zealand. October 24, 2015 07:20-07:28 UT. FLT-110, ASI120MC.

MARE HUMORUM - Maurice Collins, Palmerston North, New Zealand. October 24, 2015 07:38 UT. FLT-110, ASI120MC, f/21.



STADIUS – Richard Hill – Tucson, Arizona, USA November 21, 2015 02:46 UT. Seeing 9/10. TEC 8" f/20 Mak-Cass, SKYRIS 445M, 656.3 nm filter.

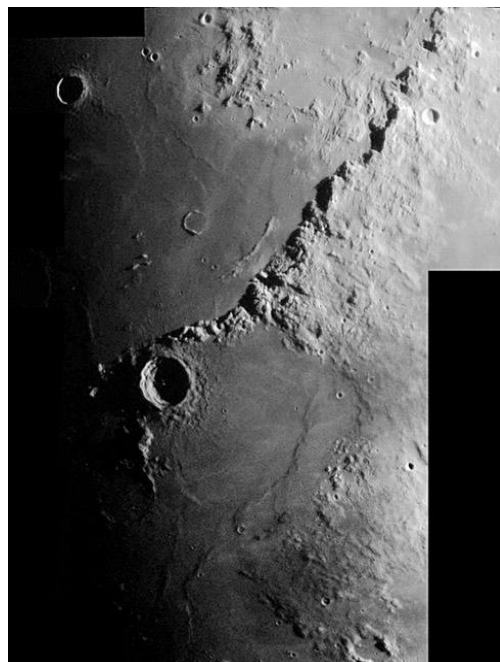
Ignore the elephant in the room, Copernicus. It's gorgeous as usual but I want to call attention here to the morphology of the secondary cratering between the 93km diameter Copernicus and the 60km Eratosthenes on the right. Between them is the 70km ghost crater Stadium, seen very well here with the low sun angle. Eratosthenes was not there when the old 3.8 billion year old (b.y.o.) Stadium impact took place and the no more than 1 b.y.o. Copernicus was not there when the 1-3 b.y.o. Eratosthenes impact occurred.

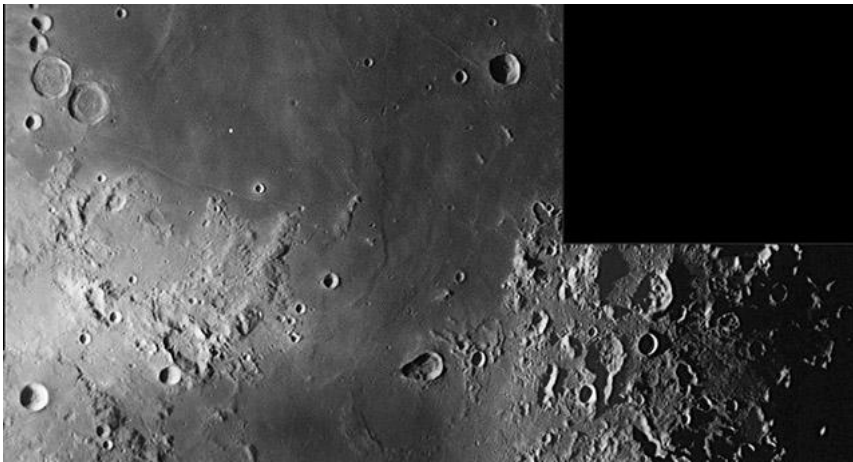
The verticle chain of secondary craters from the Copernican impact that starts in Stadium and goes to the top of the image. This image shows them down to just below 2km size. I'd say "diameter" except that many are just gashes and slashes made by mountain sized rocks ejected from Copernicus. How fantastic that would have been to see this impact happen from a safe distance here on earth. Note the remarkable gash at the top of this image some 40km in length but only 2-3 km in width as seen on the LROC QuickMap.

MONTES APENNINUS – Richard Hill – Tucson, Arizona, USA March 29, 2015 02:28 UT. Seeing 8/10. TEC 8" f/20 Mak-Cass, SKYRIS 445M, 656.3 nm filter.

A long lunar day begins with this view of the 60km diameter Eratosthenes and Sinus Aestuum to the lower right from the crater. Note the nice ejecta surrounding the crater and the wonderful dorsa in the southern end of this sinus. Sprouting like a grand tail from Eratosthenes, are the Montes Apenninus reaching up past the 22km Conon in the upper right corner. Get a good lunar map and have some fun identifying the many mons up the ridge. Above the title is the first view of 36km Timocharis for this day.

Below and left of Eratosthenes you can just trace the walls of the 71km ghost crater Stadium. At the very bottom of the image there is one ruined crater. This is Schroeter, listed as 36km diameter though it's fairly irregular. It shows flow marks breaching the northern wall.





APOLLO 11 to TORRICELLI –

Richard Hill – Tucson, Arizona, USA

October 3, 2015 09:00 UT. Seeing 9/10.

TEC 8" f/20 Mak-Cass, SKYRIS 445M, 656.3 nm filter.

Whenever the lighting is right I always try to image the area of the Apollo 11 landing, or Tranquility Base. Of course I don't expect to see the equipment, and never will, I just like to see if I can get better images of the three craters Armstrong, Aldrin and Collins (5, 3 and 3 km diameter respectively). The location of Tranquility Base is noted by a white dot in the upper left corner

are the twin craters Sabine and Ritter (31 and 32 km respectively). Take note of the two odd craters above Ritter, Ritter C and B moving up from Ritter.

Torricelli is not a pasta but is the sideways pear-shaped crater near the bottom middle of the image. The seeing was good enough so a lot of detail was caught on the floor and in the walls of this feature. This crater is listed as 24 km diameter, but how do you get a diameter with a shape like this? I measure it to be about 35x20 km using LROC Quick Map. Look at the jumbled terrain to the right of Torricelli. On the other side of Torricelli you have an arrowhead-shaped crater (pointing down). This is Hypatia pointing into Sinus Asperitatis. It too is listed as 43 km diameter but is actually more like 40x25 km. Rimae Hypatia can be seen on the shores of Mare Tranquillitatis just south of Tranquility Base.

PLATO – David Jackson – Reynoldsburg, Ohio USA

October 26, 2015 01:30-01:46 UT. Seeing 8/10.

Transparency 4.1/6, colongitude 71.9°, 10", f/4.7, 91x, 132x, 264x.

Association of Lunar and Planetary Observers: The Lunar Selected Areas Program
Visual Observations of Selected Lunar Features: *PLATO* (indicate chosen features)

Blank for Albedo Indices Drawing Blank

Date (UT): *2015-10-26* Start Time (UT): *01:30* End Time (UT): *01:46*
 Colongitude (Start): *71.9* Colongitude (End): *71.9* Altitude of Moon: *+42°*
 Seeing: *4.1* Transparency: *8* Instrument: *10" F/4.7*
 Magnification(s): *91 x 132 x 264 x* Filter(s): 1. 2. 3. 4.
 Observer: *David Jackson* Location: *Reynoldsburg OH 43068*

Index Point	Albedo: Filter 1	Albedo: Filter 2	Albedo: Filter 3	Albedo: Filter 4	Index Point	Albedo: Filter 1	Albedo: Filter 2	Albedo: Filter 3	Albedo: Filter 4
A	9				K	5			
B	9				L	5			
C	9				M	5			
D	9				N	5			
E	9				O	5			
F	9 (10)				P	5			
G	9				Q				
H	9				R				
I	5				S				
J	5								

Observational Notes:
Abdo wases, nater, using a
10 Step Grayscale

LUNAR GEOLOGICAL CHANGE **DETECTION PROGRAM**

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

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

Observations/Studies for October were received from: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Alphonsus, Aristarchus, Lichtenburg, Littrow, Marius, Mons Pico, Mons Piton, and Swift. Alberto Anunziato and others (Argentina – AEA) observed Aristarchus, Copernicus, Mare Nubium, Plato and Sinus Iridum. Kevin Berwick (Ireland – ALPO) observed Aristarchus, Laplace A, and Proclus. Francisco Cardinali and others (Argentina – AEA) imaged: Gassendi. Marc Charon (Reading Astronomical Society, UK) obtained a whole Moon image. Maurice Collins (New Zealand, ALPO) imaged Mare Humorum, and captured a whole Moon image. Marie Cook (Mundesley, UK) observed Alphonsus, Aristarchus, Herodotus, Plato, Proclus, and Taruntius. Rik Hill (Tucson, AZ, USA - ALPO) imaged Copernicus, Fracastorius, Theophilus, Torricelli, Palus Epidemiarum, and Rupes Altai. Giovanni Perna (Italy, UAI) imaged several features. Mike Pyka (Poland – BAA) imaged the ISS passing across the lunar disk. Franco Taccogna (Italy, UAI) imaged Aristarchus and Gassendi.

News: Firstly I would like to wish Happy Holidays to all our readers at this time of the year. I hope that at least some of you will receive some useful presents for lunar studies.

To add to the existing set of enthusiastic lunar observers in Argentina (the Oro Verde group), I have been contacted by Denis Martinez, who is the President of the Foundation of Southern Hemisphere Amateur Astronomers, and he says that he would like to participate in the observing program. I have therefore sent Denis our details and have added his observing location to our lunar predictions web site.

Again due to my very heavy lecturing workload, for this semester, this article is again a stripped down version of what I would normally produce, so unfortunately I do not have time to do the analysis. However I will present examples of observations received, and summarized transcripts of what repeat illumination LTP they coincided with. I will leave it up to the reader to decide what to make of the repeat illumination observations. Hopefully I can return to a more normal format and analysis in January. In the mean time I have continued to add REF No's, and will do the analysis on these over the holidays – so you can refer back to the original observations in the January newsletters.

Aberystwyth University, which hosts the [repeat illumination predictions](#) and [lunar schedule](#) web sites, has decided to go over to a completely Cloud Based way of storing staff web pages, using some Microsoft package that we may be forced to use, rather than the current approach of simply loading up HTML files. It is not known whether my existing software generated HTML web pages that I produce for different geographical locations in the world, will survive this university Cloud Based transition. Therefore do not be surprised if you cannot access the web pages at around mid December time. If this does happen then I will consider putting my web pages onto a non-university web site where I have more of a say in what I can do with my own web content. If this does happen then I will place a link on the old web sites showing where to look for the new web pages.

LTP Reports: No LTP reports were received in October, other than the one concerning Reiner and Reiner Gamma (See write-up from last month) which was not a LTP. Mike Pyka (BAA) did manage to obtain a video sequence of the ISS passing across the southern lunar highlands, along the line of sight (See Fig 1).

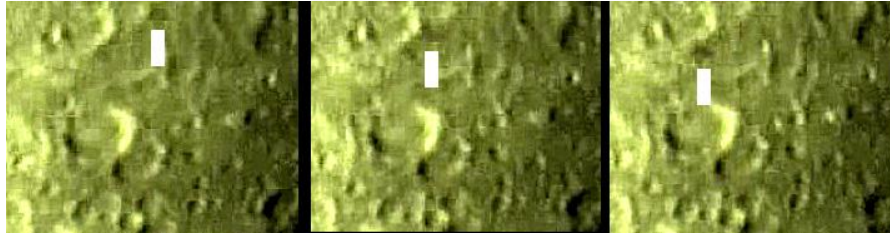


Figure 1. Webcam sequence of an ISS transit across the Moon, captured by Mike Pyka (BAA) on 2015 Oct 01 UT 19:56-1957. These raw video Images have been sharpened and orientated with north towards the top. The ISS, in silhouette, is indicated as being above the tick mark in each image.

Routine Reports: Below is a selection of reports received for October that can help us to re-assess unusual past lunar observations. Please note that although we have not discussed images sent in by Marc Charon, Rik Hill, and Giovanni Perna –because these were not under specific repeat illumination conditions, these images are nevertheless placed in our archives and made available to other Lunar Section researchers. By chance, the majority of images/observations from October, which are discussed below, were made on 2015 Oct 24 and often by more than one observer:

Lichtenburg: On 2015 Oct 26 UT 01:49-02:12 Jay Albert (ALPO) observed this crater under the same illumination conditions (to within $\pm 0.5^\circ$) to the following mid 1960's LTP report:

Lichtenberg 1966 Jun 02 UT 03:05-03:35 Observed by Schneller (Cleveland, Ohio, 8" reflector, slit spectroscope) "Red glow on W. wall (Schneller thinks this is "normal" reddening at SR; however, these vary according to Ricker), (This rep't is the only positive one from alert sent out to observe for J.Green's tidal predictions, See list of neg. obs.)" NASA catalog weight=3 (average). NASA catalog ID #944. – [REF 34]

Jay (using a 6" SCT, x214, seeing 6-7 out of 10, and transparency of magnitude 2) comments that he could see no red glow effect, or indeed any other color on the NW wall, or indeed anywhere else. The exterior eastern wall was bright, but the interior of the western wall was much brighter. The crater's floor was entirely shadow filled. Visual blinking with red (Wratten 25) and blue/green (Wratten 44a) filters indicated a possible marginal excess of red on the western wall.

Gassendi: On 2015 Oct 24 UT 03:43 Francisco Cardinalli and others (AEA) imaged Gassendi under the same illumination conditions, to within $\pm 0.5^\circ$, to the following 1985 report:

On 1985 May 30 P.Madej (Huddersfield, UK, 77mm refractor, x111 and x250, seeing II-III, transparency good) whole spectrum of colors seen on the central peak area, visible in both eyepieces, and was more prominent at the higher magnification. Not aware if the observer checked for this effect on other terminator peaks? ALPO/BAA weight=1.- [REF – 34b]

You can see the color image that Francisco captured in Fig 2 – this is the normal appearance that Peter Madej should have seen in 1985. There is no sign of a spectrum of colors on the central peak that Peter Madej saw. I checked the altitude of the Moon and it was 28° above the horizon as seen from Huddersfield in the UK on the LTP date, so not exceptionally low.

Plato: On 2014 Oct 24 Alberto Anunziato (and others at AEA) and Maurice Collins imaged this crater at 04:36 and 07:20 UT respectively, under the same illumination and topocentric libration conditions, to within $\pm 1^\circ$, to the following 1980's report:

On 1981 Aug 11 at UT21:05-21:36 G. North (England, seeing=poor) detected, in green light, a darkening on the floor of Plato. This effect was not seen elsewhere. J-H Robinson (Teighmouth, Devon, UK) detected on the SSE rim (inner and beyond) a triangle that appeared hazy in a wide range of filters at 21:05UT. However at 21:36UT it was only hazy in green and blue light. No similar effect was seen elsewhere. The Cameron 2006 catalog ID=150 and weight=5. The ALPO/BAA weight=3. – [REF 35]



Figure 2. Gassendi on 2015 Oct 24 UT 03:43 as imaged by Francisco Cardinalli and others (AEA). This image is orientated with north towards the top, and has been color normalised before undergoing a color saturation enhancement of 50%, and some sharpening. No attempt has been made to remove any spectral dispersion effects.

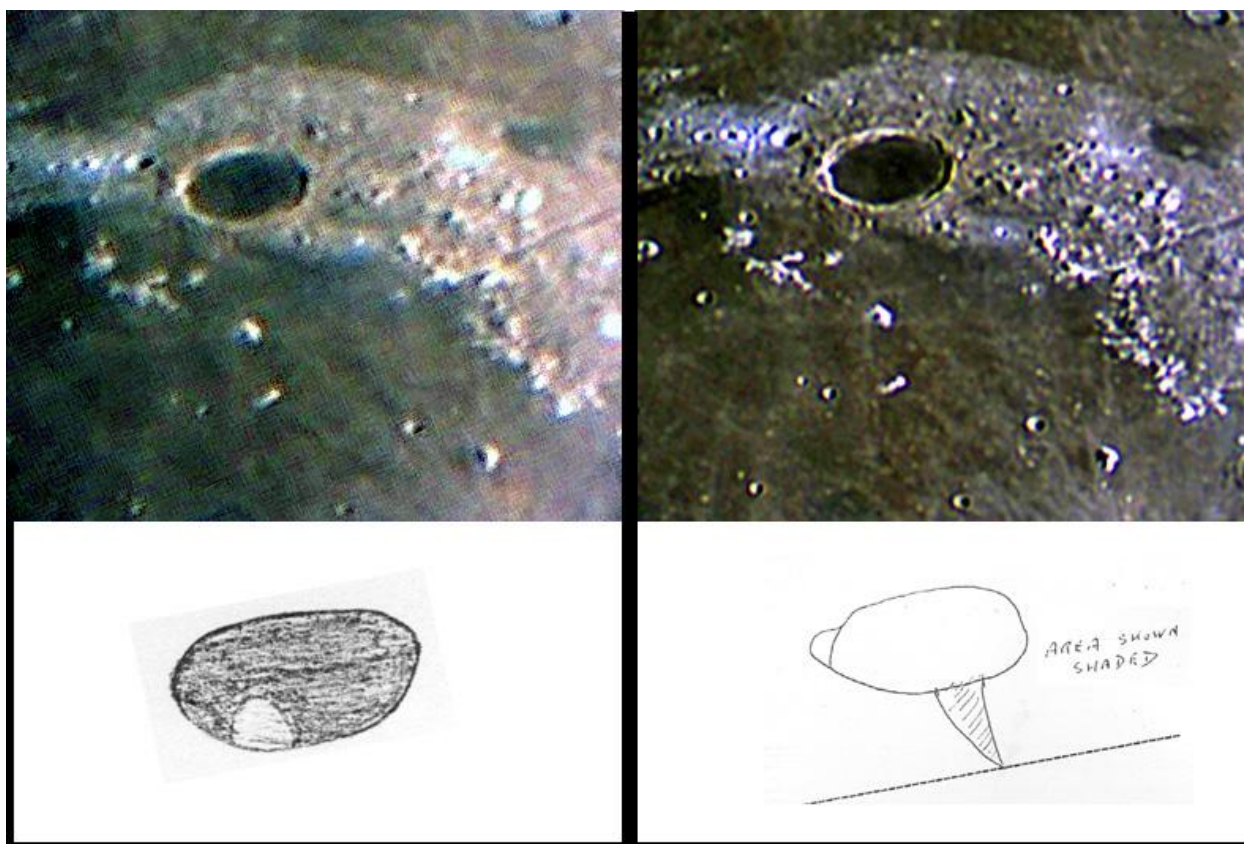


Figure 3. Plato with north orientated towards the top. **(Top Left)** Color image from 2015 Oct 24 UT 04:36 as imaged by Alberto Anunziato and colleagues (AEA) taken with a 250 mm SCT, in white light with a Phillips SPC 9000 web camera. The seeing was 7 out of 10. The image has been sharpened slightly, had its original color normalized, and then the color saturation was increased to 70%, saturation. **(Top Right)** Color image by Maurice Collins (ALPO) from 2015 Oct 24 UT 07:20 – this image has been color normalized and had its color saturation set at 60%. **(Bottom Left)** A sketch by Gerald North from 1981 Aug 11 made between 20:12 and 20:23 UT. **(Bottom Right)** A sketch by Hedley J. Robinson from 1981 Aug 11, made sometime between 21:05 and 21:40 UT.

For comparison on the bottom of Fig 3, are a couple of sketches made during the night of the original LTP. The Gerald North sketch was made with a 460 mm Newtonian at x207, under III-IV seeing conditions, and the Hedley Robinson sketch was made with a 260 mm Newtonian at x200 under IV seeing conditions. The

white patch on the floor of SW Plato is clearly visible in the top two images, the floor of Plato is generally darker than the mare, and the white triangle seen by Robinson in 1981 seems to correspond to a region outside the SE of Plato, albeit the geometry is poorly reflected in the original sketch. In view of the seeing conditions back in 1981, and the Moon's low altitude (17° when observed by North, and lower still when observed by Robinson), and the normality of some of the features described in the original reports, I suspect that the weight of this LTP report will get demoted slightly when I find the time to do a full analysis on this in the new year.

Aristarchus: 2015 Oct 24 UT 18:42-20:30 Franco Taccogna (UAI) and 19:26-20:26 Kevin Berwick (ALPO) observed this crater during a repeat illumination slot where the solar illumination was within $\pm 0.5^\circ$ of what it was in the following 1963 and 1997 LTP reports:

On 1963 Nov 28 at UT 05:00-06:00 Greenacre, Barr, Hall and Dungan (Flagstaff, AZ, USA, 24" refractor) observed a deep violet area form on the western exterior of Aristarchus, and a less deep violet area form to the eastern edge of Aristarchus. As these were becoming stronger, a blue-like haze formed on the sunlit floor of Aristarchus, that obscured underlying detail. The ALPO/BAA weight=2. – [REF 36]

On 1997 Oct 13 at UT11:09-11:21 D. Rodway (Oamaru, South Island, New Zealand, 8.5" reflector, x270) saw a deep salmon-pink coloration in the south east corner interior of the crater Aristarchus. This color was confirmed by the observer's wife. By 11:21 UT the color had faded completely. Rodway had been a lunar observer since 1958, using a wide range of instruments from 3 inch refractors to 12 inch reflectors and had observed a LTP in Gassendi back in 1966 (from London, UK), and so was an experienced observer. The ALPO/BAA weight=4. – [REF 37]

I have generated a synthetic series of spectral dispersion images based upon Franco's 19:42 image, with the spectral dispersion at 45° increments. See Fig 4.

Although the artificial spectral dispersion modifications to Franco's image (Fig 4) show color fringes on edges, they do not match the precise descriptions that were given in the original two LTP reports. For the 1963 LTP report, one can replicate blue on the floor, or violet on the west rim and a faint blue on the east rim, but not both at the same time, and anyway some serious red spectral dispersion should have been visible elsewhere – which was not reported at the time. Kevin, who observed later, using a 4" Televue refractor (x77, seeing IV and intermittent cloud) did not see any color inside the crater but suspected a pinkish area between Aristarchus and Herodotus. However he believes this may have been related to eye fatigue, and it tended to be more noticeable when the craters were near the edge of the field of view.

Proclus: On 2015 Oct 24 Marie Cook (BAA) and Kevin Berwick (ALPO) observed Proclus at 21:15-21:40 and 21:17-22:16 UT respectively. This corresponded to the same illumination conditions, to within $\pm 0.5^\circ$ to the following LTP report that Marie Cook made in 1990:

Proclus 1990 Mar 09 UT 00:12-00:13 Observed by Marie Cook (Frimley, UK, 3.5" Questar telescope) observed a "long plume of light" the brightness was the same as the wall region. It went from the southern rim about half of the way across to the center in a "northerly" direction. The plume feature was not seen at higher magnifications. Change in brightness also noted. The Cameron 2006 catalog ID=394 and the weight=1. The ALPO/BAA weight=1. – [REF 38]

Marie comments, that this time around (using the same telescope, seeing III, transparency moderate-poor) that no long plume of light seen. The floor was normal and the brightest part of the rim was to the north. Kevin Berwick, using a also found no sign of a plume at x77 and x180, using his 4" apochromatic refractor, under II-III seeing conditions.

Suggested Features to observe in December: For repeat illumination (and a few repeat libration) observations for the coming month - these can be found on the following web site: http://users.aber.ac.uk/atc/lunar_schedule.htm . By re-observing and submitting your observations, only this

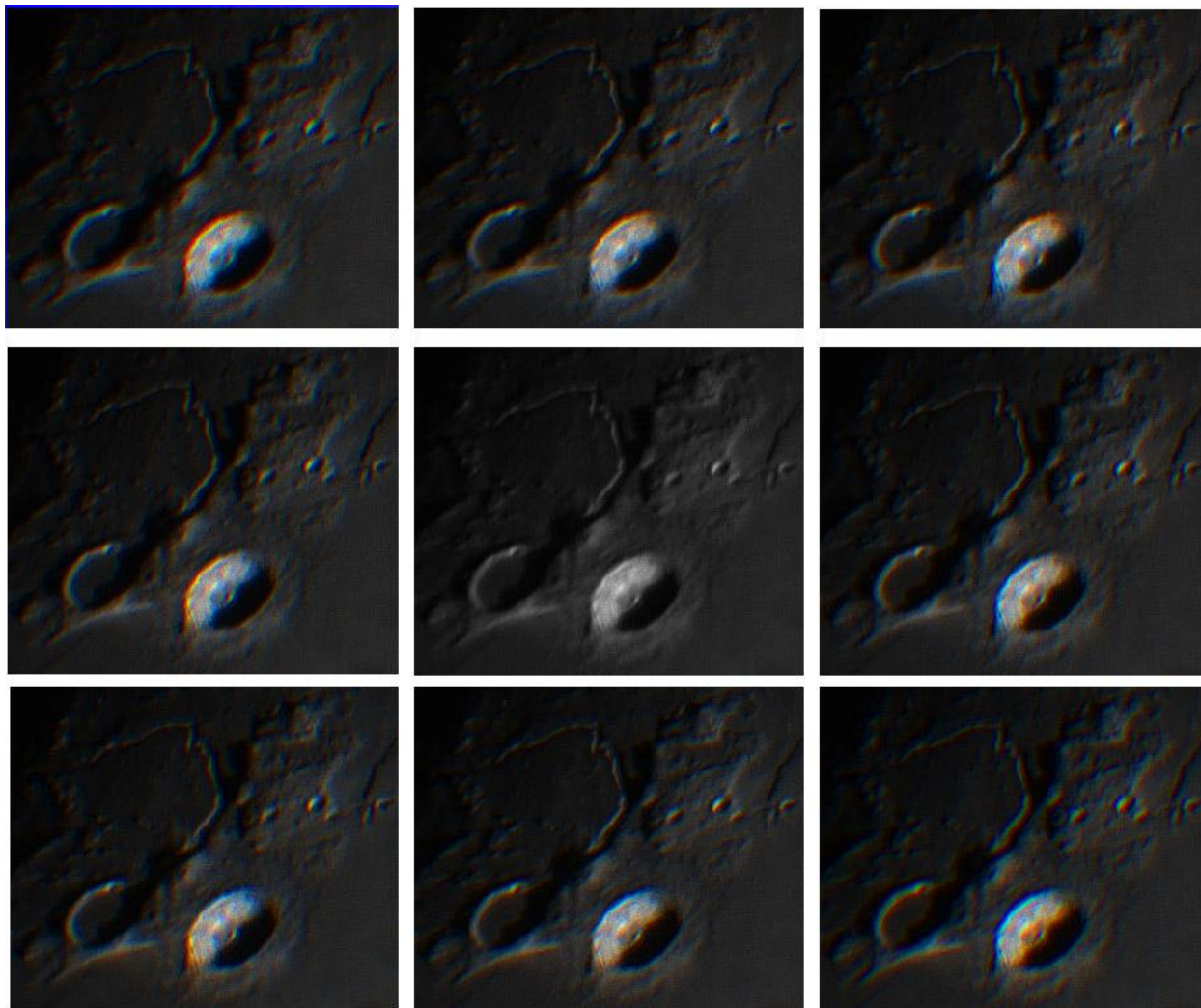


Figure 4. 2015 Oct 24 UT 19:42 image by Franco Taccogna (UAI), orientated with north towards the top. **(Centre)** The monochrome image. **(Clockwise around the centre)** synthetic spectral dispersion images with the dispersion at 45° intervals.

way can we fully resolve past observational puzzles. To keep yourself busy on cloudy nights, why not try “Spot the Difference” between spacecraft imagery taken on different dates? This can be found on: http://users.aber.ac.uk/atc/tlp/spot_the_difference.htm . If in the unlikely event you do ever 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 <https://twitter.com/lunarnaut> .

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KEY TO IMAGES IN THIS ISSUE

1. Baco
2. Copernicus
3. Gassendi
4. Lichtenburg
5. Mare Humorum
6. Montes Apenninus
7. Palus Epidemiarum
8. Parry
9. Plato
10. Proclus
11. Sinus Iridum
12. Stadius
13. Torricelli

FOCUS ON targets

X = Mare Nubium

Y = Kepler

