THE LUNAR OBSERVER

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

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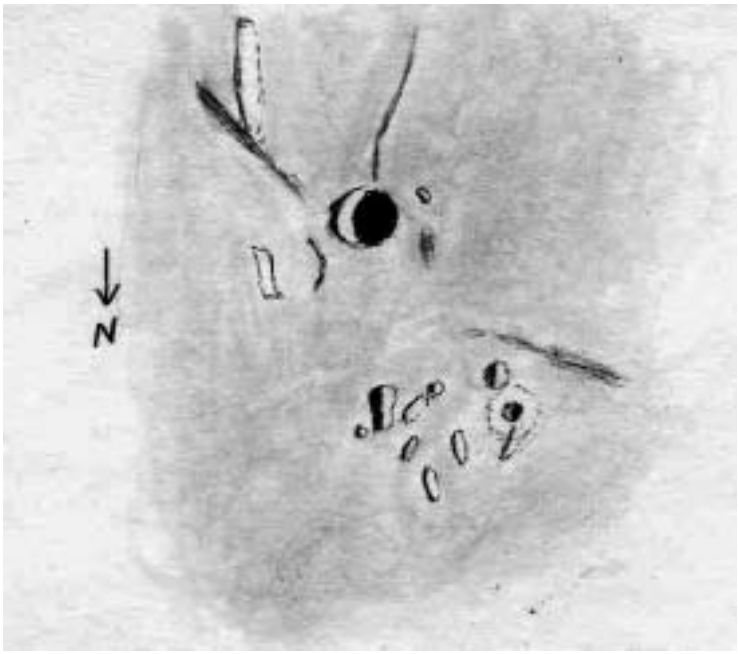
FEATURE OF THE MONTH - JAN. 2007



NICOLLET

Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
September 15, 2006 - 08:50-09:02 & 09:20-09:38 UT
15cm Newtonian - 170x - Seeing 8/10

I sketched this crater and vicinity on the morning of Sept. 15, 2006. This crater is in Mare Nubium west of Rupes Recta (the Straight Wall). Nicollet itself is a rather ordinary modest crater with a scalloped east rim judging from its shadowing. The small peak Nicollet epsilon is just west of Nicollet, and some low ridges are to its south. A couple of shadow strips northeast of Nicollet may be remnants of an old ring. The conspicuous double peak Nicollet delta is to the north, and the lower elongated peak Nicollet phi is just west of delta. The small pit Nicollet B is west of delta and phi, and has a modest halo. A small bright streak with a bit of shading extends north of B; this gives the surrounding bright area a comma shape. The low round peak Nicollet beta is just south of B. There are a few more low peaks north of delta and B, and a possible wrinkle south of beta.

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.

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

NOTE FROM THE EDITOR:

This issue marks the 10th anniversary of the publication of *The Lunar Observer*.

Thank you …… WMD

LUNAR CALENDAR - JANUARY 2007 (UT)

03 . . . . . 13:57 . . . . . Full Moon
06 . . . . . 19:00 . . . . . Moon 0.86 Degrees NE of Saturn
10 . . . . . 16:25 . . . . . Moon at Apogee (404,335 - 251,242 miles)
11 . . . . . 12:44 . . . . . Last Quarter
15 . . . . . 15:00 . . . . . Moon 5.8 Degrees S of Jupiter
17 . . . . . 02:00 . . . . . Moon 4.5 Degrees S of Mars
19 . . . . . 19:04 . . . . . New Moon (Start of Lunation 1040)
19 . . . . . 19:00 . . . . . Moon 1.2 Degrees SSE of Mercury
20 . . . . . 15:00 . . . . . Moon 2.2 Degrees SSE of Neptune
20 . . . . . 18:00 . . . . . Moon 0.73 Degrees SE of Venus
22 . . . . . 05:00 . . . . . Moon 0.44 Degrees WNW of Uranus
22 . . . . . 12:00 . . . . . Moon at Perigee (366,925 km - 227,997 miles)
25 . . . . . 23:02 . . . . . First Quarter

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 drawings)
Medium employed (for photos and electronic images)

FOCUS ON: Banded Craters

William M. Dembowski, FRAS
Coordinator, Lunar Topographical Studies

Nearly 200 lunar craters have been reported as having dusky radial bands on their inner walls and/or floors. The most prominent of these is Aristarchus, whose bands can easily been seen with a small (3 inch) telescope. Interestingly, the Aristarchus bands were not recorded by some of the more famous and devoted lunar observers of the past. Neither Schroter, Beer, Madler, Lohrmann, nor Schmidt ever included the appearance of these radial bands in their published descriptions of craters. It is not until 1868 that we find their first mention in a work published by J. Philips. This is, of course, not to suggest that banding is a recent phenomenon but simply an indication of the relative importance attached to various features by observers in different eras.

Dusky bands tend to make their appearance shortly after local sunrise and steadily increase in visibility until reaching their peak under a high sun. Changing illumination can affect more than just visibility. Changes in shape, position, and albedo have also been observed. Those having access to Harold Hill's "A Portfolio of Lunar Drawings" will find excellent examples of long term studies of the bands within the crater Birt and the Messier Twins.

Some bands appear to be related to topographical features; possibly lava flows into the crater through breaches in the walls or variations in the composition of the lunar surface. Others might simply be dark underlying terrain over which a bright ejecta pattern is displayed. Since not all bands present clues as to their nature, it is more practical to classify them by general appearance alone.

In the March 1955 Journal of the British Astronomical Association, K. W. Abineri and A. P. Lenham published a paper in which they suggested that banded craters could be grouped into five categories:

Group 1 - (Aristarchus type) Craters are very bright, quite small, and have fairly small dark floors leaving broad bright walls. The bands, on the whole, apparently radiate from near the centre of the craters. These craters are often the centres of simple bright ray systems.

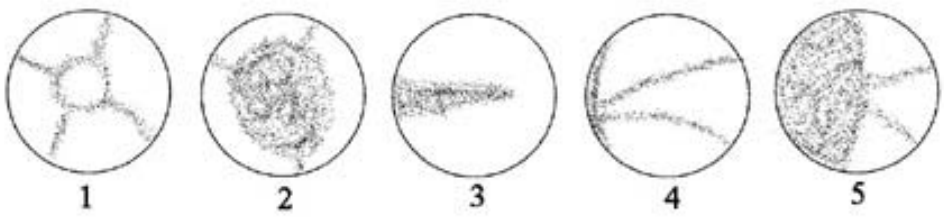
Group 2 - (Conon type) Rather dull craters with large dark floors and narrow walls. Very short bands show on the walls but cannot be traced on the floors. The bands, despite their shortness, appear radial to the crater centre.

Group 3 - (Messier type) A broad east-west band is the main feature of the floors.

Group 4 - (Birt type) Long, usually curved, bands radiate from a non-central dull area. The brightness and size are similar to the Group 1 craters.

Group 5 - (Agatharchides A type) One half of the floor is dull and the bands radiate from near the wall inside this dull section and are visible on the dull and bright parts of the floor.

These highly stylized drawings (by the author of this article) are intended only to give a general impression of each Group



An overview of the Bright & Banded Craters Program (by Dr. Julius Benton, Jr.) was provided in the October 2006 issue of "The Lunar Observer". Since that time I have decided to separate these two classes of features with the Bright Craters now being a part of the Bright Lunar Rays Program (as craters with limited ray systems) and treat Banded Craters as its own program under the umbrella of the Selected Areas Program. The slightly revised objectives of the Banded Craters Program include the following:

1. Detect and catalog craters that exhibit dark and/or bright bands under various lighting conditions throughout a given lunation and from one lunation to another.

2. Determine whether or not there is a relationship between crater brightness at local noon and the visibility of dark or light bands, central peaks, or both.

3. For craters exhibiting banding, determine the relative positions, orientation, and intensities (albedos) of the bands throughout a lunation and from one lunation to another.

4. Investigate what correlations may or may not exist between crater size, the presence of central peaks, and the occurrence of light and/or dark bands.

5. Observe the radial bands, either visually or photographically, through different colored filters to determine any changes in appearance.

6. Establish whether the banding is related to physical or albedo features, both within and surrounding the crater.

7. Monitor the visibility and morphology of bright and/or banded craters during umbral and penumbral lunar eclipses.

As with all lunar topographical programs, drawings, photographs, and digital images are solicited to help support and achieve the above objectives. However, in view of the extensive work already having been done in the Selected Areas Program (SAP), contributors must use the SAP Observing Forms and procedures previously established. Only by doing so will it be possible to meaningfully compare current observations with the decades of work already performed.

This program was not designed for the casual observer. 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

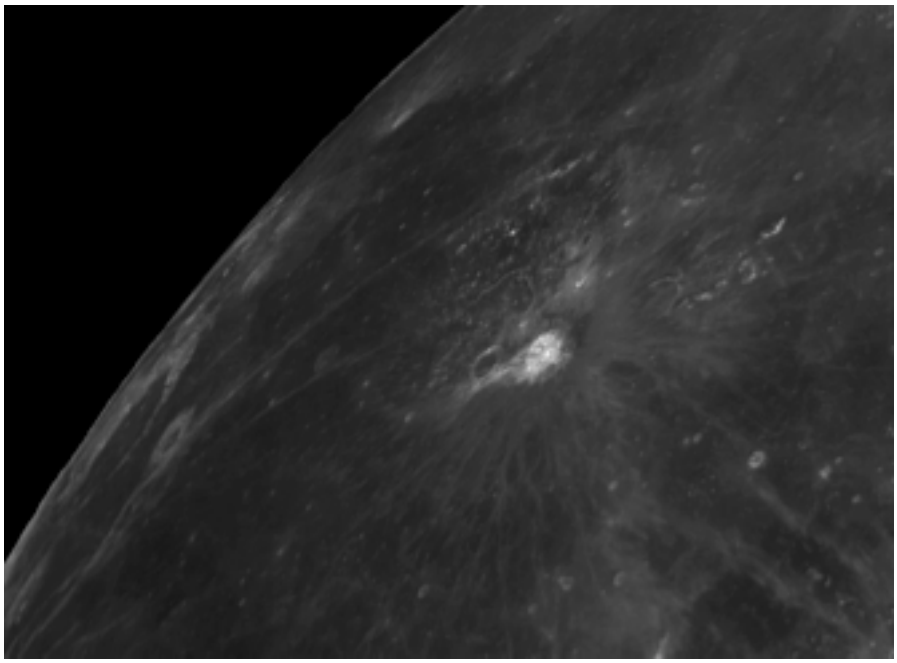
References:

Abneri, K.W. & Lenham, A.P. - Lunar Banded Craters - B.A.A. Journal (March 1955)
Grego, Peter - The Moon and How to Observe It - Springer-Verlag (2005)
Hill, Harold - A Portfolio of Lunar Drawings - Cambridge University Press (1991)
Price, F.W. - The Moon Observer's Handbook - Cambridge University Press (1988)
Warner, Brian - Banded Craters - A.L.P.O. Journal (Vol.10, Issue 3-4, March-April 1956)

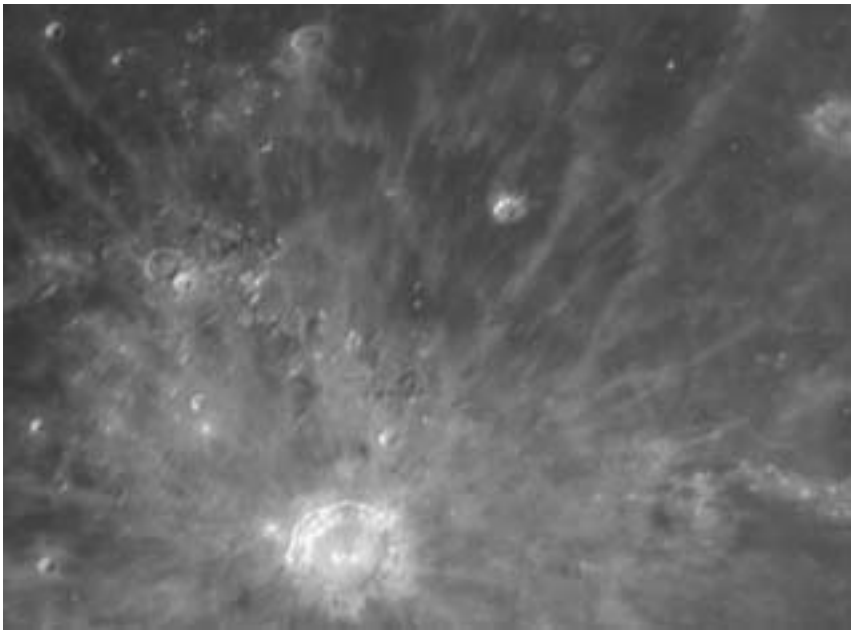
Three observers have answered the call with excellent images of banded craters - Wayne Bailey. Howard Eskildsen, and Gerardo Sbarufatti. A few of their images are presented on the next few pages. It is hoped that many more will follow, both from them and other equally dedicated observers.

OBSERVATIONS OF BANDED CRATERS

By Wayne Bailey - Sewell, New Jersey, USA



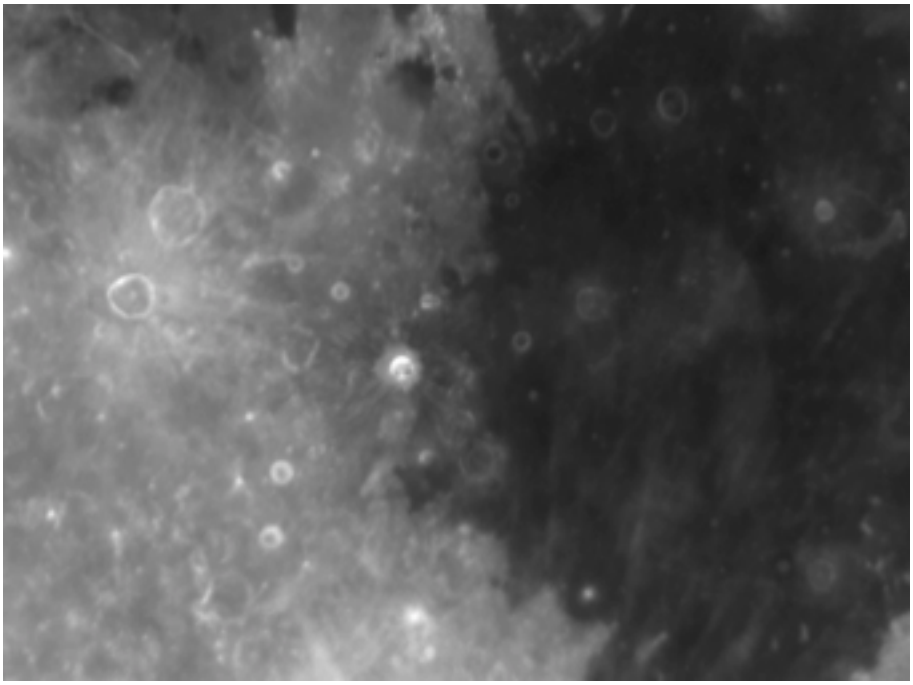
ARISTARCHUS & Brayley
December 5, 2006 - 03:02 UT - Colong: 86.8 - Seeing 5/10 - Trans: 4/6
Celestron C-11 f/10 SCT - Lumenera Skynyx 2-1M - Schuler IR72 filter



COPERNICUS & PYTHEAS
November 4, 2006 - 03:33 UT - Colong: 69.9 - Seeing 5/10 - Trans: 4/6
Celestron C-11 f/10 SCT - Lumenera Skynyx 2-1M - Schuler IR72 filter

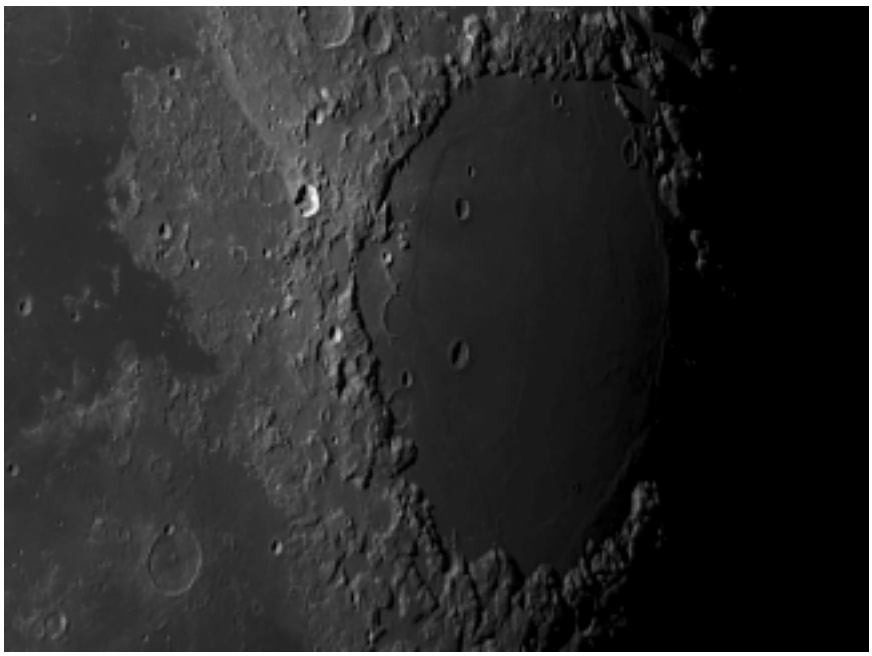
OBSERVATIONS OF BANDED CRATERS

By Wayne Bailey - Sewell, New Jersey, USA



DIONYSIUS & SILBERSCHLAG

November 4, 2006 - 04:33 UT - Colong: 70.4 - Seeing 5/10 - Trans: 4/6
Celestron C-11 f/10 SCT - Lumenera Skynyx 2-1M - Schuler IR72 filter

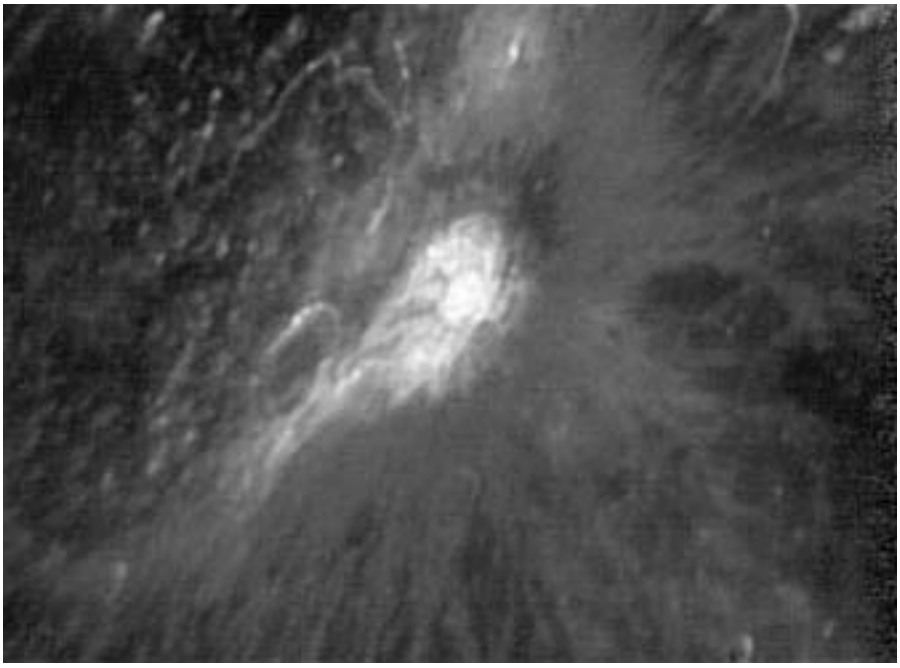


PROCLUS

October 9, 2006 - 06:46 UT - Colong: 69.9 - Seeing 6/10 - Trans: 4/6
Celestron C-11 f/10 SCT - Lumenera Skynyx 2-1M - Schuler IR72 filter

OBSERVATIONS OF BANDED CRATERS

By Howard Eskildsen, Ocala, Florida, USA



ARISTARCHUS
November 11, 2006 - 11:29 UT - Seeing 9/10 - Trans: 5/6
Meade 6 inch f/8 Refractor - IR block filter - NexImage camera

CONON & LACUS FELICITATIS
November 11, 2006 - 11:18 UT - Seeing 9/10 - Trans: 5/6
Meade 6 inch f/8 Refractor - IR block filter - NexImage camera

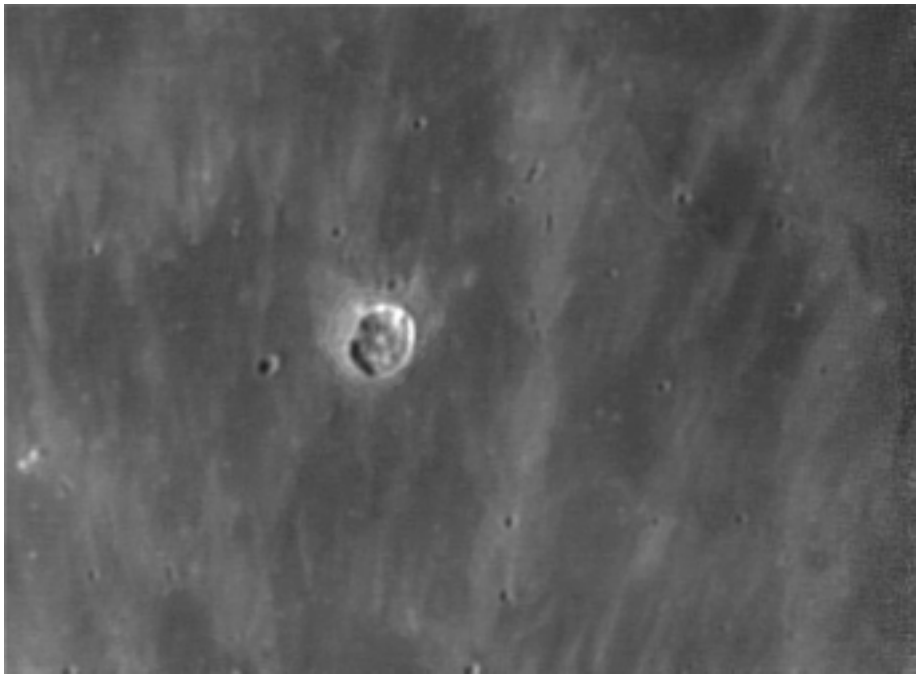
OBSERVATIONS OF BANDED CRATERS

By Howard Eskildsen, Ocala, Florida, USA

PALLUS & BODE

November 11, 2006 - 11:21 UT - Seeing 9/10 - Trans: 5/6

Meade 6 inch f/8 Refractor - IR block filter - NexImage camera



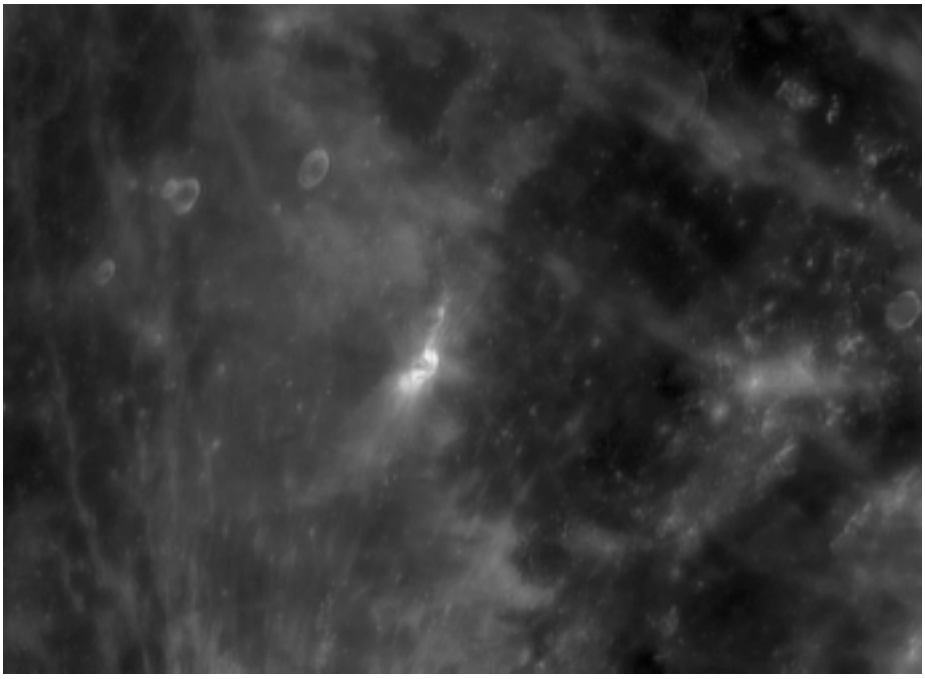
PYTHEAS

November 11, 2006 - 11:26 UT - Seeing 9/10 - Trans: 5/6

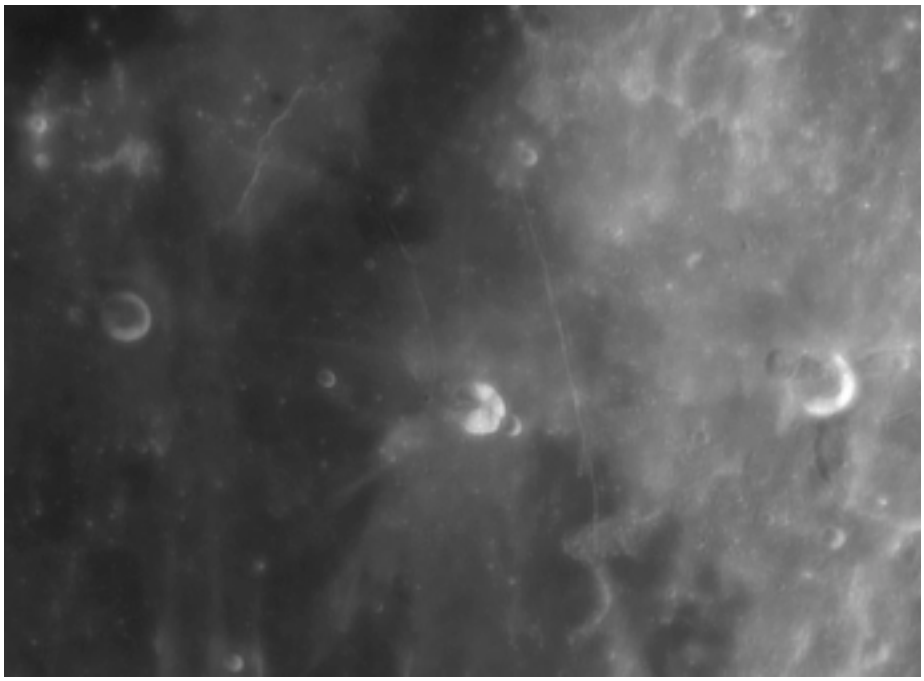
Meade 6 inch f/8 Refractor - IR block filter - NexImage camera

OBSERVATIONS OF BANDED CRATERS

By Gerardo Sbarufatti, Caselle Landi (LODI), Italy



BESSARION
October 11, 2006 - 03:08 UT - Seeing: AIII - Trans: 4/5
Celestron 8 f/10 SCT - 2x Barlow - Red Filter - KamPro2 Camera



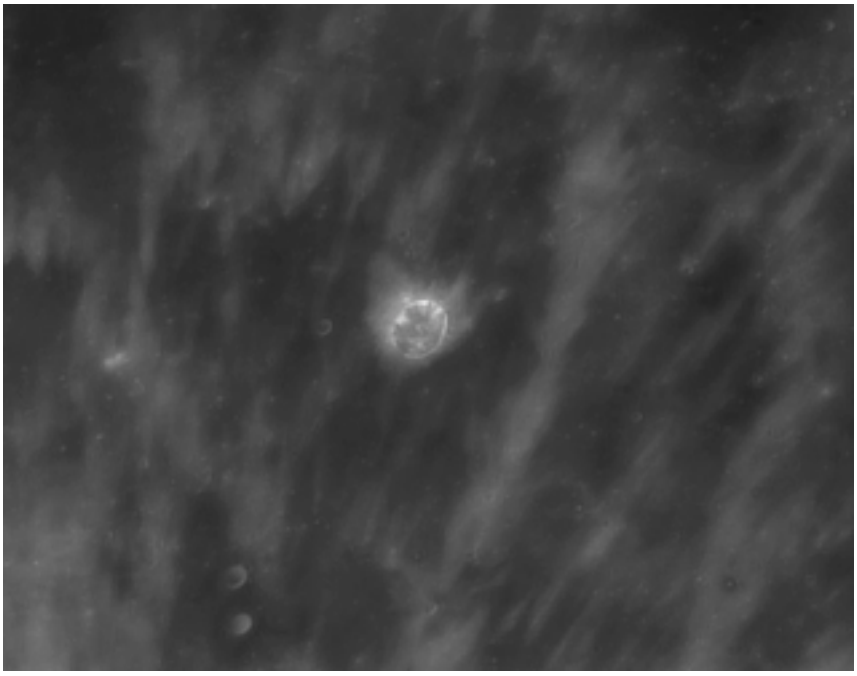
BIRT & NICOLLET
October 10, 2006 - 02:50 UT - Seeing: AIII - Trans: 4/5
Celestron 8 f/10 SCT - 2x Barlow - Red Filter - KamPro2 Camera

OBSERVATIONS OF BANDED CRATERS

By Gerardo Sbarufatti, Caselle Landi (LODI), Italy

DAWES

October 10, 2006 - 02:30 UT - Seeing: AIII - Trans: 4/5
Celestron 8 f/10 SCT - 2x Barlow - Red Filter - KamPro2 Camera



PYTHEAS

October 10, 2006 - 02:42 UT - Seeing: AIII - Trans: 4/5
Celestron 8 f/10 SCT - 2x Barlow - Red Filter - KamPro2 Camera

LUNAR TOPOGRAPHICAL STUDIES

Coordinator - William M. Dembowski, FRAS
dembowski@zone-vx.com

OBSERVATIONS RECEIVED

WAYNE BAILEY - SEWELL, NEW JERSEY, USA
Digital images of Tycho & Ball, Mare Fecunditatis & environs (2), Mare Nectaris & enviros , Kepler & environs (3), Nicollet & Birt (2), Maury & Posidonius, Dionysius & Silberschlag (3), Tycho & Clavius, Menelaus & Dawes (2), Copernicus & Pytheas (2), Bode (2), Atlas & Bode & Maury, Aristarchus & Brayley (2), Aristillus & Theaetetus (2), Mare Crisium, Alphonsus (2), Burg, Pytheas & Brayley

STEVE BOINT - SIOUX FALLS, SOUTH DAKOTA, USA
Digital image of Ptolemaeus to Mosting

ED CRANDALL - WINSTON-SALEM, NORTH CAROLINA, USA
Digital images of Theophilus region (2), Messier, Posidonius, Piccolomini

COLIN EBDON - COLCHESTER, ESSEX, ENGLAND
Drawings of Hecataeus, Humboldt, Liebig, Rumker

HOWARD ESKILDSEN - OCALA, FLORIDA, USA
Digital images of Aristarchus, Aristillus & Autolycus, Pallas & Bode, Pytheas, Moretus, South Pole region (2), Lacus Felicitatis & Conon (2), Descartes, Rima Archytas (4), Bailey & Burg (4), Montes Apenninus, Palus Epidemiarum, Sinus Iridum, Theophilus & Catharina, Tobias Mayer & Hortensius, Triesnecker & Hyginus (2), Mare Australe, Bailey & Drygalski, Humboldt & Curie, Burg & Hercules, Mare Undarum & Humboldt, Humboldt, & Hecataeus

PETER GREGO - REDNAL, BIRMINGHAM, ENGLAND
PDA drawing of Hell

ROBERT H. HAYS, JR. - WORTH, ILLINOIS, USA
Drawings of Nicollet, Wichmann, Pitiscus

K.C. PAU - HONG KONG, CHINA
Digital images of Delisle, Doppelmayer

GERARDO SBARUFATTI - CASELLE LANDI, ITALY
Digital images of Menelaus, Dawes, Birt & Nicollet

RECENT TOPOGRAPHICAL OBSERVATIONS

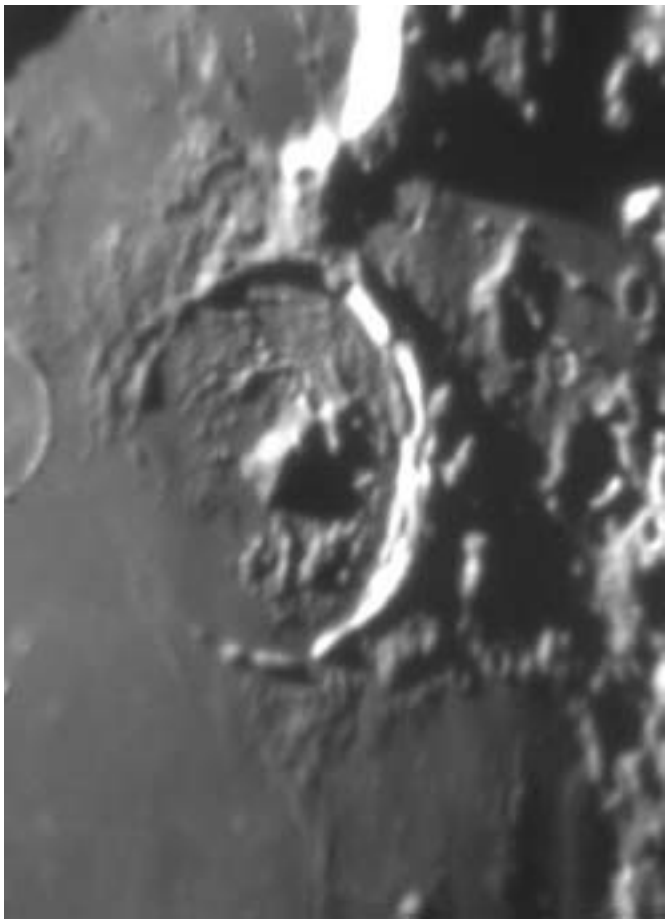
PTOLEMAEUS TO MOSTING
Digital image (mosaic) by Steve Boint - Sioux Falls, South Dakota, USA
June 16, 2005 - 04:00 UT - 10" Newtonian - 2x Barlow
Philips Toucam Pro II - 130 frames stacked for each image

POSIDONIUS
Digital image by Ed Crandall - Winston-Salem, North Carolina, USA
November 26, 2006 - 23:56 UT - Seeing 5/10
110mm f/6.5 Refractor - 3x Barlow - Philips Toucam

RECENT TOPOGRAPHICAL OBSERVATIONS

RECENT TOPOGRAPHICAL OBSERVATIONS

HELL
PDA drawing by Peter Grego - Rednal, Birmingham, England
December 12, 2006 - 03:30 UT - 200mm SCT - 300x



DOPPELMAYER
Digital image by
K.C. Pau - Hong Kong, China
December 1, 2006 - 14:45 UT
Colong: 44 - Seeing 5-6/10 - Trans: 4/10
250mm f/6 Newtonian - 5x Barlow
Philips Toucam Pro
141 Frames stacked

LUNAR TRANSIENT PHENOMENA

Coordinator – Dr. Anthony Cook – acc@cs.nott.ac.uk
Assistant Coordinator – David O. Darling - DOD121252@aol.com

LTP NEWSLETTER - JANUARY 2007

Dr. Anthony Cook - Coordinator

Best wishes for the 2007 and I hope that you have plenty of clear sky when the Moon is around - it will be an exciting year with a lead up to several international lunar missions from this year on - will these solve the problem of LTP once and for all? Observations were received from the following observers for November: Jay Albert (FL, USA), Clive Brook (Plymouth, UK), Maurice Collins (New Zealand), Marie Cook (Mundesley, UK), myself (Nottingham, UK), Robin Gray (NV, USA), Nigel Longshaw (UK), Gerald North (Narborough, UK), Steve Knight (Hampshire Astronomical Group, UK - observation via Geoff Burt), Piergiovanni Salimbeni (GLR group, Italy), Brendan Shaw (UK), and Don Spain (KY, USA).

Two observers, myself and a Hampshire Astronomical Group observer, Steve Knight, had a go at re-observing Copernicus under the same illumination as Geoff Burt's 2006 Jun 05 observation, but again, neither of us imaged anything unusual. Consequently I am coming to the conclusion that Geoff's blob may have been a LTP as I cannot find another explanation and we have had several attempts to re-observe but with no repeat performance. It was very welcome to start receiving reports from three past observers again, Robin Gray, Maurice Collins and Nigel Longshaw.

The Earthlit Moon on 26th November 2006 generated some unanticipated excitement, and for a change I was the one who noticed the possible activity. With hindsight I think I could have done a better job, but observing and telephone alert pressures force quick decisions. Is it better to get other observers out looking as soon as possible, or to do a thorough monitor and analysis before instigating an alert? The danger of the former is that we could go back to the old days of having seemingly too many alerts, although the danger of the latter is by the time an alert is issued a LTP may have finished! Bearing this in mind, here is what happened:

On the previous night of the 25th November UT 17:03-17:34, I had used a Celestron 11 robotic telescope and taken some CCD images that showed up Earthshine quite nicely with relatively little glare from the illuminated limb. Aristarchus was quite bright, but I was used to this, so ignored. On the next night, 18th November UT 16:34-18:39, and putting out of my mind what I had seen the previous day. When moving around the Aristarchus, Kepler, Copernicus area, I noticed that the crater Pytheas, at times, was almost, and perhaps as bright as Aristarchus (see Fig 1a). A quick check in the Hatfield photographic lunar atlas (under analogous full Moon illumination) revealed that this seemed a bit odd. I immediately issued text message alerts to Italian UAI and GLR groups, and raised a few BAA members in the UK by telephone - the objective was to monitor the brightness of Pytheas and Aristarchus. Whilst I was doing this I set the robotic telescope at Nottingham University to take images automatically approximately every 5 sec in white light (unfortunately the filter wheel was stuck so I could not image in other wavebands). I also contacted David Darling in the US and he put out an email alert to other observers. It was only much later when I had time to sit down and compare the Earthshine images with those from the 25th Nov, that it became obvious that Pytheas was not the culpret, but instead Aristarchus

appeared obviously fainter on 26th Nov than it did on the 25th Nov (Compare Fig 1a and 1b), or was it brighter on the 25th and normal on 26th? Unfortunately most observers were either clouded out or had problems seeing much in Earthshine at all - however you can see from the images how obvious to the eye this was!

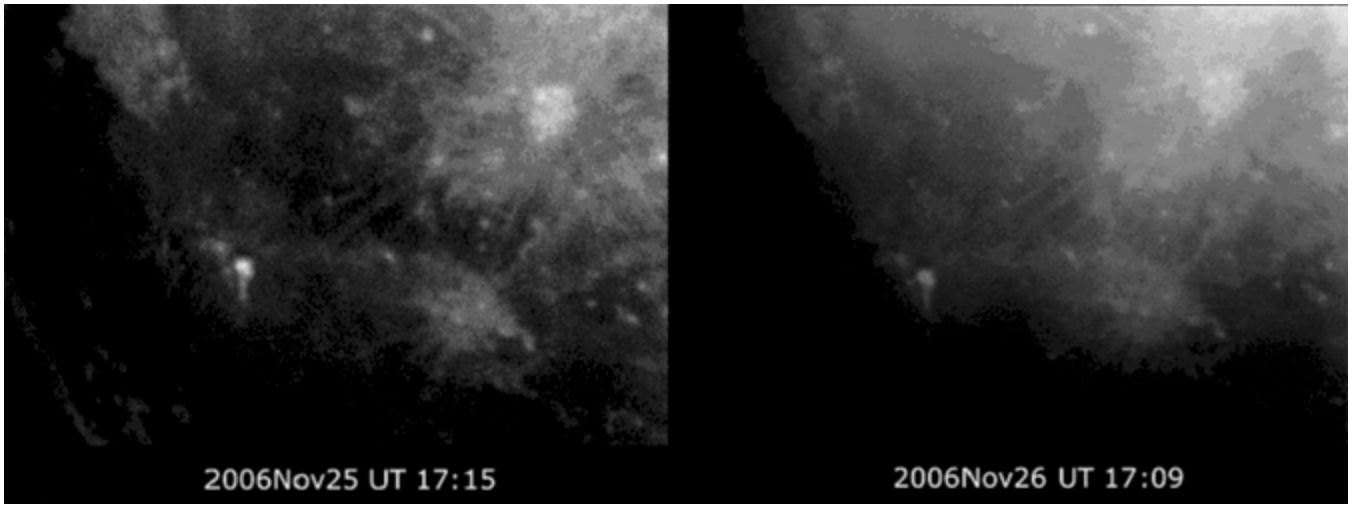


Fig 1a Aristarchus much the brightest feature Fig 1b Aristarchus fainter than Pytheas etc.

One immediate possibility, looking at Fig 1b, was that a lot more glare from the illuminated side was visible on the 26th Nov and this artificially offset the brightness of the lunar image towards the top of that image. After some lengthy measurements of some sample CCD images I plotted some preliminary graphs for localised points (less affected by glare) for the Aristarchus region, and for the Copernicus region, and these suggest strongly that this is the case as there are two offset lines of points with the same gradient: one for the Aristarchus region and one for the Copernicus region. Therefore the 2006 Nov 26 LTP alert was probably a false alarm (subject to further analysis), for which I am sorry if this definitely proves to be the case, although taking a look at Fig 1a and Fig 1b above, and in particular the similarity of Aristarchus and Pytheas on Nov 26th, it is easy to see why it was suspected as being a LTP at the time.

So what does this tell us? There have been a lot of Earthshine LTP in the past referring to the visibility of Aristarchus - typical comments being: Aristarchus is “brighter” or “fainter” than normal. Well if initial visual inspection of CCD images can fool us, the same too must apply easily to many of the past visual Earthshine Aristarchus LTP. Glare problems may also affect estimates of the magnitude of impact flashes seen in Earthshine too! How then can one be more quantitative in future? CCD images are to be preferred to visual observations as they can be more quantitative, i.e. one can get brightness numbers out and compare to other localized features. In Fig 1b I would say that Pytheas looks very similar in brightness to Aristarchus - in fact the CCD brightness of Pytheas is greater. I do not wish to discourage visual monitoring of Earthshine features, but please make lots of comparisons with other nearby features if you are going to attempt this.

Finally, Jay Albert has asked me to write some advice on optical filters to use when looking for color on the Moon with the human eye. My advice is as follows: Kodak Wratten filters are expensive, and one should be very careful to buy the correct combination. In the BAA we have always recommended the Wratten 25 (or 29) red and Wratten 44a filters. However different observers have different color sensitivity and may, if they find one filter lets in more light than the other, wish to use some Neutral density filters to even up the contrast. I have also heard that a Wratten 25 and 38a pair may work well

too. The key thing is when you put the filters one in front of another, and look at a bright light, they should yield a dark image i.e. red must block the blue and blue must block the red. If you see a greyish image then the filters spectral response overlaps and they are less suitable. One alternative to Kodak Wratten filters is to purchase a booklet of gelatin filters from Edmund Optics - these are a fraction of the price and contain spectral curves for each of the 100 or so filters in the booklet. You will have to experiment to find which filter pair combination is best, but it will save you some money!

Predictions, 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. 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!

Dr Anthony Cook, School of Computer Science & IT, Nottingham University, Jubilee Campus, Wollaton Road, Nottingham, NG6 1BB, UNITED KINGDOM. Email: acc@cs.nott.ac.uk

THE MOON IN THE NEWS

(SpaceRef) The Virtual Moon
http://www.spaceref.com/news/viewpr.html?pid=21498

Lunar Explorer (As described above)
http://www.lunarexplorer.com/

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