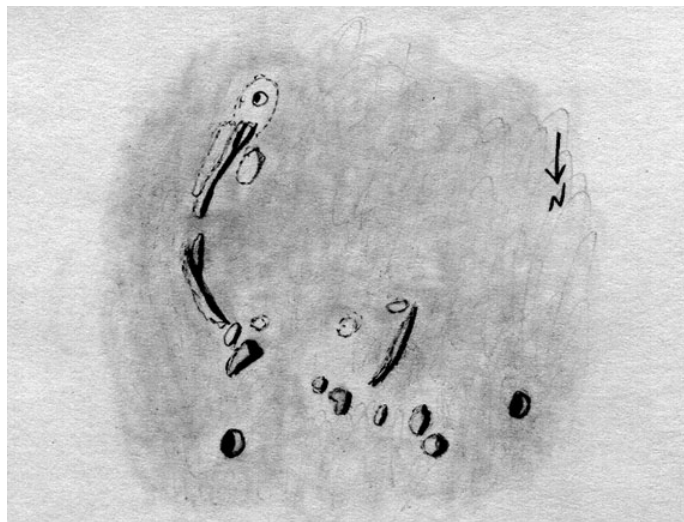




THE LUNAR OBSERVER

A PUBLICATION OF THE LUNAR SECTION OF
THE ASSOCIATION OF LUNAR AND PLANETARY OBSERVERS
EDITED BY: William M. Dembowski, F.R.A.S. - Elton Moonshine Observatory
219 Old Bedford Pike (Elton) - Windber, PA 15963 - dembowski@zone-vx.com

FEATURE OF THE MONTH - DEC. 2004



MAESTLIN

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

June 29, 2004 - 3:04 to 3:26 UT

15cm Newtonian - 170x - Seeing 5-6/10

I sketched this crater and vicinity on the evening of June 28/29, 2004 after the moon occulted iota Librae. This crater lies in western Oceanus Procellarum west of Encke. Maestlin itself is the modest crater toward the northeast on the sketch. The similar crater Maestlin B lies farther to the west. This sketch is actually dominated by the ruined crater Maestlin R. This feature has partial rims to the east and northwest, and not much else. A small pit with a halo lies just south of the remaining east rim. There are no other intact craters on this sketch. The low hill just inside the rim of Maestlin R near the small pit may be Maestlin iota, according to the Lunar Quadrant Map. Maestlin lambda is the large peak nearest to Maestlin itself, while Maestlin mu and nu are the two large peaks nearest to Maestlin H. I saw three tiny spots in the northern part of Maestlin R; none had any detectable shadow. There was another bright area immediately adjacent to the southernmost portion of Maestlin R. The two parts of Maestlin R's east rim appeared forked at their southern ends. There were a few other small peaks which may or may not be connected with Maestlin R.

EDITOR: Maestlin and environs can be found on Map 29 of Rukl's Atlas of the Moon.

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 (2), Menelaus (1), Proclus (2), Kepler (1), Aristarchus (1)

Written account of Menelaus ray (1)

STEVE BOINT - SOUIX FALLS, SOUTH DAKOTA, USA

Digital images of Wrinkles at Marius, Wrinkles at Montes Spitzbergen, Wrinkles north of Copernicus

ED CRANDALL - WINSTON-SALEM, NORTH CAROLINA, USA

Digital images of Janssen (2), Herodotus & Aristarchus

HOWARD ESKILDSEN - OCALA, FLORIDA, USA

Digital images of total lunar eclipse (58)

ROBERT H. HAYS, JR. - WORTH, ILLINOIS, USA

Sketches of Maestlin, Reiner Gamma, Lubiniezky

40 timings of stars occulted by the Moon

K. C. PAU - HONG KONG, CHINA

Digital image of Dembowski

ALEXANDER VANDENBOHEDE - GHENT, BELGIUM

Digital images of Mare Orientale, Tycho

ROBERT WLODARCZYK - CZESTOCHOWA, POLAND

Sketches of Proclus ray system, J.Herschel

Observations submitted should include the following:

Name and location of observer

Name of feature

Date and time (UT) of observation

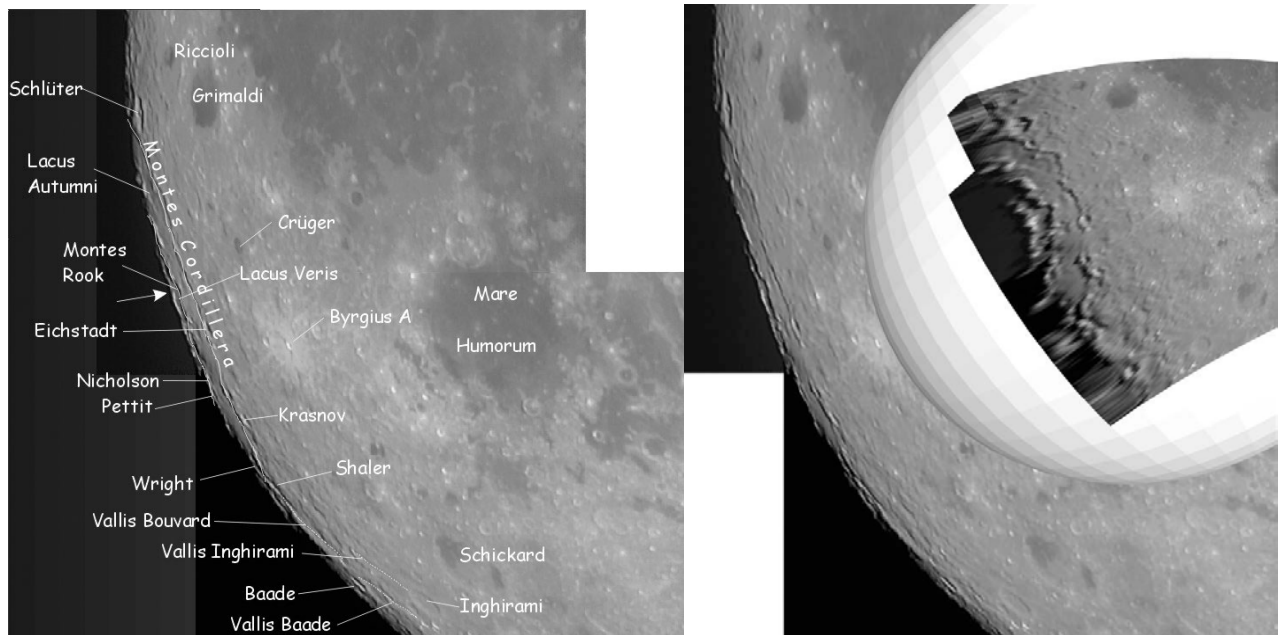
Size and type of telescope used

Magnification (for sketches)

Medium employed (for photos and electronic images)

SPHERICAL PROJECTION OF LUNAR FEATURES WITH COMMERCIAL SOFTWARE Alexander Vandenbohede - Ghent, Belgium

With Photoshop it is possible to put your picture on a sphere which can be tilted. So you tilt the sphere as if you are flying around the Moon. This gives very interesting views of the Moon, as for instance here of the Orientale impact basin which was made on 04-04-2004 at 2200 UT with my 20 cm F6 Dobson. By tilting the picture as if we are just above the basin it is possible to see it in another perspective. The ring structures of Montes Cordillera and the inner and outer Montes Rook are obvious. I also have the impression that there is another ring in the vicinity of Baade and halfway between Crüger and Eichstadt.

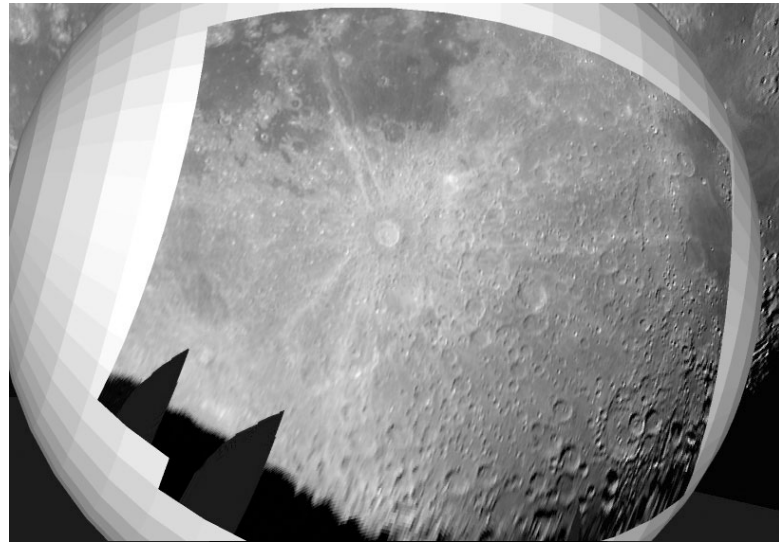
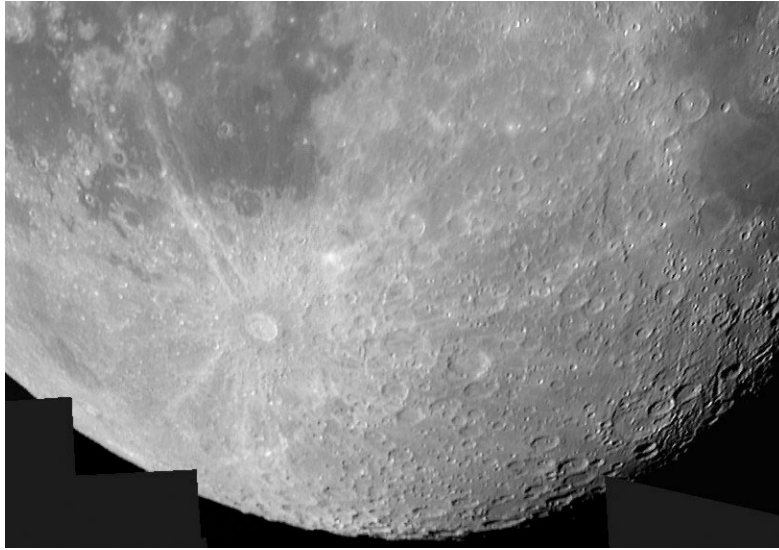


With Photoshop the function 3D-transform is used (menu filter, render). It is thus possible to use a picture of a crater on the Moon's limb and to calculate how this crater would be viewed if it were on the central part of the Moon's disk. It is done very easily and gives an exciting view of well known limb features. I got the technique from lunar observer J-P [Metsavainio](http://www.lpod.org/archive/2004/06/LPOD-2004-06-21.htm) who submitted an example on the Lunar Picture Of the Day website. See: <http://www.lpod.org/archive/2004/06/LPOD-2004-06-21.htm>

I think it is also interesting to look at pictures of ray systems in this way because it shows the structures from another perspective. I've included another example of crater Tycho with its ray system. The picture was taken on 08/04/2004 at 500 UT using my 20 cm F6 Dobson and a webcam in its prime focus. The end result is a mosaic of different images.

The ray system with its well-known features can be seen. Then I recalculated the image in Photoshop as if Tycho would be central on the Moon's disk. First of all, the zone towards the southwest where no major rays are present, can be well seen. This zone is linedated by the two big rays going towards Kies and the one going towards Longomontanus. The big ray towards Mare Nectaris is more or less opposite to the zone where no important rays are visible. So it seems that the three most impressive rays (counting the two towards Kies as one) are Y-shaped and their positions are related to the shadow zone without

major rays. Also the dark zone, consisting of impact melt, immediately surrounding Tycho is asymmetrical. I think this is a beautiful example of the resulting ejecta blanket of an oblique impact. This stuff is all very well known but Photoshop gives it another dimension.

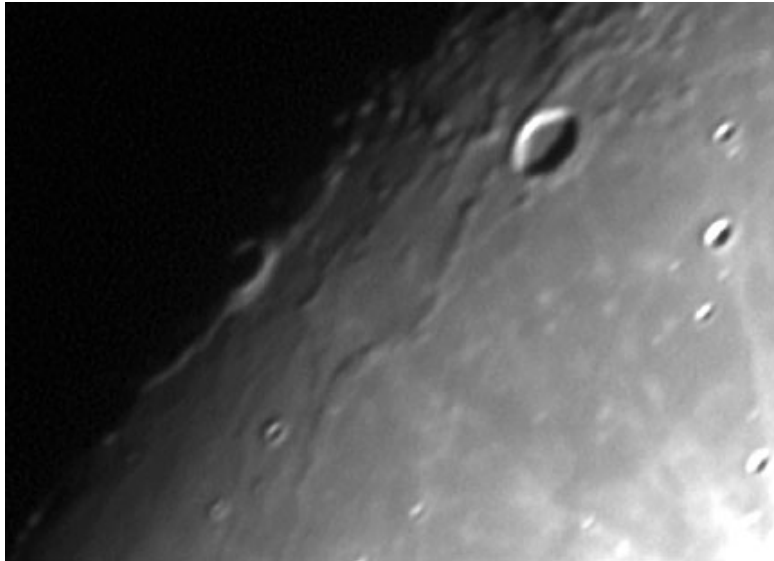


ROBERT GARFINKLE IN ASTRONOMY MAGAZINE

Robert Garfinkle, ALPO member and Fellow of the Royal Astronomical Society, has a new article in the December issue of *Astronomy Magazine*.

“*Polar Moon*” (pages 84-89) is about the Sir John Franklin expedition to locate a Northwest Passage through the Arctic seas in 1845. The expedition was a total loss, but six men associated with Franklin or the attempts to rescue him and his men have been honored with lunar features named for them. The article recounts the expedition, the rescue attempts, and what you can see when you observe these lunar features.

RECENT TOPOGRAPHICAL OBSERVATIONS

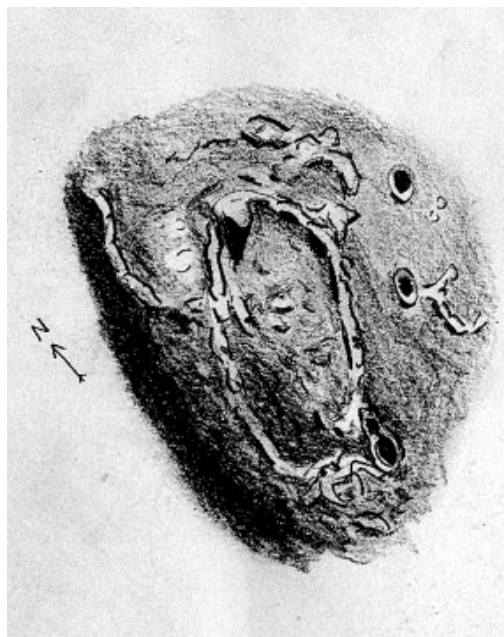


LOW PROFILE FEATURES NEAR MARIUS

Digital image by Steve Boint - Souix Falls, South Dakota, USA

July 28, 2004 - 22:51 UT

10" Newtonian - Philips Toucam Pro



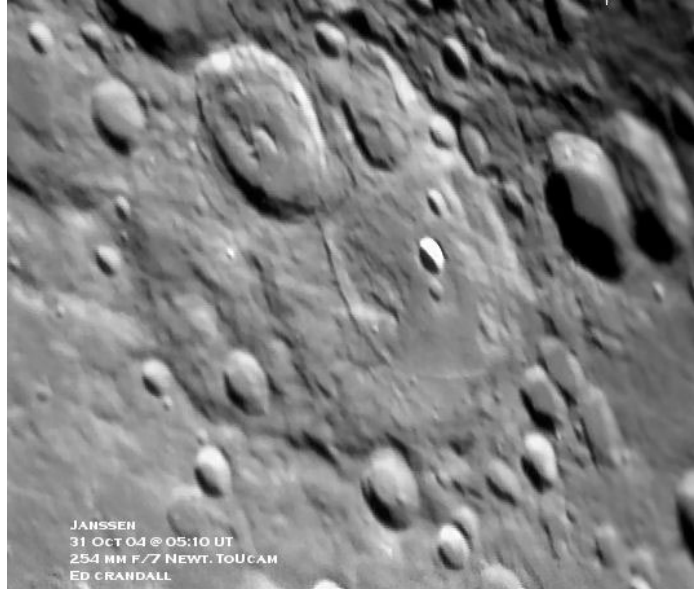
J. HERSCHEL

Sketch by Robert Włodarczyk - Czestochowa, Poland

October 24, 2004 - 20:45 UT

18cm Newtonian - 150x - Seeing: Ant.II

RECENT TOPOGRAPHICAL OBSERVATIONS



JANSSEN

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

October 31, 2004 - 05:10 UT

254mm Newtonian - Philips Toucam



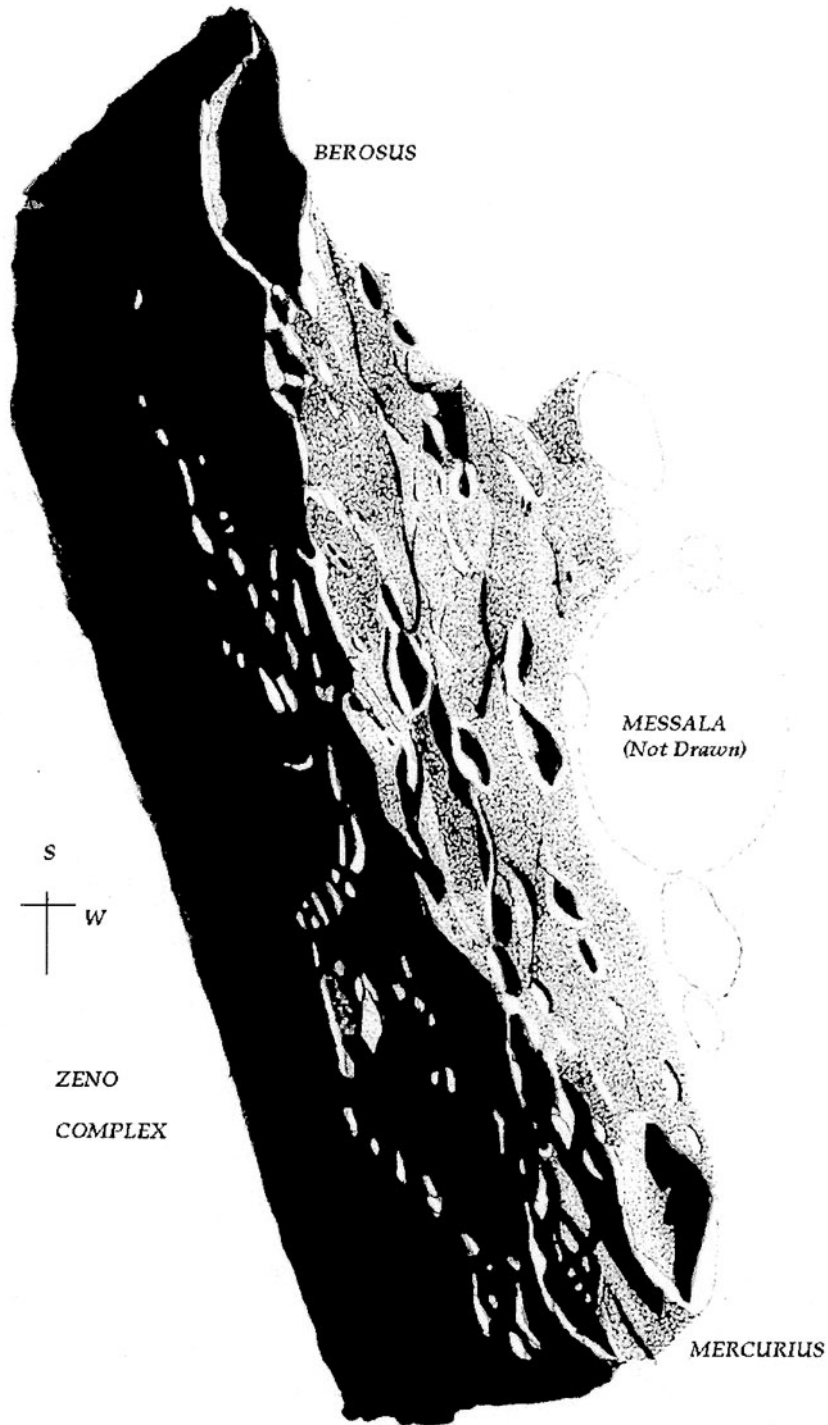
GOLDSCHMIDT

Digital image by Daniel del Valle - Aguadilla, Puerto Rico

August 24, 2004 - 28:30 UT

8 inch SCT - Logitech QuickCam

RECENT TOPOGRAPHICAL OBSERVATIONS



REGION EAST OF MESSALA

Sketch and text (Page 7) by Colin Ebdon - Colchester, Essex, England
August 31, 2004 - 22:45 to 00:30 UT (Sept. 1)
7 inch Maksutov-Cassegrain - 225x - Seeing: Ant.III

Observing notes for region East of Messala **Colin Ebdon - Colchester, Essex, England**

This observation was undertaken primarily to follow up previous examination of the region East of Messala, with particular reference to an extended linear feature running South from the Western edge of the Zeno complex. At low powers this line seems to extend onwards for the whole distance to the crater Berosus. and in Plate 16 of Rukl's Atlas is exactly coincident with the line marking longitude 68 degrees East.

The linear feature commences at an unnamed shallow crater immediately South of the crater A, itself just South-west of the Zeno complex. Between here and the crater D it seems to comprise of a definite rille about 50 km in length. The Eastern rim of D seems to lie on the same line, and from this point the linear feature continues as a fairly sharply defined ridge up to the Western rim of the crater G. The 'ridge' then continues onwards to the Western edge of the crater Berosus, but along this length it seems to have a softer more rounded edge which is more reminiscent of the edge of a lava field rather than a low scarp.

In conclusion. there is no obvious reason to think that the linear feature in its entirety is caused by anything other than a line of sight effect, but it does seem to consist primarily of two separate features which have the appearance of being joined into one by the crater G, which acts as the link. Apart from Zeno and Messala themselves, the entire region seems to be somewhat neglected, but is worthy of examination in greater detail. The same can be said of the region beyond Mercurius, up to Endymion.

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| <h3><u>BRIGHT LUNAR RAYS PROJECT</u></h3> <p>Coordinator - William M. Dembowski, FRAS</p> |
|--|

Remote Sensing Studies of Selected Lunar Rays

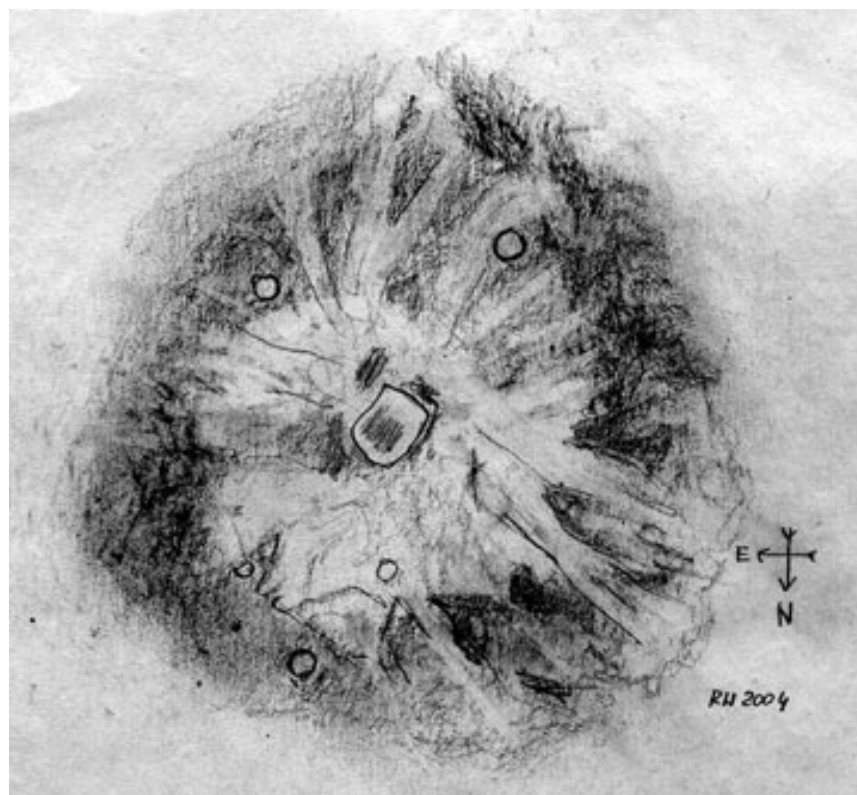
B. R. Hawke, D. T. Blewett, P. G. Lucey (HIGP/U. Hawaii), J. F. Bell III (CRSR/Cornell U.), B. A. Campbell CEPS/NASM), M. S. Robinson (USGS/Flagstaff)

The nature of lunar crater rays has long been the source of major controversy. Some workers have proposed that rays are dominated by primary crater ejecta, while others have emphasized the role of secondary craters in producing rays. In an effort to better understand the processes responsible for the formation of lunar rays, we have utilized a variety of remote sensing data to study selected rays associated with Olbers A, the Messier crater complex, and Tycho. These data include near-IR reflectance spectra (0.6-2.5 um), 3.8- and 70-cm radar maps, and Clementine and Galileo multispectral imagery.

Olbers A is a Copernican-aged impact crater (D = 43 km) located in the highlands on the Moon's western limb which exhibits an extensive ray system. Eleven spectra were obtained for Olbers A, its rays, and related features. All spectra were analyzed and spectral mixing model studies were conducted. The spectra obtained for areas near the intersection of two major ray elements in Oceanus Procellarum are dominated by mare material. However, highland debris is quite abundant (contributing 30-50% of the flux to the spectra). Lesser amounts (26-38%) of highland debris were determined to be present in the more diffuse ray segments. Messier and Messier A are located in Mare Fecunditatis; major rays occur to the south and west of the parent craters. Spectral analysis indicates that the rays west and south of the Messier complex are dominated by fresh mare material. The rays exhibit enhanced values on the 3.8-cm depolarized radar image, but no enhancement is apparent in the 70-cm data set.

A major ray from Tycho crater crosses much of Mare Nectaris. Analyses of near-IR reflectance spectra, multispectral imagery, and a variety of radar data indicate that the Tycho ray in Mare Nectaris is dominated by fresh local material excavated and emplaced by secondary craters.

RECENT RAY OBSERVATIONS



BRIGHT PLATEAU AND RAYS OF LALANDE
Sketch by Robert Wlodarczyk - Czestochowa, Poland
September 28, 2004 - 23:00 UT
15cm Newtonian - 75x 150x - Seeing: Ant.II-III

RECENT RAY OBSERVATIONS

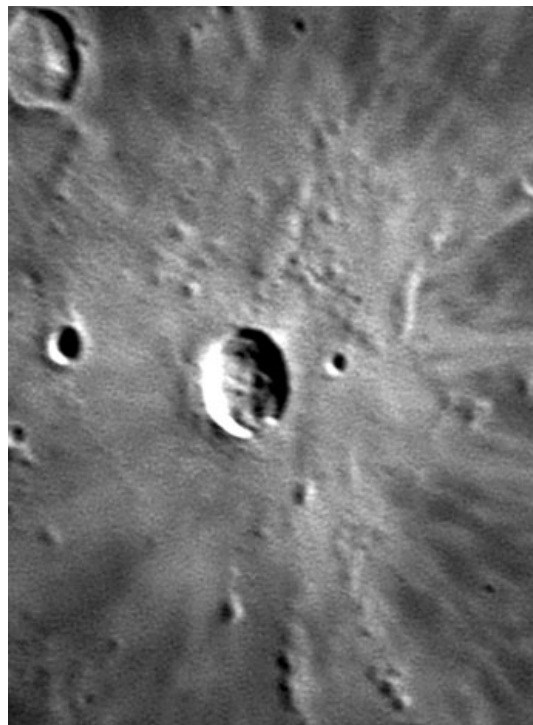


ARISTARCHUS & HERODOTUS

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

October 26, 2004 - 1:01 UT

254mm Newtonian - 2x Barlow - Toucam



KEPLER

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

October 7, 2004 - 21:44 UT

212mm Newt-Cass. - 2x Barlow - 36 frames stacked

LUNAR TRANSIENT PHENOMENA

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

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

LTP NEWSLETTER - DECEMBER 2004

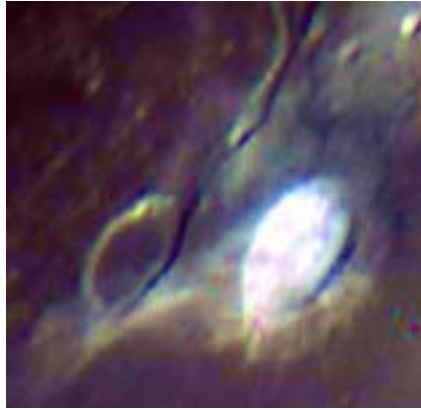
Dr. Anthony Cook - Coordinator

Writing this newsletter from the shores of the UK in the lead up to Christmas, I would like to wish all our observers seasonal greetings, where ever you are. Observations for October have been received from: myself, Michael Amato (USA), Clive Brook (UK), Marie Cook (UK), David Darling (USA), Robin Gray (USA), Antonio Marino (UAI, Italy), Brendan Shaw (UK), and Robert Spellman (USA). I have received just one report of the Lunar Eclipse on Oct 28th, from Michael Amato (CT, USA) so I presume that most observers, like myself were clouded out. Robert Spellman continues to send me observations of light rays – where light from a rising/setting sun starts breaks through a gap in a crater wall and reaches the mostly shadow filled floor forming an elongated patch/needle of light. In the past some LTP have been confused with light rays. You can see some of his example images on:

http://www.geocities.com/xetor_2000/light.html

Whilst examining Marius on 2003 Oct 26, to check for light streaks seen in this crater observed by Bolton on 1901 Oct 25, Antonio Marino (UAI, Italy) and Brendan Shaw (UK) obtained some excellent CCD images. These images reveal some ray material and a few bright craterlets that just might explain the original observation. However I would strongly urge observers to please check this crater again on 2004 Nov 25 UT 09:45-11:31, 2004 Dec 25 UT 00:37-02:14, 2005 Jan 23 UT 15:19-16:57, and 2005 Feb 22 UT 05:28-07:05. Note that from your location the Moon may not be visible at these times due to it being too low, or it may be during the day, so please read the monthly predictions web site below specifically for your locality. Apart from checking for Bolton's light streaks on the floor, I would also like to request that you monitor the shape and darkness of the dark patch on the floor at the foot of the inner west rim – reasons for this request will be revealed in a later newsletter.

Brendan Shaw, David Darling and Robin Gray have been checking out past color reports of LTP. On 2004 Oct 26 UT 23:30 Brendan took a color image of Aristarchus that seems to confirm a 1966 Jun 02 report by Jaeger (Indiana, USA) where a brownish-yellow edge was reported on the Southern rim. I color corrected Brendan's image (larger than the one shown below) so that red and blue components were least square fitted (calibrated) to the green channel to achieve an overall grey image, then I enhanced the color saturation to bring out any remaining strong colors. Apologies to those of you who still receive this newsletter in black and white by post, but you will have to believe my descriptions about the color. The image below was taken under identical illumination to within +/-0.5 deg to the 1966 LTP report and would suggest that the color seen on the southern edge was in fact natural color. Interestingly Brendan's image does not completely confirm a 1975 Nov 17 LTP report by Le Croy (Virginia, USA and also under similar illumination) where it was said that Aristarchus and Herodotus were "*fused together in an oval with a bluish cast on the eastern rim*", although there is a hint of the bluish cast in the shadow on the east in Brendan's image – possibly from short wave light scattered in our atmosphere.



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!

LTP OBSERVER ALERT & SMART-1 UPDATE

David O. Darling - Assistant Coordinator

The Smart-1 spacecraft has arrived at the Moon and achieved lunar orbit on November 15. We will learn more about this as the news releases on the mission continue. This means that it will be crunch time and that we will be monitoring the Moon as often as we can and submitting observations to me or Dr.

Anthony Cook. When the mission begins its lunar imaging program we can monitor the location of the Smart-1 by monitoring the mission web site at:

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

Once on that page you then click onto Orbit View and it will load up the map. You need to select computer time and it will give you the present time location of the space craft.

When you submit your observations you can use my LTP Report form on line and fill in the blanks that pertain to you. Some of the field such as albedo or photometry, etc., will not. If it does not pertain to you don't click on it. The form will not submit what is not filled in. This form is located the left column of my web page. (See sample on Page 14.)

I also want to inform you that Dr. Anthony Cook has an extremely interesting observing program going on and I want to encourage you to become part of it. What it consists of is the viewing of historical L. T. P. sites that have been published in the NASA L. T. P. Catalog put together by Winifred S. Cameron. This catalog has over 1463 events recorded in it. They cover a time span from 500 AD to 28 May 1977. What Dr. Cook provides is a computer generated schedule of when lighting conditions for these specific events are being duplicated. The key to this observing program is to see if similar phenomena are seen during the observing session. If the observers see similar phenomena it would indicate that it not a true lunar transient event but just the appearance of the lunar formation under this lighting condition. Your

observations to this program are very important will help determine what can be consider in the L. T. P. Catalog what is truly an event. You can view the observations submitted by going to the **A.L.P.O** Web site: <http://www.lpl.arizona.edu/alpo/>

Then click onto the **Lunar Section**. Once there you click on Dr. Cook link and you will find page that present several options. You can click **Current Suggested Observing** This will give observing times by your location in the world. You only need print out the part that applies to your observing location. Where your observations and Dr. Cook comments ends up are on **Observations Received This Month**. If you want to look at last month's there is a link that allows to view last month's observations.

MOON MISSIONS - PAST & PRESENT

SMART-1

The eyes of all lunar enthusiasts are, or should be, on the European Space Agency's SMART-1 mission which entered lunar orbit on November 15, 2004. If you are not familiar with the mission, take a look at the SMART-1 Homepage: <http://smart.esa.int/science-e/www/area/index.cfm?fareaid=10>

For a complete rundown of the mission objectives go to:
<http://smart.esa.int/science-e/www/object/index.cfm?fobjectid=31413>

Here is an excerpt from that page:

“SMART-1's camera AMIE will enable scientists to study the Moon's topography and surface texture once again. It measures visible light at a million points in a field of view 5 degrees wide, and filters can select yellow light, red light or very short infrared rays. By looking at selected regions from different angles, and under different lighting conditions, AMIE will provide new clues to how the lunar surface has evolved.

With longer infrared rays, the infrared spectrometer SIR will map the surface distribution of minerals such as pyroxenes, olivines and feldspars. It will do this in far more detail than Clementine did, when it scanned the lunar surface at six different infrared bands. SIR distinguishes about 256 wavelength bands, from 0.9 to 2.4 microns. The mineralogy will reveal effects of cratering and maria formation, and the nature of subsurface layers exposed by fractures in the Moon's crust. “

In addition to the above, SMART-1 will also be searching for possible water on the Moon and data which might support or invalidate the current popular theory of the Moon's origin (the bit splat).

OTHER RELATED LINKS INCLUDE:

Mission Overview (ESA): http://www.esa.int/export/esaSC/120371_index_0_m.html

Mission Overview (BBC) <http://news.bbc.co.uk/2/hi/science/nature/4015227.stm>

SMART-1 Instruments: <http://smart.esa.int/science-e/www/object/index.cfm?fobjectid=31415>

TOTAL LUNAR ECLIPSE - OCTOBER 27, 2004
Imaged and assembled by Howard Eskildsen

