THE LUNAR OBSERVER

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

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.
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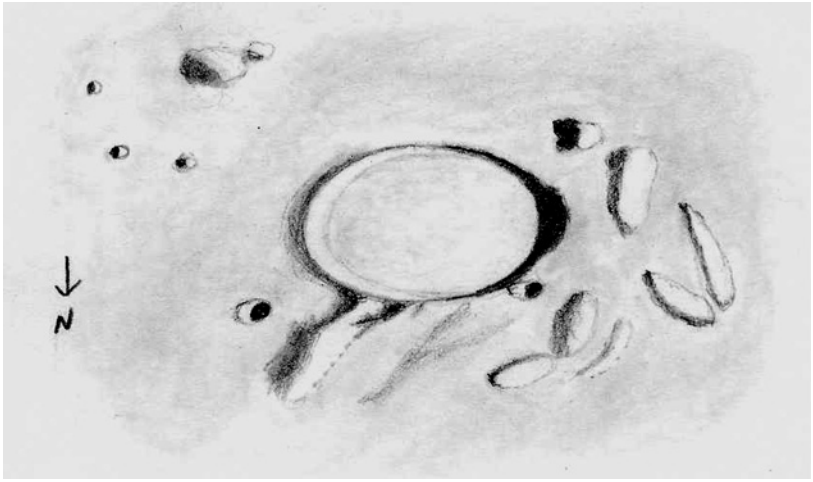
FEATURE OF THE MONTH - MAY 2007



FONTENELLE

Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
January 10, 2007 - 08:46 to 09:12 UT
15cm Newtonian - 170x - Seeing 7/10

I drew this crater and vicinity on the morning of Jan. 10, 2007 shortly after the moon hid 6th-magnitude ZC 1779. This crater is on the north edge of Mare Frigoris, and it is surrounded by mare material though the LQ Map does not show it as such. Fontenelle has a smooth, featureless interior that is the same tint as the mare, though its rim is unbroken. There is substantial shadow along its west side, possibly from a slump. Fontenelle H is the small crater just north of this shadow. A variety of peaks lies west of Fontenelle; none are labeled on the LQ map. The arrowhead-shaped peak at the south end of this group had darker shadowing than the others. The small crater northeast of Fontenelle is Fontenelle P and Fontenelle R may be buried within some strips of shadow on the north side of Fontenelle. Some additional wrinkling is near H. A group of peaks lies southeast of Fontenelle; the largest one is Fontenelle epsilon. This peak has only grayish shadowing, much like most of the peaks farther west. The area south of Fontenelle is very smooth.

AN INVITATION TO JOIN THE A.L.P.O.

The Lunar Observer is a publication of the Association of Lunar and Planetary Observers that is available for access and participation by non-members free of charge, but there is more to the A.L.P.O. than a monthly lunar newsletter. If you are a non-member you are invited to join our organization for its many other advantages.

We have sections devoted to the observation of all types of bodies found in our solar system. Section coordinators collect and study members' observations, correspond with observers, encourage beginners, and contribute reports to our Journal at appropriate intervals.

Our quarterly journal, **The Strolling Astronomer**, contains the results of the many observing programs which we sponsor including the drawings and images produced by individual amateurs. Several copies of recent journals can be found on-line at: **http://www.justfurfun.org/djalpo/** Look for the issues marked FREE, they are not password protected. Additional information about the A.L.P.O. can be found at our website: **http://www.lpl.arizona.edu/alpo/** Spend a few minutes browsing the Section Pages to learn more about the fine work being done by your fellow amateur astronomers.

To learn more about membership in the A.L.P.O. go to: **http://www.lpl.arizona.edu/~rhill/alpo/member.html** which now also provides links so that you can enroll and pay your membership dues online.

LUNAR CALENDAR - MAY 2007 (UT)

May 02	10:10	Full Moon
May 05	11:00	Moon 5.8 Degrees S of Jupiter
May 10	04:27	Last Quarter
May 10	09:00	Moon 1.6 Degrees SSE of Neptune
May 12	06:00	Moon 1.1 Degrees NW of Uranus
May 12	23:00	Moon 2.7 Degrees NNW of Mars
May 15	15:00	Moon at Perigee (359,392 km - 223,316 miles)
May 16	19:28	New Moon (Start of Lunation 1044)
May 17	24:00	Moon 3.0 Degrees N of Mercury
May 22	20:00	Moon 0.77 Degrees NE of Saturn
May 23	21:02	First Quarter
May 27	22:00	Moon at Apogee (405,456 km - 251,939 miles)

A.L.P.O. LUNAR COORDINATORS

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New A.L.P.O. Publications Section Page

Ken Poshedly has announced the establishment of a new A.L.P.O. Publications Section Webpage at http://www.alpo-astronomy.org It gives an overall description of ALPO publications in general and several "buttons" linked to sub-pages for:

1) ALPO Publications staff
2) *The Strolling Astronomer* & ALPO Monographs (except for the Wilkins Moon Map)
3) Publications Guidelines

CALL FOR OBSERVATIONS:
FOCUS ON: THEOPHILUS

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 2007 edition will be the crater **Theophilus**. 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 Theophilus article is June 20, 2007

Theophilus & Lunar Transient Phenomena

WILLIAM DEMBOWSKI - LTSS COORDINATOR:

The crater Theophilus is not only an interesting feature from a topographical standpoint, it is also a site frequently mentioned in reports of Lunar Transient Phenomena (LTP). As you observe Theophilus in response to the Focus On call for observations, we ask that you be aware of its importance in the study of LTP's. Dr. Anthony Cook has compiled a schedule of dates and times for the observing of various features for the purpose of verifying, or disqualifying, earlier reports of LTP's. A complete listing for the current month can always be found at: http://www.cs.nott.ac.uk/~acc/Lunar/ltp.htm

In a cooperative effort between the Lunar Topographical Studies Section and the Lunar Transient Phenomena Section, each *Focus On* target will also become the *LTP* target for the same period. To that end, Dr. Cook has provided a schedule for Theophilus, for the months of May and June, with the following commentary:

DR. ANTHONY COOK - LTP COORDINATOR:

The following are a set of dates and UT times under which you will have the chance to observe Theophilus under identical illumination (to within +/-0.5 deg conditions to what they appeared as during past LTP (Lunar Transient Phenomena) events. The objective of observing such features at these dates and times is to gain a detailed set of observations of the "normal" appearance of these features from which we may judge critically past LTP reports. This will help greatly to eliminate many of these LTPs from the 1978 NASA catalog for which simple tricks of lighting were to blame. It will then allow us to identify a core set of reliable observations whose origin may be due to transient, natural surface processes on the Moon.

FOR OBSERVATIONS TO BE SUBMITTED TO THE LTP PROGRAM:

Please ensure that the Moon is at least 20 degrees above the horizon at your site and that the Sun is below the horizon. Any observations that you send in where the Moon was below the altitude, or the Sun was above the horizon will be ignored hence forth – this is being done to ensure high quality observations.

Schedule of Repeat Illumination Events for Crater Theophilus

Compiled by Dr. Anthony Cook
Coordinator, LTP Section

Date	UT	Phase	Original Observation with link to description
2007-May-06	19:41-21:25	81%	Cross 1965-Jul-18 http://www.cs.nott.ac.uk/~acc/Lunar/Events/3530
2007-May-22	05:39-09:27	35%	Fox 1969-Jul-19 http://www.cs.nott.ac.uk/~acc/Lunar/Events/5970
2007-May-22	08:44-11:15	36%	Jean 1968-Jul-01 http://www.cs.nott.ac.uk/~acc/Lunar/Events/5165
2007-May-22	11:58-12:35	37%	Collier 1970-Apr-12 http://www.cs.nott.ac.uk/~acc/Lunar/Events/6530
2007-May-23	04:52-06:37	43%	Delaye 1969-Jul-20 http://www.cs.nott.ac.uk/~acc/Lunar/Events/6020
2007-May-23	16:39-18:28	49%	Ruchatz 1972-May-19 http://www.cs.nott.ac.uk/~acc/Lunar/Events/7290
2007-May-24	05:44-09:42	54%	Fox 1969-Jul-21 http://www.cs.nott.ac.uk/~acc/Lunar/Events/6040
2007-May-24	12:01-14:38	57%	Haiduk 1972-May-20 http://www.cs.nott.ac.uk/~acc/Lunar/Events/7295
2007-May-25	08:44-11:23	65%	Cook 1978-Nov-08 http://www.cs.nott.ac.uk/~acc/Lunar/Events/8570
2007-Jun-05	07:27-08:26	82%	Cross 1965-Jul-18 http://www.cs.nott.ac.uk/~acc/Lunar/Events/3530
2007-Jun-20	16:45-20:36	33%	Fox 1969-Jul-19 http://www.cs.nott.ac.uk/~acc/Lunar/Events/5970
2007-Jun-20	19:52-22:22	34%	Jean 1968-Jul-01 http://www.cs.nott.ac.uk/~acc/Lunar/Events/5165
2007-Jun-20	22:54-23:53	35%	Collier 1970-Apr-12 http://www.cs.nott.ac.uk/~acc/Lunar/Events/6530
2007-Jun-21	15:56-17:46	42%	Delaye 1969-Jul-20 http://www.cs.nott.ac.uk/~acc/Lunar/Events/6020
2007-Jun-22	03:42-05:36	47%	Ruchatz 1972-May-19 http://www.cs.nott.ac.uk/~acc/Lunar/Events/7290
2007-Jun-22	16:46-20:51	53%	Fox 1969-Jul-21 http://www.cs.nott.ac.uk/~acc/Lunar/Events/6040
2007-Jun-22	23:04-01:46	54%	Haiduk 1972-May-20 http://www.cs.nott.ac.uk/~acc/Lunar/Events/7295
2007-Jun-23	19:42-22:34	63%	Cook 1978-Nov-08 http://www.cs.nott.ac.uk/~acc/Lunar/Events/8570

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: Plato

William M. Dembowski, FRAS
Coordinator, Lunar Topographical Studies

FIGURE 1
Digital image by Howard Eskildsen
Ocala, Florida, USA
March 29, 2007 - 00:24 UT
Seeing: 8/10 - Trans: 5/6

Meade 6 inch Refractor
IR Blocking Filter
Orion Starshoot II

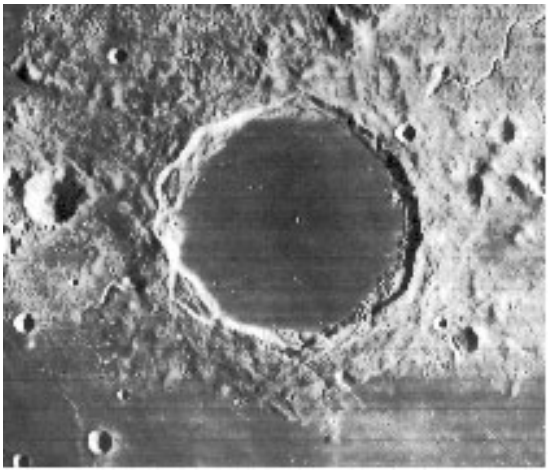
DOUBLE-DIGIT OBSERVING:

Plato is certainly one of the most observed features on the Moon. With a sharply defined diameter of 100 km (60 miles) it is large enough to be seen with even the smallest of telescopes and is quite easy to locate. Plato lies on a bright strip of terrain between Mare Imbrium and Mare Frigoris in the northcentral region of the Moon making it visible on most nights from First through Third Quarter (Figure 1).

THE CRATER:

Although Plato has a distinctly oval appearance due to the effect of foreshortening, it is really quite circular (Figure 2). Its walls rise approximately 2.4 km above the floor which was probably twice as deep before being flooded with dark mare basalt which make it one of the largest flat floors on the Moon.

FIGURE 2
Lunar Orbiter Photo
Frame IV-127-H3 - NASA

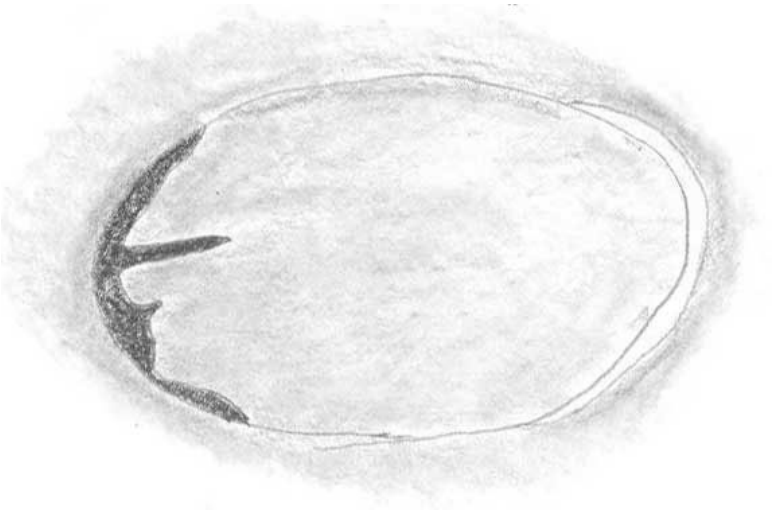


One triangular section of the western wall has broken away and slumped inward. This 15 km long feature, Plato zeta, is well shown in Figure 3. Not only does Plato zeta make for interesting viewing, it also serves as a handy means of orienting a close-up image of Plato when other points of reference are not well shown.

FIGURE 3
Digital image by Ed Crandall - Winston-Salem, North Carolina, USA
December 10, 2005 - 01:10 UT
110mm APO Refractor - 2x Barlow - 2 inch Extension - Philips Toucam

The walls of the crater feature a series of peaks which cast impressive shadows across the crater floor at sunrise and sunset. These shadows are fascinating in their own right and are usually the most dominating feature under a low sun (Figure 4).

FIGURE 4
Drawing by Maurice Collins
Palmerston North, New Zealand
October 20, 2000 - 16:00 UT
Meade ETX90 Mak-Cass



The floor of Plato is peppered with craterlets, some say as many as 70, but most amateur sized instruments show far fewer. The largest is about 3 km in diameter and lies near the crater's center (Figure 5). Among the more interesting is a pair just southwest of center that can serve as a test of the resolving power of a moderately sized telescope.

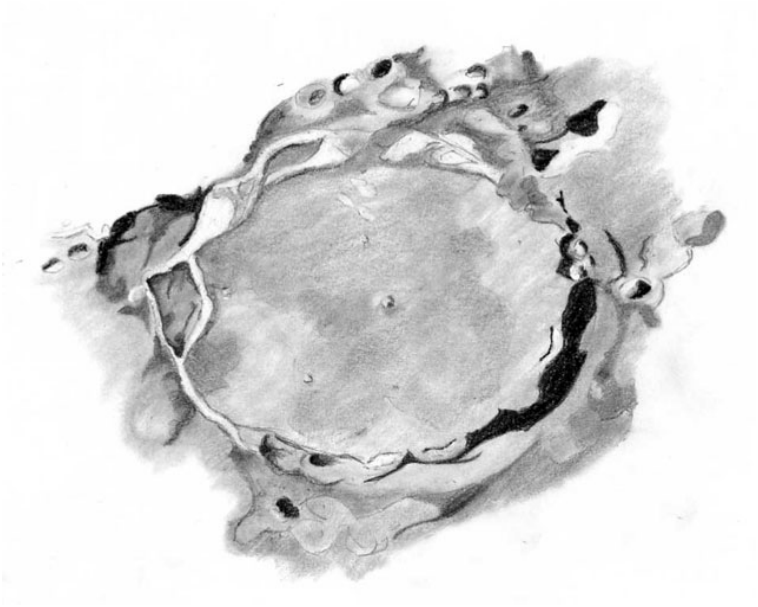


FIGURE 5
Drawing by Federico Corno - Settimo Torinese, Italy
October 23, 2004 - 19:20 to 20:50 UT
Vixen VMC200L 8 inch f/9.8 Catadioptric at 390x

These craterlets also play a key role in the investigation of lunar transient phenomena. More than a few observers have reported difficulty seeing the Plato craterlets under conditions that should have otherwise made them easy targets. These incidents of obscuration are often looked upon with skepticism but require more investigation before being completely dismissed.

HIGH SUN OBSERVING:

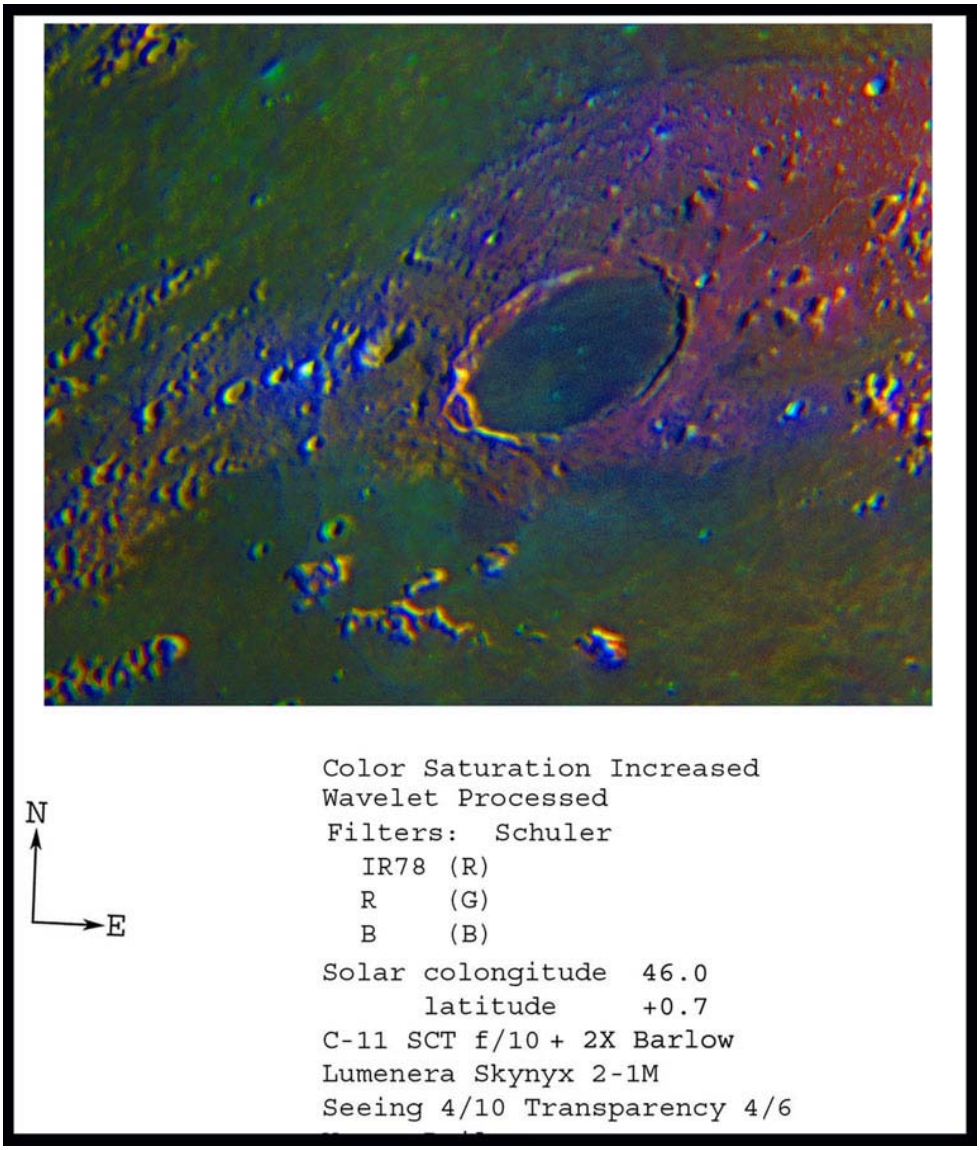
Plato's floor also hosts a system of faint light streaks that are only visible under a high sun. Although reported by several prominent lunar observers, some of these streaks are of a questionable nature. H.P. Wilkins recorded a pattern of four streaks which ran north-south across the floor but he later stated that they had disappeared. From time to time other such markings have been reported but are difficult to confirm. Two albedo features which have been recorded photographically are a large, wedge shaped region on the southwest side of the crater floor which is commonly referred to as "the Sector". The other is a light streak which skirts the northern wall. Such intriguing features always deserve a look when the Sun is high in the lunar sky and albedo studies are at their best.

REFERENCES:

North, Gerald – "Observing the Moon" – Cambridge University Press (2000)
Price, Fred W. – "The Moon Observers Handbook" – Cambridge University Press (1988)
Wilkins, H.P. & Moore, Patrick – "The Moon" – MacMillan Company (1955)

False Color Image of Plato

Wayne Bailey - Sewell, New Jersey, USA
March 30, 2007 - 02:27 to 03:04 UT



This Plato image is a combination of three monochrome images. The filters are Schuler IR78 (infrared longward of 780 nm), R and B. The R & B filters are the standard photometric filters from the UBVRI set. The IR78 is longward of the standard I (which is the IR72 filter). The image uses IR78 for red, R for green, and B for blue. The histograms of the individual images were linearly stretched to create and approximately gray average color in the combination, then the color saturation was increased.

Finally, the saturated histograms were linearly adjusted to maximize the color variations. Several craterlets within Plato, as well as some other small craters appear blue, probably because they're relatively young. There are subtler variations of color throughout the image. The filters used for this image were chosen simply because the images had the best resolution and the largest range of colors. Other filter combinations seem to produce at least qualitatively similar results.

ADDITIONAL PLATO OBSERVATION

Digital image by Michael Boschat - Halifax, Nova Scotia, Canada
Febuary 28, 2007 - 2300-2310 UT - Seeing: 7/10 - Trans: 4/6
Antares 105mm f/10 Refractor - Baader Contrast Booster Filter.
3.0 MP DSC-3020 Digital Camera afocal - 111x

OBSERVATION OF TOTAL LUNAR ECLIPSE

Film image by Robert H. Hays, Jr. - Worth, Illinois, USA
March 4, 2007 - 00:43.8 UT
Celestron 5 inch - Nikon FM Camera - 1/125 sec. - Tri-X Film

LUNAR TOPOGRAPHICAL STUDIES

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

OBSERVATIONS RECEIVED

WAYNE BAILEY - SEWELL, NEW JERSEY, USA
Digital images of Plato & Sinus Iridum (3), Plato (2), Stevinus & Furnerius, Mare Nectaris, Dionysius, Mare Humorum (2), Pytheus

MICHAEL BOSCHAT - HALIFAX, NOVA SCOTIA, CANADA
Digital images of Plato (2)

MAURICE COLLINS - PALMERSTON NORTH, NEW ZEALAND
Numerous written observations from March 24 to April 9
Digital images of Theophilus & Mare Nectaris, Full Disc of Moon (7),

FEDERICO CORNO - SETTIMO TORINESE, ITALY
Drawing of Plato

ED CRANDALL - WINSTON-SALEM, NORTH CAROLINA, USA
Digital images of Janssen, Piccolomi & Rupes Altai (2), Vallis Rheita & Janssen, Proclus Rays (2)

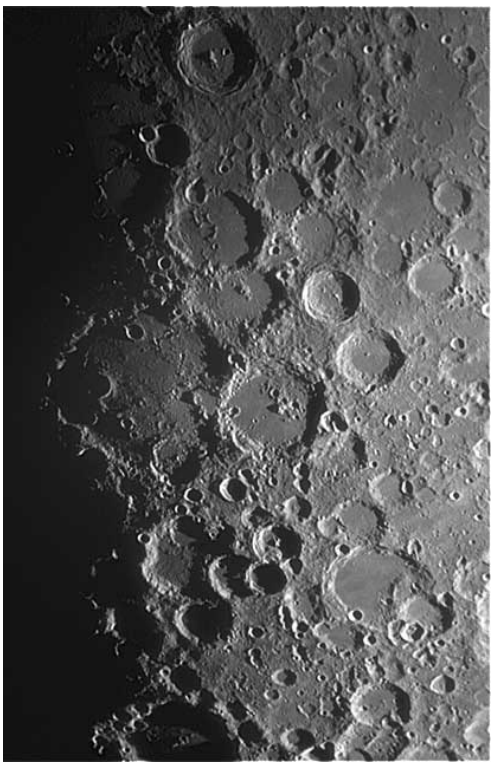
HOWARD ESKILDSEN - OCALA, FLORIDA, USA
Digital images of Capuanus, Copernicus, Eastern Mare Imbrium, Central Region of Moon, Mare Fecunditatis, Lacus Mortis (2), Pytheus (4), Mare Nubium, Proclus (3), Messier, Mare Australe, Mare Marginis & Mare Smythii, Ariadeus (4), Aristarchus (2), Messier (2), Aristarchus (2), Archimedes & craterlets. Plato & Vallis Alpes, Aristillus (4), Conon (3), Ptolemaeus, Deslandres, Mare Nectaris, Menelaus (3), Proclus to Messier, Burg (4), Theaetetus (2), Birt (2), Kepler, Bode, Proclus

ROBERT H. HAYS, JR. - WORTH, ILLINOIS, USA
Photographs (film) of lunar eclipse (4)

KLAUS PETERSEN - GLINDE, GERMANY
Digital images of Mare Crisium, Mare Australe, Langrenus

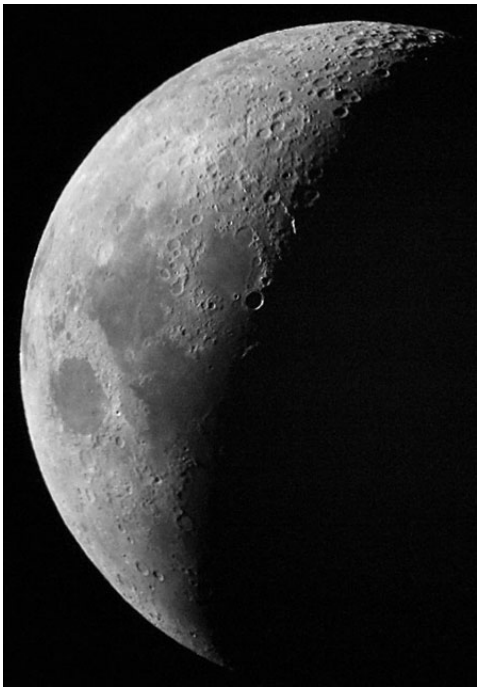
RECENT TOPOGRAPHICAL OBSERVATIONS

DIONYSIUS
Digital image by Wayne Bailey - Sewell, New Jersey, USA
March 26, 2007 - 02:19 UT - Seeing: 5/10 - Trans: 3/6
Celestron C11 f/10 SCT - Lumenera Skynyx 2-1M Camera

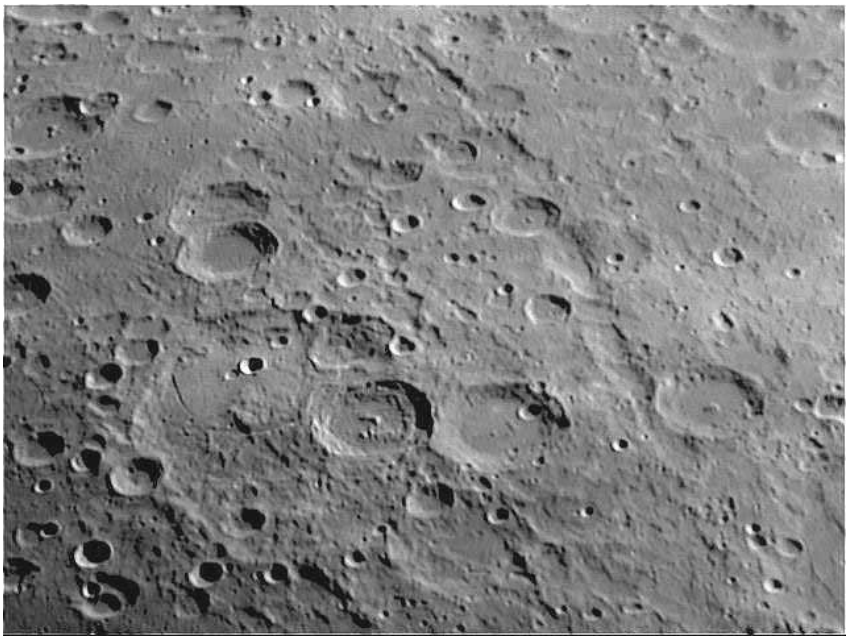


DESLANDRES
Digital image by Howard Eskildsen - Ocala, Florida, USA
March 27, 2007 - 00:56 UT - Seeing 7/10 - Trans: 5/6
Meade 6 inch f/8 Refractor - 2x Barlow - Orion Starshoot II

RECENT TOPOGRAPHICAL OBSERVATIONS



6-DAY MOON
Digital image by Maurice Collins - Palmerston North, New Zealand
March 24, 2007 - 06:37 UT
Meade ETX90 Mak-Cass - 25mm EP - 2mp Camera afocal



JANSSEN & VALLIS RHEITA
Digital image by Ed Crandall - Winston-Salem, North Carolina, USA
March 25, 2007 - 01:17 UT - Seeing: 5/10 - Trans: 4/6
110mm f/6.5 APO Refractor - 3x Barlow - Philips Toucam

BRIGHT LUNAR RAYS PROJECT

Coordinator - Willliam M. Dembowski, FRAS

RECENT RAY OBSERVATIONS

Digital image by Ed Crandall - Winston-Salem, North Carolina, USA
March 25, 2007 - 01:10 UT - Seeing: 5/10 - Trans: 4/6
110mm f/6.5 APO Refractor - 3x Barlow - Philips Toucam

MARE FECUNDITATIS
Digital image by Howard Eskildsen - Ocala, Florida, USA
March 29, 2007 - 00:31 UT - Seeing: 8/10 - Trans: 5/6
Meade 6 inch Refractor - IR Blocking Filter - Orion Starshoot II Camera

BANDED CRATERS PROJECT

Coordinator - Willliam M. Dembowski, FRAS

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

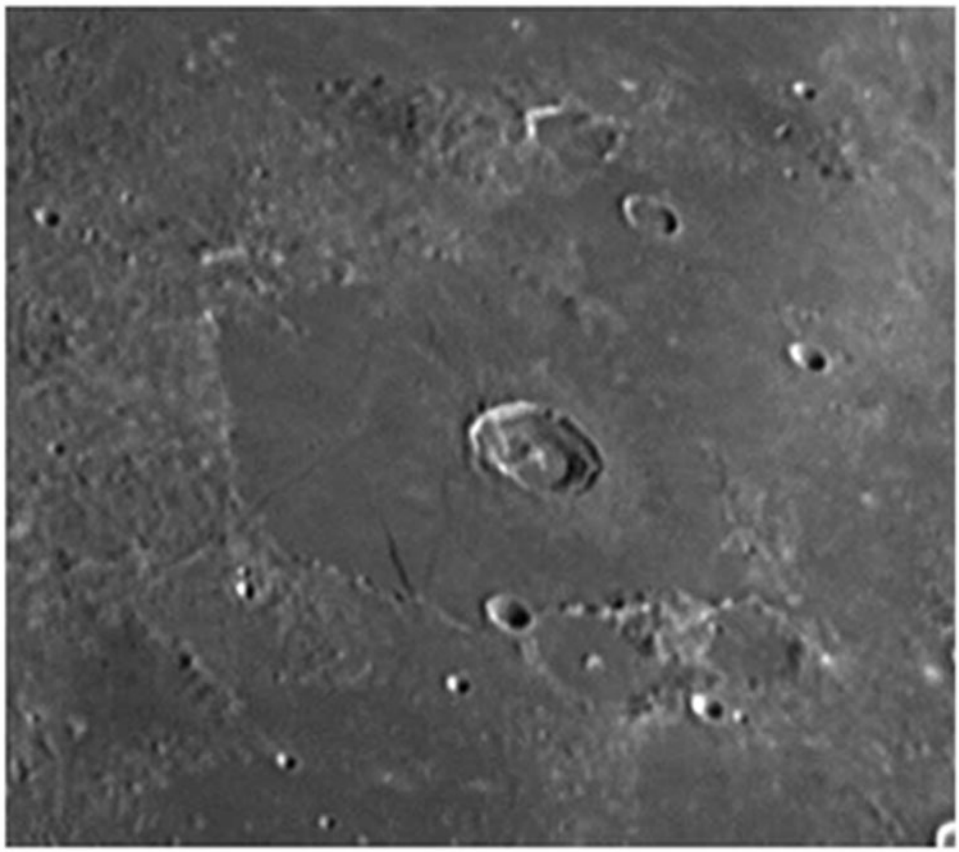
Crater Observed: Pytheas
Observer: Wayne Bailey Observing Station: Sewell, NJ
Mailing Address: 17 Autumn Lane, Sewell, NJ 08080
Telescope: Celestron SCT 28 cm f/10 + 2x barlow
Imaging: Skynyx 2-1M Filters: Schuler IR72
Seeing: 4/10 Transparency: 4/6
Date (UT): 2007/03/30 Time (UT): 03:13
Colongitude: 46.1 Latitude: +0.7
Position of crater: Selen. Long. Selen. Lat.
20.6° West 20.5° North
Lunar Atlas Used as Reference: Rukl, Atlas of the Moon, Revised Updated Ed.

Image (North up): (East right):

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

Crater Observed: Burg
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 StarShootII, 2X Barlow, Filters: IR Block Filter
Seeing: 7/10 Transparency: 5/6
Date (UT): 2007/03/27 Time (UT): 00:53
Colongitude: 08.8
Position of crater: Selen. Long. Selen. Lat.
28.2° East 45.0° North
Lunar Atlas Used as Reference: Virtual Moon Atlas Expert Version 2.1 2004-11-07

Image (north up):



LUNAR TRANSIENT PHENOMENA

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

LTP NEWSLETTER - MAY 2007

Dr. Anthony Cook - Coordinator

Observations were received from the following observers for March: Jay Albert (FL, USA), Clive Brook (Plymouth, UK), Marie Cook (Mundesley, UK), Maurice Collins (New Zealand), and Gerald North (Narborough, UK). No LTP were reported for March, although there were a good set of reports for the eclipse and three of the above observers have been experimenting with capturing digital images at the telescope.

Last month (I am writing this in April) I attended the 38th Lunar and Planetary Science Conference (LPSC) in League City, near Houston. There I had the pleasure to meet a couple of ALPO members: John Westfall and Brian Cudnik. Although "Mars" was dominating this week long meeting I was interested naturally in the lunar sessions and posters and took several notes about things that should be of direct interest to us in the LTP sub-section and the Lunar Section as a whole:

Firstly, please be aware that things will change for all lunar amateurs in the next three years. There are many lunar missions planned: Japan, China, India, USA, Russia, probably Germany (seeking funding) and maybe even Great Britain too? Most of these will be using stereo imaging the Moon, or laser altimeters, to measure the lunar topography to sub-km spatial resolution and metre scale height resolution. So the net effect is that by 2010 it will be far easier to produce accurate models of crater appearances on the Moon on the computer than it will be to sketch or image through the telescope! We have been here before of course; in the late 1960's/early 1970's it was said that Apollo would kill off lunar amateur observing. But as we know this did not happen because Apollo covered only the equatorial areas, and earlier unmanned orbiters, and the later Clementine, Galileo and SMART-1 missions, took images under a very limited range of illuminations. However this time things are different and any future attempts at Earth-based photography, CCD imaging, sketches, lunar occultations will be very unlikely to yield new information about the Moon apart from three exceptions discussed in the next paragraph.

I am sorry to sound so depressed, but that is scientific and technological progress! On the positive side of things, the study/confirmation of historical lunar observations, lunar eclipses, LTP's (assuming that these are not disproven in the next few years), and impact flash detection should still be very useful scientific pursuits for amateur lunar observers – although there may be some competition from the proposed German satellite for the latter. There will also be great new opportunities for amateur armchair astronomers to pour over the Gigabytes of lunar spacecraft imagery, and topographic, datasets returned in the next few years, trying to beat professional lunar geologists to discoveries. I suppose it could be argued also that some of our existing photographic/CCD imaging and sketching are probably worth continuing for non-scientific reasons e.g. educating new observers about techniques or for observing for an artistic point of view.

Turning to the lunar interior, Frolich and Nakamura (University of Texas) have re-analysed the Apollo lunar seismic data and have been studying Deep Moon Quakes (DMQ). DMQs appear in nests, or clusters, at typical depths of 800-1100km beneath the lunar surface. Quakes from these have periods of 27.55 and 27.21 (tidally related) days and different periods (other causes). The locations of the quakes varies geographically, and also whether the Moon is approaching or receding from the Earth. It was speculated that the temperature/pressure conditions at which DMQs occur at, are analogous to those at 100-150 km beneath the Earth's surface. In the case of these terrestrial quakes, a liquid is usually needed for the quakes to occur. A problem remains though how do lunar quakes activate under such a low tidal stress? One answer might be "rock fatigue" – this is where rock can fracture under many repeated cycles. There could be 1010 tidal cycles over 1 billion years. If the fluid theory is correct then fluid may be being pumped around at these depths. The conference abstract does not speculate what the liquid might be but here on Earth water is regarded as a possible liquid.

With regard to water on the Moon – results from Apollo told us that this was NOT present in the lunar rocks returned. However several presentations discussed how water could indeed be present on the Moon. Ong et al (University of California) made some theoretical calculations on volatile retention from comet impacts and found that between 1.3x107 and 1.1x1010 metric tons of water could potentially make it into, and be retained in, cold traps at the lunar poles. This is in good agreement with the Hydrogen values of 6x1010 metric tons as determined by the lunar Prospector spaceprobe. As an independent check on possible hydrogen at the lunar south pole, Schaler and Purucker (Goddard Space Flight Center) reanalyzed the Lunar Prospector magnetic field measurements and found that there are six craters that have magnetic field strengths at the nano-Tesla level (measured at 30 km spacecraft altitude) that might be sufficiently strong enough to retain local magnetospheres during quiet solar conditions and fend off depletion of water ice better than elsewhere. Lastly lunar water in the returned Apollo rocks was discussed by Isaacson and Pieters (Brown University). A 3 micron wavelength feature has always been seen in spectroscopic analysis of Apollo lunar soils, but up until now it was always assumed to be due to water vapour from our atmosphere contaminating the previously dry lunar soil. The researchers conducted heating experiments to attempt to remove this "loosely" bound atmospheric water vapour effect and found that after removal there still persisted water content from an unknown reservoir in the soil that probably was not a contaminant. Alas the authors do not give an estimate of percentage of water per weight that they find in the lunar soil.

Schultz (Brown University) – discussed his Ina like, geologically recent, features in the context of the Procellarum region and the South Pole Aitken basin (SPA). He pointed out that his Ina-like features all lie at cross cutting fracture system from Procellarum. He had made some simulations of the SPA formation and got the appropriate fracture pattern such as we see in Procellarum. So all the Ina-like features are where he would expect them to be.

Concerning news on SMART-1, I learnt from the ESA delegates that it was not as prolific as Clementine in taking images. Clementine took 2 million images during its short stay in orbit around the Moon. By contrast SMART-1 took only ~20,000 images, most of these were pointing down in nadir mode, although some were taken under multiple look angle conditions. Many of the instruments were damaged or degraded during the long passage to the Moon through the Earth's Van Allen radiation belt, but despite this useful results were obtained including the first detection of Calcium on the Moon from a British experiment. During the impact of SMART-1, observations from the France-Canada-Hawaii telescope of the ejecta, suggest that, as the predicted models for the expansion of the ejecta cloud were for speeds of 3km/sec, the only way that the observed cloud could be visible from the Earth, for the length of time observed, was if some of the material went vertically upwards and made it into sunlight.

Further 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!

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KEY TO IMAGES IN THIS ISSUE

1. Burg
2. Deslandres
3. Dionysius
4. Fontenelle
5. Janssen
6. M. Fecunditatis
7. Plato
8. Proclus
9. Pytheas