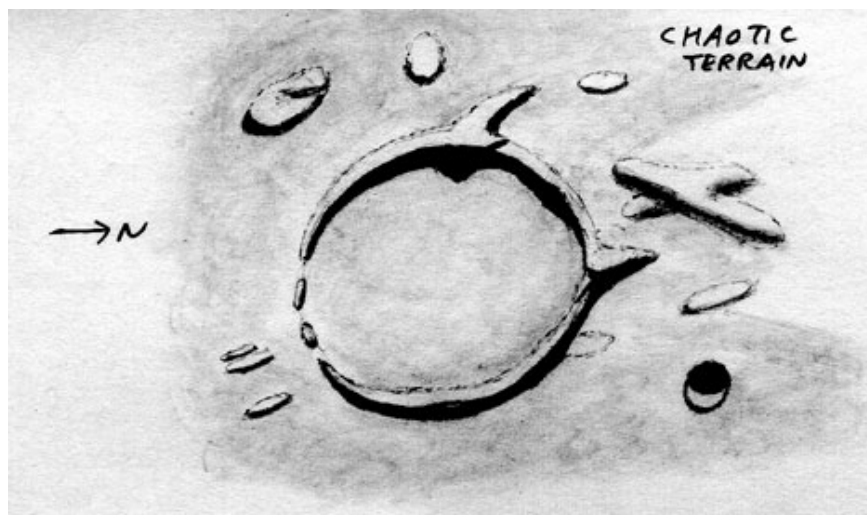




THE LUNAR OBSERVER

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.
EDITED BY: William M. Dembowski, F.R.A.S. - dembowski@zone-vx.com
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FEATURE OF THE MONTH - FEB. 2005



LUBINIEZKY

Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
September 8, 2004 - 08:46 to 09:14 UT
15cm Newtonian - 170x - Seeing 7/10

I sketched this crater of the morning of September 8, 2004 while watching five occultations. This crater is in northwestern Mare Nubium, and has obviously been flooded by that mare. There are gaps in the south rim, and the interior is smooth and featureless. The highest point on the rim appears to be a peak on the west rim that cast a substantial triangular shadow and also had a ridge angling outward. A similar feature may be on the north rim. Otherwise the rims of this crater appeared to be fairly low, but there was an isolated strip of light on the east rim that may indicate some terracing.

The crisp crater to the north is Lubiniezky D, and Lubiniezky beta is the largest of several peaks to the south and west. The Lunar Quadrant Map shows Lubiniezky sigma to the north; this may refer to an x-shaped elevation that I drew. The area around Lubiniezky sigma also looked lighter than the area around Lubiniezky in general; the mare material may not have reached there. There was also some chaotic terrain to the northwest that I did not draw.

EDITOR: Lubiniezky and surroundings can be found on Map 53 of Rukl's Atlas of the Moon.

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.justfun.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/~rhil/alpo/member.html> which now also provides links so that you can enroll and pay your membership dues online.

LUNAR TOPOGRAPHICAL STUDIES

Acting Coordinator - William M. Dembowski, FRAS

dembowski@zone-vx.com

OBSERVATIONS RECEIVED

MICHAEL AMATO - WEST HAVEN, CONNECTICUT, USA

Ray maps of Messier (3), Menelaus (2), Proclus (2), Kepler (3), Aristarchus (3)

MIGUEL ANGEL CRESPO MIR & MANUEL LOU

TORRICELLA DE VALMADRID, ZARAGOZA, SPAIN

Digital images of Copernicus, Plato, Proclus, Area near Stevinus

ED CRANDALL - WINSTON-SALEM, NORTH CAROLINA, USA

Digital images of Maurolycus, Alpine Valley & Mons Piton, Archimedes, Moretus

DAVID O. DARLING - SUN PRAIRIE, WISCONSIN, USA

Digital image of Mare Orientale

DANIEL DEL VALLE - AGUADILLA, PUERTO RICO

Sketch of Dome near Menelaus

HOWARD ESKILDSEN - OCALA, FLORIDA, USA

Digital images of Mare Orientale, 2-day Moon, Eastern Mare Crisium, Mare Humboldtianum

CLAUDE LIBERT - GENT, BELGIUM

Digital images of Eratosthenes, Stadius, Tycho

K. C. PAU - HONG KONG, CHINA

Digital images of Albategnius, Lade, Meton, Playfair G, Montes Caucasus, Wolf, Opelt, Fra Mauro, Deslandres, Sinus Aestuum

RAFAEL BENAVIDES PALENCIA - POSADAS, CORDOBA, SPAIN

Digital images of Vallis Schroteri, Marius, The Arrowhead, Eratosthenes, W.Bond, Schickard (2)

ALEXANDER VANDENBOHEDE - GHENT, BELGIUM

Digital images of South Polar Region (3), Mare Australe (2)

HIGHLAND DOME NEAR T. MAYER-B **AND TWO CONES NEAR MILICHIUS**

By Rodrigo Viegas, Raffaello Lena and Jim Phillips, M.D. (GLR group)

The Milichius region has been thoroughly studied. Many domes are reported in this zone, possibly the best known being Milichius π . To the N of Milichius and embedded in the Carpathian Mounts lies the antique crater Tobias Mayer with its eroded walls. SE of T. Mayer stands younger T. Mayer-D, that is the companion to a highland dome positioned at 14.89 ° N and 27.75 ° W [1].



Figure 1

Jim Phillips

December 22 2004 at 02:37 UT

TMB 8" F/9 Apochromatic refractor

4X Powermate. Atik B&W camera. Registax.

Recently, Viegas detected on a frame by Phillips (Figure 1) a dome near crater T. Mayer-B, which is unreported to our knowledge. This dome, located at 14.77 ° N and 31.08 ° W, does not appear on the A.L.P.O. Lunar Dome Survey database and is not in the highland dome list in [1]. Figure 2 is the Lunar Orbiter frame IV-133-H2, where this dome is easily recognizable with a summit craterlet. Moreover, three images from the Consolidated Lunar Atlas confirm its domical nature, as it virtually disappears under higher solar altitudes. Preliminary estimations indicate a diameter of 6.6 Km and a rather low slope: this unlisted highland dome can be described using the Westfall Classification Scheme [2] as DW/2a/5f/7j. As most highland domes, this one is difficult to spot because it is camouflaged as the surrounding hummocky mounds.

In Figure 3, that covers another zone of the same LO frame, two cones were noted close to Milichius crater. These features are seen as small mounds in Phillips' image and in CLA imagery, because of their small size. Preliminary estimations indicate diameters under 2 Km for both cones. Both of them can be classified using the Classification Scheme in [3] as B1. They appear stuck together, on the edge of a large dome, radial to it. This morphology makes possible the following interpretation: both cones are parasites of the dome, and they formed as the dome approached extinction. Their coordinates are 10.74° N, 31.74° W and 10.71 ° N, 31.81 ° W respectively.

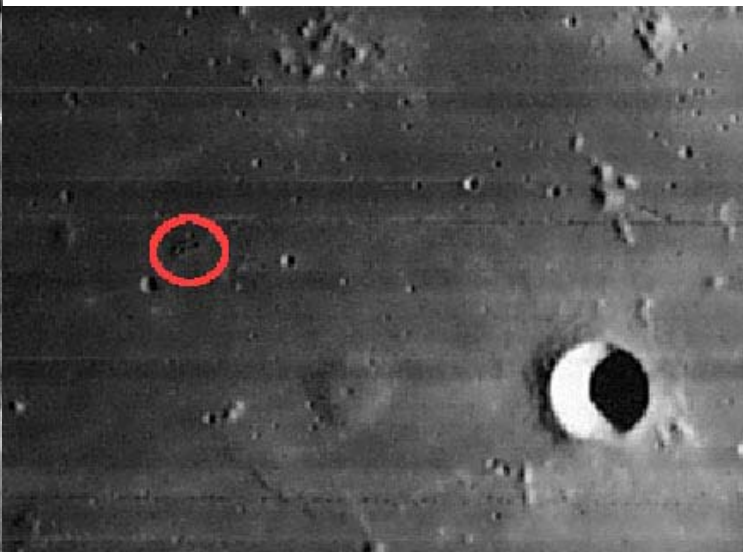


Figure 2

Figure 3

Two areas of Lunar Orbiter Frame IV-133-H2

Clearly, this preliminary data and interpretation can be improved with new specific observations. The GLR group (<http://www.glrgroup.org>) welcomes any report, drawing or image of this feature.

References:

- [1] Douglass E., Santacana G.; Selenology, 2002, Vol 21 No 2, pp 8-12.
- [2] Westfall J.; J.A.L.P.O., 1964, Vol 18, pp 15-20.
- [3] Lena R.; Selenology, 2004, Vol 23 No 2, pp 17-20.
- [4] Phillips, J.; J.A.L.P.O., 1989, Vol 33, No. 4-6, pp 61-72.
- [5] Phillips, J.; J.A.L.P.O., 1989, Vol 33, No. 4-6, pp 73- 74.

A.L.P.O. LUNAR COORDINATORS

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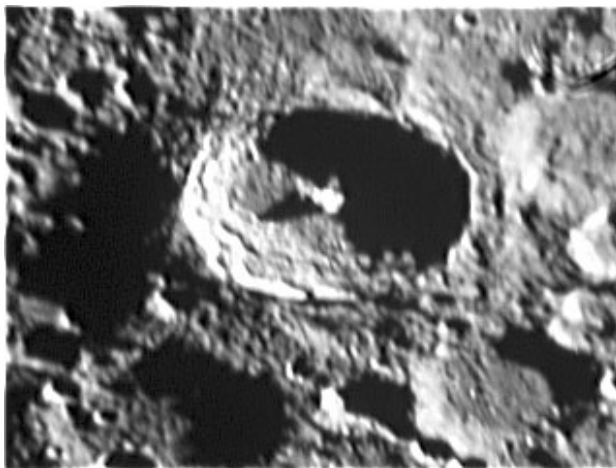
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Marvin W. Huddleston – Acting Coordinator, Lunar Dome Survey - kc5lei@comcast.net



TYCHO

Digital image by Claude Libert - Ghent, Belgium

December 20, 2004

12 inch SCT - Philips Toucam

TYCHO

By Chuck Taylor

The moon is the one object in the heavens I could never grow tired of observing. It is always changing. The moon never looks the same, though very little has altered on its surface. Each night the light comes from a different angle, throwing new features into high relief. Even during a short observing session, the appearance can change dramatically. For example, consider Tycho. At full moon, it dominates the other craters. Yet as the sun first rises on Tycho, its appearance is anything but impressive. Although it is a respectable 85 km across and 4,850 m deep, it is easily lost in the myriad of surrounding craters. It is far smaller than nearby Maginus (145 km) or Longomontanus (163 km). Tycho first appears on the eighth day after the new moon. At first, it is little more than a dark indentation on the terminator, the line dividing the sunlit areas from those still in darkness. Unless you are familiar with the area, you may need a map to make sure you have the right crater. It blends in with the hundreds of other craters visible in the area.

If you are fortunate enough to catch Tycho just as the sun rises over it, you will first see the eastern rim, with the rest of the crater in darkness. As the sun continues to rise, the central peak and western wall will begin to show up. As you view the central peak, you are looking at rock that was once deep beneath the surface. Roughly 109 million years ago, a body 7-10 km in diameter impacted the moon at high speed. The high velocity allowed it to penetrate deep beneath the surface, fracturing and compressing the surrounding rock. The kinetic energy melted a good deal of that rock, and caused a huge explosion that scattered pieces more than 2,000 km away! As the ground rebounded after the explosion, the underlying rock thrust upwards to create the central peak. In effect, the peak gives us a peek at rocks from many kilometers below the surface.

Over the next several days, as the angle of illumination changes, you may notice the area around Tycho is built up. It is not simply a large hole in the ground. The impact overturned several hundred cubic kilometers of lunar rock, and left much of it piled around the crater. This created a ring that rises above the surrounding area. If we could drive across the lunar surface toward Tycho, this ring would be like a

ramp, gradually leading to the top of the rim. From there, we would see our path rapidly drop to the crater floor. At full moon, this raised ring will appear to darken, making Tycho look like the center of a target. For many years, scientists debated the cause of this darkness. It was confusing because the dark areas appear to have once been molten, pointing to a possible volcanic origin. Only gradually did we understand the tremendous energies involved in a high speed impact. Converted to heat, that energy melted a great deal of rock, splashing impact melt over the floor of the crater and surrounding areas. Similar-sized craters once had the same dark halo surrounding them. Over time, subsequent impacts broke up the rock in their dark halo, and it slowly brightened. However Tycho is the youngest large crater we see on the moon, and is too young for this to have happened. While 109 million years old may seem old for earth, it is extremely young for the moon. As the sun continues to rise over Tycho, you can also observe the crater walls. You may notice they are not smooth, but terraced, showing how they slumped back after the initial explosion. We will see this again in similar sized craters. In Tycho, because of its youthfulness, these terraces are especially clear.

As full moon approaches, you will also see rays reaching out from Tycho. The brightness of Tycho, contrasted with the dark halo, combines with the rays to make Tycho the dominant crater of the full moon. The Tycho impact scattered rock and dust for thousands of kilometers. Falling back to the surface, the fragments created secondary craters and the bright lines we call rays. Because of their youthfulness, these rays are still very bright. Over time, they will darken and fade from view, just as the dark halo will lighten. Given another billion years, Tycho will no longer stand out the way it does now. It will become just another crater among many others. In the meantime, notice that the dark halo and rays are not symmetrical. Look closely, and you can see the dark built-up area around the rim is smaller on one side. Likewise, the rays are sparse on that side. You can almost imagine the impactor striking, heading west to east. Although the explosive nature of the impact caused the crater to be largely circular rather than oval, it ejected less material up range to the west.

In the following days, as Tycho moves toward sunset, notice how the eastern rim and the area around it remain illuminated after surrounding areas have gone dark. You can again see that Tycho is not just a hole that suddenly appears in the lunar surface. The ground slowly rises, peaking at the rim before quickly dropping down to the floor of the crater. Because it is higher, this raised area still catches the sun's rays, while darkness covers the surrounding areas.

As the month continues, Tycho disappears from view on the twenty-third day after the new moon. The dark halo disappears shortly after the full moon stage, and the rays also fade from sight. The light from the setting sun will again throw the area into high relief, allowing you to see details that were invisible during the full moon. Tycho will again become just an ordinary crater in an area covered with craters.

Topographical observations submitted should include the following:

Name and location of observer

Name of feature

Date and time (UT) of observation

Size and type of telescope used

Magnification (for sketches)

Medium employed (for photos and electronic images)

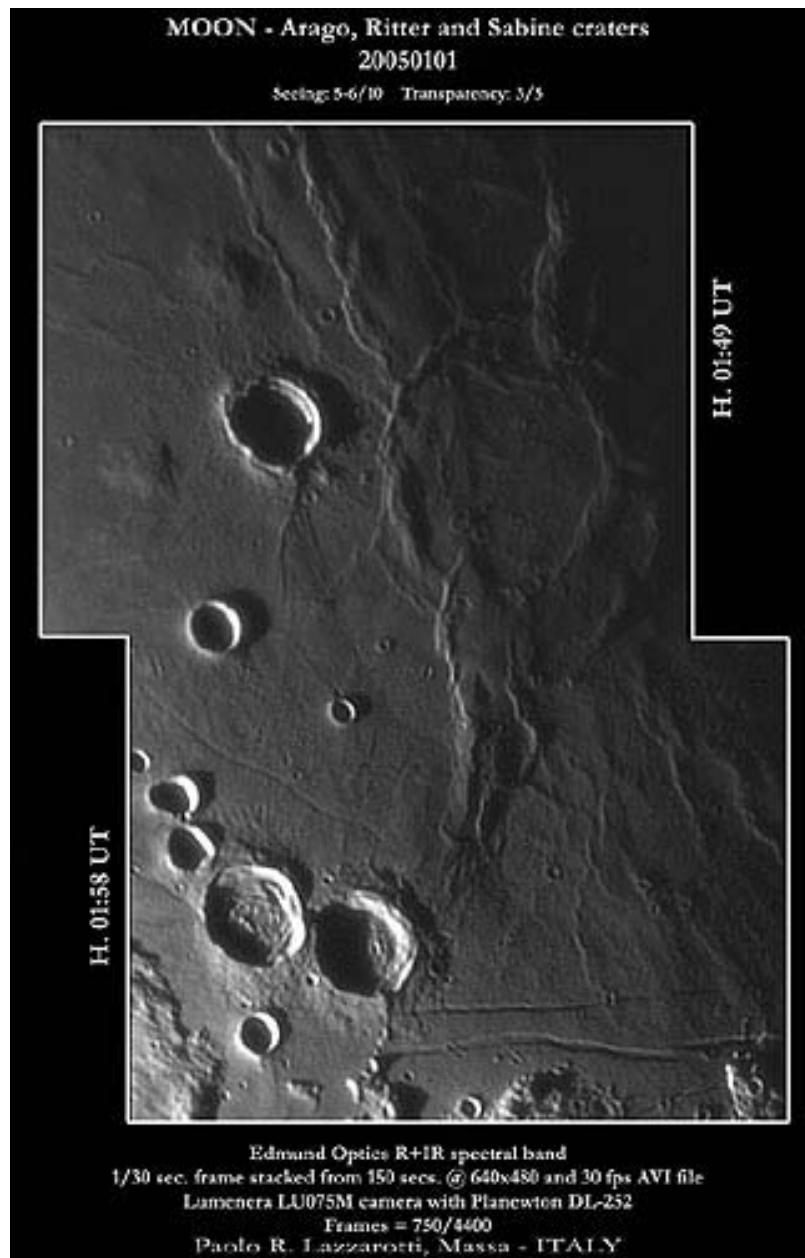
SUNSET ON WESTERN TRANQUILLITATIS

Raffaello Braga (rafbraga@tin.it)

Paolo Lazzarotti (paololazzarotti@astromeccanica.it)

(UAI Lunar Section)

This mosaic picture shows the western part of Mare Tranquillitatis between craters Ritter and Sabine to the south and the domes NNW of crater Arago to the north. The images were taken on January 1st, 2005 from 01:49 to 01:58 UT through a 250 mm Newtonian telescope. The details of the CCD camera and of the processing are reported on the image itself.



Mare Tranquillitatis lies on the site of an ancient pre-Nectarian impact basin and has been extensively flooded by basaltic lavas whose age ranges from 3.8 to 3.3 b.y. (i.e. Upper Imbrian, [1]). Composition and stratigraphy of the basaltic lavas in this lunar region have been extensively studied and are the subject of many papers as [2] and [3]. The lavas in the western portion of the mare – from the northwestern part as far south as the Apollo 11 landing site, have a very high titanium content and are also the youngest lavas erupted in the region being here the end member of the stratigraphic sequence. Moving from the SW border to the NE one, lavas become progressively older and are characterized by a lower Ti content. Apart from these regional differences volcanic processes have been very active over the entire mare surface which can be considered a true volcanological museum worthy of careful scrutiny even with modest telescopes.

At the SW border of the mare lie the craters Ritter and Sabine, both with a diameter of about 30 km and a somehow irregular outline, quite different from most impact craters of similar dimensions. Once believed to be lunar calderas this beautiful pair is now considered an example of floor-fractured craters, that is, impact craters modified by later magmatic processes that raised the floor and allowed lavas to flow onto the inner plain [4]. In fact the examination of the soil composition data from Galileo and Clementine spacecrafts revealed that both craters excavated non-mare anorthositic material from below the basaltic layers. This highland material deposited onto the crater rim and in the ejecta blanket.

NNE of Ritter and Sabine the grazing illumination reveals the magnificent – and still mysterious – structure of Lamont. It is characterized by two incomplete subcircular ridges with diameters of 60 and 120 kilometres respectively, both irregular and incomplete [5]. The ring system is crossed by a radial pattern of wrinkle ridges roughly arranged around the NNE-SSW direction. Apart from Paolo's CCD image another impressive view of this structure is in the D5 plate from the Consolidated Lunar Atlas. Lamont corresponds to a mass concentration (mascon) and could be the surface expression of some buried structure - maybe an impact basin [6] - the result of purely tectonic stresses or a combination of both.

NW of Lamont the Erathostenian crater Arago gives the name to a couple of very conspicuous lunar domes, Arago Alpha and Arago Beta. The ALPO Lunar Dome Survey catalogue gives the following dimensions for these structures:

Arago Alpha: 15 x 24 km

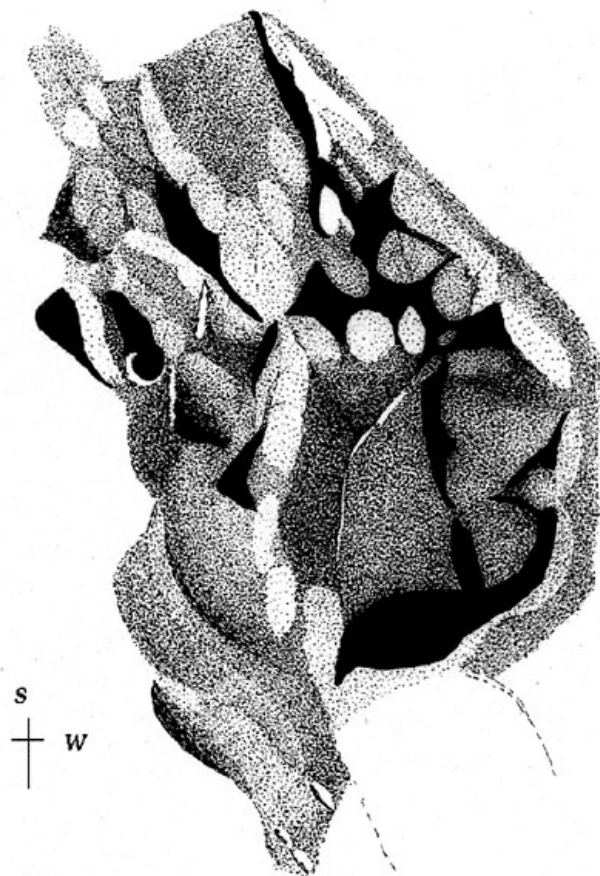
Arago Beta: 20 x 23.36 km

Head and Gifford [7] put them into the class VII of their classification scheme which includes domes with irregular structures and complex surface details as the Marius Hills in Oceanus Procellarum. In fact the Arago domes are strikingly different from, say, those in the Milichius – Hortensius region. While many of these resemble “bubbles” frozen in the lunar crust with near circular outlines and a hemispherical profile, Arago Alpha and Beta have a very irregular profile and a lumpy surface showing protrusions and possible eruptive vents. In fact while many lunar domes might actually be laccoliths instead of true volcanoes (for example those lacking a summit pit) this seems not the case for the Aragos, which give the strong impression of some “viscous” stuff extruded on the lunar surface. Other domes are visible in upper left corner of the CCD mosaic and correspond to three well known entries in the ALPO catalogue. Staid et al. [3] refer to these aligned domes and to the Aragos as potential sources of the high-Ti basalts in this area, although domes should be considered as the manifestation of the late stages of the volcanism in a given area rather than the sources for the gigantic lava flows that flooded the lunar impact basins.

REFERENCES (all the listed papers are extremely intriguing readings for any lunar enthusiast, and all except [3] are freely downloadable on the www through the NASA ADS Internet site <http://adsabs.harvard.edu>)

- [1] Wilhelms D.E. (1987) Geologic History of the Moon, USGS Prof. Paper, 1348
- [2] Rajmon D., Spudis P. (2001) Distribution and stratigraphy of basaltic units in Mare Tranquillitatis, Proc. Lun. Plan. Sci. Conf. XXXII, paper 2156
- [3] Staid M.I., Pieters C.M., Head J.W. (1996) Mare Tranquillitatis: Basalt emplacement history and relation to lunar samples, J. Geophys. Res., 101 (E10), 213-227
- [4] Schultz P.H. (1976) Floor fractured lunar craters, The Moon vol. 15, 241-273
- [5] Dvorak J., Phillips R.J. (1979) Gravity anomaly and structure associated with the Lamont region of the Moon, Proc. Lun. Plan. Sci. Conf. X
- [6] Scott D.H. (1974) The geologic significance of some lunar gravity anomalies, Proc. Fifth Lun. Conf.
- [7] Head J.W., Gifford A. (1980) Lunar mare domes: classification and modes of origin, Moon Planets, 22, 235-258

RECENT TOPOGRAPHICAL OBSERVATION



BOSCOVICH

Sketch by Colin Ebdon - Colchester, Essex, England

October 4-5, 2004 - 23:45 to 01:00 UT

7 inch Mak-Cass - 225x 300x - Seeing AIII

RECENT TOPOGRAPHICAL OBSERVATIONS

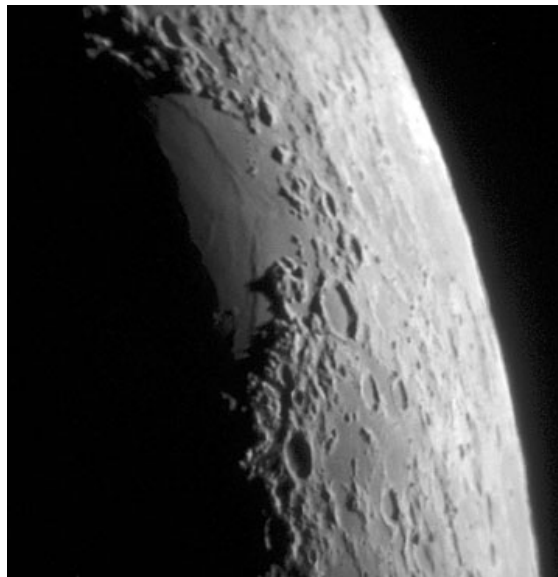


ARCHIMEDES

Digital image by Ed Crandall - Winston-Salem, North Carolina, USA

January 19, 2005 - 00:34 UT

10 inch Newtnian - 2x Barlow - Philips Toucam



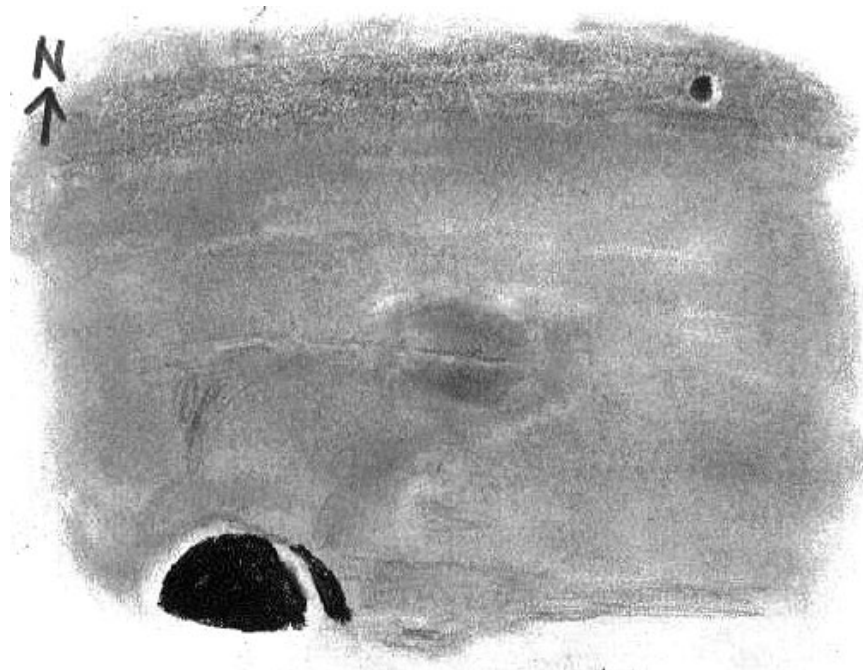
EASTERN MARE CRUSIUM

Digital image by Howard Eskildsen - Ocala, Florida, USA

January 12, 2005 - 23:38 UT

6 inch Refractor - Nikon Coolpix 4300

RECENT TOPOGRAPHICAL OBSERVATIONS



DOME NEAR MENELAUS

Sketch by Daniel del Valle - Aguadilla, Puerto Rico

January 6, 2005 - 23:05 to 23:25 UT

8 inch SCT - 450x - Seeing 6/10



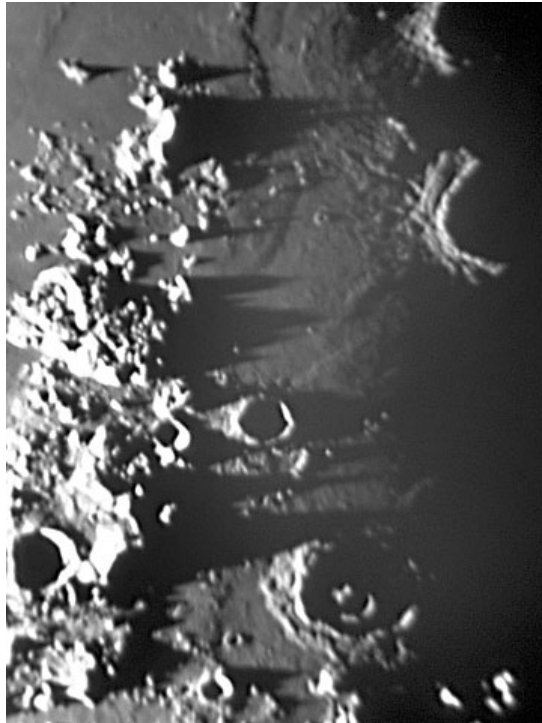
MARE ORIETALE

Digital image by David O. Darling - Sun Prairie, Wisconsin, USA

December 5, 2004 - 09:09 UT

8 inch SCT - Lunar Planetary Imager

RECENT TOPOGRAPHICAL OBSERVATIONS



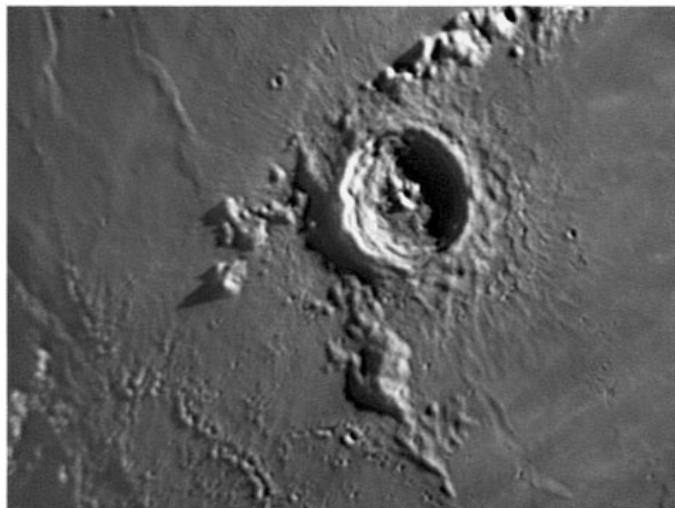
MONTES CAUCASUS

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

November 19, 2004 - 10:55 UT

250mm f/6 Newtonian - 2.5 Barlow

Philips Toucam Pro - 45 frames stacked



ERATOSTHENES

Rafael Benavides Palencia - Posadas, Cordoba, Spain

December 20, 2004 - 19:58 UT

9-1/4 inch SCT - Philips Toucam Pro

BRIGHT LUNAR RAYS PROJECT

Coordinator - William M. Dembowski, FRAS

Each month TLO features a book or magazine excerpt dealing with Bright Lunar Rays. Some are from current sources, others from vintage astronomical literature. This month's offering is from:

"Observational Astronomy for Amateurs" J. B. Sidgwick (Dover Press 1971) Section 2

2.3 The Lunar Rays

Visibility of the rays varies inversely as the size of the angle at the Moon between the Sun and the observer; neither the Sun nor the Earth being 'overhead' from a particular locality on the Moon's surface is itself sufficient. Some, however, are visible at as little as 20 degrees from the terminator.

The rays provide great scope for work, since there is not yet adequate observational data to test rival theories as to their origin and nature. Whether or not superficial granulation or pitting can account for the observed features of the ray systems is another problem that can only be solved through the accumulation of many more observations than are at present available.

Owing to their ill-defined appearance, and the lack of simultaneity between their best visibility (far from the terminator) and that of other surface features (near the terminator), there is not yet in existence an adequate map of even the more prominent rays.

Statistical discussion of the characteristics of their distribution - e.g. occurrence on high or low ground, broken or smooth ground, on slopes facing towards and away from¹ the centre of the system, discontinuities, curved arcs², avoidance of surface features³, etc - might be very fruitful. Also that of their appearance in different regions - complexity or otherwise of their structure, variations of width, etc; more reliable data are wanted concerning the intercommunication of different ray systems; the smaller ray systems; the radiation of rays from points other than the crater centre - or, if aligned upon the centre, only becoming visible at some distance from the centre; the association of rays with lines of craterlets. Finally, there is a great need for an accurate photometric study of the rays in all parts of the disc.

1. E.g. The Tycho ray on the western slopes of the Altai.
2. E.g. Copernican rays in the vicinity of Pytheas, Pytheas G, and Bessarion D.
3. E.g. Tycho rays in the vicinity of Clavius, Bullialdus, Schneider, and Longomontanus.

RECENT RAY OBSERVATIONS

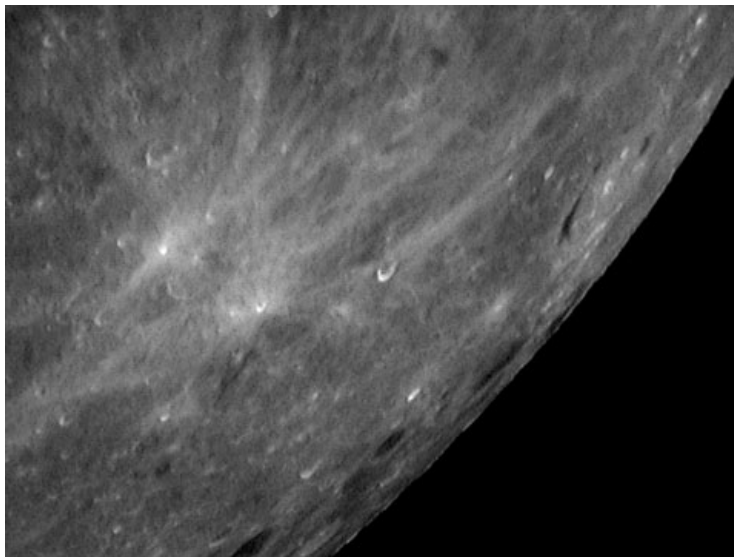


PROCLUS

**Digital image by Miguel Angel Crespo Mir and
Manuel Lou - Torricella de Valmadrid, Zaragoza, Spain**

December 21, 2004 - 20:51 UT

8 inch Celestron SCT - Philips Toucam Pro



RAY SYSTEMS NEAR STEVINUS

**Digital image by Miguel Angel Crespo Mir and
Manuel Lou - Torricella de Valmadrid, Zaragoza, Spain**

December 21, 2004 - 20:02 UT

8 inch Celestron SCT - Philips Toucam Pro

LUNAR TRANSIENT PHENOMENA

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

Assistant Coordinator – David O. Darling – DOD121252@AOL.COM

LTP NEWSLETTER - FEBRUARY 2005

David Darling

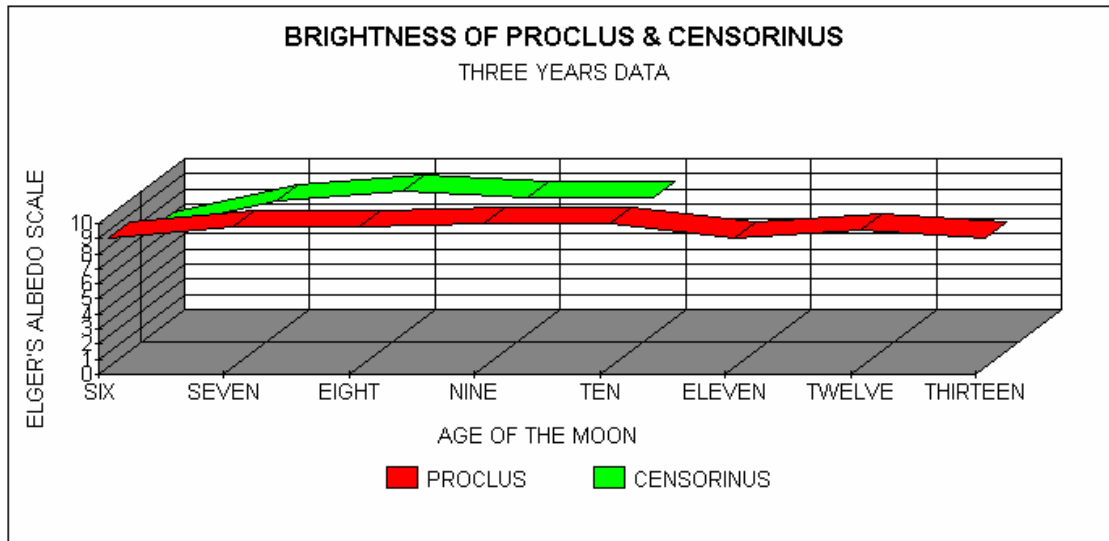
Tel. (USA) 608 837-7787

Email: dod121252@aol.com

Due to teaching pressures affecting me at University over the next 6 months, David Darling (Assistant LTP coordinator for ALPO) has volunteered to write the monthly LTP articles (his first one is below) and to receive BAA/ALPO observation. Please give him your full support. - Tony Cook

HISTORY OF BRIGHT CRATERS: During the month of December we had several observers report increased brightening to some already bright craters on the Moon. These lunar formations were: Aristarchus, Censorinus, and Birt. The crater Aristarchus was reported on 2004 DEC 02 UT 01:55 - 02:45 by Clive Brook of Plymouth, UK. He could see variations in brightness and contacted Dr. Cook. I received this information by email from Dr. Cook and passed it on to all my observers. I had two observers: Michael Amato of West Haven CT, USA who confirmed the variation in brightness on 2004 DEC 02 UT 03:00 and Robin Gray of Winnemucca, NV, USA made albedo reading showing Aristarchus going through changes in brightness on 2004 DEC 03 UT 08:40 - 10:03 Unfortunately none of the observers reported variations in brightness at the same time, failing to give us the confirmation of the event I had hoped for. I checked out different correlations such as the Solar activity and perigee and apogee. <http://www.dxlc.com/solar/> I found that the sunspot activity and solar flux had peaked during the time of the event. The fluctuation in brightness of the crater may have been caused by the earth's atmosphere but to have it behave the same way across the Atlantic Ocean and for two consecutive days makes that unlikely. I got the impression from the report that the fluctuation reported was behaving similar to Aurora Borealis as it pulsed and danced across the night sky.

We also had a report for Censorinus on 2004 DEC 18 UT 02:00 showing a period of brightening by Frank Serio of Houston, Texas, USA. It is unclear at this time if something unusual had taken place with this crater or not; it may have been an artifact of Registax. When checking the solar data site I did find that Solar Flux, Sunspot activity and Planetary K index were all on the increase. The crater Birt was reported by Robin Gray on 2004 DEC 20 UT 2:51-3:26 to show exceptional brightness to nimbus surrounding it. This correlates closely with a repeat lighting event made on 1969 Nov 17 where pulsation were reported on the west wall of Birt. This could be a strong indication that this crater becomes bright at this time and the pulsation reported in 1969 may have been seeing related? The Solar activity showed all three plots having increased activity. When examining the perigee & apogee date 4 DEC 2004 and 21 DEC 2004 we find both events land close to both days, indicating possible tidal stress effect. See hyperlink <http://www.fourmilab.ch/earthview/pacalc.html> I have put a graph showing the brightness of two craters during eight days of lunation to show how they in fact they change in brightness.



I also want to point out that if you are taking albedo measurements using Elger albedo scale it is important to measure a secondary feature as well as a near by Lunar Maria to get the most accurate results. If all three target spots on the Moon go through fluctuation in brightness that would indicate Earth's atmospheric may be a cause. The same is true if you are taking brightness reading from your CCD image to make sure you place a secondary feature that is also bright in the same field of view. When taking an albedo measurement of the near by Lunar Maria it should be in the same longitude as your primary target. There are more directions on how to do albedo measurements available on my web site under L. T. P. Observing Manual. You will find that once you begin looking at the lunar features as variation in albedo brightness the Moon comes alive as a great tapestry of light and dark splotches that come and go as the solar angle changes. When you begin to accumulate your albedo measurement on the craters you been monitoring you can become very excited when an albedo variance takes place for no apparent reason. You will find the data you been collecting confirms that a real L.T. P. event has taken place. I want to close now and remind you that when you submit a drawing or image with your report it is critical that the UT date and time be indicated for these attachments. Failing to do so will reduce the quality of the report and increase the correspondence load since an email will have to be sent to request that information.

LUNAR CALENDAR - FEBRUARY 2005 - (UT)

02	07:27	Last Quarter
07	22:12	Moon at Perigee (Apparent diameter 33'19")
08	22:28	New Moon (Start of Lunation #1016)
16	00:16	First Quarter
20	04:49	Moon at Apogee (Apparent diameter 29'27")
24	04:54	Full Moon

MOON MISSIONS

LUNAR RECONNAISSANCE ORBITER (LRO)

The six selected areas of investigation for the project:

Lunar Orbiter Laser Altimeter (LOLA): Determines the global topography of the lunar surface at high resolution, measure landing site slopes and search for polar ices in shadowed regions.

Lunar Reconnaissance Orbiter Camera (LROC): Acquires targeted images of the lunar surface capable of resolving small-scale features that could be landing site hazards, as well as wide-angle images at multiple wavelengths of the lunar poles to document changing illumination conditions and potential resources

Lunar Exploration Neutron Detector (LEND): Maps the flux of neutrons from the lunar surface to search for evidence of water ice and provide measurements of the space radiation environment which can be useful for future human exploration.

Diviner Lunar Radiometer Experiment: Charts the temperature of the entire lunar surface at roughly 985 feet (300 meter) horizontal scales to identify cold-traps and potential ice deposits.

Lyman-Alpha Mapping Project (LAMP): Observes the entire lunar surface in the far ultraviolet. LAMP will search for surface ices and frosts in the polar regions and provide images of permanently shadowed regions illuminated only by starlight.

Cosmic Ray Telescope for the Effects of Radiation (CRaTER): Investigates the effect of galactic cosmic rays on tissue-equivalent plastics as a constraint on models of biological response to background space radiation.

For more complete information go to:

http://www.space.com/scienceastronomy/lro_science_041223.html

SMART-1

SMART-1 Final Operational Orbit:

<http://smart.esa.int/science-c/www/object/index.cfm?fobjectid=36358>

SMART-1 First close-up images:

<http://news.bbc.co.uk/1/hi/sci/tech/4209995.stm>

<http://www.esa.int/export/SPECIALS/SMART-1/>

SMART-1 & LRO

Search for Lunar Ice: http://www.space.com/scienceastronomy/lunar_ice_041214.html