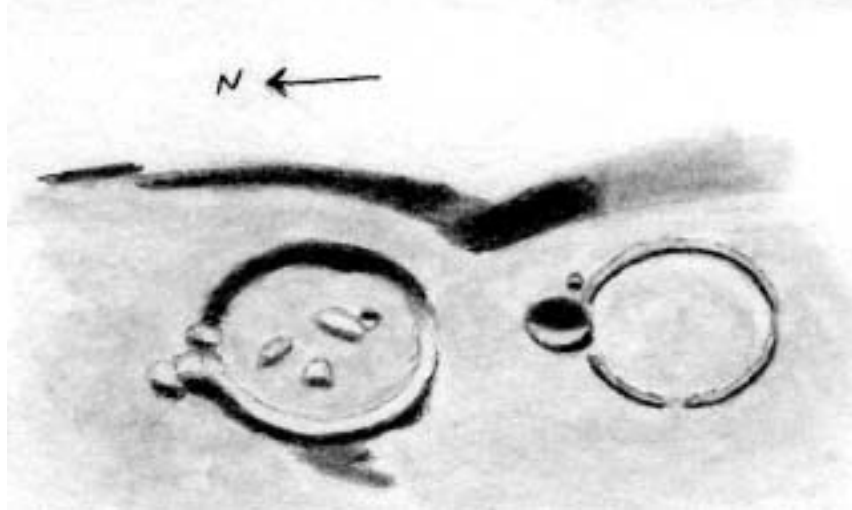


# THE LUNAR OBSERVER

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

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

## FEATURE OF THE MONTH - AUGUST 2005



### BOHNENBERGER

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

March 16, 2005 - 00:40 to 01:16 UT

15cm Newtonian - 170x - Seeing 6-8/10

I sketched this crater on the evening of March 15/16, 2005 while observing three occultations. This crater is located at the extreme eastern edge of Mare Nectaris. There are three modest peaks on the floor, and a small pit near the peak toward the southeast. The rim appears to be complete, though there may be a very small break in the north rim among some peaks there. There are high points on the east and southwest rims based on shadowing that I saw. Additional shadowing was just off the west rim. Bohnenberger A is the very shallow crater south of Bohnenberger. This feature has breaks in its north and west rims. The deep crater on the north edge of A is Bohnenberger G. This seems to be a crisp, fresh crater, unlike the other two. A small peak is just east of G, and the southwest rim of this crater is relatively high, based on shadowing there. (This is in one of the breaks on A's rim.) The dark shadowing east of Bohnenberger is the edge of Mare Nectaris; the terrain is much lighter to the east. This area is labelled as the Montes Pyrenees. I had the impression of a steep escarpment there (though that probably isn't the case). The shadowing became much lighter near Bohnenberger A, indicating that the slope was much less pronounced.

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

# GLR Catalog of Lunar Domes

**Compiled by: Charles A. Kapral and Robert A. Garfinkle F.R.A.S.  
Release: May 2005**

## **The Catalog**

This catalog was created when I compared the A.L.P.O. original catalog with later catalogs. I noticed that some sites were duplicated in the 1960 catalog and the 1992 catalog, and that there were also sites included in one catalog, but not the other. I then did a literature search and found other sites in other catalogs and papers that were not in any of the A.L.P.O. catalogs. Work on the catalog was nearly complete when I discovered that Robert Garfinkle, F.R.A.S., was also completing his dome catalog. I asked Mr. Garfinkle for a copy of his work and permission to use it in this catalog. He sent me a copy and permission and when I reviewed his excellent work, it was obvious that there was no way that I could claim sole ownership of this catalog with the inclusion of his excellent work. I suggested to Mr. Garfinkle that we co-author this catalog, and he graciously agreed. Many thanks to Mr. Garfinkle for his excellent contributions.

Several domes, studied by GLR, have been included in both revised (unpublished) list by Robert A. Garfinkle and C. Kapral.

It can be download at

<http://www.glrgroup.org/domes/kapralcatalog.htm>

Brendan Shaw has plotted the location of many domes on the Lunar Aeronautical Charts (LAC), as described in the TLO, April 2005, pages 10-11. It can be download at

<http://www.fabiolottero.it/lac/map.htm>

The GLR Catalog of Lunar Domes contains the following information:

- |                   |   |
|-------------------|---|
| 1. Name           | The dome (or feature) name.   |
| 2. Longitude/Xi   | The lunar longitude in degrees/minutes and decimal degrees of the dome. A “+” sign indicate east, “-” indicates west.   |
| 3. Latitude/Eta   | The lunar latitude in degrees/minutes and decimal degrees of the dome. A “+” sign indicates north, “-” indicates south.   |
| 4. Xi and Eta     | The orthographic coordinates of the dome. For the Xi coordinate a “+” sign indicate east, “-” indicates west. For the Eta coordinate a “+” sign indicates north, “-” indicates south. |
| 5. Size (km)      | The size of the dome in kilometers. When 2 dimensions are listed the first size is the east-west dimensions and the second size is the north-south dimension.                         |
| 6. Height (m)     | The height of the dome in meters.   |
| 7. Slope          | The average slope angle of the dome in degrees. (Refer to how “average slope” is determined).   |
| 8. Westfall Class | The dome’s classification in accordance with the Westfall classification system (Refer to “Classifying Lunar Domes”).   |
| 9. Rukl Map       | The page in Antonin Rukl’s <b>Atlas of the Moon</b> on which the dome should appear.  |

- |             |   |
|-------------|---|
| 10. LAC Map | The United States Air Force Aeronautical Chart and Information Center (ACIC) Lunar Aeronautical Chart (LAC) number that the dome can be found on.   |
| 11. Code    | A code signifying whether the dome is verified (V), unconfirmed (U), or is not a dome (N).  |
| 12. Notes   | <p>Remarks containing:</p> <ul style="list-style-type: none"> <li>• a brief description of the dome</li> <li>• the Westfall Dome Class (if determined)</li> <li>• an indication of what other charts the dome is on: <ul style="list-style-type: none"> <li>a. I-number charts were developed by the ACIC</li> <li>b. RLC charts are the Ranger Lunar Charts series</li> <li>c. Designations such as E3-d indicates that the dome is visible on sheet E3-d in the Kuiper, Arthur, and Whitaker “Photographic Lunar Atlas” (Chicago 1960) or on the same page number in the supplements</li> <li>d. M/C-number is the Moore &amp; Cattermole “Catalog of Lunar Domes”</li> <li>e. The GLR Working List Reference # and Working Map Quadrant &amp; Map # (if available). EX: GWL-250(I-A2) for dome #250 in the GLR Working List with its associated map being in quadrant I, map A2.</li> </ul> </li> </ul> <p>NOTE: The GLR Working List of lunar domes is available for download at <a href="http://www.glrgroup.org/download.htm">http://www.glrgroup.org/download.htm</a> and the associated charts can be found at <a href="http://www.glrgroup.org/domes/lunardomes.htm">http://www.glrgroup.org/domes/lunardomes.htm</a>.</p> |
| 13.         | Ref # A reference number referring to the sources where mention of the dome can be found.   |

The names of the domes were determined as follows:

1. A dome previously named in the literature has, for the most part, kept its previous name. Exceptions are where a dome has been listed in different catalogs with different names. I tried to pick the earliest mentioned name of the dome as the name used in this catalog. Some domes have an official International Astronomical Union (IAU) adopted name, such as Linné Alpha (Linné □).
2. Domes referred to by commonly used names, such as the “Valentine Dome”, have that name also listed in the “Name” column.
3. The majority of the names were initially selected by naming the domes after the major feature that they were near, in sequence as much as possible, beginning with “1”, then measuring clockwise from north incrementing the number for each dome encountered belonging to that feature, for the most part.
4. Names of any new domes or suspected domes are merely the next consecutive number in the name list.

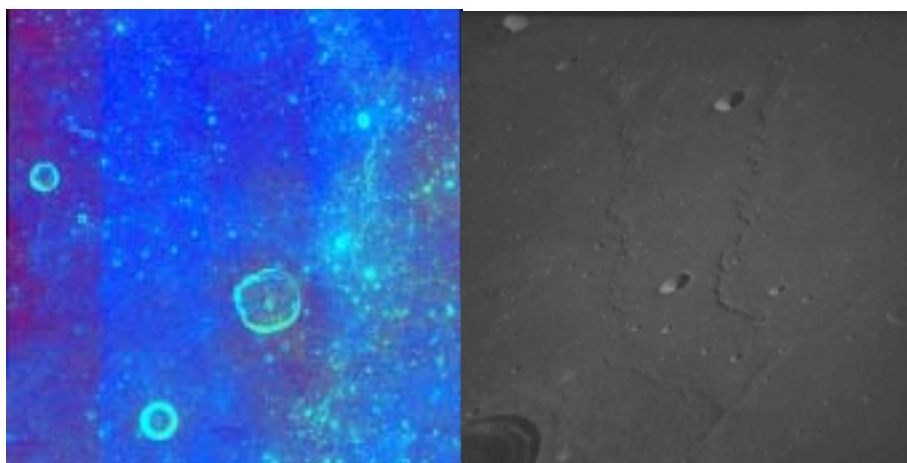
This catalog is a work-in-process and contains some inaccuracies. The reason for the catalog is to give observers a list of all known or suspected domes on the Moon.

# AN UNLISTED DOME NEAR CRATER ARAGO

**Located at longitude +21.96° and latitude +7.66°**

**By Raffaello Lena, Christian Wöhler, Zac Pujic, Jim Phillips,  
Paolo Lazzarotti and Maria Teresa Bregante (GLR group)**

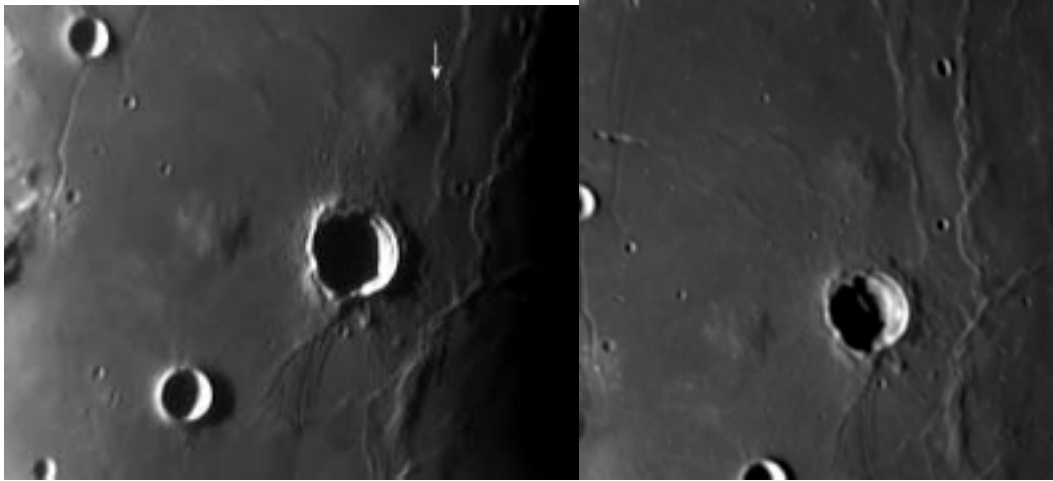
Mare Tranquillitatis is situated on the site of an ancient pre-Nectarian impact basin [1]. Arago is a well-known crater located in the western part of Mare Tranquillitatis. To the southwest lies the Manners crater, and to the southeast, the large Lamont formation is situated, which has been submerged by the mare. Lamont is a 75 km wide oval ridge surrounded by a wrinkle-ridge ring approximately 135 km in diameter. It is considered a small multiring impact basin. Moreover Lamont is the site of a moderate-sized mascon. [2]. Mascons are associated with impact basins and are believed to be due to the excess mass of mare lavas and/or a rise of the dense lunar mantle under the basin.



**FIGURE 1 (Clementine)      FIGURE 2 (Lunar Orbiter)**  
**(See text for details)**

Several domes are reported in this region. To the north of Arago lies the large lunar dome Arago Alpha ( $\alpha$ ). A similar-sized lunar dome is located to the west, named Arago Beta ( $\beta$ ). Arago Alpha and Beta have a very irregular profile showing protrusions and possible eruptive vents. Between Arago Alpha and the crater Maclear four well-known aligned domes, 5 to 8 km wide, can be found. These domes have formed in basalts of relatively high  $\text{TiO}_2$  content, and they appear strongly blue in the Clementine UVVIS colour ratio image (Fig.1). The domes Arago Alpha and Beta appear to consist of a mixture between blue and underneath redder lava. As reported in [3] the older lavas in Mare Tranquillitatis are characterized by a lower Titanium content (reddish in colour ratio), while the youngest lavas erupted in the region are blue (higher Titanium content). New ground-based CCD imagery is currently being studied to examine domes in the Arago region, not identified or well-resolved in Lunar Orbiter photographs and Apollo imagery (see Fig. 2).

Recently this region has been monitored by the GLR group. A low, previously unreported dome has been observed in this area, near Arago Alpha. It is situated at longitude +21.96° and latitude +7.66°. It has formed in basalts of relatively high  $\text{TiO}_2$  abundance (see Fig.1). For each of the observations, the local lunar altitude of the Sun and the Sun's selenographic colongitude were calculated using the Lunar Observer's Toolkit by H. D. Jamieson.

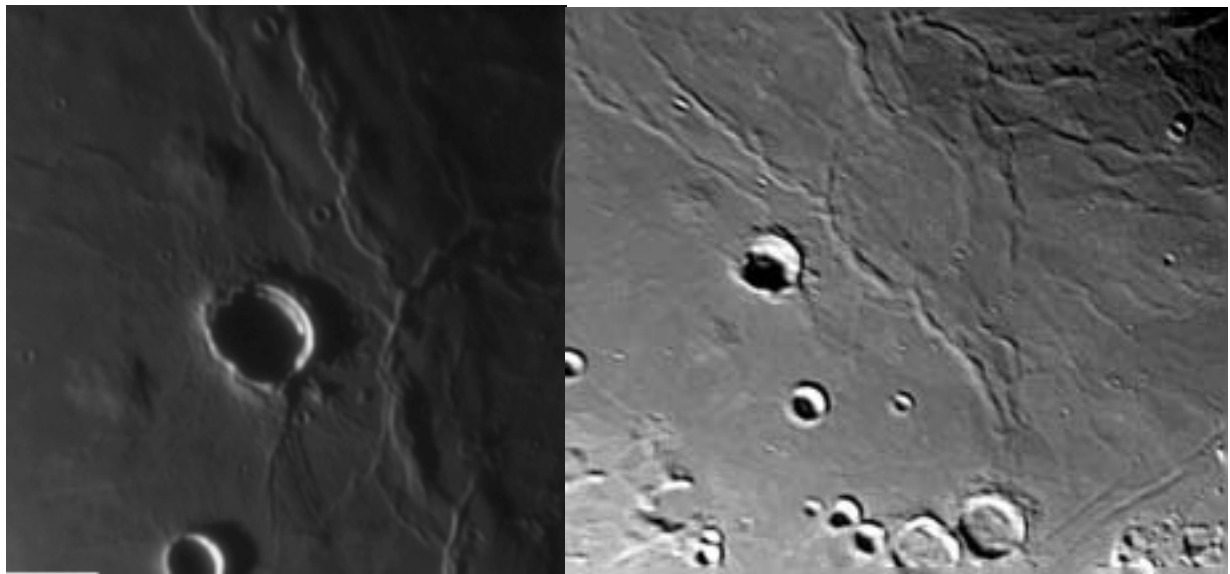


**FIGURE 3 (Zac Pujic)**

**FIGURE 4 (Jim Phillips)**

**(See text for details)**

Fig. 3 displays the dome, which was detected by Zac Pujic on May 28, 2005, at 18:10 UT, using a 310 mm Newtonian f/28, a Wratten 25A filter, and a Philips ToUCam CCD webcam (solar altitude =  $3.86^\circ$ , colongitude =  $154.30^\circ$ ). The image is oriented with north at the top and west (IAU) to the left. Another image (Fig. 4), was taken by Jim Phillips on May 28, 2005, at 09:58 UT, using a TMB 8" f/9 apochromatic refractor and an Atik B&W CCD camera (solar altitude =  $7.96^\circ$ , colongitude =  $150.16^\circ$ ).



**FIGURE 5 (Paolo Lazzarotti)**

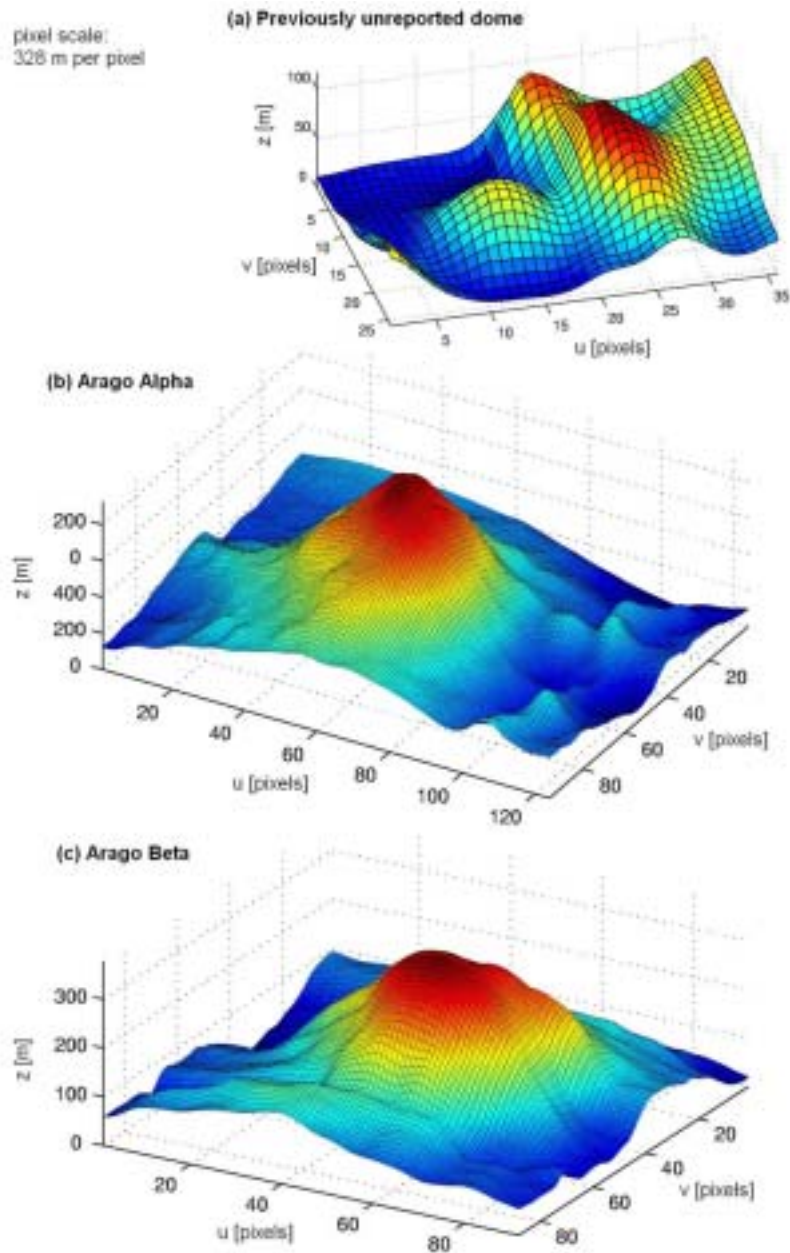
**FIGURE 6 (Christian Wohler)**

**(See text for details)**

The image shown in Fig. 5 was taken by Paolo Lazzarotti on January 01, 2005, at 01:49 UT, using a 250 mm Newtonian telescope and a Lumenera LU075M CCD camera (solar altitude =  $2.68^\circ$ , colongitude =  $155.13^\circ$ ). An older image in which the dome is apparent (Fig. 6) was taken by Christian Wöhler on July 19, 2003, at 02:40 UT, using a 200 mm Newtonian telescope and a Philips ToUCam CCD camera (solar altitude =  $7.74^\circ$ , colongitude =  $150.45^\circ$ ). The dome had not been noticed at that time.



The described dome requires a specific solar altitude to be observed clearly. Preliminary estimations indicate a diameter (E-W direction) of  $(5.6 \pm 0.30)$  km and a rather low slope; moreover, no black shadow is cast by the dome even under low solar altitude (see Fig. 5), which confirms its low relief character. As a note of interest, the Apollo imagery and Lunar Orbiter frame, taken under higher solar altitude, do not show this dome.



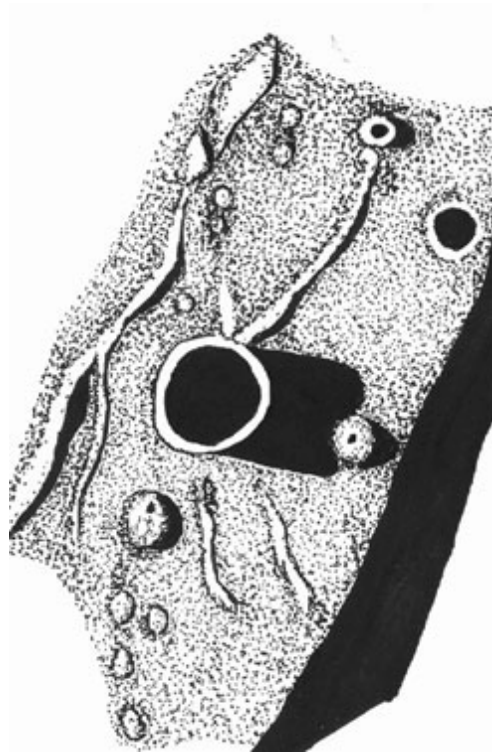
**FIGURE 7** (See text for details)

The height was obtained by determining elevation differences between the summit of the dome and its surrounding on the corresponding 3D profiles derived by photogrammetry and shape from shading analysis [4]. The dome height was measured in the image shown in Fig. 5 as  $(45 \pm 10)$  m, yielding a slope of  $0.88^\circ \pm 0.3^\circ$ . Fig. 7 shows the 3D reconstruction results.

**TABLE 1: Properties of the dome located at longitude +21.96° and latitude +7.66°, measured in Fig. 4.**

Dome	Longitude Latitude	Diameter (km)	Height (m)	Slope (°)	Westfall Classification
Dome 1	+21.96° +7.66°	5.6±0.30	45±10	0.88±0.30	DW/2a/5f/0
Arago Alpha	+21.70° +7.56°	25.4±0.30	330±30	1.5±0.3	DW/3d/5i/7p8p9p
Arago Beta	+20.07° +6.24°	23.6±0.30	270±30	1.3±0.3	DW/3d/5i/7p8p9p

In Table 1 we categorize the examined dome using the Westfall scheme [5]. Moreover, this dome is presumably of class IV, using the classification scheme for lunar mare domes introduced by Head and Gifford [6]. However, the dome looks more like a structure which is separate from the nearby ridge, such that it might also be a separate shallow class III dome. In Table 1 we also report the height and slope measured for Arago Alpha and Beta. Interestingly the obtained results strongly suggest that previous estimates of the Arago Alpha and Beta heights, given by Brungart [7], are wrong. Brungart compiled a catalogue of 261 domes reporting their coordinates, diameters, heights, slopes, and morphological characteristics. For Arago Alpha and Beta he reports under the entries 3 and 4 a height of 700 m and 800 m with an average slope of 5.5° and 6.0°, respectively. Our results indicate a lower slope of 1.5°±0.3° and 1.3°±0.3°, respectively.



**FIGURE 8 (Raffaello Lena)**  
(See text for details)



The height of Arago Alpha was measured in the image shown in Fig. 5 as (330±30) m. The height of Arago Alpha was also computed from a visual observation by Raffaello Lena (Fig. 8).

This observation was carried out on November 10, 2002, at 18:00 UT using a 100 mm f/15 refractor (solar altitude = 1.48°, colongitude = 339.89°). According to Ashbrook [8], the average slope of the dome flank is equal to the solar altitude when  $x = 0.25$ , where  $x$  is the fraction of the dome diameter that is covered by black shadow. A hemispherical shape of the dome is assumed. The height  $H$  of the dome was then calculated by  $H = r (\tan s)$ , where  $r$  is the radius of the dome and  $(\tan s)$  the tangent of the average slope angle when the dome is  $\frac{1}{4}$  covered by black shadow (as it is the case here). It turns out that the summit of Arago Alpha is 310 m higher than the surrounding plain, with an average slope of 1.48°. This result is in clear agreement with the photoclinometry and shape from shading analysis.

Any observations that readers can make about the previously unreported dome described here will be gratefully received for our GLR survey ([lena@glrgroup.org](mailto:lena@glrgroup.org)).

Future observing schedules of the GLR group are being planned to investigate different lunar domes on a case by case basis. It is hoped that by eliminating many of the less reliable measurements and reports, we will be left with a core set of observations upon which more reliable statistical analysis can be performed.

## **References:**

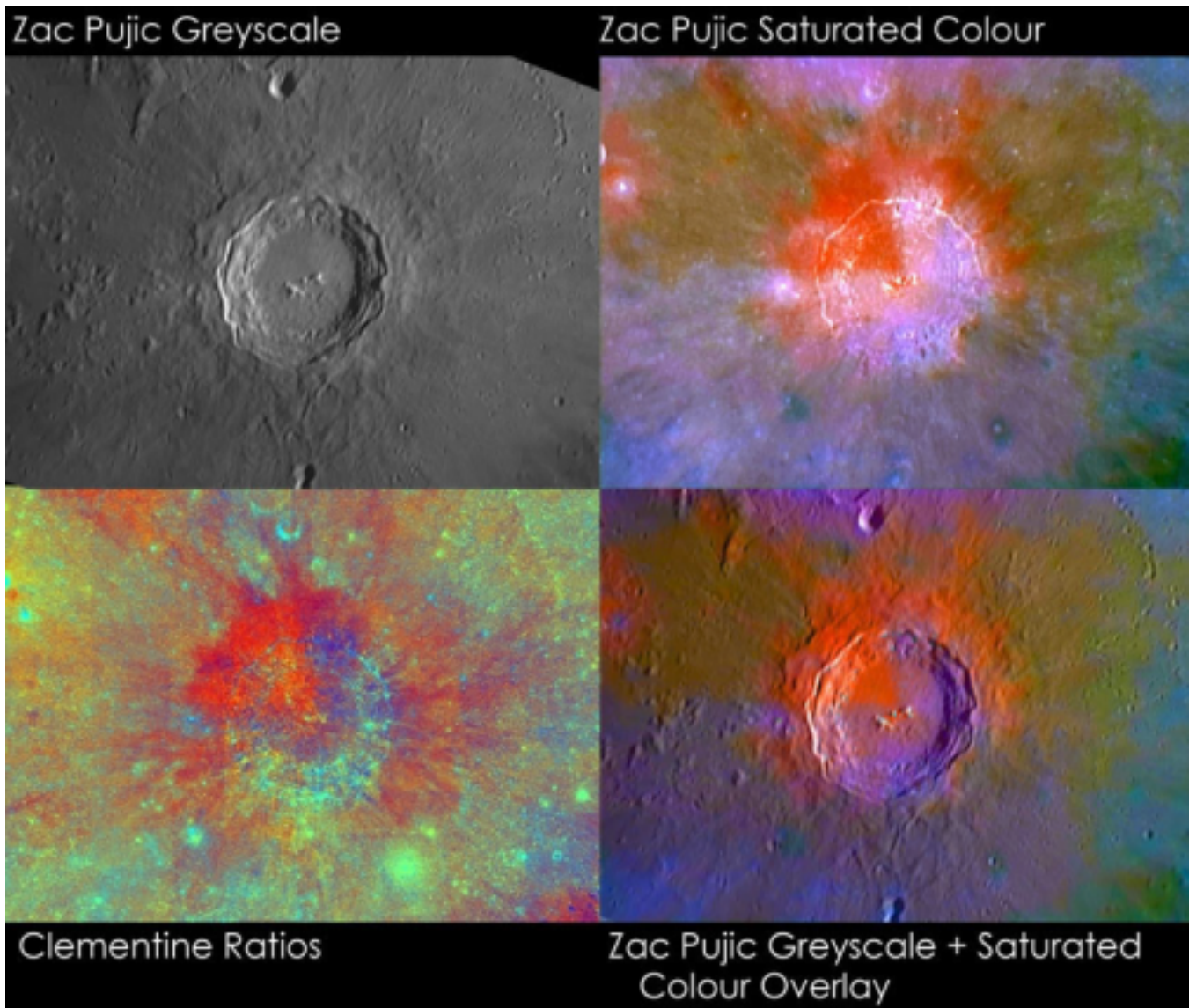
- [1] D. Wilhems, "The geologic history of the Moon", USGS Prof. Paper 1348, 1987
- [2] C. Wood, "The Modern Moon, A Personal View", Sky Publishing, 2003
- [3] D. Rajmon, P. Spudis, "Distribution and stratigraphy of basaltic units in Mare Tranquillitatis, Proc. Lun. Plan. Sci. Conf. XXXII, paper 2156, 2001.
- [4] B. K. P. Horn, Height and Gradient from Shading, MIT technical report, AI memo no. 1105A, 1989.  
<http://people.csail.mit.edu/people/bkph/AIM/AIM-1105A-TEX.pdf>
- [5] J. Westfall; "A Generic Classification of Lunar Domes", J.A.L.P.O., July 1964, vol. 18, no. 1-2, pp. 15-20.
- [6] J. W. Head, A. Gifford; "Lunar Domes: Classification and Modes of Origin", Moon and Planets, 1980, vol. 22, pp. 235-258.
- [7] D. L. Brungart, Airforce Institute of Technology Wright Patterson Air Force Base, Ohio, 15 July 1964.
- [8] J. Ashbrook, JALPO, vol. 15, no. 1-2, 1961.

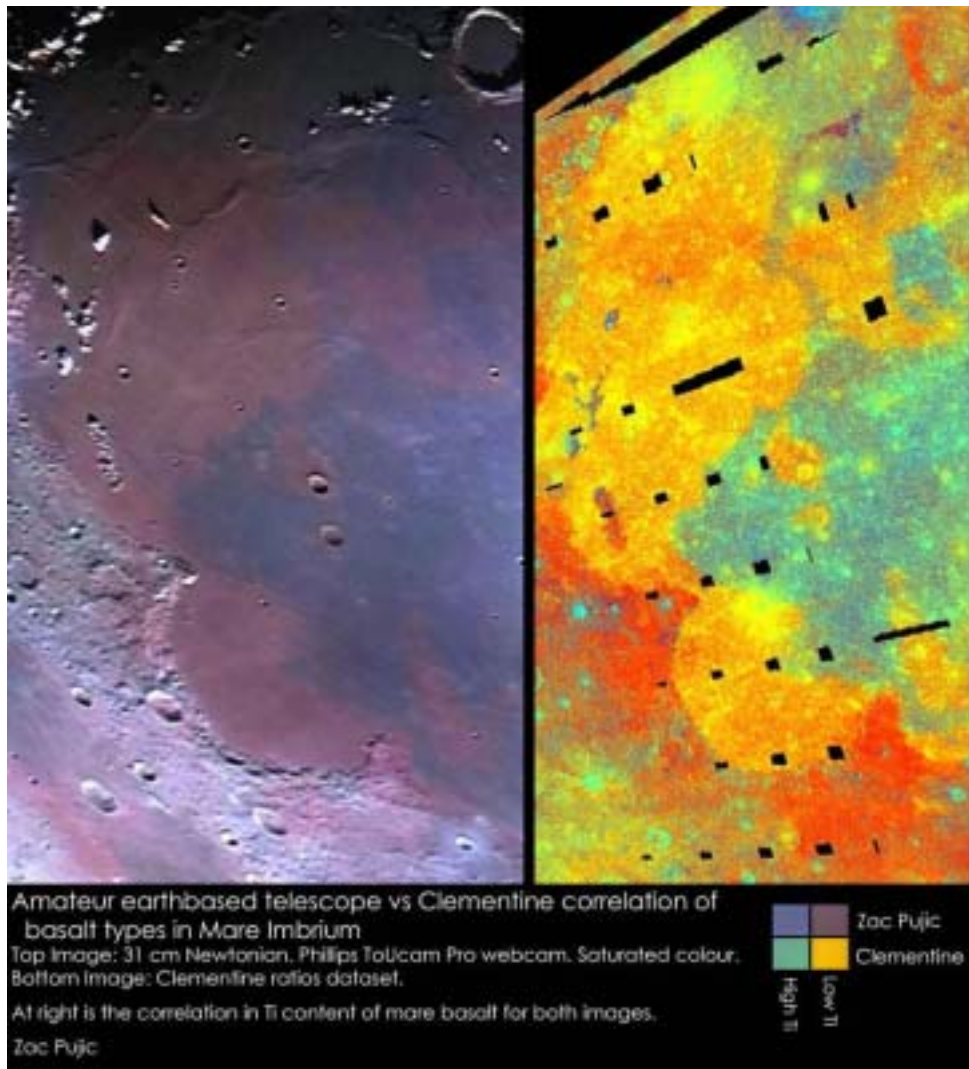
# SATURATED COLOR IMAGES

By Zac Pujic

I obtained these images of the Moon in 2005, with a 31-cm Newtonian (12 inches) at between f/5.75-f/28 and a Phillips ToUCam Pro webcam. I used eyepiece projection with a 9-mm Nagler eyepiece (for f/28) and a True Technology IR blocking filter. After acquiring the AVI using QuickFocus, I used Registax to select and stack frames from the AVI. I used the wavelet filters in Registax, and unsharp mask filters in Photoshop, to sharpen the image and to increase the colour saturation.

The colours arise from compositional differences in the Moons rocks. In general, blue indicates Titanium-rich rock while red indicates titanium-poor rock. However other processes, including maturation of the regolith by micrometeorites can also cause reddening (such as in the highlands which are generally older than the mare).





## FOCUS ON: MARE CRISIUM

### CALL FOR OBSERVATIONS

*Focus On* will be a regular series of articles based on observations received for a specific feature or group of features. The subject of the first installment (**September 2005**) is **Mare Crisium**. Observations of all kinds (electronic or film based images, sketches, 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 images to one of the addresses shown in the banner on Page One.

# **LUNAR TOPOGRAPHICAL STUDIES**

Acting Coordinator - William M. Dembowski, FRAS

[Dembowski@zone-vx.com](mailto:Dembowski@zone-vx.com)

## **OBSERVATIONS RECEIVED**

DANIEL DEL VALLE - AGUADILLA, PUERTO RICO

Sketches of Dome near Milichius, Triesnecker, Quartet of craters on Oceanus Procellarum

ACHILLE GIARDANO - NAPLES, ITALY

Digital images of Struve, Marius, Herschel, Riccioli & Grimaldi

HOWARD ESKILDSEN - OCALA, FLORIDA, USA

Digital image of Mare Crisium & Mare Fecunditatis

PAOLO LAZZAROTTI - Massa, ITALY

Digital images of Doppelmayer, Gassendi, Letronne, Prinz, Torricelli, Kepler

RAFFAELLO LENA - ROME, ITALY

Digital images of Schiller & Schickard, South Polar Region

YENAL OGMEN - LEFKONIKO, CYPRUS

RayMaps of Messier, Menelaus

ZAC PUJIC - BRISBANE, AUSTRALIA

CCD images of Cone at Lassell D, Area near Lassell, Dome near Hortensius, Gauss (2)

GERARDO SBARUFATTI - CASSELLE LANDI (LODI), ITALY

Digital image of Petavius. Deslisle

MARCO SELLINI - ITALY

Digital images of Mare Humorum, Philolaus & Anaxagoras, Harpalus & Bianchini, Mare Frigoris

ROBERT WLODARCZYK - CZESTOCHOWA, POLAND

Sketches of Reiner Gamma, Rays of Messier A

**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)**



## RECENT TOPOGRAPHICAL OBSERVATIONS

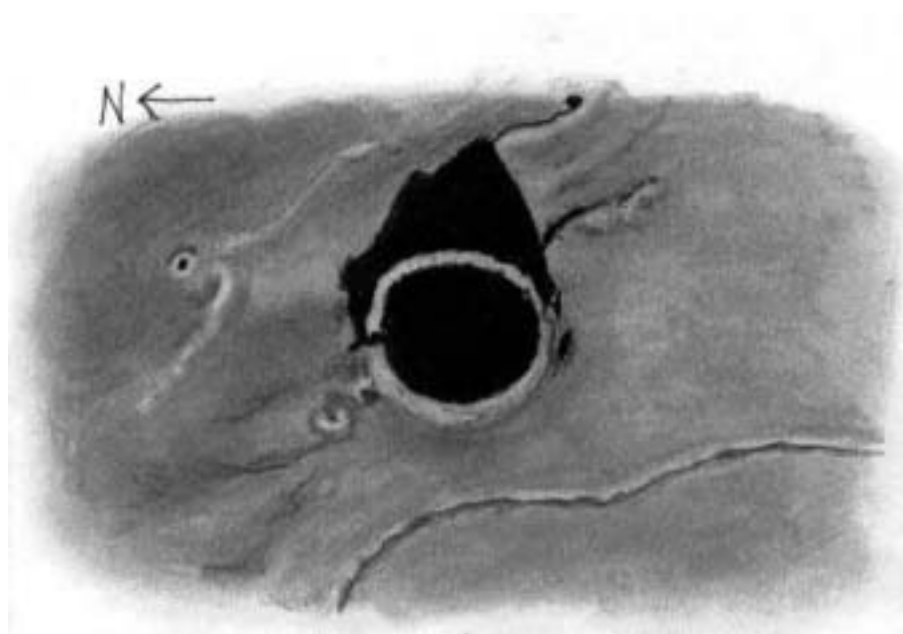


### MARIUS & SURROUNDINGS

Digital image by Achille Giardino - Naples, Italy

May 20, 2005 - 21:25 UT

ETX 125 - 2x Barlow - Philips Toucam Pro



### TRIESNECKER

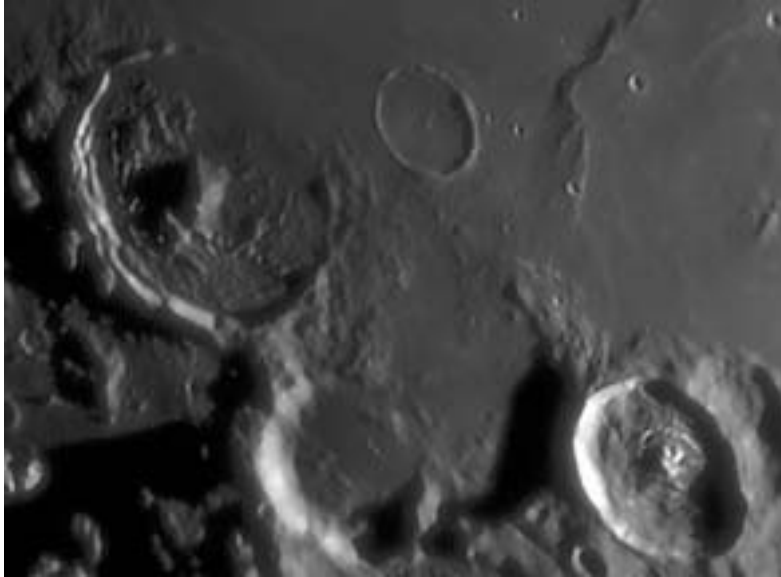
Sketch by Daniel del Valle - Aguadilla, Puerto Rico

July 14, 2005 - 00:02 to 00:25 UT

4.7 inch Refractor - 222x



## **RECENT TOPOGRAPHICAL OBSERVATIONS**



### **DOPPELMAYER, LEE, & VITELLO**

**Digital image by Paolo Lazzarotti - Massa, Italy**

**May 19, 2005 - 19:28 UT**

**178mm Meade Mak-Cass - Lumenera LUO75M Camera**

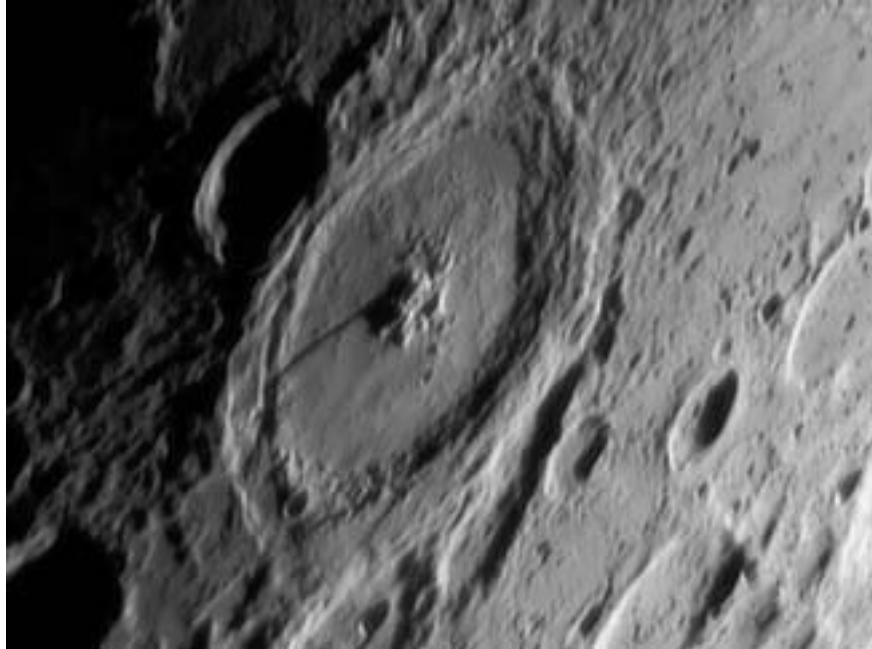


### **SOUTH POLAR REGION**

**Digital image by Raffaello Lena - Rome, Italy**

**10cm Refractor - Digicam**

## RECENT TOPOGRAPHICAL OBSERVATIONS



### PETAVIUS

**Digital image by Gerardi Sbarufatti - Casselle Landi, Italy  
March 13, 2005 - 17:37 UT  
8 inch SCT - Philips Vesta Pro**



### PHILOLAUS & ANAXAGORAS

**Digital image by Marco Sellini - Italy  
May 19, 2005 - 21:39 UT - 180mm Mak**

# **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:

## **A FUNDAMENTAL SURVEY OF THE MOON**

**(McGraw-Hill Series in Undergraduate Astronomy)**

**Ralph B. Baldwin**

**McGraw-Hill Inc. – 1965 – Various Pages**

About one-fifth of the postmare Class 1 craters are surrounded by white haloes and streaks called *rays*. Although many strange theories have been advanced to account for these rays, it is generally considered that they are composed of lunar rock which had been pulverized and broadcast by the energies released at the birth of the crater. It is well known that when ordinary rocks are finely ground, they become much whiter than the parent materials. Presumably, lunar rocks would have the same characteristics. At the Arizona Meteorite Crater, this rock flour forms an appreciable fraction of all material ejected from the crater. On the moon, the ray craters often have a small nimbus of light material surrounding the pit and then discrete rays extending outward. The diameter of the ray pattern averages about 12 times the diameter of the crater.

Even though a given ray from a large crater extends in a narrow path for some hundreds of miles, the ray is not a continuous path of dust. Close examination shows that the ray is made up of a large number of discrete elongated patches. The explosion which formed the crater must have pulverized much rock and sent large gouts of dust along similar low-angle paths so that the envelope which outlines a given ray encloses a series of elliptical patches pointing back toward the crater, each patch marking the impact region of a distinct portion of the ejected material.

Along with the fine rock-flour patches, there are often found secondary on-the-ray craters formed from the low-velocity impacts of solid material shot out of the crater at the same time as the dust. At large craters, such as Copernicus, these secondary craters are numerous and are often shallow with very low rims, and they may be quite elongated. On the average, they point back to the main crater, but individual pits may occur in any orientation. The Ranger photographs show many small, on-the-ray craters.

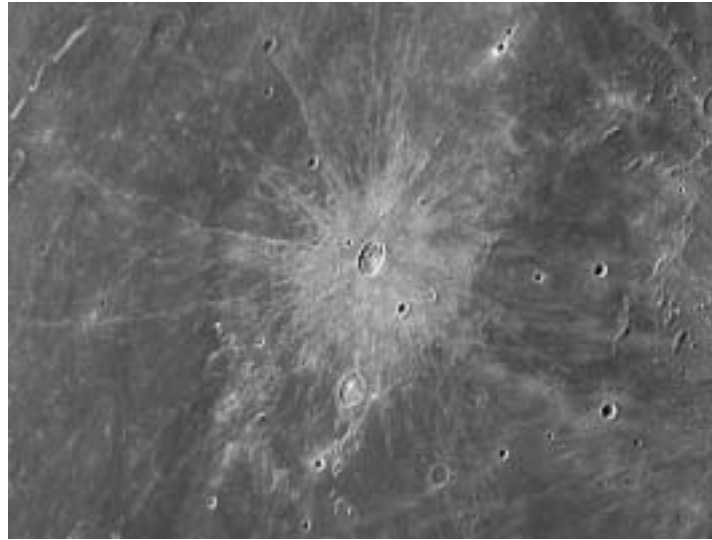
\* \* \* \* \*

The photographs taken at the higher elevations are quite similar to those made through earthly telescopes. As the Ranger VII approached the surface, smaller and smaller craters appeared. Formations which showed as tiny white spots enlarged into clear and sharp ray craters.

At an elevation of 235 miles, certain broad diffuse white patches began to be resolved into groupings of small ill-defined craters on a white background. Probably the white patches are portions of rays from the giant impact craters Tycho and Copernicus. A few small linear markings can be seen.

By the time the Ranger VII had descended to 85 miles, the linear features were clearly shown to be small wrinkle ridges. Here and there is an elongated shallow depression which is approximately aligned with either Tycho or Copernicus. The smaller craters are obviously concentrated on the white patches. This association of craters and rays is reminiscent of the normal photographs of the Copernicus ray system, where rather large numbers of on-the-ray craters are known. Along with the pulverized material, there must have been ejected from Copernicus a considerable number of discrete lumps of matter.

## RECENT RAY OBSERVATIONS



### KEPLER

**Digital image by Paolo Lazzarotti - Giogo, Italy  
June 29, 2005 - 03:09 UT  
178mm Mak-Cass - Lumenera LUO75M Camera**



### MESSIER RAY SYSTEM

**Raymap by Yenal Ogmen - Lefkoniko, Cyprus  
July 17, 2005 - 19:06 to 19:21 UT  
Meade 5 inch ETX - 73x**

# LUNAR TRANSIENT PHENOMENA

Coordinator – Dr. Anthony Cook – [acc@cs.nott.ac.uk](mailto:acc@cs.nott.ac.uk)

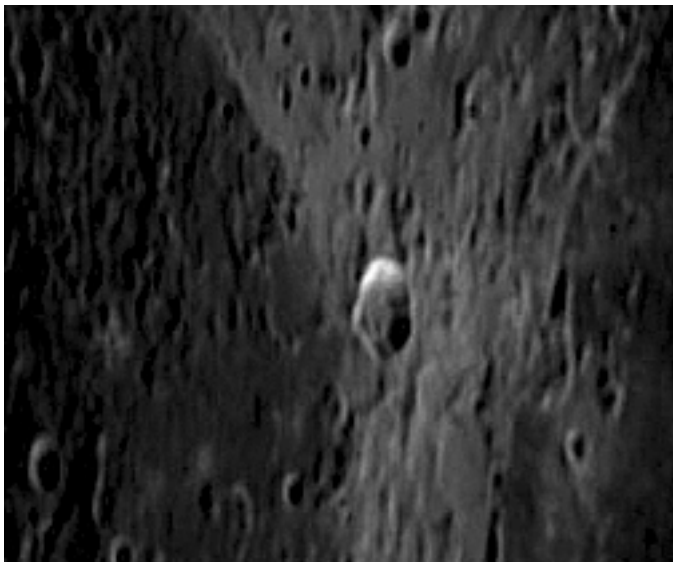
Assistant Coordinator – David O. Darling – [DOD121252@AOL.COM](mailto:DOD121252@AOL.COM)

## LTP NEWSLETTER - AUGUST 2005

Dr. Anthony Cook - Coordinator

Observations for June were received from: Jay Albert (Lakeworth, USA), Clive Brook (UK), Marie Cook (Mundesley, UK), Jolio Lobo (Sao Paulo, Brazil), Gerald North (Narborough, UK), Brendan Shaw (UK), and Don Spain (Louisville, USA). These observations totaled 334 minutes. I also received some interesting ideas about LTP from John Hauk (USA) that I will go into in more detail next month

One of the observations received was an interesting report from Jolio Lobo of Sao Paulo, Brazil, concerning a day light LTP in Proclus. Much of the following has been obtained by an email exchange with Jolio via his daughter acting as a translator. On 2005 Jun 13 an attempt was being made to observe a lunar occultation of Jupiter using a 500mm telescope (40mm eyepiece) and 110mm refractor finder (40mm eyepiece) at the Municipal Observatory of Campinas Jean Nicolini, in Sao Paulo, Brazil. Unfortunately the assumed date of the occultation was in error as it was actually in July, not June. However it was noticed that there was a: *“Glow and reddishness (pink ring) in the crater Proclus on the illuminated part of the moon. We observed an intense brightness all over the crater Proclus comparative to a first magnitude star and much brighter than the crater Aristarchus. We also detected the presence of a slight ring on the limb of the same crater. Both of the events were observed from 16 UT. From 16.30 UT the brightness was much less and the pink ring was still Visible At 17:10 UT the brightness of the crater Proclus returned to its normal scale.”* Subsequent emails clarified some aspects of the observation: a) it was the most shining object on the moon, b) the brightness was all over the crater (i.e. 100% illuminated) like an extremely bright and shiny cloud, c) a thin “rosaceous” ring was observed in the crater, d) the effect was noted in the finder scope, but not in the main telescope as the larger aperture was suffering from strong turbulence resulting in poorer definition.



**Figure 1**

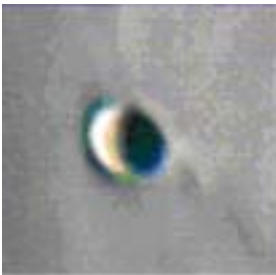
**Image of Proclus by Brendan Shaw taken on 2005 Jun 13 showing everything is normal in appearance at 21:37 UT.**



Brendan Shaw (UK) although not realizing that there was a LTP in Proclus (as we were not alerted at this stage), obtained an image of the crater almost 4.5 hours later as can be seen in Figure 1 (N at the top). Although the northern rim is very bright, this is really quite a normal appearance at this stage in the lunation as shown in images of the area obtained in February. The image differs from the visual report from Jolio Lobo where he stated that the “whole of Proclus” was very bright.

So what could the Jolio Lobo observation be – the following are suggestions only and so not necessarily correct? The rose tinged ring might be complimentary colors of the bright part of the crater seen against the blue daylight sky? Atmospheric spurious color is doubtful as the Moon was at least 40 deg above the horizon at the time although it might also be a chromatic effect in the optical system somewhere? Figure 1 differs from the visual report from Jolio Lobo where he stated that the “whole of Proclus” was very bright. Therefore the discrepancy is rather difficult to explain? Incidentally Jolio says that he is a lunar observer with 28 years of experience and was trained by Jean Nicolini and Nelson Travinik. I think that in future if any observer out there sees something out of the ordinary, they should do two things: 1) alert the BAA/ALPO LTP network as soon as possible, and 2) please take a CCD image/video or at least make a sketch so that we can compare to future observations. Anyway for now the Jun 13<sup>th</sup> report has been entered into the database so that we can try to re-observe under identical illumination/libration to double check on normal appearance just in case it is related to the sun falling on slopes (unlikely).

Lastly Brendan Shaw had a go at imaging Bessel on 2005 Jun 13 to match the illumination conditions to within +/-0.5 deg of illumination of Denett’s observation of the crater in 1877 Jun 17 UT 22:30 where the observer thought that he could detect a minute point of light shining out of the dark crater? On the 2005 occasion, no minute point was seen shining out of the shadow of Bessel, so there remains the possibility that 1877 observation was a genuine LTP?



**Figure 2**  
**Bessel on 2005 Jun 13 UT 20:41 by Brendan Shaw corresponding to the same illumination as Denett’s LTP observation from 128 years earlier!**

Predictions, including the more numerous illumination only events can be found on the following web site: <http://www.cs.nott.ac.uk/~acc/Lunar/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! I am also on the Internet telephone service Skype if any of you would rather receive alerts on this?

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### **SMART-1**

SMART-1 Homepage: <http://smart.esa.int/science-e/www/area/index.cfm?fareaid=10>

Tribute to Cassini [http://www.esa.int/SPECIALS/SMART-1/SEM4GN1DU8E\\_0.html](http://www.esa.int/SPECIALS/SMART-1/SEM4GN1DU8E_0.html)

Hadley Rille [http://www.esa.int/esaCP/SEMB7A808BE\\_index\\_0.html](http://www.esa.int/esaCP/SEMB7A808BE_index_0.html)

### **CLEMENTINE**

<http://www.lpi.usra.edu/expmoon/clementine/clementine.html>

### **LUNAR PROSPECTOR**

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