

THE LUNAR OBSERVER

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

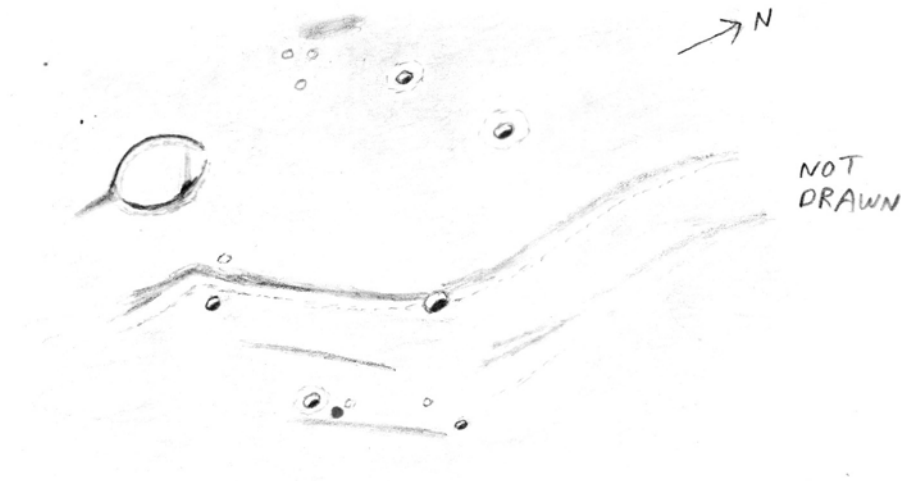
EDITED BY: Wayne Bailey wayne.bailey@alpo-astronomy.org

17 Autumn Lane, Sewell, NJ 08080

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

FEATURE OF THE MONTH – MAY 2009

Puiseux & Wrinkle Ridges



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

February 6, 2009 2:15-2:49 UT

15 cm refl, 170x, seeing 7

I drew this area of southern Mare Humorum on the evening of Feb 5/6, 2009 after watching two occultations. Puiseux is the largest crater in this sketch. This is a shallow crater with a high point on its east rim and a small break in its north rim. Its floor appears smooth, but there is a dusky streak extending northwestward from the high point. This streak is not dark, sharp shadow, so I can't think of what it might be, (I do know that it stayed in place regardless of how I looked at it). A darker streak, looking more like

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.

shadowing, extends southward from Puiseux. The longest features are wrinkle ridges, part of a series of them in this mare and in others. The most prominent one begins east of Puiseux, angles to the northeast near Puiseux H and bends back to the northwest and north at Puiseux D. This wrinkle is quite substantial with rather dark shadowing south of Puiseux D, but is much lower with less shading north of D. Another wrinkle ridge starts east of Puiseux D and extends northward, roughly parallel with the low portion of the longer ridge. This second ridge appears quite wide at its southern end, but becomes narrower to the north. Its shading is also darker to the north where there is a short wrinkle branching off. The southern ends of both of these wrinkles also have short branches. There are two strips of shadowing east of Puiseux H and D, which may be more wrinkles. These strips appear straighter than the other wrinkle shadows, but they are not as crisp as those from rilles. There are several small craters scattered in this area besides Puiseux H and D. Pr. Kelvin F is near the southern end of a strip of shadow, and a tiny pit, not on the LQ map, is near this shadow's north end. Two tiny bright dots are nearby. Puiseux C and B are northwest and west of Puiseux D, and Puiseux A may be one of three tiny bright dots north of Puiseux. A vague bit of shading is near this trio. There are haloes around Puiseux B and C as well as Pr. Kelvin F, but not Puiseux D or H. The bright dots may be mini-pits whose shadows were too small for me to see, but had haloes evident.

LCROSS Impact Observation Opportunity

On 4th June 2009 (the precise day is unknown at present, and the month could still change), NASA will launch its long awaited Lunar Reconnaissance Orbiter (LRO). The launcher vehicle Centaur upper rocket stage being used to get LRO to the Moon, will be used to slam into a permanently shadowed crater at either the north or the south pole of the Moon. The aim is to create an impact crater and kick up an ejecta plume that just might be visible in amateur sized telescopes of 10" and greater in size. If there is ice at the poles (as a few scientists have speculated), then one might expect to see evidence of H₂O, OH, O or H molecules in any spectra obtained. The latter will most likely be attempted by the big observatories. Accompanying the upper Centaur stage, four minutes behind, will be the Lunar CRater Observation and Sensing Satellite (LCROSS) and this will perform studies of the crater formation process and measure some of the debris before itself impacting into the lunar surface. For European



The LCROSS spacecraft (Image from http://www.nasa.gov/mission_pages/LCROSS/main/)

observers the chances of seeing the impact plume will not be too great as the impact will be timed for observation by large telescopes in Hawaii, the southwestern US and South America, however we can still

give this a go if the Moon is above the horizon and South and North American amateurs will have a greater chance to detect any effects. If anybody is interested in participating, please do contact me (or in the case of ALPO members, Brian Cudnik) and we will keep you informed of new information on the impact times and observing techniques needed

Dr Anthony Cook, Institute of Mathematical and Physical Sciences, University of Wales Aberystwyth, Penglais, Aberystwyth, Ceredigion, SY23 3BZ, WALES, UNITED KINGDOM. Email: atc @ aber.ac.uk

Editor's note: The LCROSS website is at lcross.arc.nasa.gov. It has a section on observations (lcrossarc.nasa.gov/observation.htm) and a link to an on-line discussion group for those interested in contributing observations, in addition to detailed information about the mission. Another website, www.nasa.gov/lcross has mission status information. The LCROSS spacecraft was fueled on April 24th, and launch will occur no earlier than June 2, 2009. Once launched, LCROSS (and the attached Centaur upper stage) will use the first passage by the moon to modify it's orbit into a high inclination, elongated earth orbit. This positions it for a high angle, high-speed impact at the lunar pole. There is a two to three month commissioning period in orbit during which the impact point will be selected and the orbit adjusted for the proper impact time. Impact should occur in August 2009 (assuming an early June launch).

Information can also be found at www.alpo-astronomy.org/lunar/lunimpacts.htm, the ALPO Lunar Section Meteorite Impacts Search website, Brian Cudnick, coordinator. Brian can be contacted at PVAMU Department of Physics, PO Box 519, MS2230, Prairie View, TX 77446 or cudnick@sbcglobal.net.

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)

LUNAR CALENDAR

MAY-JUNE 2009 (UT)

| | | |
|---------|-------|--|
| May 01 | 20:44 | First Quarter |
| May 04 | 06:00 | Moon 5.5 Degrees SSW of Saturn |
| May 09 | 04:01 | Full Moon |
| May 14 | 02:58 | Moon at Apogee (404,914 km - 251,602 miles) |
| May 17 | 05:00 | Moon 2.7 Degrees NNW of Jupiter |
| May 17 | 07:00 | Moon 2.4 Degrees NNW of Neptune |
| May 17 | 07:27 | Last Quarter |
| May 18 | 23:00 | Moon 1.9 Degrees SSE of asteroid Juno |
| May 19 | 16:00 | Moon 4.8 Degrees NNW of Uranus |
| May 21 | 03:00 | Moon 6.1 Degrees NNW of Venus |
| May 21 | 15:00 | Moon 6.0 Degrees NNW of Mars |
| May 23 | 22:00 | Moon 7.1 Degrees NNW of Mercury |
| May 24 | 12:11 | New Moon (Start of Lunation 1069) |
| May 26 | 03:45 | Moon at Perigee (361,154 km - 224,411 miles) |
| May 31 | 03:22 | First Quarter |
| May 31 | 12:00 | Moon 5.7 Degrees SSW of Saturn |
| June 07 | 18:11 | Full Moon |
| June 10 | 16:05 | Moon at Apogee (405,785 km - 252,143 miles) |
| June 13 | 14:00 | Moon 2.7 Degrees NNW of Neptune |
| June 13 | 15:00 | Moon 3.2 Degrees NNW of Jupiter |
| June 15 | 22:15 | Last Quarter |
| June 15 | 24:00 | Moon 0.37 Degrees SSE of asteroid Juno |
| June 16 | 01:00 | Moon 5.1 Degrees NNW of Uranus |
| June 19 | 13:00 | Moon 7.8 Degrees NNW of Venus |
| June 19 | 14:00 | Moon 5.9 Degrees NNW of Mars |
| June 20 | 08:00 | Moon 6.5 Degrees N of Mercury |
| June 22 | 19:35 | New Moon (Start of Lunation 1070) |
| June 23 | 10:40 | Moon at Perigee (358,017 km - 222,461 miles) |
| June 27 | 21:00 | Moon 5.8 Degrees SSW of Saturn |
| June 29 | 11:28 | First Quarter |

FOCUS ON: Triesnecker to Ariadaeus

By Wayne Bailey

Acting Coordinator: Lunar Topographical Studies

Although there aren't any spectacular features, like Copernicus or Tycho, that immediately attract attention, the variety of interesting features, and the overall complexity of this region, repays careful study. It is also well placed for

Figure 1. Triesnecker-Ariadaeus Area. Howard Eskildsen-Ocala, FL USA. March 05, 2009 01:37-01:39 UT. Seeing 9/10, Transparency 5/6. Meade 6" f/8 refractor, Orion StarShoot II, W-8 yellow filter.

observation near the center of the visible hemisphere. Multiple systems of rilles associated with Ariadaeus, Hyginus and Triesnecker, may be the best known characteristic of the area, but it also includes mare areas, a variety of craters, and the entire region has been heavily modified by the formation of Mare Imbrium (figure 1).

Mare Vaporum lies to the northwest. It's relatively smooth and featureless, indicating it's youth. Bill Dembowski's image (in the Recent Ray Observations section of this issue) shows distinct albedo variations within Mare Vaporum. The southeastern edge, between Hyginus and Manilius, has rugged, hilly terrain with large grooves

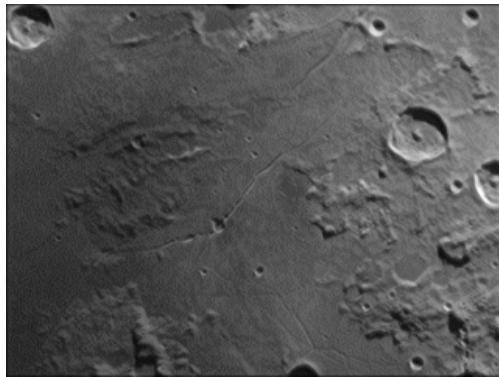


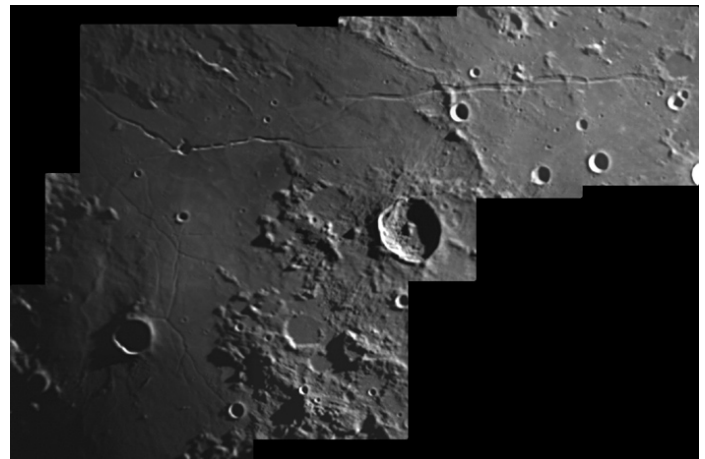
Figure 2. Hyginus-Manilius – Larry Todd – Dunedin, New Zealand. May 05, 2006 22:20 UT. 8" Mak, f/20.

radial to Mare Imbrium and parallel to the northwestern segment of Rima Hyginus (figure 2).

Hyginus is an unimpressive, rimless, 10 km diameter crater located near the northeast end of Sinus Medii. It's also at the center of the most visible rille on the moon, Rima Hyginus (figure 3). One segment extends northwest from Hyginus, approximately radial to Mare Imbrium, to Mare Vaporum. The other segment extends east-southeast until it disappears between Agrippa and Rima Ariadaeus. Close examination reveals that most of the rille consists of interconnected, rimless pits. At its western end it appears to broaden into a wider valley as it reaches Mare Vaporum. Towards its eastern end, it forks as it turns south towards Agrippa. Both branches

Figure 3. Triesnecker-Hyginus-Cayley – Richard Hill-Tucson, Arizona, USA. July 11, 2008 02:47 UT. C14, 2x barlow, UV/IR blocking filter, SPC900NC camera, Seeing 8/10. 200/2000 images.

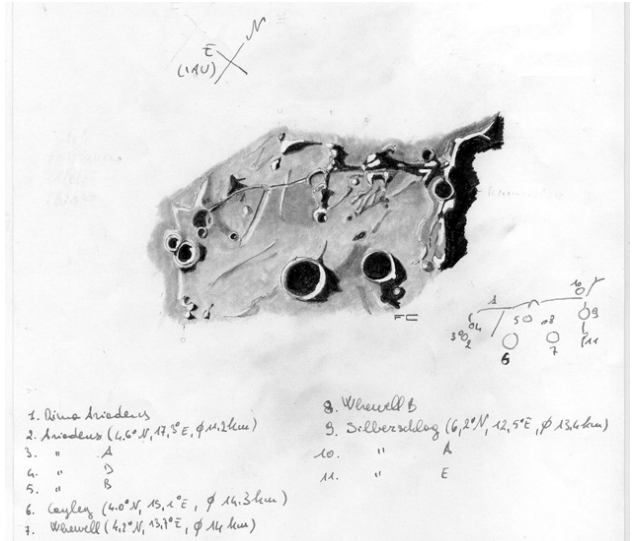
appear to be normal, linear rilles. The southern branch appears to gradually fade out as it approaches Agrippa. The northern branch appears to connect to Rima Ariadaeus west of Silberslag, but Lunar Orbiter images indicate that it closely parallels a short southwest spur from Rima Ariadaeus. Hyginus is in the center of a



broad, shallow depression which could be the result of a magma chamber emptying. This, combined with the overall impression that the crater and rilles formed by collapse, indicates that this may be primarily a volcanic feature. However, there is still the question of where did the magma or ash end up? There doesn't seem to be a good explanation yet for how Hyginus and its rille formed.

Rima Ariadaeus, however, is a classic graben, formed where extension stress creates and separates parallel faults, allowing the terrain between to drop. It runs east-southeast from a point north of Agrippa, past bowl shaped Silberschlag, to its juncture with Mare Tranquillitatis on the north side of Ariadaeus. Along the way it crosses several topographic features, most notably a ridge extending north from Silberschlag to Boscovitch, which are depressed by the graben (figures 3&4). East of Silberschlag, as the rille passes south of

Figure 4. Ariadaeus Rille – Fred Corno - Settimo Torinese, Italy. April 23, 2007 20:45 UT. Seeing 8/10, Transparency good. Taka FS128 refractor, 149x.



two hills it appears to fade out. A second, very similar rille begins at the two hills, closely parallels the first for a short distance to its end, and then continues on in the same direction to Ariadaeus (figure 3). So it appears that Rima Ariadaeus is actually two, nearly co-linear

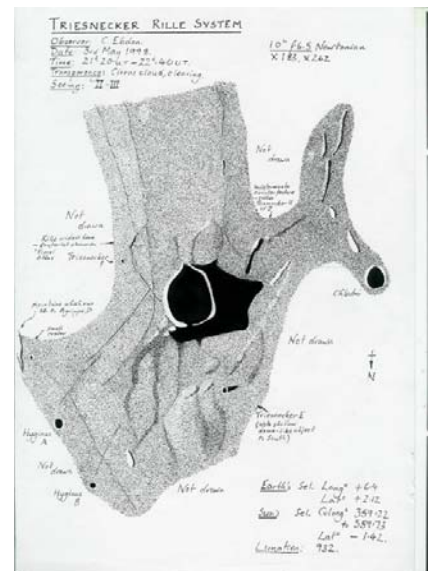


rimae. Rima Ariadaeus is one of the largest, most impressive rilles on the moon, but would be even more impressive if it were oriented differently to allow cross illumination at low sun angles, instead of only illumination approximately along it's axis.

Figure 5. Triesnecker-Klaus Petersen-Glinde, Germany. March 04, 2009 20:00 UT. Seeing 4/10, Transparency 3/6. Meade 8" SCT, f/10, DMK 21AF04.AS, 350 of 1000 frames.

In the northeastern section of Sinus Medii lies the 26 km diameter complex impact crater Triesnecker. It appears young and fresh, with a bright, steep rim, slump blocks around the rim interior, and a blocky floor (figure 5). It is on the western edge of an extensive, complex system of rilles named after it, Rima Triesnecker. However, their only connection is that the

Figure 6. Triesnecker-Colin Ebdon-Colchester, Essex, UK. May 03, 1998 21:20-22:40 UT. Seeing AII-III, Transparency cirrus cloud clearing, colongitude 359.2-359.7°. 10" f/6.5 Newtonian, 183x, 262x.



crater formed on top of the pre-existing rilles. In contrast to the previous two rille systems, Rima Triesnecker is a system of straight, narrow, shallow rilles, mostly trending north-south, but with enough variation that numerous rilles cross (figures 6). Under high sun conditions, several small, dark-haloed craters are visible on Sinus Medii between Triesnecker and the banded crater Chladni on the western edge.

The relative lack of impact craters on Mare Vaporum compared to the mare material of Sinus Medii

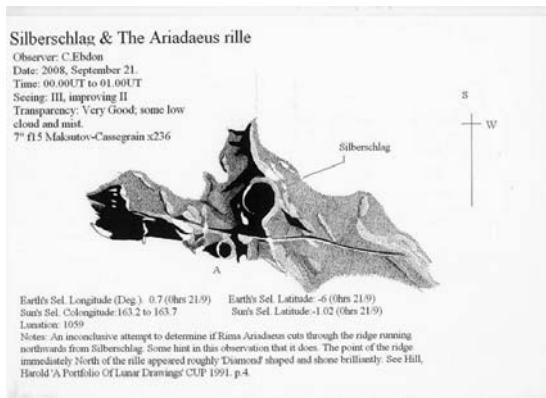
around Triesnecker and up to Hyginus illustrates the youth of the Vaporum lava flows. Mare Vaporum has very few topographical features except for a few small hills and indistinct ridges. Agrippa and Godin stand out in even a casual examination of this area since they postdate the bombardment resulting from the formation of the Imbrium basin. Notice the common, elongated troughs all pointing towards the center of Imbrium, many flooded with lava or other ejecta. Many of the older craters have been heavily eroded, or almost obliterated. Examples are Julius Caesar and Boscovich north of Rima Ariadaeus, Rhaeticus on the southeastern shore of Sinus Medii, and the Pallas/Murchison pair to the northwest of Sinus Medii, between the banded craters Chladni and Bode. Several additional banded craters are in this area, including Cayley, Silberschlag, Ariadaeus and Ariadaeus A. The dark rayed crater Dionysius is on the shore of Mare Tranquillitatis, south of Ariadaeus.

In summary, this is an interesting, complex area, whose diverse features are not all well understood.

ADDITIONAL READING

- Bussey, Ben & Paul Spudis. 2004. The Clementine Atlas of the Moon. Cambridge University Press, New York.
 Byrne, Charles. 2005. Lunar Orbiter Photographic Atlas of the Near Side of the Moon. Springer-Verlag, London.
 Grego, Peter. 2005. The Moon and How to Observe It. Springer-Verlag, London, pg 183.
 Mutch, Thomas. 1970. Geology of the Moon. Princeton University Press, Princeton.
 Rukl, Antonin. 2004a. Atlas of the Moon, revised updated edition, ed. Gary Seronik, Sky Publishing Corp., Cambridge.
 Schultz, Peter. 1976. Moon Morphology. University of Texas Press, Austin.
 Wood, Charles. 2003. The Modern Moon: A Personal View. Sky Publishing Corp., Cambridge, pg 124-125.

ADDITIONAL TRIESNECKER-ARIADAEUS OBSERVATIONS



Silberschlag & Ariadaeus Rille-Colin Ebdon-Colchester, Essex, UK.
 September 21, 2008 00:00-01:00 UT. Seeing AIII improving to II,
 Transparency very good some low cloud and mist, colongitude 163.2-163..7°. 7" f/15 Mak-Cas, 236x.



Ariadaeus Rille & Surrounds-Larry Todd – Dunedin, New Zealand

ADDITIONAL TRIESNECKER-ARIADAEUS OBSERVATIONS



Hyginus-Ed Crandall-Winston-Salem, NC USA. January 04, 2009 23:20 UT. Seeing 5/10, Transparency 4/6, Colongitude 13.6°. 110 mm f/6.5 APO, 3x barlow, Toucam.

Triesnecker-Richard Hill-Tucson, AZ USA. February 25, 2007 02:52 UT. C14, Wratten 21 filter, ToUCam, 300/1500 images.



Hyginus-Agrippa – Michel LeGrand – La Conyere, France. October 19, 2008 00:32 UT. C11, Toucam pro.

Triesnecker-Hyginus – Axel Tute – Küssaberg, Baden-Württemberg, Germany. April 03, 2009 20:20 UT. Seeing 8/10, Transparency 5/6, Colongitude 14.75°. 8" SCT, f/10, Toucam 740k.



CALL FOR OBSERVATIONS:
FOCUS ON: Mare Fecunditatis

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 **July 2009** edition will be Mare Fecunditatis. 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 area to your observing list and send your favorites to:

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

Deadline for inclusion in the Mare Fecunditatis article is June 20, 2009

FUTURE FOCUS ON ARTICLES:

In order to provide more lead time for potential contributors the following target has been selected:

Deslandres **TLO Issue: September 2009** **Deadline: August 20, 2009**

Drawing Notes

The following two articles are the second installment in the series on drawing techniques used by various observers. Because this month's issue includes a Focus On article, I've chosen two of the shorter articles. It's interesting to note that although both observers produce drawings, Robert Hays routinely submits the physical drawings, while Jay Albert notes that his final step is to scan the drawing into his computer and submits the scanned image. Either physical drawings or scanned images are acceptable for submission. In fact, if you're hesitant to relinquish your drawing, but don't have a scanner, submit it and ask that it be returned. I'll scan it, return the original, and archive the scanned image. Note that photocopies will not work well for tonal drawings, they may work for line drawings or stippling.

Observing and Drawing the Moon

Robert H. Hays

I really don't have a specific technique, so I'll just describe how I observe and draw. I choose my features at random. On clear nights with good seeing and lunar altitude, I look for something to draw. I try to choose features that might be slightly interesting, but not too complex. I draw craters and small peaks first, and visualize a pattern, much like stars in a constellation. For broken craters, I start with the complete circle or oval, and make erasures at the telescope. I add elongated features, rilles and patches later, as well as comments about bright or dark areas. The sketches themselves are on ordinary index cards that are cream-colored (not white; I found that unsuitable for the moon). I follow much the same routine on the card as at the telescope, starting with very light markings, and filling

them in when I like their placement. I minimize erasing as much as possible. I use pencils of varying shades. The darker ones are used for black shadow. Many years ago, ALPO sent me a little tool (along with some pencils) that has been very useful in smoothing out pencil strokes. I honestly don't remember what it's called, but it looks and feels like a stiff little pencil like thing made of compacted paper or thin cardboard. All I know is that this thingumajig is very handy for smoothing pencil strokes in dark shadow areas and large mare areas, and for applying the accumulated graphite in small areas such as dark crater interiors and between bright patches.

That's all there is to it. I do use maps for identification, but not for altering observations. I draw what I see at the time, and describe it accordingly. I feel that the text is important in explaining details on the sketch, and, perhaps, adds to its interest.

Lunar Sketching

Jay Albert

Every once in awhile, I get ambitious and feel the urge to attempt a lunar drawing. I used to do a lot of drawings of galaxies and, as a member of the ALPO Mars Section, I do a lot of Mars drawings during apparitions. But believe me, lunar drawing is far more challenging because you see so much more intricate detail in the eyepiece and you have 45 minutes at most to record it before changing solar angles alter the view. The kind of drawing I enjoy doing is generally called "tonal" drawing because it attempts to record what you actually see, including the different intensities of light, shadow and brightness or dimness of surface features.

While I've sometimes used only a number 2 pencil when that was all I had with me, I prefer to use a set of artist pencils, such as a set of Staedtler's with shades running from 8B (pitch black) to 9H (as light as you can get and still put pencil to paper). I do my drawing in a 5.5" x 8" sketch book with 100 sheets of 60lb, lightly textured, acid free paper. This also serves as my observing log. Some blending stumps, minimally abrasive erasers and a pencil sharpener are also needed.

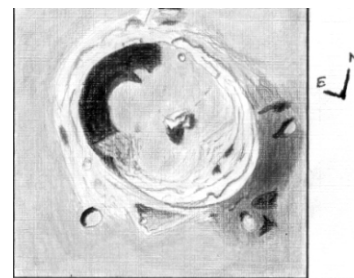


*Alpetragius
400x, no filters
40km, 3900m
10:25-10:55 PM EDT
5/13/08*



Crater Sirsalis
4-22-05, 02:50-03:30 UT
Transparency: m5
Seeing: 8-9/10
Celestron NexStar 11GPS
400x unfiltered
Jay Albert, Lake Worth, FL

Observing your subject is necessary before picking up a pencil. The overall shape of the feature, tone of the background surface and changes in tone of major surface areas and prominent features all need to be studied in themselves and with regard to their position relative to each other. Of absolutely critical importance is determining the direction from which the sunlight is coming and to which the shadows are extending. My next preparation step is to rub the part of the sheet I'm going to draw on with either an HB or 2H pencil, depending on the overall shade of the background surface, and then smooth it out with a blending stump.



Tycho Crater
4/3/01, 1:58 - 2:45 UT
Seeing: 8
Transparency: 5
Meade 7" Maksutov Cass.
297x, no filter

At this point I'm ready to start drawing. First I'll draw the overall outline of the feature making sure that I have the correct shape. Next I outline the major details and make any needed corrections until I feel

that I have them in the right positions and at the right scale relative to the whole and to each other. This becomes the framework to add increasingly fine details and I use the erasers and lighter and darker pencils as required to get the right tonality to the details, surfaces and shadows. As time permits, the last thing I do is add some coarse detail outside of the main feature to put it in some context. Since this step is peripheral and I probably will have run out of time anyway at this point, I won't concern myself with adding fine detail surrounding the main feature. I'll take a look at what I've done in the comfort of my den the next day or so and, if I don't hate it (it happens!), I may scan it into my computer and normally add a text box with the date, telescope used, start and end times of the drawing, magnification and filters.

LUNAR TOPOGRAPHICAL STUDIES

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

Assistant Coordinator – William Dembowski - dembowski@zone-vx.com

Website: <http://moon.scopesandscapes.com/>

OBSERVATIONS RECEIVED

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND Digital images of Mare Crisium-Petavius, Eastern Mare Imbrium, Lacus Spei, Altai Scarp, Aristarchus, Bailly, Cleomedes, Messier & Langrenus, Macrobius & Proclus, Theophilus, and mosaics of the 6, 7, 8, 9, 10, 12, 14.7, 16, 18, 21, 22, 23, 26 day and full moon

FRED CORNO - SETTIMO TORINESE, ITALY Drawing of Rima Ariadeas

ED CRANDELL – WINSTON-SALEM, NORTH CAROLINA, USA Digital image of Deslandres

WILLIAM DEMBOWSKI – ELTON, PA, USA Digital image of M. Serenitatis & M. Tranquilitatis rays

HOWARD ESKILDSEN - OCALA, FLORIDA, USA Banded crater reports for Aristillus, Ariadaeus(2), Bode(2), Conon, Menelaus(2), Davy A&G, Birt, Messier, Nicollet, Theaetetus, Silberslag(2), and Proclus

CHRIS HARVEY - PAIGNTON, SOUTH DEVON, UK Waxing gibbous moon mosaic

RIK HILL – TUCSON, ARIZONA, USA Digital images of Clavius, Ariadaeus-Triesnecker(2), Triesnecker(2)

KLAUS PETERSEN - GLINDE,GERMANY Digital images of Triesnecker, Ariadaeus

LARRY TODD – DUNEDIN, NEW ZEALAND Digital images of Triesnecker-Ariadaeus(7)

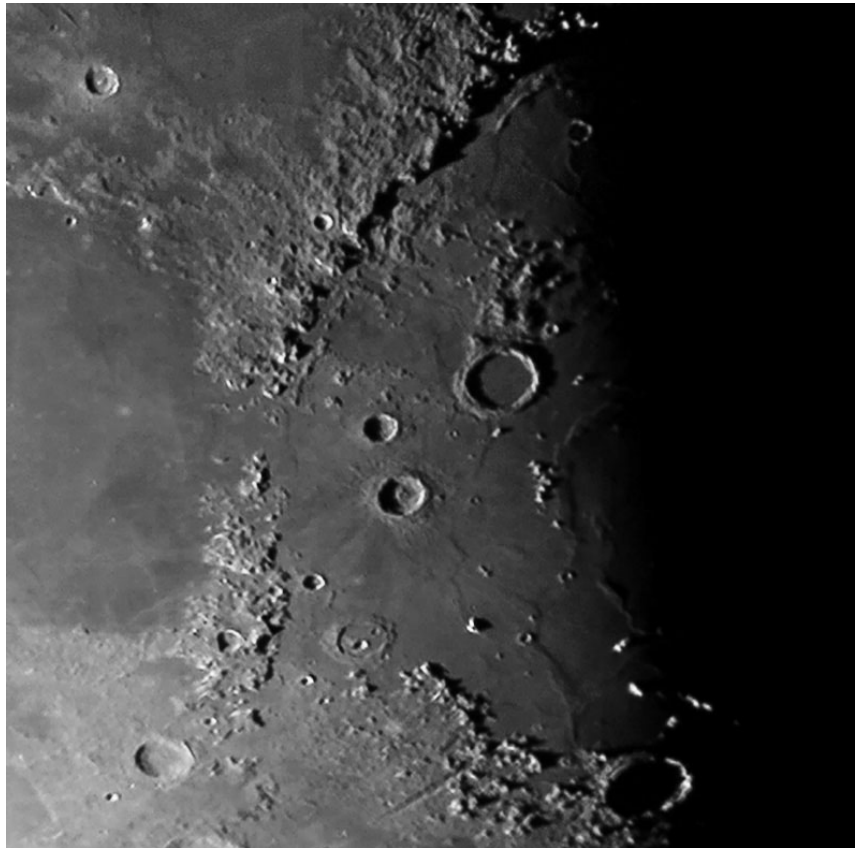
AXEL TUTE - BADEN-WÜRTTEMBERG, GERMANY Digital image of Triesnecker-Ariadaeus

ROBERT WLODARCZYK – CZESTOCHOWA, POLAND Drawings of Gauss, Pythagoras

RECENT TOPOGRAPHICAL OBSERVATIONS

Eastern Mare Imbrium –

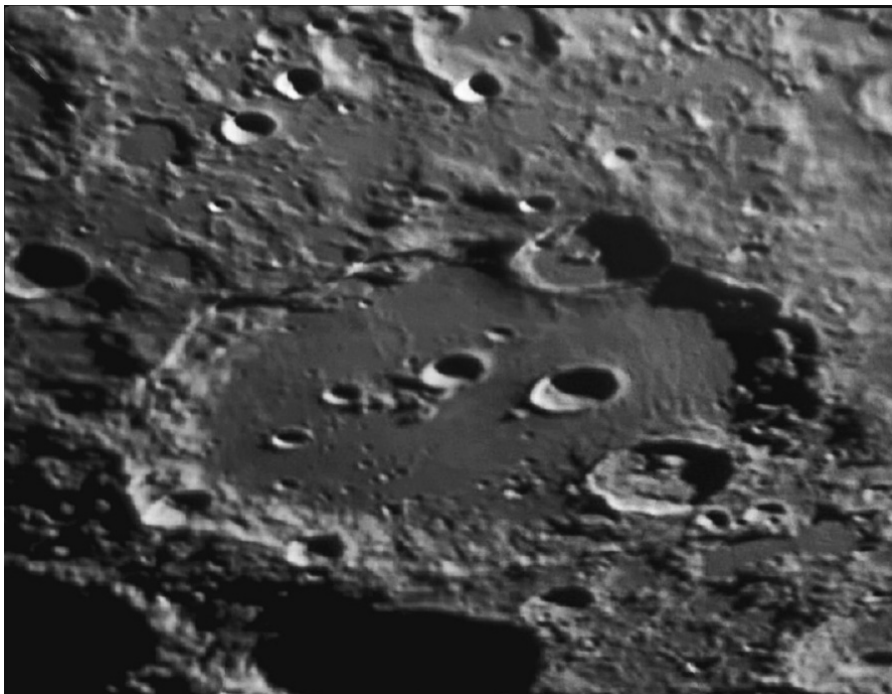
Maurice Collins - Palmerston North, New Zealand, April 03, 2009 08:35 UT. C8, f/10, LPI. I processed this two-image mosaic of the eastern section of Mare Imbrium showing Mons Piton and the peaks of the inner ring of the Imbrium basin in the low sun illumination along with numerous wrinkle ridges. Also visible is the Apollo 15 landing site region near the 6 km diameter crater Hadley C, and Hadley rille is just faintly visible. Archimedes, Autolycus, Aristillus, Cassini, Plato and the Alpine Valley were looking nice that night.



Deslandres - Ed Crandell – Winston-Salem, North Carolina, USA. January 04, 2009 23:38 UT. Seeing 5/10, Transparency 4/6, Colongitude 13.5°. 110 mm f/6.5 APO + 3x barlow.

RECENT TOPOGRAPHICAL OBSERVATIONS

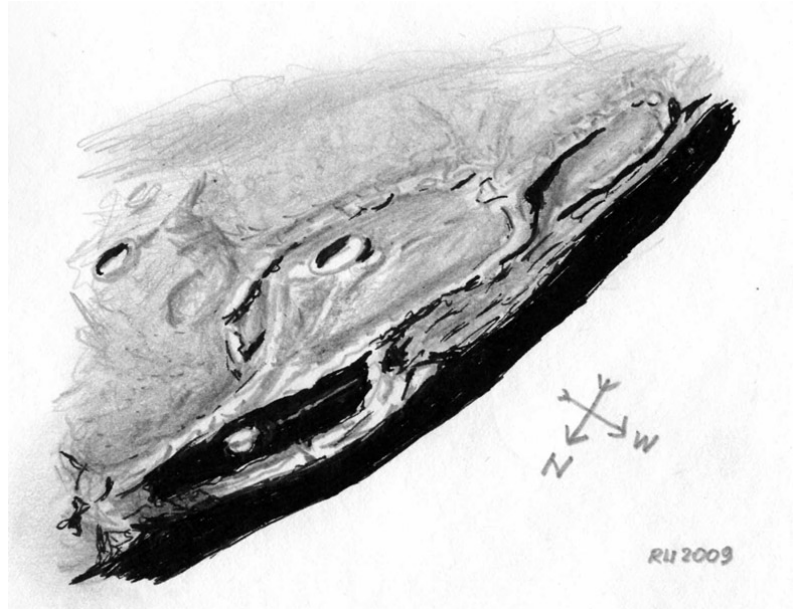
Waxing Gibbous – Chris Harvey –
Paignton, South Devon, UK. April 04,
2009 11:17-01:43 UT. Seeing very good.
Meade ETX-105 EC, f/14, LPI. 35 images
stacked.



Clavius - Richard Hill -
Tucson, Arizona, USA. April
05, 2009 02:18 UT. C14, f/22,
UV/IR blocking filter,
SPC900NC camera,
Seeing 7/10. 100/1000
images. The best image I have
gotten yet of Clavius. It's a montage
of 4 images and it's the first time
I've captured the rilles radiating
north out of Rutherford.

RECENT TOPOGRAPHICAL OBSERVATIONS

Pythagoras – Robert Włodarczyk,
Częstochowa, Poland. April 07,
2009, 19:45 UT. Seeing 5/10,
Transparency 3/6. 12 cm
Newtonian, f/7.5, 112-224x.



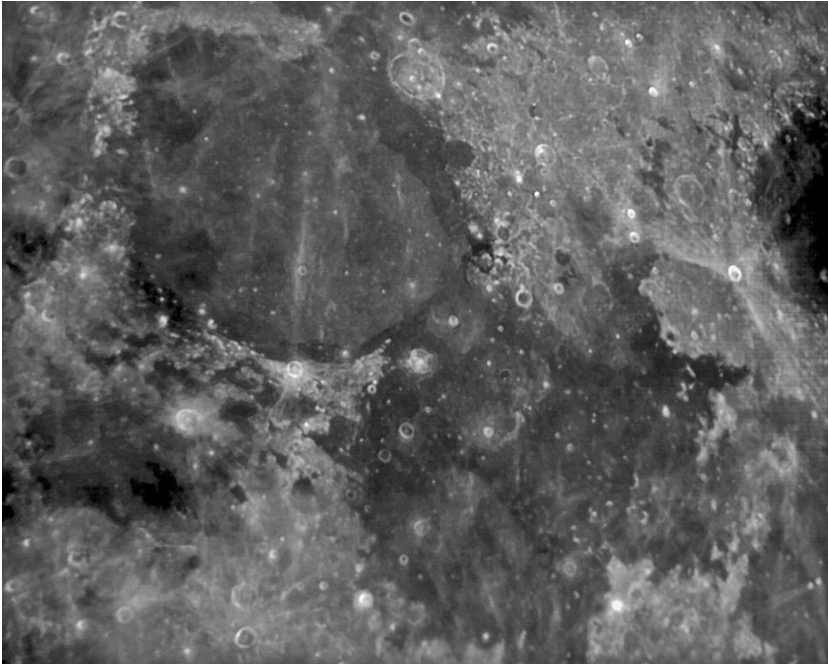
BRIGHT LUNAR RAYS PROJECT

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

Assistant Coordinator – William Dembowski – dembowski@zone-vx.com

Bright Lunar Rays Website: <http://moon.scopesandscapes.com/alpo-rays.html>

RECENT RAY OBSERVATIONS



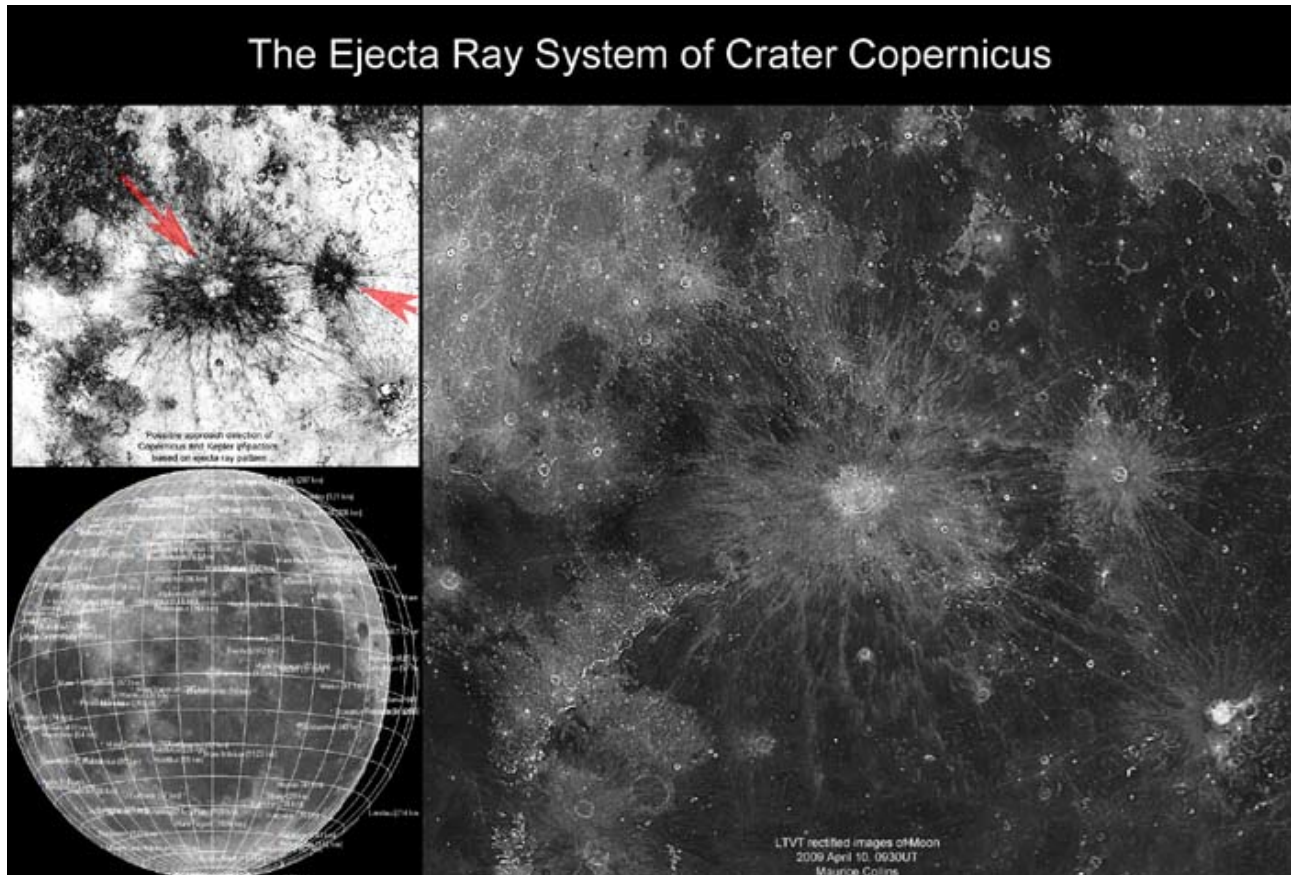
Mare Serenitatis & Mare Tranquillitatis

– William Dembowski – Elton, PA, USA. July 15, 2008 02:07 UT. Seeing 4/10, Colongitude 53.9°. Celestron 8" SCT, Orion StarShoot II.

Mare Crisium to Petavius - Maurice Collins - Palmerston North, New Zealand, April 10, 2009 09:27 UT. C8, LPI.



RECENT RAY OBSERVATIONS



Copernicus & Kepler - Maurice Collins - Palmerston North, New Zealand, April 10, 2009 09:30 UT. C8, LPI. Image rectified in LTVT.

Apart from the lunar imaging I have also been working on analyzing one of my previous nights images to see what I can see in it. Here is an image of the Copernicus ray system. I was looking at the spread of the ejecta blanket from Copernicus and Kepler and in my opinion there seems to be an uneven distribution of the ray patterns. From this I have proposed possible impactor approach directions based on the more prominent patterns of Tycho and Proclus. I have marked them with the red arrows in the insert.

BANDED CRATERS PROGRAM

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

Assistant Coordinator – William Dembowski - dembowski@zone-vx.com

Banded Craters Program Website: <http://moon.scopesandscapes.com/alpo-bcp.html>

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

Crater Observed: Birt

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: Celestron NexImage, 3X Barlow Filters: W-15 Yellow

Seeing: 7/10 Transparency: 6/6

Date (UT): 2009/01/10 Time (UT): 01:41

Colongitude: 76°

Position of crater:

Selen. Long.

Selen. Lat.

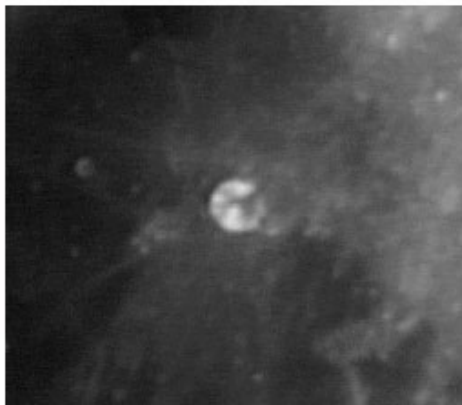
8.5° West

22.4° South

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

Image (north up):

Comments:



The familiar complex markings of the interior of the crater show up nicely in this photo. There appears to be a tiny dark area at the junction of Birt and Birt A

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

Crater Observed: Menelaus

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: W-15 Yellow

Seeing: 7/10 Transparency: 6/6

Date (UT): 2009/01/10 Time (UT): 01:17

Colongitude: 76°

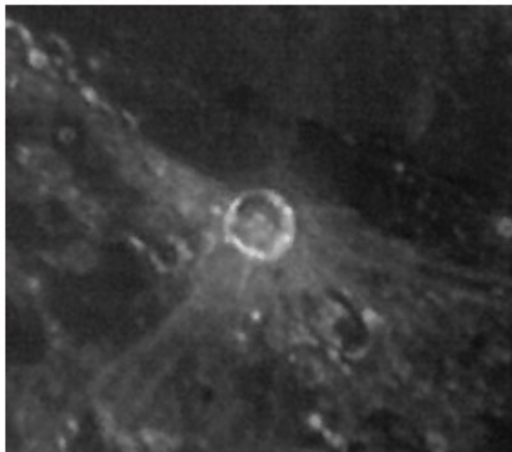
Position of crater: Selen. Long. Selen. Lat.

16.0° East 16.3° North

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

Image (north up):

Comments:



The rim has quite complex bright and dark markings.

LUNAR TRANSIENT PHENOMENA

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

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

LTP NEWSLETTER – MAY 2009

Dr. Anthony Cook - Coordinator

Observations for March 2009 were received from the following observers: Jay Albert (FL, USA), Clive Brook (Plymouth, UK), Tony Buick (UK), Maurice Collins (New Zealand), myself (Aberystwyth, UK), Marie Cook (Mundesley, UK), Gerald North (Narborough, UK), Bill Leatherbarrow (Sheffield, UK), Brendan Shaw (UK), and Graham Smith (East Yorkshire, UK).

Recent LTP Reports: I have not heard any further reports to confirm Ray Masini's observation from Perth, Australia back on Jan 30th, or any images to verify the appearance of Aristarchus in Earthshine on Mar 1st. However the end of March and early April have brought up some more reports, this time to do with colors seen on the Moon. I do not know if we wish to call these reports LTP as such at this stage – but they almost certainly would have found entries into the Cameron catalog, especially as they appear to follow each other. I will not attempt to analyse these as there is too little information to go on, suffice to say that the Moon was not being studied at a low attitude. Also some of these reports do overlap with the colongitude ranges of some past colored LTP reports in the same areas and so might have something to do with natural surface color? However please note the poor observing conditions where these are mentioned.

Proclus 2009 Mar 31 UT 19:26-19:50: Marie Cook (Mundesley, UK, 90mm Questar telescope, x130, seeing II-III and transparency poor to moderate) saw the normal illuminated north-east to west wall and a faint central spot. However through filters the crater dulled in blue, was slightly brighter in yellow and was much brighter in red. She also observed a blink between red and blue filters on the north west wall. A possible brightness variation was seen in the red filter, but this may have been due to variable haze? No other features exhibited color. My thanks go to observers who followed up this observation the next night, especially to Paul Abel, who provided a sketch.

Mare Crisium 2009 Apr 01 UT 20:00-20:30: Clive Brook (Plymouth, UK, 5" refractor, x40, x100, seeing worsening at the end of the session) observed a few bright areas in the centre of the mare to be brighter in red at the start of the session, though not later at a higher magnification.

Mare Crisium 2009 Apr 02 UT 21:45-22:05: Clive Brook (Plymouth, UK, 5" refractor, x40, x100, seeing excellent, but transparency poor, Edmunds Scientific filters No. 47 (rose) and No. 80 (blue) used) observed rays that crossed Mare Crisium from Proclus, gave a positive reaction in red light as did, to a lesser extent, the light areas in the south of the mare. Rays that did not cross the mare surface from Proclus did not give the reaction. No color effects seen elsewhere. Clive did not judge this to be a LTP due to poor observing conditions.

Plato 2009 Apr 04 UT 20:30-20:45: Clive Brook (Plymouth, UK, 5" refractor, x100, seeing and transparency both excellent) observed a pale pinkish brown coloration on the floor of Plato. Clive telephoned me and I put out a limited alert, however the effect had gone by 20:50UT, leaving just the usual mottling on the floor of Plato. Clive reported that no other features on the Moon had shown any color. On

that night I was imaging in 10nm FWHM wide wavebands centred on prominent Radon and Argon emission lines using a couple of remotely controlled telescopes at the University of Aberystwyth. However in the 5 sec time lapse imagery that I obtained, neither scope showed anything unusual on the floor of Plato and so we know that there was not any Argon or Radon optical emission taking place – though this does not rule out other wavelengths or more general short or long wavelength absorption or scattering.

Plato 2009 Apr 04 UT 21:40: Marie Cook (Mundesley, UK, 90mm Questar telescope, x80-x130, seeing III, transparency hazy) reported that the floor patches on Plato looked darker than normal, especially in the blue filter, less so through a yellow filter and were not visible at all through a red filter. There was also a reddish tint seen on the northern wall. Copernicus also had a slight bluish tint on the north western outer wall. No color seen the next night. Again my remotely controlled telescope observations overlapped, but I detected no Radon or Argon emission lines.

Plato Apr 05 UT 01:03-01:31 and 01:44 and 02:30: Jay Albert (Florida, USA, 11” reflector, x224 and x211, transparency 4th magnitude, declining to 3rd magnitude, seeing was 5-6/10) Observed a tiny bright point on the south east rim of Plato adjacent to the east wall shadow. It was first seen at 311x without filters, then seen in both Wratten 25 red and Wratten 38A blue filters (faintest in the latter). This tiny spot appeared to be a high point on the south east rim. At 01:28 the spot was no longer seen in the blue filter, but remained easily visible in red and integrated light. Observed 01:03 - 01:31; rechecked 01:44 & 02:30 with no change. In subsequent correspondence, it appears that Jay would not regard this as a LTP as the color was just on the limits of detectability and observing conditions were far from good.

Earthshine: Have you ever wondered why on some nights the Earthshine looks bright and on other nights it is difficult to see? Obvious answers are:

- (a) It depends upon the Moon’s phase, the larger the illuminated fraction of the Moon, the more likely that glare will kill off chances of seeing much detail in Earthshine.
- (b) The higher the altitude, of the Moon above the horizon, the less the absorption and scattering in our atmosphere, and the easier it is to see Earthshine.
- (c) It depends upon the Earth’s phase (opposite to the Moon).
- (d) It depends upon what land masses, oceans and clouds are visible from the Moon – this has been commented upon in the past by Winnie Cameron!

I recently came across an article on <http://www.space.com> about the interesting news story that an Australian Phd student, Sally Langford (University of Melbourne), has been imaging Earthshine on a regular basis from Mount Macedon observatory in Victoria for an exo-planet biological signature detection demonstration observing technique. She found that the brightness of Earthshine can vary by upto 23% over the space of one hour at 600nm! Furthermore variations in overall Earthshine color were also noted. I wonder if this could perhaps explain many Earthshine LTP reports? To visual observers, most Earthshine illuminated features, are just on the limit of detectability. \So a 10-20% rise in Earthshine would bring some features into visibility for a few minutes to tens of minutes. Of course this would affect all features equally, however if some had color e.g. Aristarchus is blue, and the Earthshine had an increase in color in blue, then this would make Aristarchus stand out noticeably more than other features. Such effects have been reported in Earthshine LTPs in Aristarchus before in the past. Unfortunately the Earthshine theory does not explain short term tens of seconds brightness variations seen, however it may well be that an idea proposed by Winnie Cameron, simply seeing effects, could explain these?

For repeat illumination LTP predictions for June, these 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!

Dr Anthony Cook, Institute of Mathematical and Physical Sciences, University of Wales Aberystwyth, Penglais, Aberystwyth, Ceredigion, SY23 3BZ, WALES, UNITED KINGDOM. Email: atc @ aber.ac.uk

KEY TO IMAGES IN THIS ISSUE

- 1. **Birt**
- 2. **Clavius**
- 3. **Copernicus**
- 4. **Kepler**
- 5. **Mare Crisium**
- 6. **Mare Imbrium**
- 7. **Mare Serenitatis**
- 8. **Mare Tranquillitatis**
- 9. **Menelaus**
- 10. **Petavius**
- 11. **Puiseux**
- 12. **Pythagoras**

FOCUS ON targets
X = Triesnecker - Ariadaeus (May)
Y = Mare Fecunditatus (July)
Z = Deslandres (September)

