

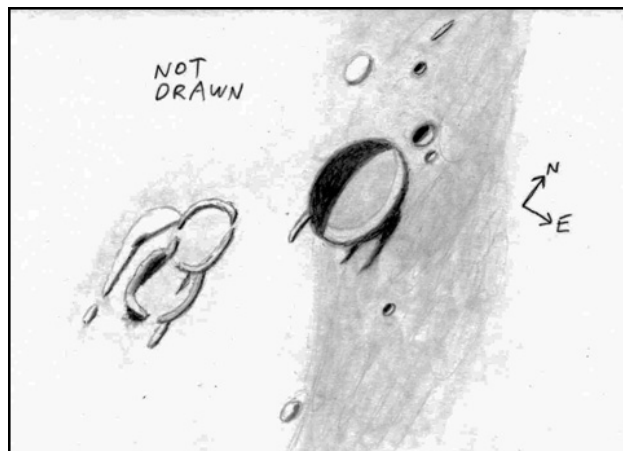


# THE LUNAR OBSERVER

**RECENT BACK ISSUES:** [http://www.zone-vx.com/tlo\\_back.html](http://www.zone-vx.com/tlo_back.html)

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.  
EDITED BY: William M. Dembowski, F.R.A.S. - [dembowski@zone-vx.com](mailto:dembowski@zone-vx.com)  
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219 Old Bedford Pike (Elton) - Windber, PA 15963

## FEATURE OF THE MONTH – NOV. 2008



### CLAUSIUS

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

**July 27, 2008 – 09:54 to 10:30 UT**

**15cm Newtonian - 170x - Seeing: 6-7/10**

I sketched this crater and vicinity on the morning of July 27, 2008 after watching two stars reappear from occultation. This crater is located in an isolated patch of mare material south of Mare Humorum. Clausius itself is a relatively deep crater with a featureless floor and some ridges or strips of shadow extending from the south or east. Clausius A is the deep pit just to the north, and a smaller, shallow crater is just east of A. Another small, deep pit to the northwest is probably Clausius E, according to the Lunar Quadrant map. A couple of low elevations west of E may be the remnants of a ghost ring shown on that map. The tiny, deep pit southeast of Clausius is Clausius J, and an isolated hill is farther south. Clausius D is the broken ring southwest of Clausius, and it overlaps another broken ring to its south. (The LQ map does not show them overlapping, but I saw it differently.) There is a wide, wing-shaped ridge extending west, then south from Clausius D with a detached peak off its southern tip. Two more short strips of shadow or ridges in and around the southern ring are parallel to the southern end of the wide ridge, and also parallel to the strips of shadow around Clausius. The edge of the isolated mare patch skirts the southern edge of Clausius. This edge is fairly sharp southeast of Clausius, less sharp to the west. The terrain in the lighter area to the south still appeared relatively 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. Additional information about the A.L.P.O. and its Journal can be found on-line at: <http://www.alpo-astronomy.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.

## **IMPORTANT ANNOUNCEMENT**

Effective November 1, 2008, I have resigned from my post as A.L.P.O. Coordinator of Lunar Topographical Studies. All communications related to the Section (observations, articles for TLO, etc.) should now be sent to the very capable hands of Wayne Bailey [wayne.bailey@alpo-astronomy.org](mailto:wayne.bailey@alpo-astronomy.org) who has been appointed as my replacement. We do not anticipate any transition or continuity problems as I will remain on the A.L.P.O. staff as Wayne's Assistant Coordinator

..... William M. Dembowski

### **LUNAR CALENDAR - November 2008 (UT)**

Nov. 01	08:00	Moon 2.6 Degrees S of Venus
Nov. 02	05:00	Moon at Apogee (405,722 km - 252,104 miles)
Nov. 03	23:00	Moon 1.9 Degrees SSE of Jupiter
Nov. 06	04:03	First Quarter
Nov. 06	19:00	Moon 1.0 Degrees NNW of Neptune
Nov. 08	21:00	Moon 3.7 Degrees NNW of Uranus
Nov. 13	06:18	Full Moon
Nov. 14	10:00	Moon at Perigee (358,972 km - 223,055 miles)
Nov. 19	21:32	Last Quarter
Nov. 21	14:00	Moon 5.0 Degrees SSW of Saturn
Nov. 27	16:55	New Moon (Start of Lunation 1063)
Nov. 27	20:00	Moon 3.7 Degrees S of Mercury
Nov. 27	22:00	Moon 4.1 Degrees S of Mars
Nov. 29	17:00	Moon at Apogee (406,479 km - 252,574 miles)

### **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)

# **FOCUS ON: Bullialdus to Kies**

**By William M. Dembowski, FRAS**

**Coordinator: Lunar Topographical Studies**

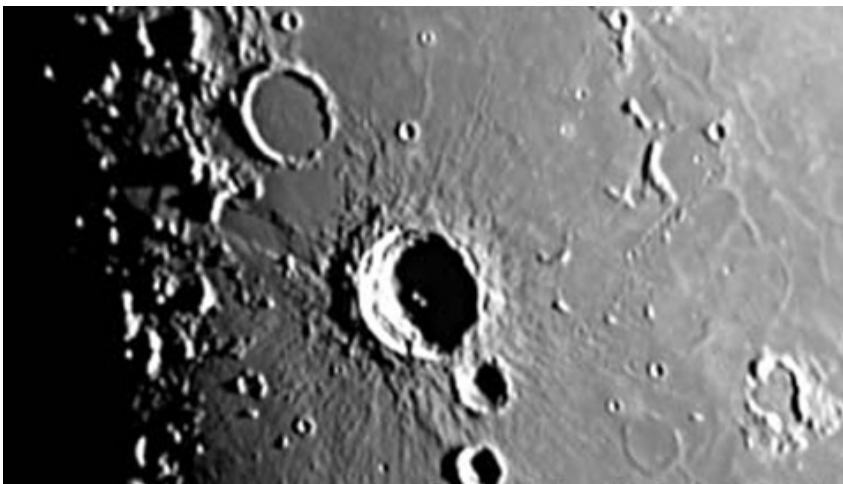


**FIGURE 1 – Overview of area from Bullialdus to Kies**

**Digital image by Ed Crandall – Winston-Salem, North Carolina, USA  
December 30, 2006 – 23:39 UT – Colong: 41.4 – Seeing: 5/10 – Trans: 4/6  
110mm f/6.5 APO Refractor – 3x Barlow – Philips Toucam**

## **BULLIALDUS:**

Situated in western Mare Nubium, Bullialdus (61 km in diameter) is an impressive crater that bears a strong resemblance to Tycho and Copernicus. It has beautifully terraced inner walls but, being older than Tycho or Copernicus, they are not as sharply defined; nor does it have their impressive ray system. Bullialdus does, however, have a prominent ejecta blanket that extends about one crater diameter from the crater walls and is itself is a feature worth studying. (Figure 2)



**FIGURE 2**

**Bullialdus Ejecta Blanket**

**Digital image by Mike Mattei**

**Littleton, Mass., USA**

**February 7, 2006**

**10 inch f/10 SCT**

The complex walls rise 3,500 meters above the crater floor which contains a cluster of central peaks, the highest of which is about 1,000 meters. The floor itself has the appearance of being relatively flat but is likely to be roughly textured on a small scale. Large dark patches that increase in visibility as the sun climbs in the lunar sky, then fade when it is directly overhead, may be the product of shadows too small to be seen individually.

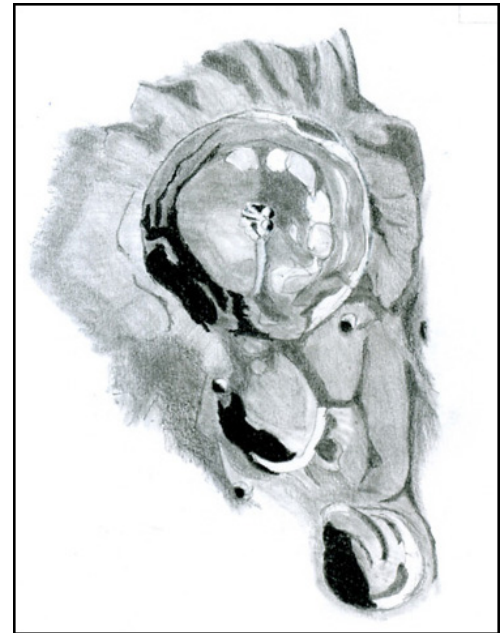
**FIGURE 3**

**Bullialdus central peaks and ridge**

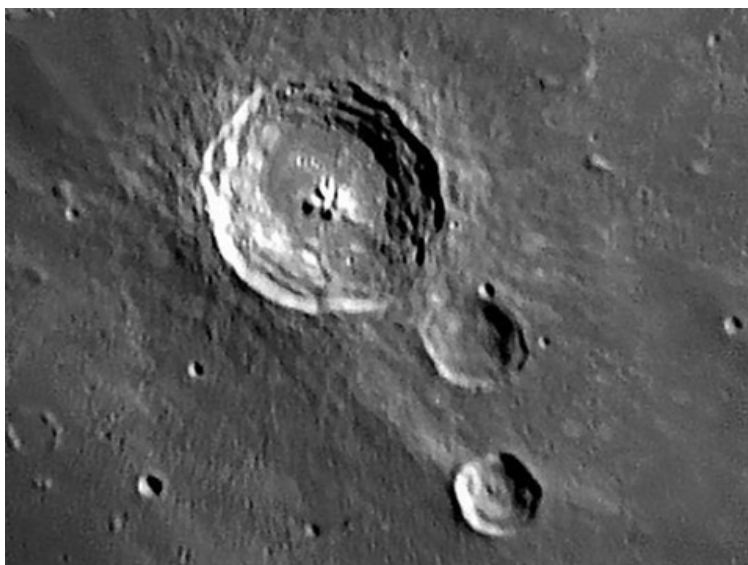
**Drawing by Fred Corno - Settimo Torinese, Italy**

**March 1, 2004 – 22:50 UT**

**Vixen VMC200L f/9.8 – 278x**



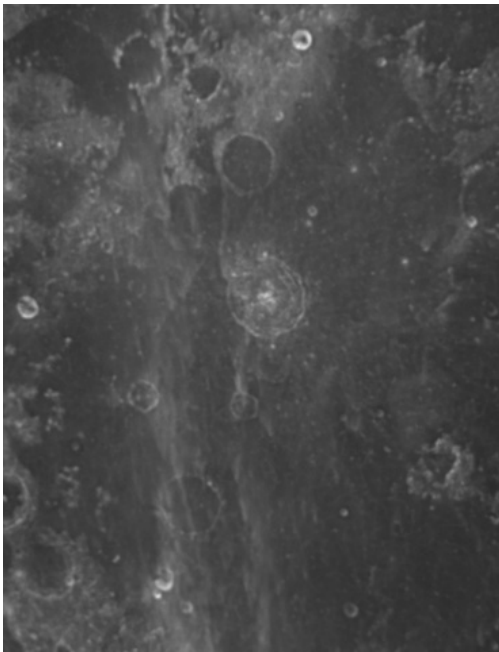
Other than the central peaks, the only easily observable floor feature is a ridge-like formation that runs from the peaks to the southeastern wall where it “points” to crater Bullialdus-A (Figure 3). Bullialdus-A is a 25 km crater that is nearly in contact with Bullialdus and must pre-date its namesake since it is overlaid by the Bullialdus ejecta blanket. To the south of Bullialdus-A is B, at 21 km it is a virtual twin of A. Moderate sized telescopes should show small craters just outside the eastern walls of A (Figure 4) and one on the inner eastern wall of B (unfortunately, hidden within the shadows of Figure 4).



**FIGURE 4 – Bullialdus-A and B**

**Digital image by John Sussenbach – Netherlands**

**Year: 2003 – Celestron C11 at f/20**



**FIGURE 5**  
**Tycho rays in the target area**  
**Digital image by Wayne Bailey**  
**Sewell, New Jersey, USA**  
**August 19, 2008 – 05:40 UT – Colong: 123.3**  
**Seeing: 4/10 – Trans: 4/6**  
**Celestron C11 SCT at f/20 – Schuler IR72 Filter**  
**Lumenera Skynyx 2-1M Camera**

### **KÖNIG:**

König lies to the west and slightly south of Bullialdus-B and, at 23 km, is also of a similar size. König has only a small central peak but an interesting arc of ridges to its west which may be the remnants of an ancient crater. Bright rays that overlay König and the surrounding area, including Kies, emanate from Tycho. (Figure 5)

### **KIES & KIES PI:**

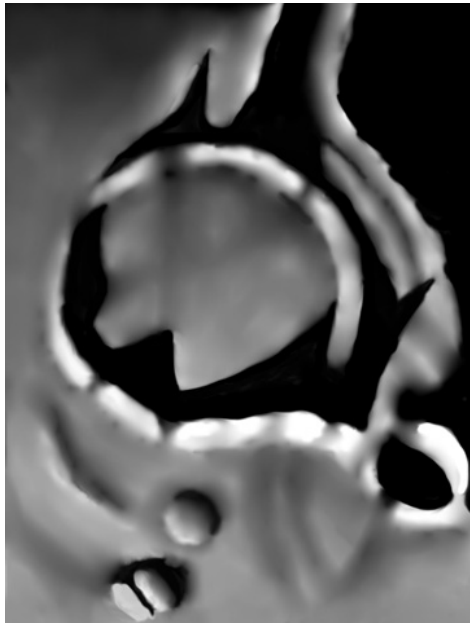
Approximately 160 km south of Bullialdus are a pair of observing favorites, Kies and Kies Pi. Kies is a 44 km diameter flooded crater whose walls rise no more than 760 meters above the surrounding plain. The walls are lowest and have gaps in the northwest and west, and there is an “extension” to the south. As previously stated, the crater and its surroundings are crossed by some of the larger Tycho rays. (Figure 6)

**FIGURE 6 – Kies**  
**Digital image by Maurizio Morrini**  
**Milan, Italy**  
**October 9, 2008 – 18:12 UT**  
**Seeing: 5/10 – Trans: Good**  
**250mm f/4.8 Newtonian – 2x Barlow**  
**Lumenera Skynyx 2-0 Mono Camera**  
**Filter: Celestron IR/UV cut**





Kies Pi is considered by most to be the finest example of a lunar dome on the near side of the Moon. Easily seen west of the lower half of Kies, it is 11 km in diameter and has a clear central pit. (Figure 7)



**FIGURE 7 – Kies**

**PDA Drawing by Peter Grego - St. Dennis, Cornwall, UK  
September 24, 2008 – 02:45 to 03:25 UT - Colong: 200.6 to 200.9  
200mm SCT - 200x with Binoviewer**

**REFERENCES:**

Grego, Peter – “The Moon and How to Observe It”, Springer (2005)  
North, Gerald – “Observing the Moon: The modern astronomer’s guide”, Cambridge Univ. Press (2000)  
Rukl, Antonin – “Atlas of the Moon”, Hamlyn (1991)  
Wood, Charles A. – “The Modern Moon: A personal view”, Sky Publishing Corp. (2003)

**CALL FOR OBSERVATIONS:**

**FOCUS ON: Albategnius**

***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 2009** edition will be the crater **Albategnius**. 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 feature to your observing list and send your favorites to:

**Wayne Bailey - [wbailey42@comcast.net](mailto:wbailey42@comcast.net)**

**Deadline for inclusion in the Albategnius article is December 20, 2008**

## **ADDITIONAL OBSERVATIONS OF BULLIALDUS TO KIES**



**Digital image by Michael Boschat – Halifax, Nova Scotia, Canada**

**October 9, 2008 – 23:20 UT – Seeing: 6/10 – Trans: 2/6**

**Rubinar 10cm f/10 Maksutov – Centrios 3.0 MP DSC-200 – Afocal Zoon at 40x**



**Digital image by Howard Eskildsen – Ocala, Florida, USA**

**April 26, 2008 – 09:17 UT – Seeing: 8/10 – Trans: 5/6**

**Meade 6 inch f/8 Refractor – 2x Barlow – Orion StarShoot II**



## **ADDITIONAL OBSERVATIONS OF BULLIALDUS TO KIES**



**Digital image by Maurice Collins – Palmerston North, New Zealand  
July 13, 2008 – 08:40 UT  
Celestron 8 inch f/10 SCT – Meade LPI**



**Digital image by Michel LeGrand – Couyere, France  
October 9, 2008 – 19:31 UT  
T 62cm Astroqueyaras – Olympus E-410 – 1/25 at ISO 400**

# **LUNAR TOPOGRAPHICAL STUDIES**

Website: <http://www.zone-vx.com/alpo-topo.html>

## **OBSERVATIONS RECEIVED**

MICHAEL AMATO - WEST HAVEN, CONNECTICUT, USA

Digital image of "X" on the Moon

WAYNE BAILEY - SEWELL, NEW JERSEY, USA

Digital image of Bullialdus & Kies

MICHAEL BOSCHAT - HALIFAX, NOVA SCOTIA, CANADA

Digital images of 8-day Moon, Bullialdus to Copernicus, Bullialdus

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND

Digital images of Copernicus, Tycho, Schickard, Aristarchus, Sirsalis & Darwin Rilles, Bailly, 11-day Moon, 14-day Moon, Orientale Basin, 15-day Moon, Tycho Rays (3)

Computer generated contour maps of Waning Gibbous Moon, Near Full Moon (2), 11-day Moon

FRED CORNO - SETTIMO TORINESE, ITALY

Drawing of Bullialdus

COLIN EBDON - COLCHESTER, ESSEX, UK

Drawings of Larrieusdam, Maestlin, Wolf

HOWARD ESKILDSEN - OCALA, FLORIDA, USA

Digital images of Schickard, Mare Nectaris

Banded Crater Report Forms with digital images of Agatharcides-A, Aristarchus, Damoiseau-E, Kepler, Milichius, Bessarion, Brayley

PETER GREGO - ST. DENNIS, CORNWALL, ENGLAND

PDA drawings of Torricelli, Posidonius, Abulfeda, Triesnecker, Kies, Reiner Gamma

ROBERT H. HAYS, JR. - WORTH, ILLINOIS, USA

Drawing of Clausius

RIK HILL - TUCSON, ARIZONA, USA

Digital images of Aristarchus

BRUCE KINGSLEY - MAIDENHEAD, UK

Digital images of Drygalski, Moretus & Newton, Tycho

PAOLO LAZZAROTTI - MASSA, ITALY

Digital images of Mare Crisium, Mare Smythii,

MICHEL LEGRAND - COUYERE, FRANCE

Digital images of Myginus, Piccolimini, Posidonius, Theophilus

ANDREW MARTIN - ROCKVILLE, MARYLAND, USA

Written observations of the ray systems of Aristarchus, Kepler, Glushko

MAURIZIO MORRINI - MILAN, ITALY

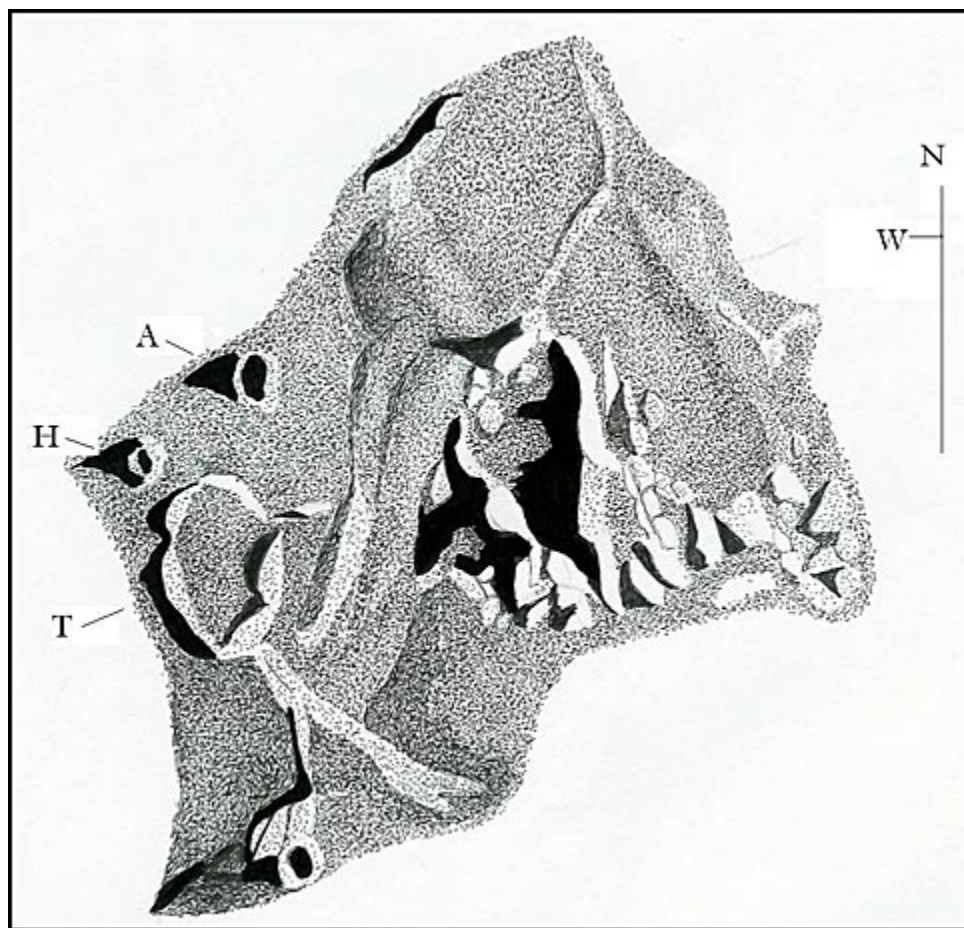
Digital images of Bullialdus to Kies (2), Bullialdus to Capuanus (2)

JOHN SUSSENBACH - NETHERLANDS

Digital image of Bullialdus

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## **RECENT TOPOGRAPHICAL OBSERVATIONS**



### **WOLF**

**Drawing by Colin Ebdon – Colchester, Essex, UK**

**April 14, 2008 – 22:30 to 23:40 UT – Colongitude: 20.64 to 21:15**

**Seeing: All then AIII – Trans: Very good , some low clouds**

**7 inch f/15 Maksutov-Cassegrain – 300x**

## **RECENT TOPOGRAPHICAL OBSERVATIONS**

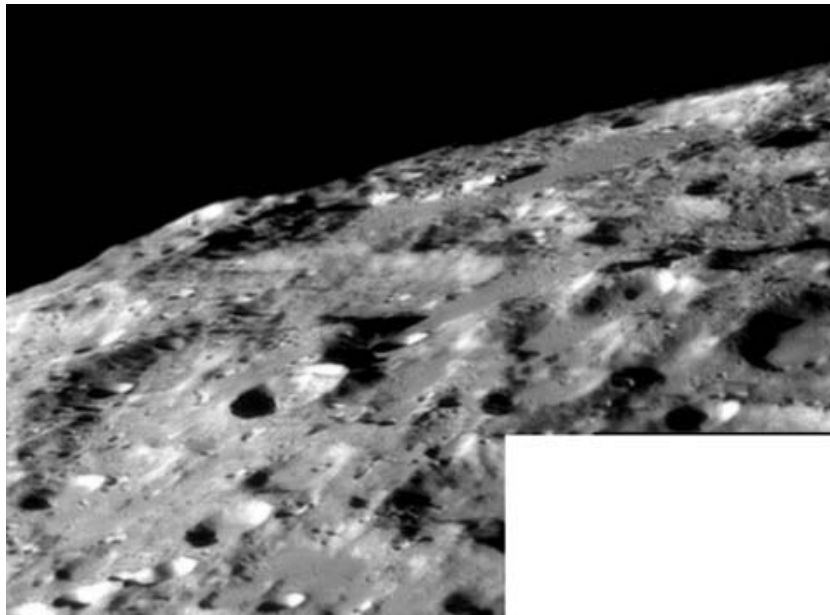


**“X” ON THE MOON (Center left)**

**Digital image by Michael Amato – West Haven, Connecticut, USA**

**October 6, 2008 – Seeing: 8/10**

**127mm Maksutov – 25mm EP and Digital Camera (Afocal)**



**DRYGALSKI**

**Digital image by Bruce Kingsley – Maidenhead, UK**

**September 21, 2008 – Seeing: Fair to good – Trans: Good**

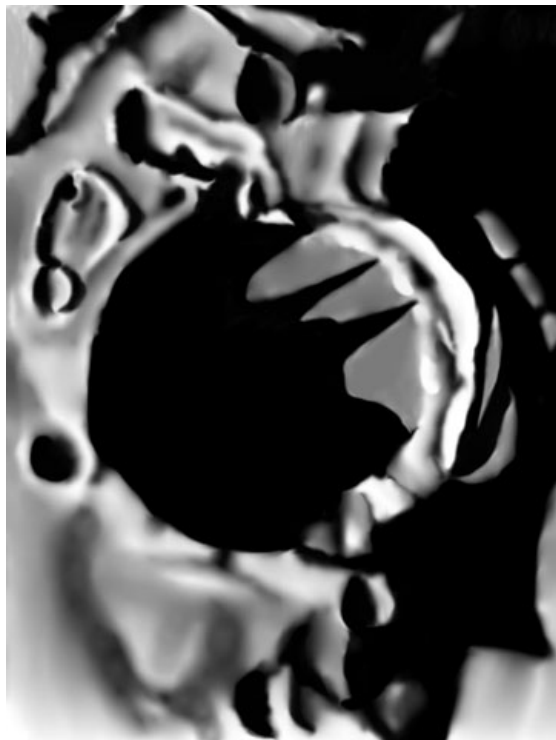
**Celestron 11 inch SCT at f/39 – I-R Filter**

## **RECENT TOPOGRAPHICAL OBSERVATIONS**



### **SHICKARD**

**Digital image by Howard Eskildsen – Ocala, Florida, USA  
September 24, 2008 – 10:06 UT – Seeing: 5/10 – Trans: 4/6  
Meade 6 inch f/8 Refractor – 2x Barlow – Orion StarShoot II**



### **ABULFEDA**

**PDA Sketch by Peter Grego – St. Dennis, Cornwall, UK  
September 21, 2008 – 00:10 to 00:50 UT – Colongitude: 162.6 to 163.0  
Seeing: AII-III – 200mm SCT – 200x with Binoview**



## **RECENT TOPOGRAPHICAL OBSERVATIONS**



### **MARE SMYTHII**

**Digital image by Paolo Lazzarotti – Massa, Italy  
June 10, 2008 – 18:50 UT – Seeing: 6/10 – Trans: 3/5  
Gladius CF-315 Lazzarotti Opt. Scope – LVI-1392 Experimental Camera  
Edmund Optics R Filter – 31msec. Exposure – 150/2000 Frames**



### **BAILLY**

**Digital image by Maurice Collins – Palmerston North, New Zealand  
October 13, 2008 – 09:16 UT  
Celestron 8 inch f/10 SCT – Meade LPI**



# **BRIGHT LUNAR RAYS PROJECT**

**Coordinator - William M. Dembowski, FRAS**

**Bright Lunar Rays Project Website:**

**<http://www.zone-vx.com/alpo-rays.html>**

## **RECENT RAY OBSERVATIONS**

Name: Andrew Martin SFO

Location: Rockville MD (77° 8' 22" W, 39°4' 50" N, elevation 128 meters)

Date: Oct. 22, 2008

Time: 09:28:52 UT to 10:08:00 UT

Ephemeris for 09:28:52 UT

Distance: 368377 km

Colongitude: 185.8°

Lunation: 23.05 days

Phase: 258.8°

Illumination: 40.3%

Solar Inclination: -1.5°

Telescope used: 102mm Celestron C4-R Achromat Refractor f/10

Lens used: Celestron Plossl 20mm and GTO x2 Barlow (magnification 100x).

Seeing: Clear Sky Chart estimated 1 out of 5, but based on observations of moon directly I would say 3 out of 10.

Transparency: Clear Sky Chart estimated average transparency, but I would say 5 out of 6 starting.

Weather: Clear. 43°F with humidity at 61%. There were occasional winds blowing at 8mph.

### **Name of Feature: Aristarchus (47.4°W, 23.7° N)**

Observation: Aristarchus ray system was faintly visible on mare surface to the east. Overall ray details were difficult to make out. The crater itself was a very bright white with a little shadow along the eastern rim. Vallis Schroter could be seen winding its way north and west from crater. A bright tail of material could be seen stretching past Herodotus. Herodotus was barely visible due to the brightness of the tail material. A dark halo could be seen north and east of Aristarchus which seem to separate the ray details from the crater itself. It was difficult to tell if this was the end of the rays or some darker material thrown out.

### **Name of Feature: Kepler (38.0°W, 8.1°N)**

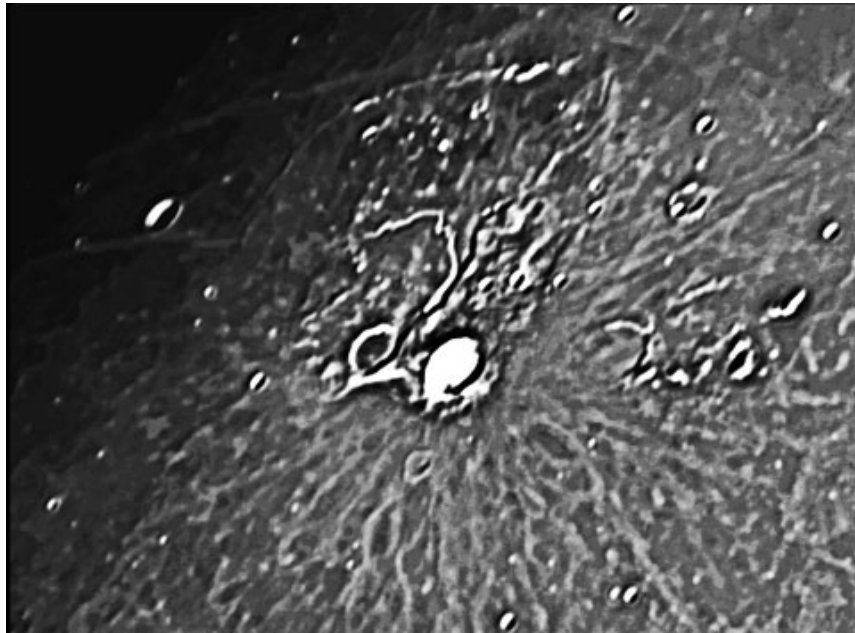
Observation: Kepler crater could be made out in the middle of dark gray array of ray material. There was a slight shadow along its eastern wall but overall the crater had a muted appearance. Some individual rays could be seen but most of the material was light gray halo around the crater for some 60 km. A series of three forked rays could be seen stretching to the west from what appeared to be the mid point of the western area of the crater. Similar to June 28<sup>th</sup> observation the rays in general appeared to stretch some 95 km from the halo of material with the rays in the northwest going further. The distribution appeared to be similar to June 28<sup>th</sup> as well. Unlike June 28<sup>th</sup>, smaller craters could be seen

imbedded in the ray material. The smaller craters had a dark center to them. Kepler A, B, C, and D could all be made out in the material. Encke was harder to make out.

**Name of Feature: Glushko (formerly Olbers A) (77.6°W, 8.1°N)**

Observation: Libration was not favorable for Glushko and any ray system from that crater seem to blend in with the surrounding terra. What was visible was the Cardanus-Selecus ray segment running along the mare surface of Oceanus Procellarum northeast towards Montes Agricola. Although the start of this ray segment was not as clear and seem to blend in with the brighter white of the terra.

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**ARISTARCHUS (Processed for ray system)**  
**Digital image by Rik Hill – Tucson, Arizona, USA**  
**July 16, 2008 – 05:19 UT – Seeing: 5/10**  
**Questar – 2x Barlow – UV/IR Blocking Filter**  
**SPC900NC Camera – 200/2000 images**

# **BANDED CRATERS PROGRAM**

**Coordinator - William M. Dembowski, FRAS**

**Banded Craters Program Website: <http://www.zone-vx.com/alpo-bcp.html>**

A.L.P.O. Lunar Section: Selected Areas Program Banded Craters Observing Form

Crater Observed: Brayley

Observer: Howard Eskildsen

Observing Station: Ocala, Florida

Mailing Address: P.O. Box 830415, Ocala, Florida, 34483

Telescope: Meade Refractor 15.2 cm f/8

Imaging: Orion StarShoot II, 2X Barlow Filters: None

Seeing: 5/10 Transparency: 4/6

Date (UT): 2008/09/54 Time (UT): 09:54

Colongitude: 205°

Position of crater:

Selen. Long.

Selen. Lat.

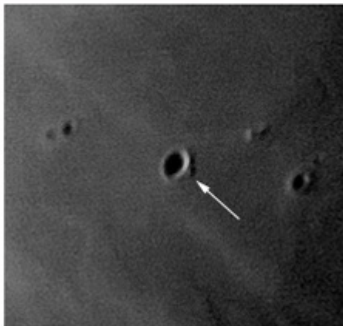
36.9° West

20.9° North

Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07

Image (north up):

Comments:



No bands visible, but the eastern rim is quite bright. There is a curious ridge that extends to the ESE of the outer rim, see arrow. On other images it appears as a bright area.

**A.L.P.O. Lunar Section - Banded Craters Observing Form**

Crater Observed: Menelaus

Observer: William M. Dembowski      Observing Station: Elton Moonshine Observatory

Mailing Address: 219 Old Bedford Pike, Windber, PA 15963

Telescope: Celestron SCT      20 cm      f/10

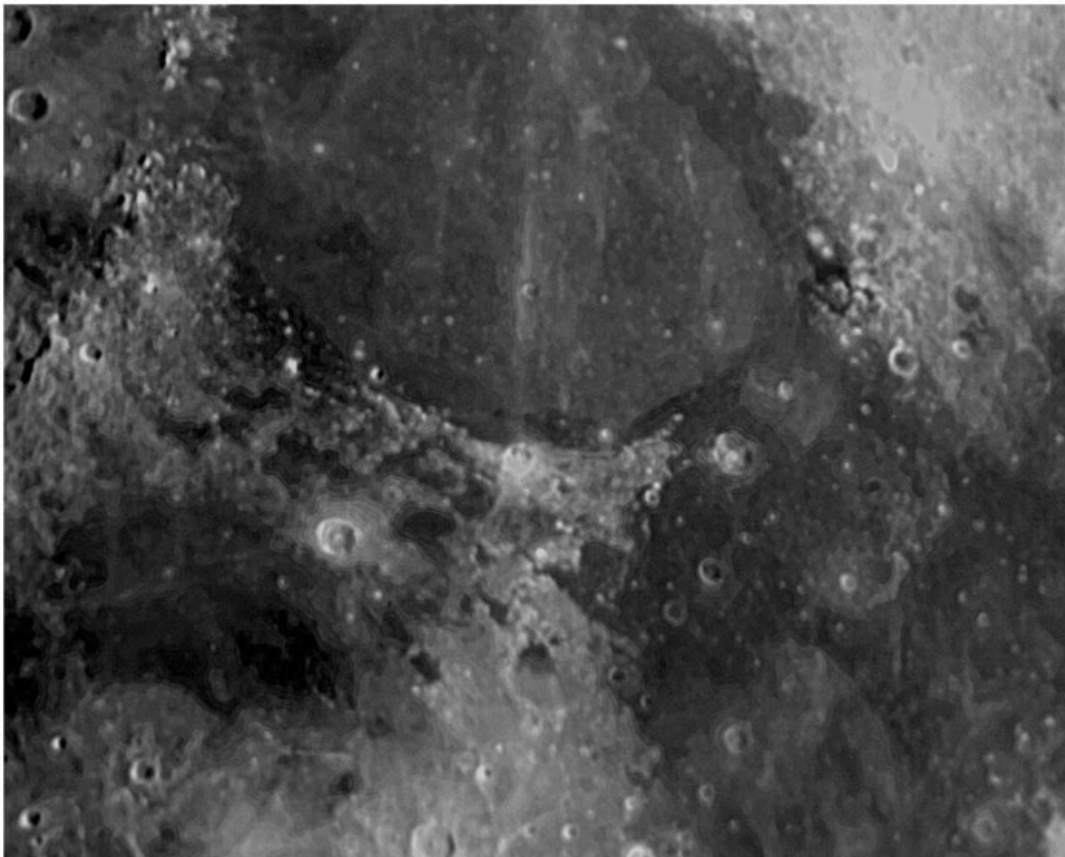
Imaging: Orion StarShoot II      Filters:

Seeing: 4/10      Transparency: 3/6

Date (UT): 2008/10/09      Time (UT): 23:46

Colongitude: 35.0

Image: (North up) (East right )



# **LUNAR TRANSIENT PHENOMENA**

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

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

## **LTP NEWSLETTER - NOVEMBER 2008**

Dr. Anthony Cook - Coordinator

Observations for September 2008 were received from the following observers: Clive Brook (Plymouth, UK), Jay Albert (FL, USA), Maurice Collins (New Zealand), myself (Aberystwyth, UK), and Marie Cook (Mundesley, UK), and Howard Eskildsen (FL, USA). I would also like to thank all other observers who kindly sent me past examples of images of the white spot on the northern shore of Mare Crisium, in order to resolve a minor LTP mystery. So we can now safely assume that the event captured on 2008 Jul 07, despite its brilliance in the image, was just a normal appearance.

I do not have much to report this month, except that I attended a couple of meetings in Germany during September. One of them was the Europlanet meeting in Münster and the other was a workshop on impact flashes in Cologne. At the Munster meeting I gave a short talk on new methods for impact flash detection – I had a comment from the audience concerning one of the ideas that I was floating, regarding the possibility of detecting a meteorite impacts on the dayside of the Moon, utilizing the Sodium D line that shows up quite strongly in Earth-based meteor spectra. The questioner said that she doubted very much if my filter width (10 nm) was narrow enough as her team used much narrower band filters, to study the lunar exosphere, with spectral widths (FWHM) of  $< 1$  Angstrom – and so the expected signal would probably be swamped by the solar continuum spectra. Nevertheless I pointed out that unlike the lunar Exosphere, where the Sodium ions are all spread out, that the impact release of Sodium would initially be highly concentrated, although thinking about this idea again I guess with the lunar exosphere, Sodium line emission has a significantly greater column depth that we are looking through and furthermore any D-Line emissions would be seen against a dark sky background. So I will probably have to think again about this dayside impact flash detection idea. In another talk, there was a discussion of the LEAM dust experiment flown on the Apollo 17 lander mission. Readers may be interested to learn that this that there was a hundred fold increase in electrostatically levitated dust activity at sunrise. This started about 60 hours before and ran until 30-60 hours after sunrise. Dust particles as large as 1mm across were being charged, levitating and travelling westwards across the terminator from the day side to the night side at Sunrise. Dust activity during sunset was also above normal levels, but less well marked. This dust transport concept has been discussed before by Timothy Stubbs of the Goddard Space Flight Center in his “Dynamic Dust Fountain Model” and might offer clues to explain some LTP near the terminator.

During the Lunar impact flash workshop in Cologne, they brought together several experts in the area, including Jose Madiedo from Spain, Wilfried Tost and Jurgen Oberst from Germany and Brian Cooke from Marshall Spaceflight center. The latest results from NASA’s Marshall Space Flight Center suggested impact flash detections were at a rate of 1 per 2 hours down to magnitude 10. The activity in the first quarter was greater than in the last quarter, perhaps related to the Apex direction. Obest and Tost presented the design and intentions for flying a space rated SPOSH camera, for detecting impact flashes, on a proposed (but not confirmed yet) German LEO lunar mission. Although the camera had poor time resolution, it made up for this by large surface area and having greatly improved sensitivity

over existing cameras. Other participants talked about gas gun experiments and how changing the angle of attack, and the composition of the surface (or the projectile) made significant differences to the brightness and duration of the flash. This got me wondering about exactly what science could come out of observing impact flashes as the brightness may no longer be a good indicator of the energy release due to all the variables I mentioned above. At least though we gain information on impact rates and the locations of the impacts for future missions to go and explore. For my part I gave a short talk on looking for effects other than the initial flash, for example dust being kicked up and causing temporary brightening of the surface on the dayside. I produced statistical plots of LTPs which showed that the frequency of LTP events appeared non-random throughout the year - though more about this some other time when I have completed my analysis!

Lastly, if anybody is interested, then I understand that may be a programme on the subject of LTPs in the first week of November on BBC Radio 4, probably in a 9PM slot. For further details, in case of schedule changes, see: <http://www.bbc.co.uk/radio4/science/frontiers.shtml> and I'm sure that the programme may be downloadable by overseas members if they are interested.

LTP observing predictions, including the more numerous illumination only events can be found on the following web site: <http://users.aber.ac.uk/atc/tlp/tlp.htm> . 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. 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!

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## KEY TO IMAGES IN THIS ISSUE

1. Abulfeda
2. Aristarchus
3. Bailly
4. Brayley
5. Bullialdus
6. Clausius
7. Drygalski
8. Menelaus
9. Schickard
10. Smythii, Mare
11. Wolf

**X = Albaternius (Next *FOCUS ON* target)**

