THE LUNAR OBSERVER

RECENT BACK ISSUES: http://www.zone-vx.com/tlo_back.html

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

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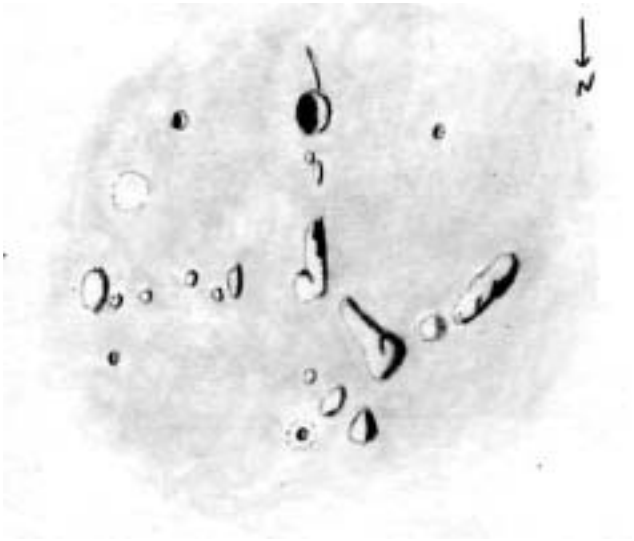
FEATURE OF THE MONTH - FEB. 2007



WICHMANN

Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
November 2, 2007 - 03:50 to 04:20 UT
15cm Newtonian - 170x - Seeing 6-7/10

I drew this crater and vicinity on the evening of Nov. 1/2, 2006 after the moon hid the 6th-magnitude stars ZC 3461 and 3465. This area is in southwest Oceanus Procellarum north of Gassendi. Wichmann itself is the modest crater south of a curved string of peaks. These peaks comprise the ghost ring Wichmann R. The three largest segments of this ring are Wichmann epsilon, gamma and theta from east to west, according to the LQ map. The two largest peaks of the group extending eastward from Wichmann R are Wichmann alpha and beta. The tiny pit Wichmann D is north of beta. Three more detached peaks are north of gamma, and the pit Wichmann C is north of them. Wichmann C has a small halo, unlike D. The small craters Wichmann A and B are to the east and west of Wichmann respectively. There is a diffuse bright patch between Wichmann A and beta. There is a short strip of shadow south of Wichmann that may be a wrinkle, but the area within the ghost ring Wichmann R appeared to be very smooth.

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 non-member 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. Several copies of recent journals can be found on-line at: **http://www.justfurfun.org/djalpo/** Look for the issues marked FREE, they are not password protected. Additional information about the A.L.P.O. can be found at our website: **http://www.lpl.arizona.edu/alpo/** 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.lpl.arizona.edu/~rhill/alpo/member.html** which now also provides links so that you can enroll and pay your membership dues online.

LUNAR CALENDAR - FEBRUARY 2007 (UT)

Feb. 02	05:45	Full Moon
Feb. 07	12:40	Moon at Apogee (404,989 km - 251,649 miles)
Feb. 10	09:51	Last Quarter
Feb. 12	09:00	Moon 6.0 Degrees S of Jupiter
Feb. 15	03:00	Moon 3.5 Degrees SSE of Mars
Feb. 17	02:00	Moon 2.1 Degrees SSE of Neptune
Feb. 17	16:14	New Moon (Start of Lunation 1041)
Feb. 18	09:00	Moon 3.9 Degrees SSE of Mercury
Feb. 18	17:00	Moon 0.59 Degrees N of Uranus
Feb. 19	09:35	Moon at Perigee (361,439 km - 224,588 miles)
Feb. 19	16:00	Moon 2.2 Degrees NNW of Venus
Feb. 24	07:56	First Quarter

CALL FOR OBSERVATIONS - FOCUS ON: SINUS IRIDUM

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 2007 edition will be Sinus Iridum. Observations 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 fascinating crater to your observing list and send your favorites to one of the addresses shown in the banner on Page One.

Deadline for inclusion in the Sinus Iridum article is Feb. 20, 2007

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 always be included:

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

Posidonius Area
By Mardi Clark

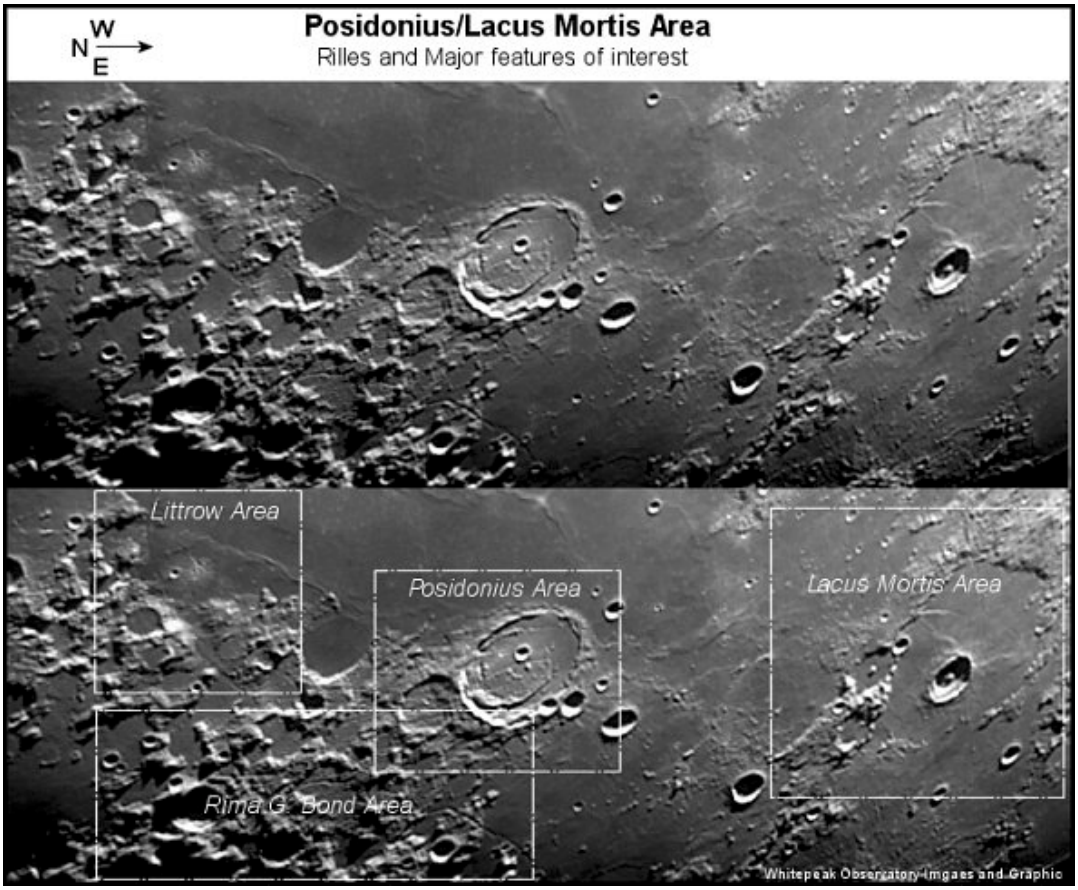


FIGURE 1

I've divided this region into four areas of special interest: Littrow, the craters G. Bond and Römer, Posidonius proper and Lacus Mortis.

Geologically, this region can be best described as an area where the gross topography has been influenced by several major basin impacts: Tranquillitatis (oldest), Crisium, Serenitatis and Imbrium (youngest). All have cast their basin ejecta across this region, blanketing the terra in varying thicknesses. These giant basin impacts also sculpted the terrain, by their ejecta and through the formation of their concentric uplift rings, to varying degrees and according to their distance, size and age. Underlying, superimposed atop and (in the case of the pre-Imbrium features) scarred by basin impact sculpture, are the pre-Imbrium and Imbrium era craters. In some cases the post basin age craters have obliterated the basin ring structure upon which they impacted (as Macrobius did to an outer Crisium ring).

Next came the volcanic era of maria formation which flooded the maria and the embayed areas reaching inland from the maria shores during successive episodes of voluminous eruptions. Lacus Somniorium, an area of lava entombed pre-Nectarian craters, is an example of maria-adjacent lava flooded plains. These ancient buried ghosts sleeping under the "Lake of Dreams" may be detectable if the light is right! Be sure and look for them!

Rilles and wrinkle ridges: Prior to 3.5billion years ago, midway through the Upper Imbrian Epoch when most of the maria were filled, the Moon was in an expansive phase globally which induced formation of

expansion features (arcuate faults) in response to subsidence of the maria (sinking from the great weight of the pooled lava) rather than compressive features (dorsa or wrinkle ridges). The latter were primarily formed [i]after[/i] 3.5BY when the Moon entered a global contraction (shrinking) phase. In Mare Serenitatis, for example, this can be seen in the distribution of arcuate rilles and wrinkle ridges. The former are found primarily in the older lava deposits located on the borders of the maria and back in the adjoining terrae. But the biggest wrinkle ridges are primarily found in the younger lavas in the central areas of the maria (Serpentine ridge is a good example); the rilles are absent from these areas as by the time these lavas were emplaced, the arcuate rille forming era of the Moon was pretty much concluded. (For more on the history of the emplacement of lave within Mare Serenitatis, see Chap. 8 of Wood's book, "Modern Moon".)

Now let's look more closely at the southernmost of the sub-areas of interest in this region, the Littrow area.

This was, of course, the area visited by the final Apollo mission, Apollo 17. It was chosen for geological investigation for two primary purposes: to sample an example of what was thought to be remnant basin ring structure expressed by mountainous terra of the Littrow range, and to sample the dark mantling material found in the Littrow valley and the surrounding area (this is where the famous "orange soil" was first found nearby Shorty crater).

Observationally, the historic Taurus-Littrow landing site is pretty easy to spot and the areas where the astronauts visited in their lunar rover represent some interesting features, some of which that one can actually see in a telescope. But first let's get our bearings...

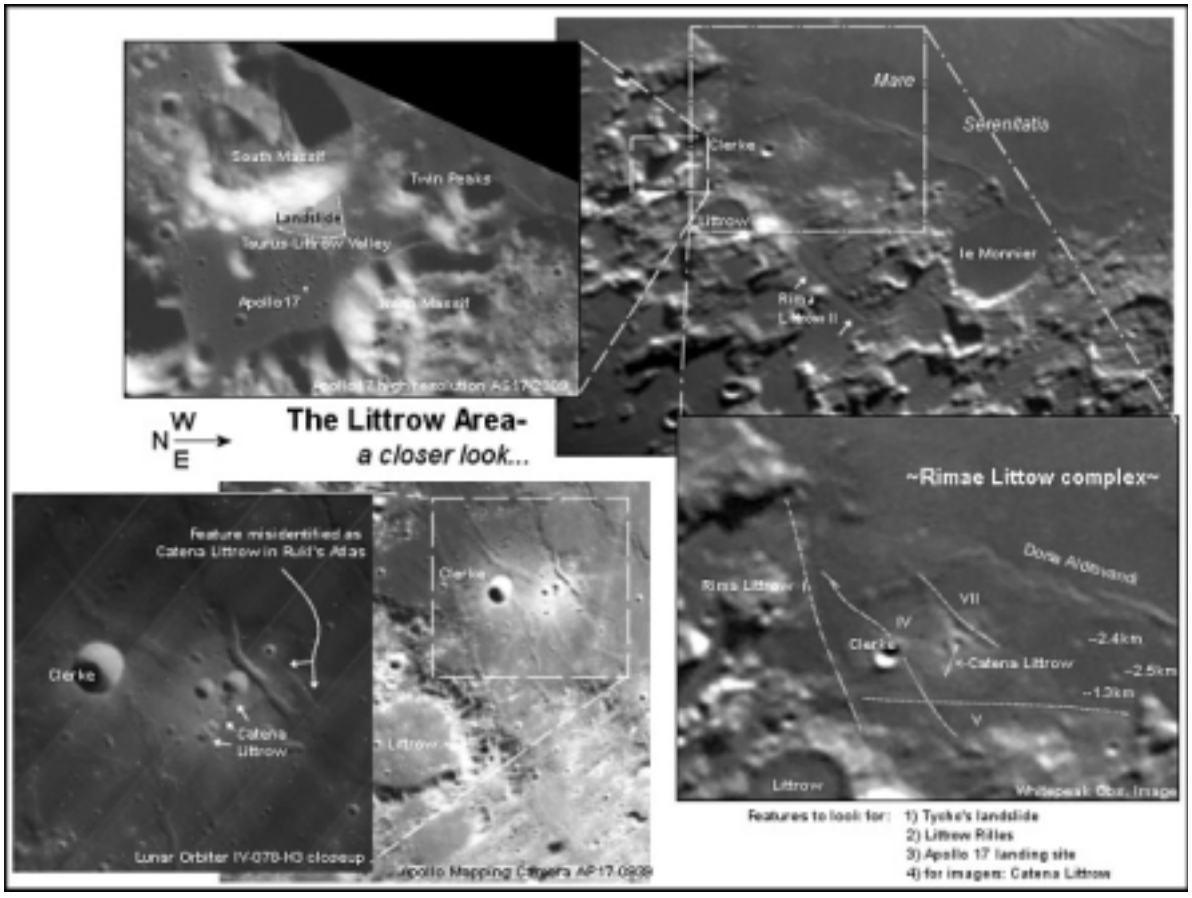


FIGURE 2

Here we have an overview of the Littrow area. There are many features of interest here. The upper right image is the overview which represents the level of detail in average seeing through a 6" telescope. Find the circular "bay" le Monnier on the eastern shore of Mare Serenitatis and the rest is pretty easy. The inset on the bottom right identifies the various Littrow rilles by the roman numeral designations of the various branches/segments. There are some reference crater diameters with which to assess your seeing and resolution floor.

One feature demands a special note: Catena Littrow. I was always curious as to where this feature really was and what it could be seen as (an actual crater chain or an unresolved rille-like line). I found that it does not lie in the location presented in Rukl's, which points to a N-S trending linear feature. In fact the Catena Littrow is an E-W trending feature located as is shown in the Lunar Orbiter image inset in the lower left. This is another of the class of features identified and named in the space age and not known during the visual observational age.

The upper right inset is a enlargement of the Apollo 17 landing and excursion area. There are actually several largish landmarks use by the Apollo astronauts which you can catch in a small telescope. The massifs, South and North, are plainly visible. The "Twin Peaks", designated Hill F and A during the mission, are also detectable, as is "Family Mountain" or Hill E.

But the most interesting feature you can see here (ideally during the waning phase when the shadows of the North massif don't interfere) is the "Tycho landslide". This is visible as a lighter triangular patch of light colored material spilled upon the darker plain of the valley floor. This area is notable in that the dating of the samples from this landslide (~110million years) seem to confirm that this landslide resulted from the jolt of the distant Tycho impact (2300km away!) shaking loose a landslide from the southern face of the North Massif!

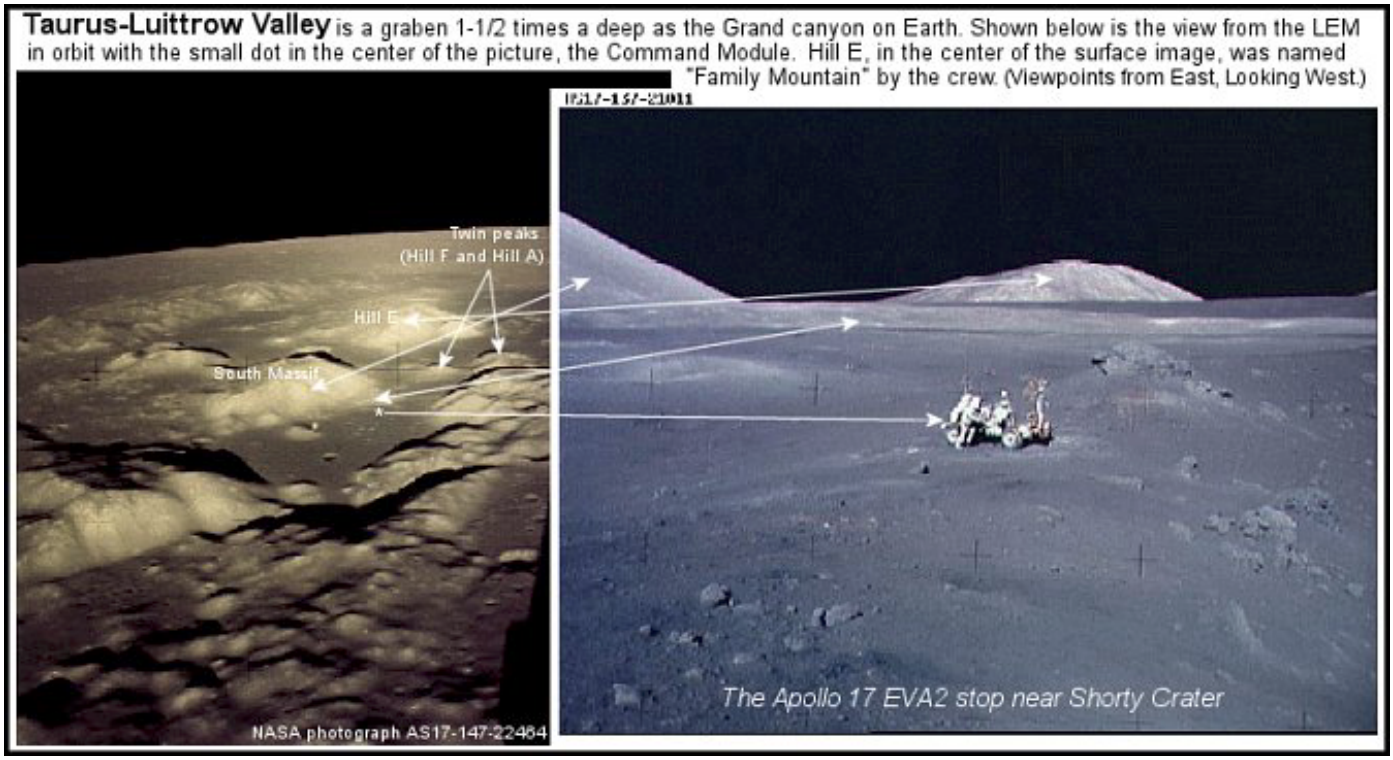


FIGURE 3

Above, a couple of views of the Taurus-Littrow valley from the Apollo 17 image archive. The left image is from the LEM while still on approach for landing--"out the porthole" literally! The second is on the surface with the famous Tycho Landslide spreading out just short of the horizon as a lighter colored horizontal streak radiating away from the N. Massif.

Proceeding north, the next area of interest is the G. Bond/Römer area, illustrated below...

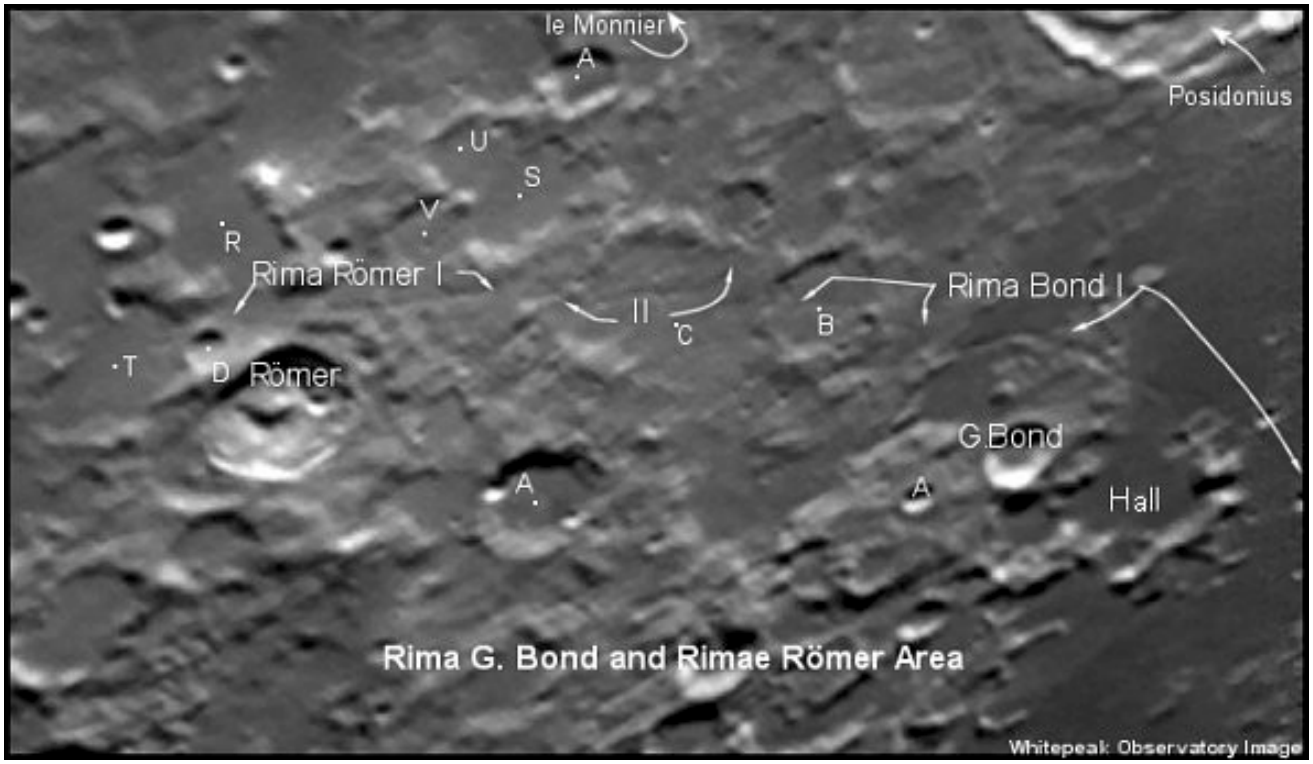


FIGURE 4

This is an area of linear and arcuate graben rilles related to the subsidence of Mare Serenitatis and thus structural and not volcanic in origin. This applies to all major rilles in this entire region, with the qualified exception of those in Lacus Mortis & Posidonius which we'll look at later. Rima G. Bond is in two parts but has only one designation "I". Rimae Römer has two parts designated I and II, the second of which more or less bisects the 46km diameter pre-Imbrium crater G.Bond C. Neither system is difficult to observe; the VMA suggests a 8" reflector, but both are plain in a 3-4" refractor. The upland portion of Rima Römer is probably the most difficult of these.

You'll notice that the terrae in this area has an appearance of being "swept" from the upper right to the lower left. This is sculpture created by the ejecta flow from the Crisium basin impact.

The next area of interest is the area immediately surrounding Posidonius and Posidonius itself...

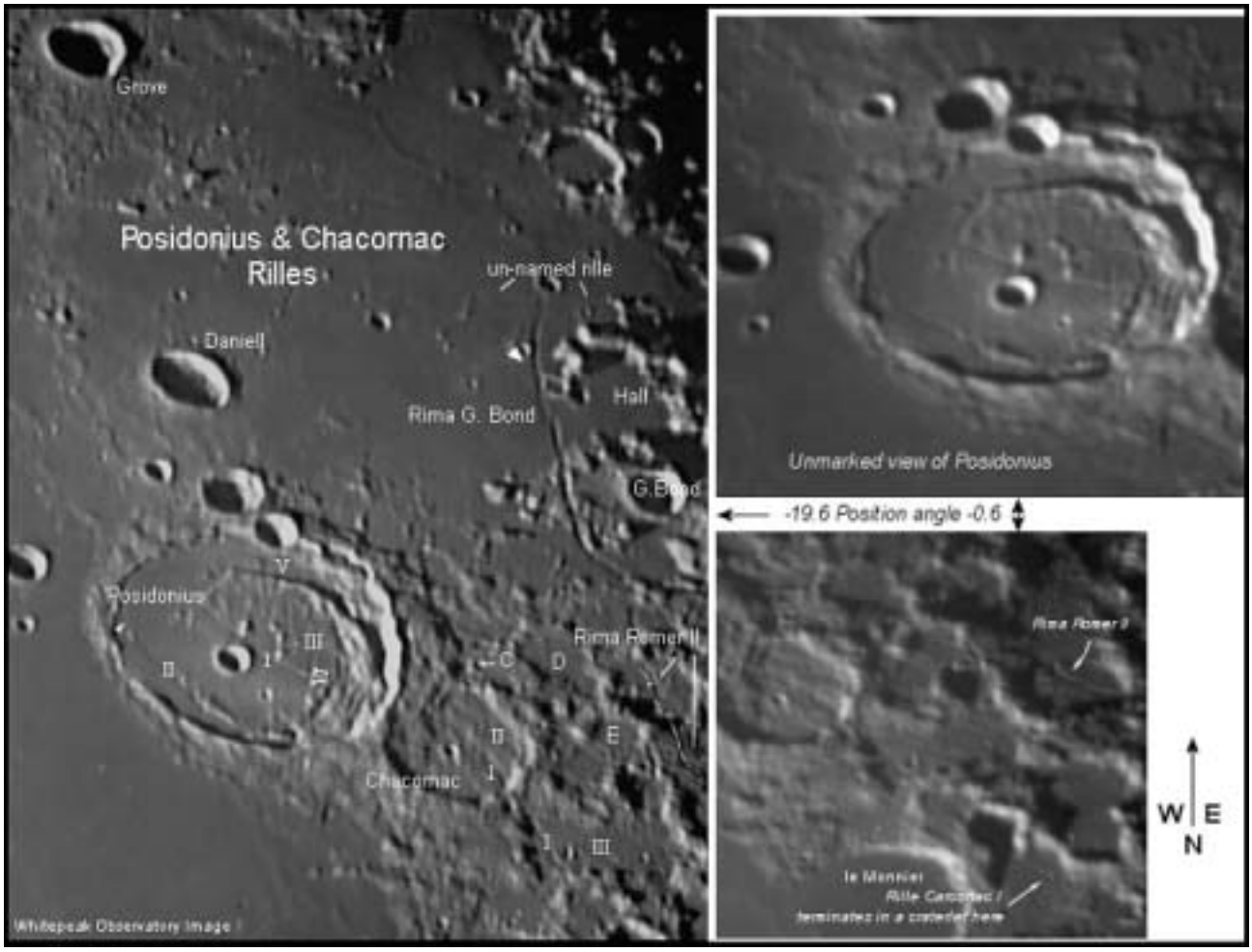


FIGURE 5

The left image is an overview and also identifies the various clefts within Posidonius by their Roman Numeral designations. (Rille systems are identified this way in two publications, the LAC charts and the Lunar Quadrant maps from the U. of Arizona sold by Sky & telescope. the latter are very inexpensive and map rilles much more extensively than Rukl's does.)

The feature most easily seen inside Posidonius is the massive block that separated from the wall on the crater's right side in the image above. It continues in an arc that more or less follows the original rim, making a sort of inner, false rim. This has no designation that I am aware of; as being the easiest to discern and the remainder increasingly difficult.

Posidonius is a late Imbrium era crater and so formed during the great Maria flooding time period on the Moon. It was thus greatly affected by volcanic and subsidence processes, becoming flooded, uplifted, cracked and tilted towards Mare Serenitatis in the process. This tipping towards the maria may be what helped the original wall cleave away the eastern inner wall as described earlier. Its linear rilles are a result of the swelling uplift of it's floor and not directly related to the adjoining maria.

There is another discreet feature worth looking for here: the unnamed rille that crosses Rima G. Bond near it northerly terminus crater (Hall J, 8km). This is one of those features that is barely shown on the Lunar Orbiter imge of this area (IV-079-H1) but is quite plain visually in more favorable lighting.

The Chacornac rille system is composed of three parts, marked I, II and III. I and II begin at the north rim of crater Chacornac and lay north of the small crater on its floor (Chacornac A; 5km). II terminates at Chacornac's southern rim while I continues all the way past le Monnier to a terminal craterlet just south of le Monnier A (see lower right inset). Interestingly, it seems to connect with the northern end of a Littrow rille at this point, making it look almost as though it continues much further south...but actually it discontinues and another rille picks up along the same trend, Littrow II (see Littrow graphic, upper right frame).

Last (like death itself) is Lacus Mortis, the spookily named "Lake of Death", named by pioneering selenographer Giovanni Riccioli in 1651. Nearly all of the names of the large dark features on the Moon that we are familiar with today originated on Riccioli's map. Why "Lake of death"? I don't think anyone but Riccioli could answer that...

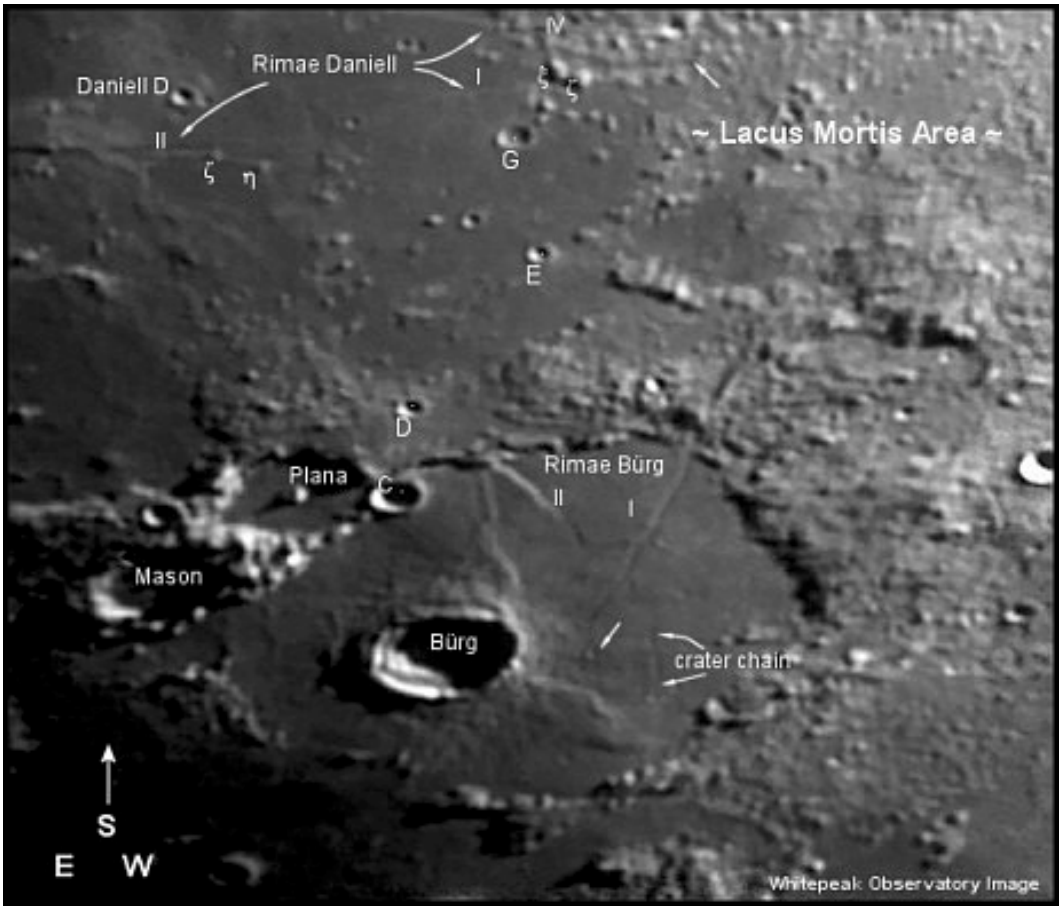


FIGURE 6

Lacus Mortis is a flooded, floor fractured crater of 155km diameter created in pre-Imbrium times. The crater flooded in the late Imbrium period, probably from the east as well as from floor vents within its interior. Much later, (about 3 billion years later actually) the prominent crater on its floor, Burg, was formed in the Copernican era, sometime since about 800 million years ago.

The rilles within Lacus Mortis are of the linear variety, stress fractures caused by localized uplift of the floor. These differ from arcuate rilles not only in shape but in their genesis. Arcuate rilles were formed as a result of maria subsidence, the maria sinking under the weight of their own pooled lava emplacements. But the straight or linear rilles were usually formed as a result of localized uplift, usually in the floors of larger lava flooded craters.

Rimae Daniell are examples of arcuate rilles. It is a four part system with the locations of three of its parts indicated in the graphic above. Rima Daniell II begins at the hill Daniell Eta and runs as indicated. Rima Daniell I runs past hill Plano Zeta and west out to midway between Luther K (~3km, one of an equal sized pairing) and Luther Y, where it terminates. Rima Daniell IV runs along the edge of the terrae above and parallel to Rima I, ending opposite the Luther K pair. Rima III (not shown) is located a sort distance into the terrae south of IV and parallel to it.

It's been my experience that all these rilles are quite faint and difficult to discern if the seeing isn't above average. I and II are definitely the easiest, III and IV quite difficult.

On to Lacus Mortis proper, the rilles here are very unusual, as one (Rima Burg II) is a combination of rille and scarp. This most prominent feature is usually seen as a wall defined by either highlight or stark shadow. There's a good reason for its prominence; at about 800meters (Byrne, Lunar Orbiter Atlas of the Moon pp217), it's around twice the height of the much more well known Straight wall (Rupes Recta). As it continues north, the scarp gradually falls away until at it's terminus it becomes a rather ordinary linear rille, which abruptly turns and crosses over to connect with Rima Burg I. This rille, a wide graben, reaches from the rim to a small craterlet marked with an arrow just to the right of crater Burg. To the right of this is another linear feature which appears as another rille in the telescope, but is in reality a small crater chain. There are numerous other floor fracture rilles within the western floor of Lacus Mortis but these are the one's most likely to be seen and the only ones with actual designations.

Hope you enjoyed this little tour of this fascinating area of the Moon!

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LUNAR TOPOGRAPHICAL STUDIES

Coordinator - William M. Dembowski, FRAS
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OBSERVATIONS RECEIVED

MICHAEL AMATO - WEST HAVEN, CONNECTICUT, USA

Ray map of Menelaus

ED CRANDALL - WINSTON-SALEM, NORTH CAROLINA, USA

Digital images of Walter, Eudoxus region, Menelaus Ray, Eratosthenes, Straight Wall, Clavius region,

COLIN EBDON - COLCHESTER, ESSEX, ENGLAND

Drawings of Billly & Hanstee, Doppelmeyer, Maraldi, Mons Riphaeus

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND

Numerous written observations from October 29, 2006 through January 4, 2007 including

18 digital images and 8 drawings.

HOWARD ESKILDSEN - OCALA, FLORIDA, USA

Digital images of Aristoteles (2), Delaunay (2), Gambart C dome, Ina (2), Sinus Iridum (2)

PAULO LAZZAROTTI - MASSA, ITALY

Digital images of Guithuisen, Herschel, Pitatus & Hesiodus & Wurzelbauer & Gauricus

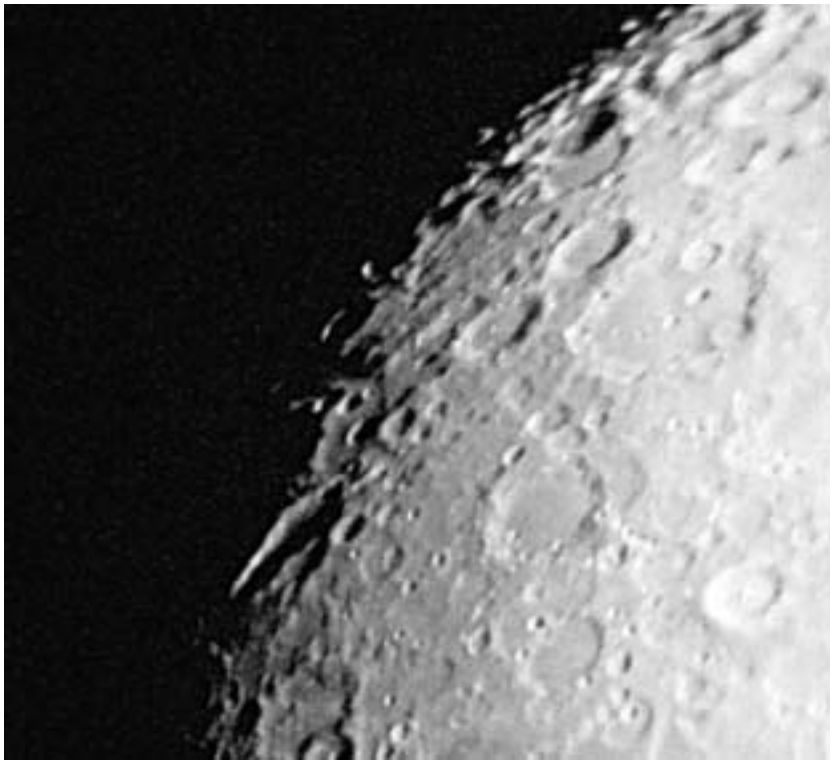
K. C. PAU - HONG KONG, CHINA

Digital images of Sinus Iridum, Vitruvius

ROBERT WLODARCZYK - CZESTOCHOWA, POLAND

Drawings of Aristarchus, Copernicus, Plinius

RECENT TOPOGRAPHICAL OBSERVATIONS



CLAVIUS AND ENVIRONS
Digital image by Maurice Collins - Palmerston North, New Zealand
December 1, 2006 - 10:18 UT
Meade ETX-90 3.5 inch Mak-Cass - 12.5mm EP - 2x zoom - Oregon camera

LANGRENUS
Drawing by Maurice Collins - Palmerston North, New Zealand
November 23, 2006 - 08:15 UT - South left, East top
Meade ETX-90 3.5 inch Maksutov-Cassegrain - 138x

RECENT TOPOGRAPHICAL OBSERVATIONS

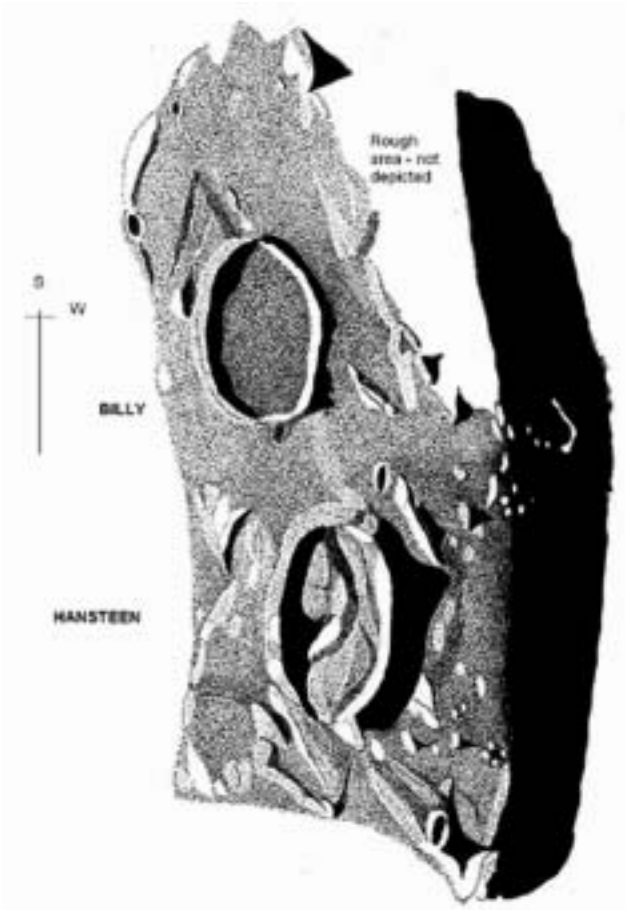
WALTER

Digital image by Ed Crandall - Winston-Salem, North Carolina, USA
December 27, 2006 - 23:06 UT - Colong: 7.2 - Seeing 6/10 - Trans: 4/6
110mm APO Refractor - 3X Barlow - Philips Toucam

DELAUNAY

Digital image by Howard Eskildsen - Ocala, Florida, USA
December 28, 2006 - 01:17 UT - Seeing: 8/10 - Clarity 6/6
Meade 6" f/8 Refractor - 5X Barlow - IR Blocking filter - NexImage Camera

RECENT TOPOGRAPHICAL OBSERVATIONS



BILLY & HANSTEEN

Drawing by Colin Ebdon
Colchester, Essex, England

November 2, 2006
21:30 to 22:30 UT
Colong: 1.12
Seeing AIII to AII
Trans: Very Good

7 inch Mak-Cass - 225X

VITRUVIUS

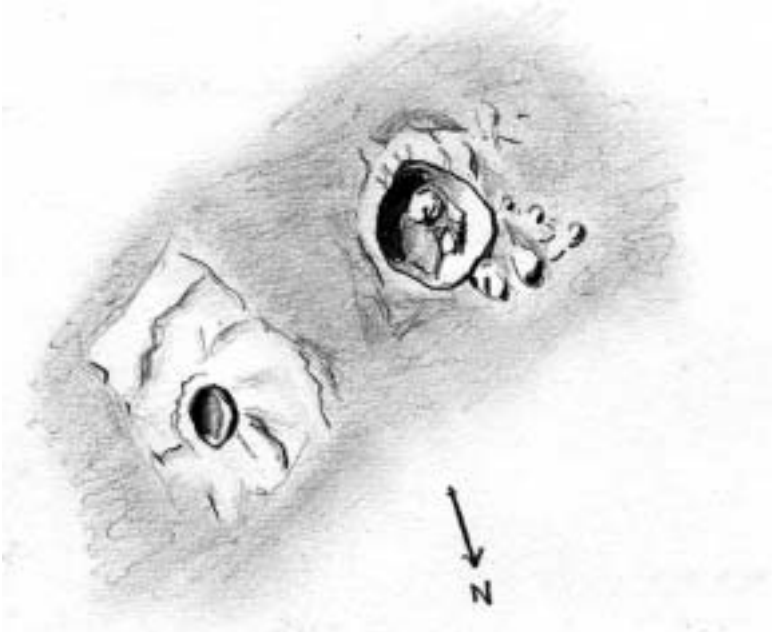
Digital image by K.C. Pau
Hong Kong, China

January 7, 2007 - 18:13 UT - Colong: 136
Seeing: 5/10 - Trans: 7/10

250mm f/6 Newtonian - 20mm EP
Philips Toucam Pro
162 Frames stacked

RECENT TOPOGRAPHICAL OBSERVATIONS

HERSCHEL
Digital image by Paolo Lazzarotti - Massa, Italy
December 1, 2006 - Seeing: 5-6/10 - Trans: 3/5
Gladio 315 Lazzarotti Optics Scope - Lumenera Infinity 2-1M Camera
0.12 arcsec/pixel image scale - 90/2000 frames - 50 msec. exposure

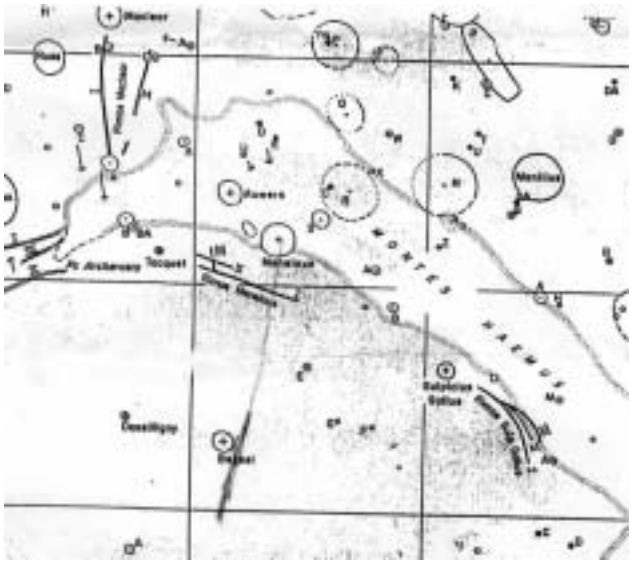


REGION OF ARISTARCHUS NEAR FULL MOON
Drawing by Robert Wlodarczyk - Czestochowa, Poland
December 5, 2006 - 22:00 UT - Seeing: 6/10 - Trans: 5/6
12cm f/7.5 Newtonian - 112X

BRIGHT LUNAR RAYS PROJECT

Coordinator - Willliam M. Dembowski, FRAS

RECENT RAY OBSERVATIONS



MENELAUS & BESSEL

Ray map by Michael Amato
West Haven, Connecticut, USA
December 26, 2006 - 21:30 UT
127mm Maksutov-Cassegrain
125mm Televue EP

OBSERVING NOTES:

The bright ray of Menelaus showed very well just past local lunar sunrise. The ray was brightest near the crater Bessel. It seems this lunar ray is brighter at local lunar sunset. It seems this lunar ray is brighter at local lunar sunrise and dimmer at local lunar sunset.

MENELAUS & BESSEL
Digital image by Ed Crandall - Winston-Salem, North Carolina, USA
December 27, 2006 - 23:48 UT - Seeing: 5-6/10 - Colong: 7.5
110mm f/6.5 APO Refractor - 3X Barlow - Philips Toucam

BANDED CRATERS PROJECT

Coordinator - Willliam M. Dembowski, FRAS

The Banded Craters Program is seeking observers to carry out a formal study of these fascinating features. The submission of a few technically superior but unrelated images is not what is required for the program's success. A series of well documented observations, even of "average" technical quality, will be far more meaningful. If you are interested in such an endeavor, please go to the Banded Craters WebPage at: http://www.zone-vx.com/alpo-bcp

LUNAR TRANSIENT PHENOMENA

Coordinator – Dr. Anthony Cook – acc@cs.nott.ac.uk

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

LTP NEWSLETTER - FEBRUARY 2007

Dr. Anthony Cook - Coordinator

Observations were received from the following observers for December: Jay Albert (FL, USA), Marie Cook (Mundesley, UK), myself (University of Nottingham, UK), Maurice Collins (New Zealand), Robin Gray (NV, USA), Praet Marnix (Belgium), Gerald North (Narborough, UK), and Brendan Shaw (UK). One LTP and two candidate impact flash reports were received for December.

On 2006 Dec 02, 2006 03:30-5:30UT Robin Gray was using a 152mm f9 refractor. The seeing was 5 (US scale), and the transparency was initially 3 (US scale), with broken clouds, clearing to 6 and a magnification of x228 was used. The Moon's elevation angle above the horizon was very high at 57 to 64 degrees over this time period, so there should have been no atmospheric spectral dispersion effects that one gets at much closer to the horizon. Robin reported…

"An initial observation of Bullialdus took place at 03:30UT and at that time it was noticed that the crater interior appeared to have a hint of yellow coloration. Briefly inspected Timocharis and the Cobra Head area, which was still in shadow. At 03:57UT (see Figure 1) it was noticed that part of the interior of Bullialdus had turned a deep yellow color. The southeast and east central part of the crater floor as well as a circular feature on the SW crater floor were yellow. The rest of the crater floor and inner walls of Bullialdus remained shades of gray. Comparison with other craters in the area such as Konig, Bullialdus A and B, Reinhold, Lansberg, Encke and Gassendi showed no trace of yellow in these features. By 04:05UT the yellow color was fading and by 04:15UT it was gone. Attempted to contact David Darling from 04:24-43UT but did not have his phone number. By 04:46UT all of the clouds in the sky were gone. Bullialdus remained gray. At 04:51 a slight yellowish tinge was seen in the crater. This was very fleeting and disappeared by 04:56. At 05:01UT a yellowish color was again seen briefly. At 05:16UT a slight yellowish tinge was seen again. This rapidly grew stronger - at 05:17 other craters were examined and no yellow coloration was seen. By 05:18UT Bullialdus had once again faded to gray. No further yellowing was seen by 05:30UT, when observations were concluded. Bullialdus was examined through Wratten Filters Red 29, Blue 38A, Yellow Green 11 and Yellow 15 - nothing unusual was seen through any of these."

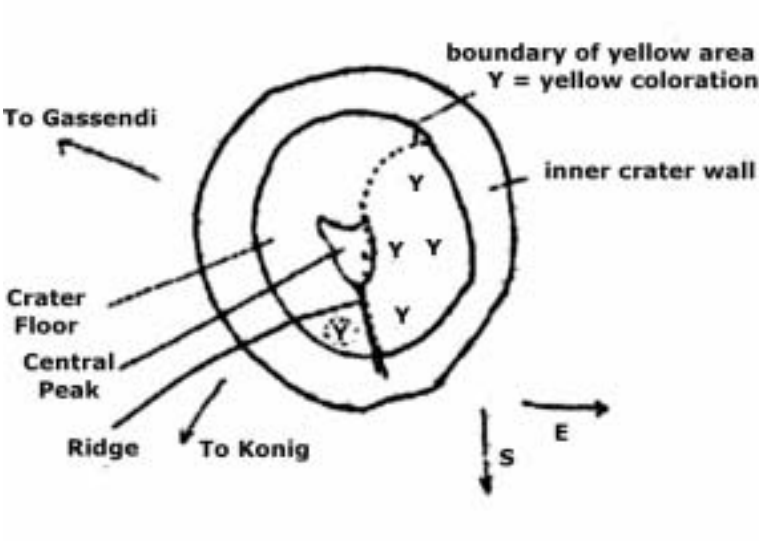


Figure 1 Robin Gray's sketch of Bullialdus showing the location of the yellow coloration, seen in white light, 03:57 UT on 2006 Dec 03. Note that I have re-orientated his sketch and re-positioned/re-written his annotation.

Only one other observer appears to have been observing on that night, Maurice Collins in New Zealand and he just happened to capture Bullialdus by chance and sent me two raw unprocessed color images taken at 09:43 and 09:45UT, some four and a half hours after Robin's last reports of the yellow color. I have reproduced a color enhanced version of the 09:45 image below and can see no obvious signs of color. Robin was sent a copy and was asked if the color he saw was strong enough to have shown up in this image and replied: *"I would have been able to see the yellow in Bullialdus in this image, had it been there. I have observed Bullialdus many times before this and this is the only time I noticed a yellow coloration - it was noticeable from the beginning of my observation of the crater that night. As I described in my report, the color varied considerably in extent and intensity through the observation period."* I also asked Robin an obvious question, did he notice any blink effect between the Red Wratten 29 filter and the Blue Wratten 38A filter, but he said that he did not notice any.

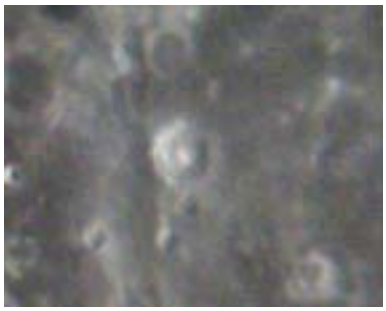


Figure 2 Enhanced color image of Bullialdus, taken by Maurice Collins, NZ, ~4.5 hours after the end of the LTP reported by Robin Gray.

There are several interesting things about Robin's observation and Bullialdus:

1) The lunar altitude was high, so there should have been no spectral dispersion in our atmosphere, and no similar color was visible on any other features. Color can come from the optics in refractors, but again no color was seen on other features.
2) The amount of yellow coloration varied on and off in four episodes (18 minute episode first followed by 4 min, then < 1min, and 1 min) for just under a total of ~25 minutes during the entire 120 minute observing session.

3) The fact that Bullialdus appeared normal through the red, yellow, green and blue filters poses us a problem. It is normal to look for color with Red and Blue Moon Blink filters – Robin says that he saw no effect. The red Wratten 29 filter has a very sharp cut-off at wavelengths shorter then 620 nm. The blue Wratten 38A filter has a more gradual cut off 50% at 480 nm, 40% at 500 nm, 23% at 550 nm, 2.6% at 600 nm, 1% at 620 nm and nothing beyond 650 nm. The color "yellow" is a bit subjective and lies in the range 500-600 nm. Therefore if the yellow color that Robin saw was due to a single bright spectral line emission, then it probably would have come out black in the red and dark gray in the blue. This was not reported, however we must remember that the sensitivity of Moon Blink devices lies in detecting color extremes, such as "reds" and "blues" and is not really keyed up to finding colors in between. Although he used other filters, it looked normal through these too. This probably indicates that the yellow color was over a range of wavelengths that spanned through the cut-offs of the red and blue filters, but obviously with a slight peak in the yellow. Perhaps we should not read too much into the color evidence as it was working in an area where the blink test was not very sensitive.

4) One of the reasons why Robin was observing the crater at this time was part of the routine effort to check out the normal appearance of craters under the same illumination conditions as to when LTPs have been seen here in the past. The original LTP report was by: Findlay and Ford (Dundee, Scotland) back in 1974 Sep 27 UT 22:45-23:40 (10" refractor, 150x, 180x, filters): *"Saw yellowish-orange color in crater. After clouds passed at 2300h color still there & gave a slight blink which no other craters did. Not seen in red filter, dark in blue. Ford saw it along ridge fr. c.p. to SW wall. Alert did not bring confirm. as clouds intervened for all others."* NASA catalog weight=4 (high). NASA catalog ID #1394. However the Moon was low in altitude 23-20deg. Back in 1974.

5) Of the 10 past LTP reports for Bullialdus, 8 have been color related, although it should be said that 4 of these had the Moon in a low altitude range of 17-23 degrees above the horizon, and some of these early reports do not describe a conscious effort to look to see if other features exhibited color.

6) One moral of this story is that please can all observers keep either David Darling or my own telephone LTP alert numbers nearby. Long lasting LTP events are rare, but it might have been possible to get other observers up and about to verify the color seen. As a backup, having a digital color still or video camcorder at hand may help to verify such reports too and they do provide three waveband observations rather than just two with Moon Blinks.

If you wish to try to observe Bulliadus during 2007 at the same colongitude as Robin's observation, then you may do so at the following dates and UTs so long as the Moon is say > 20degrees above your horizon and it is night time:

Jan 30 09:10-10:59	Feb 28 23:58-01:47	Mar 30 14:00-15:49	Apr 29 02:56-04:45
May 28 14:46-16:35	Jun 27 01:42-03:31	Jul 26 12:11-13:59	Aug 24 22:44-00:33
Sep 23 09:57-11:45	Oct 22 22:13-00:01	Nov 21 11:43-13:31	Dec 21 02:19-04:06

The second of the reports is as follows: On 2006 Dec 08 at 17:52 UT +/- 2 min, Maurice Collins (Palmerston North, New Zealand) reported seeing a very bright flash near the center of the lunar disk (south of Godin) in daylight! The flash flared up and down over a fraction of a second and was visually perceived to be three times brighter than the illuminated lunar background. He was using a 40mm A.H. eyepiece on his 3.5" Maksutov telescope. Seeing was Antoniadi III-IV. Some video was taken about 10 minutes earlier but shows nothing of interest was happening then, although a faint spot was visible in the

Godin region, but this could easily be video image noise on the digitized image frame that I have seen. I have passed this report across to Brian Cudnik of ALPO's impact flash programme. It should be said though that single flashes are very difficult to confirm and can be caused by other effects e.g. cosmic rays striking the human retina.

Maurice Collins also reported another fainter flash on the Moon whilst looking for Geminid impact flashes in Earthshine. This one occurred near Proclus at 14:37 UT on 2006 Dec 15.

Apart from the usual checking up on past LTP sites at the same illumination and libration, for 2007 I have thought up three additional projects that I would like to invite observers to participate in:

Monitoring of Earthshine for impact Flash Clouds

I got this idea from the SMART-1 impact, where it was found that apart from the impact flash, a cloud persisted for many seconds following the impact, presumably from debris ejected into sunlight (http://www.cfht.hawaii.edu/News/Smart1/)? It occurs to me that apart from looking for short duration flashes with video rate cameras, perhaps we could also employ integrating CCD or digital still cameras that are capable of taking repeated exposures in Earthshine of say 0.25 to 5 sec exposure at intervals of 5 to 10 seconds. Such images give us much clearer views of the Earthshine than we can get from single TV frames. These Earthshine images can then be used to build up a movie from which we can look for associated impact debris/ejecta clouds. We would concentrate at times of the year with high meteor rates on the night side e.g. Quadrantids, Perseids, Leonids, Geminids. Where possible two or more observers should observe at the same time to avoid terrestrial cloud effects.

Monitoring of crater interior shadows at Sun rise

These have been several interesting LTP reports where observers have reported temporary grey shadows or transient activity within crater shadows e.g. Herodotus, Eratosthenes, and Tycho. One possibility may be electrostatic levitation of dust particles. In order to participate we would require low to moderate resolution imaging with CCD cameras in order to gain enough contrast to see possible details inside shadows, taking images at a rate of at least one per minute and keeping the scene reasonably fixed would be ideal. Scattered light will undoubtedly be a problem, so you should not attempt this unless the transparency is excellent, and the Moon is at least 20 degrees above the horizon. At the very least, if no LTP are detected, we should get some nice images and time lapse movies of shadow rays and see possible evidence for light scattered off crater rims onto crater floors. Although intended for CCD observers, visual observers can participate too, by just keeping a look out for gray shadows (in deeply shadowed craters) and alerting us if they see any.

Monitoring of Ina type features

As reported in Nature (9th Nov 2006), Prof. Peter Schultz of Brown University, has evidence that the Ina formation, and others, may be geologically very young, and perhaps still outgassing? Although this partly contradicts Apollo surface evidence of non-major outgassing – (the lunar atmosphere is just so thin that anything substantial like this would have been detected over the few years of surface instrument operation) it might be worth our while monitoring the regions around Ina and other similar geologically young formations for obscuration and color. High resolution color CCD images and visual observations over time intervals of the following areas would be worth trying: Ina (18.6N, 5.3E), Hyginus rille central cadera, and near Arago/Rima Aridaeus, - just in case!

Due to pressure of work from teaching three university modules during the spring semester, LTP articles and acknowledgement of receipt of observations may become a bit fragmentary over the next four months – so my apologies but I will do my best to stay in touch.

Predictions for repeat illumination/libration for past LTP events, including the more numerous illumination only events can be found on the following web site: http://www.lpl.arizona.edu/~rhill/alpo/lunarstuff/ltp.html. For members who do not have access to the internet, please drop me a line and I will post predictions to you. If you would like to join the LTP telephone alert team, please let me know your phone No. and how late you wish to be contacted. If in the unlikely event you see a LTP, please give me a call on my cell phone: +44 (0)798 505 5681 and I will alert other observers. For South and North American observers please contact David Darling on (USA) 608 837-6054.

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THE MOON IN THE NEWS

(NASA) Lunar Geminids:
http://science.nasa.gov/headlines/y2007/03jan_lunargeminids.htm

(Space Review) Six reasons for returning to the Moon:
http://www.thespacereview.com/article/791/1

(NASA) Lunar Transient Phenomena:
http://science.nasa.gov/headlines/y2007/23jan_ltps.htm?list778348

(NASA) Tracing Earth's history on the Moon:
http://science.nasa.gov/headlines/y2007/26jan_harshwitness.htm

ROUNDUP OF INTERNATIONAL MISSIONS:

Britain going to the Moon: http://news.bbc.co.uk/2/hi/science/nature/6246513.stm

Japan rethinks its Moon mission: http://www.msnbc.msn.com/id/16634223/

Russia may join NASA in Moon exploration: http://www.msnbc.msn.com/id/16090118/

India prepares for Moon mission: http://www.csmonitor.com/2007/0111/p06s01-wosc.html

China's Moon shot advancing: http://www.nasaspaceflight.com/_nsf/content/?cid=4162