

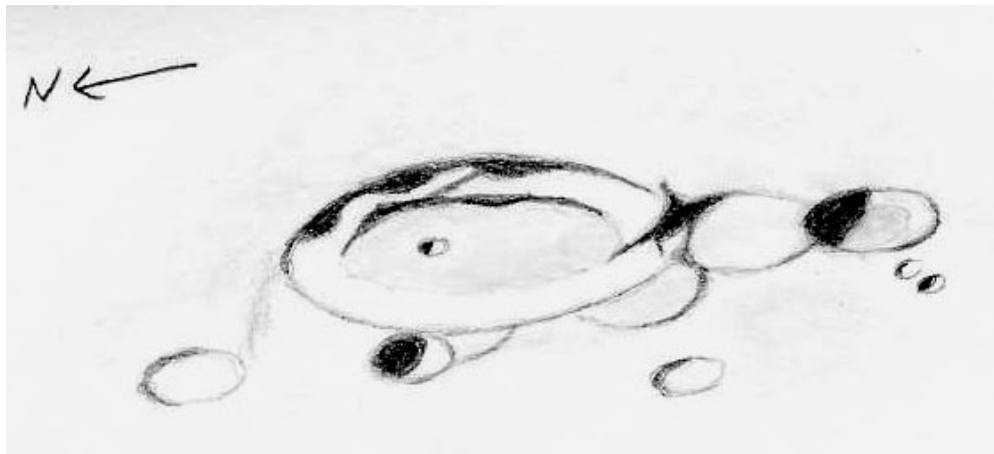


THE LUNAR OBSERVER

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 - SEPT. 2006



PONTECOULANT

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

April 4, 2006 - 02:42 to 03:06 UT

15cm Newtonian - 170x - Seeing 7/10

I sketched this crater and vicinity on the evening of April 3/4, 2006 while observing at least 10 occultations. This crater is near the southeastern limb not far from Mare Australe, but it was better placed than usual this evening. Pontecoulant has a smooth interior except for a crater pit north of center. There may be terracing on its inside rim, and several high points on its east edge. The crater immediately adjacent to Pontecoulant's south rim is Pontecoulant E. These two craters have overlapping rims, and at least parts of both are still visible. Neither was obliterated by the other, so I can't tell which one is older. Pontecoulant J abuts the south rim of E; it is smaller, but deeper than E. The rim of J has obliterated the rim of E, so J is obviously younger. Two small pits are near J. Pontecoulant L is the shallow crater west of E. There appears to be a partial ghost ring between Pontecoulant L and Pontecoulant itself. Pontecoulant A is the relatively deep crater on the west rim of Pontecoulant; there may be another partial ring along this crater. There is a fairly large, but shallow crater north of Pontecoulant that is shown, but not labeled on the LQ map.

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.

LUNAR CALENDAR - SEPTEMBER 2006 (UT)

03 (05:41) SMART-1 impacts Moon (Time uncertain)
05 24:00 Moon 3.0 Degrees SSE of Neptune
07 16:00 Moon 0.5 Degrees ESE of Uranus
07 18:43 Full Moon
07 18:51 Mid partial lunar eclipse
08 03:00 Moon at Perigee (357,175 km - 221,938 miles)
14 11:17 Last Quarter
19 04:00 Moon 2.2 Degrees NNE of Saturn
21 13:00 Moon 1.8 Degrees NNE of asteroid Juno
21 15:00 Moon 0.85 Degrees SSW of Venus
22 05:00 Moon at Apogee (406,499 km - 252,587 miles)
22 11:45 New Moon (Start of Lunation 1036)
22 11:45 Mid annular solar eclipse
23 09:00 Moon 2.0 Degrees SSW of Mars
24 02:00 Moon 1.6 Degrees SSW of Mercury
26 13:00 Moon 5.0 SSW of Jupiter
30 11:03 First Quarter

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FOCUS ON: Atlas & Hercules

William M. Dembowski, FRAS

Coordinator, Lunar Topographical Studies

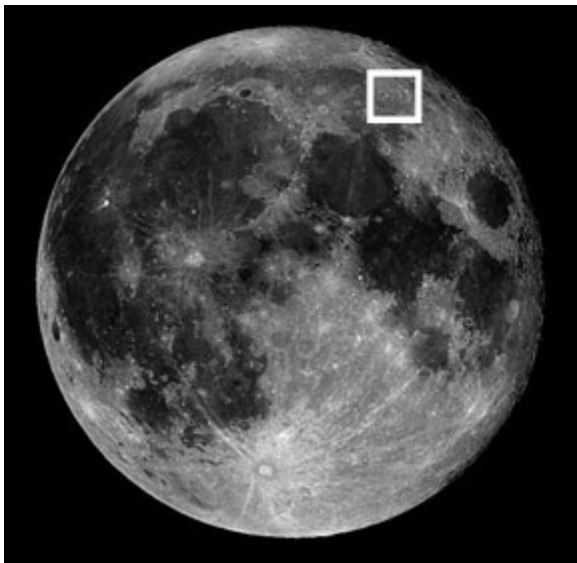


FIGURE 1

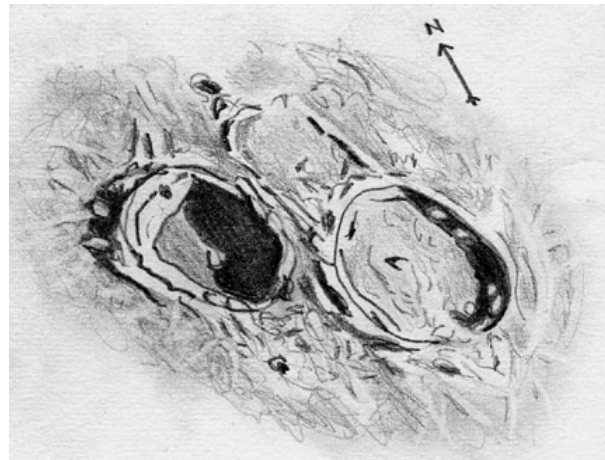
Location of Atlas & Hercules

Together, Atlas and Hercules make up one of the more popular targets for lunar observers. In fact, it is difficult to mention one without the other. They lie about 30 km apart in the northeast quadrant of the Moon (Figure 1) and, although they may be considered a pair, they are far from being twins.

FIGURE 2

**Sketch by Robert Włodarczyk
Czestochowa, Poland**

**May 2, 2006 - 19:45 UT
18cm f/6.6 Newtonian - 144x**



ATLAS:

Atlas is the larger of the two craters with a diameter of 87 km, and an easily observed ejecta blanket (Figure 2). The walls of Atlas are well terraced and surround a floor covered with a myriad of detail. The floor of the crater, apparently domed up by underlying lavas, is criss-crossed by a complex network of rilles collectively known as Rimae Atlas. Some observers have reported seeing as many as twelve separate and distinct rilles but, realistically, a sighting of half that many would be a good night's work. Several small craters scattered across the floor of Atlas are within range of moderate sized instruments and near the center is an incomplete circle of hills (Figure 3).



FIGURE 3
Digital image by Ed Crandall
Winston-Salem, North Carolina, USA

July 2, 2006 - 01:06 UT
110mm f/6.5 APO Refractor - 3x Barlow

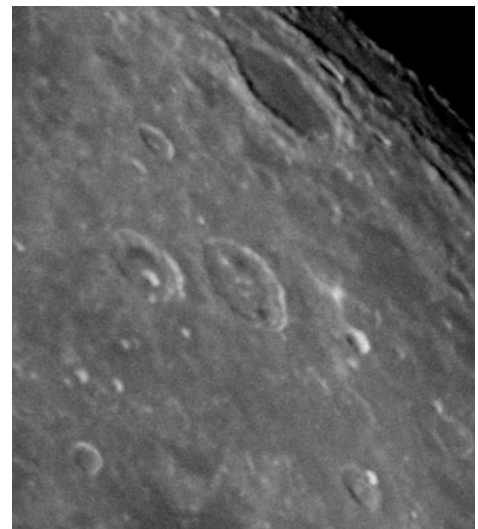
In addition to structures of positive and negative elevation, Atlas has several albedo features of great interest. There are two dark patches, each about 15 km in size, along the north and southeast inner walls with a bright ray from the crater Thales passing between them. The visibility of the dark patches in Atlas, like those in Alphonsus, changes with varying solar illumination. These patches, as well as a handful of smaller dark haloed craters to the north and northeast, are of particular interest to the ALPO Dark Haloed Crater Program. In addition, Atlas as a whole is one of the seven major targets of the ALPO Selected Areas Program and one of the 27 most active sites on the ALPO LTP List.

HERCULES:

Hercules, the more westerly of the crater pair, is somewhat smaller than its companion. It has a diameter of 69 km and, like Atlas, well terraced walls and an extensive ejecta blanket. The floor of Hercules, however, is darker than that of Atlas and quite smooth. It is dominated by a single large crater, Hercules G (14 km), while another crater, Hercules E (7 km), marks the southern wall. North of Hercules G are two small elevations and, even farther north, is an interesting arc of dark material (Figure 4). Otherwise, the floor is virtually devoid of observable forms.

FIGURE 4
Digital image by Howard Eskildsen
Ocala, Florida, USA

April 25, 2005 - 02:17 UT
6 inch f/8 Refractor - Nikon Coolpix 4300
40mm Maxview Eyepiece - 2x Barlow



DOUBLE-DIGIT OBSERVING:

Although not all of the features described here will be visible in magnifications below 100X, those who by necessity or choice observe at double-digit levels will still find much of interest. Among the features to look for are the large ghost crater, Atlas E, to the north of its namesake and the bright rayed area to the east.

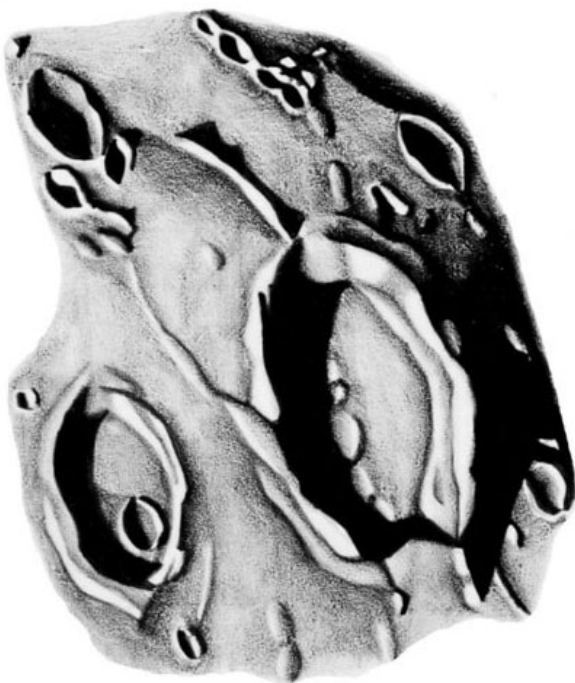
REFERENCES:

Grego, Peter - "The Moon and How to Observe It", Springer-Verlag, 2005

Rukl, Antonin - "Atlas of the Moon", Paul Hamlyn Publishing, 1991

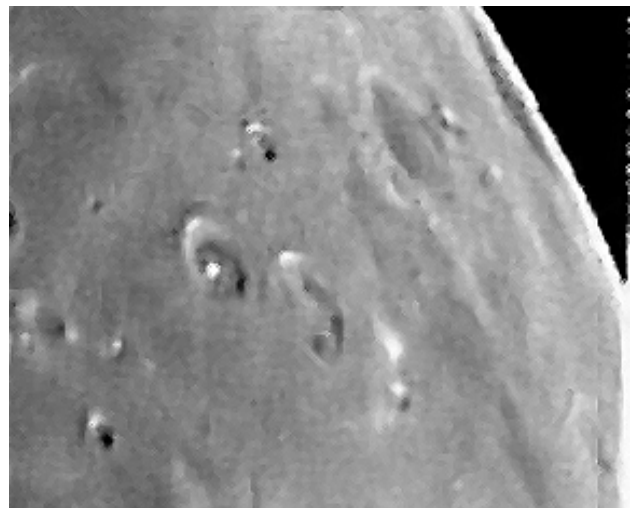
Wood, Charles A. - "The Modern Moon: A Personal View", Sky Publishing, 2003

ADDITIONAL ATLAS & HERCULES OBSERVATIONS



**Sketch by Peter Grego
Rednal, Birmingham, England
August 29, 1983
60mm Refractor - 100x**

**Digital image by Michael Boschat
Halifax, Nova Scotia, Canada
July 4, 2006 - 00:05 UT
10cm Mak - Centrios Camera**



ADDITIONAL ATLAS & HERCULES OBSERVATIONS



**Digital image by Wayne Bailey - Sewell, New Jersey, USA
August 1, 2006 - 00:29 UT - Seeing 5/10
11 inch f/10 SCT - Schuler IR72 Filter - Philips Toucam**



**Digital image by Klaus Petersen - Glinde, Germany
May 6, 2006 - 19:55 UT - Seeing 5/10
8 inch f/10 SCT - Philips Toucam**

FOCUS ON: Banded Craters

The Selected Areas Program (SAP), formerly coordinated by Dr. Julius Benton, was recently folded into the Lunar Topographical Studies Section. The SAP provides for the formal monitoring of seven specific areas of the Moon for albedo changes during a lunation, and from one lunation to the next. In addition, it includes programs for the cataloging and study of Dark Haloed Craters and Banded Craters.

In order to familiarize TLO readers with the SAP, the subject of the next installment of "Focus On" will be Banded Craters. Any crater exhibiting dark bands on its floor and/or inner walls will qualify for this assignment. As always, the observations do not need to be recent so search your files in addition to adding these fascinating craters to your observing list.

Because of the difficulty of this assignment, the timeframe for submissions will be extended from the usual two months to four months. The deadline for inclusion in the Banded Crater article will, therefore, be December 20, 2006 - with the article appearing in the January 2007 issue of TLO.

Over the next several issues of TLO we will be familiarizing you with the various aspects of the SAP which include albedo monitoring of selected areas, dark-haloed craters, and banded craters.

To assist in the selection of banded craters for the above "Focus On" assignment, below is a list of twenty of the larger craters you might try to image or draw.

20 LARGE BANDED CRATERS

CRATER NAME	DIAMETER (km)	LONGITUDE	LATITUDE
Aristarchus	40	47.4 W	23.7 N
Aristillus	55	01.2 E	33.9 N
Bessarion	10	37.3 W	14.9 N
Birt	17	08.5 W	22.4 S
Bode	19	02.4 W	06.7 N
Brayley	14	36.9 W	20.9 N
Burg	40	28.2 E	45.0 N
Dawes	18	26.4 E	17.2 N
Kepler	32	38.0 W	08.1 N
Maury	18	39.6 E	37.1 N
Menelaus	27	16.0 E	16.3 N
Messier	10	47.6 E	01.9 S
Milichus	13	30.2 W	10.0 N
Moore	10	32.8 W	33.2 S
Nicollet	15	12.5 W	21.9 S
Proclus	28	46.8 E	16.1 N
Pytheas	20	20.6 W	20.5 N
Rosse	12	35.0 E	17.9 S
Silberschlag	13	12.5 E	06.2 N
Theaetetus	25	06.0 E	37.0 N

LUNAR TOPOGRAPHICAL STUDIES

Acting Coordinator - William M. Dembowski, FRAS

dembowski@zone-vx.com

OBSERVATIONS RECEIVED

WAYNE BAILEY - SEWELL, NEW JERSEY, USA

Digital images of Atlas & Hercules(8), Tycho, Copernicus & Kepler rays, Eudoxus to Conon

COLIN EBDON - COLCHESTER, ESSEX, ENGLAND

Sketch of Guericke

HOWARD ESKILDSEN - OCALA, FLORIDA, USA

Digital images of Lacus Mortis & Hercules, Anaxagoras rays, Atlas & Hercules

GUILHERME GRASSMANN - AMERICANA, BRASIL

Digital images of Tycho & Clavius, Mare Frigoris, Gassendi, Schickard, Aristarchus, Philolaus, Reiner & Marius, Sinus Iridum

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

Sketches of Pontecoulant, Messier, Hortensius, Delisle & Diophantus

Timings of 56 stars occulted by the Moon

KLAUS PETERSEN - GLINDE, GERMANY

Digital images of Atlas & Hercules, Theophilus Chain & Mare Nectaris

ROBERT WLODARCZYK - CZESTOCHOWA, POLAND

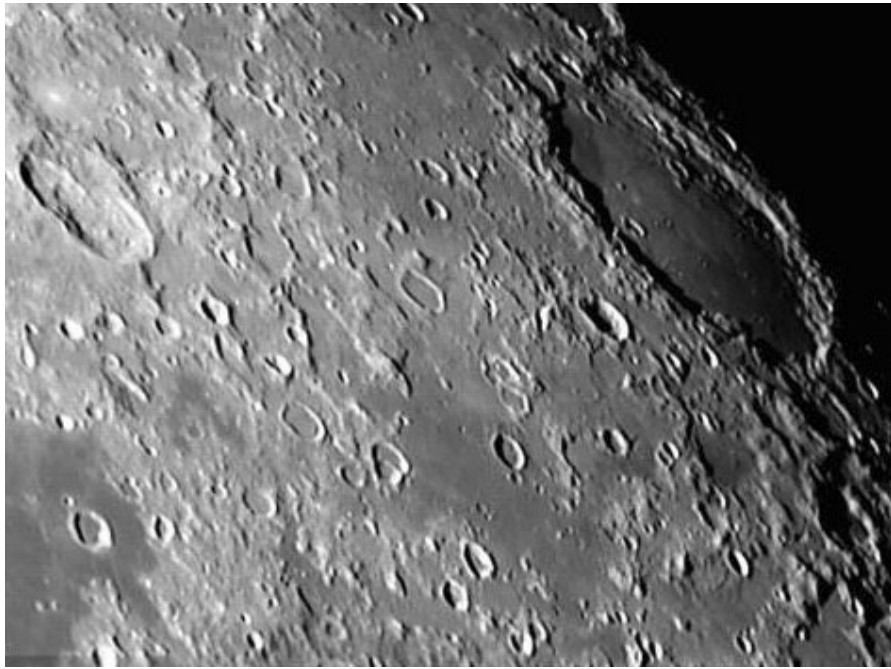
Sketches of Atlas & Hercules(2)

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)

RECENT TOPOGRAPHICAL OBSERVATIONS



SCHICKARD

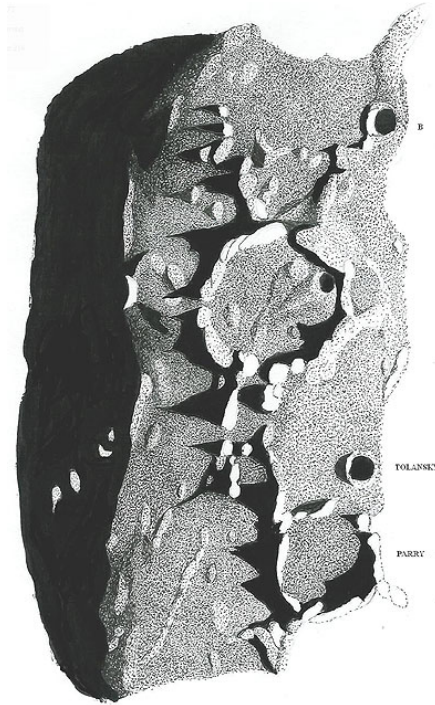
**Digital image by Guilherme Grassmann - Americana, Brasil
August 6, 2006 - 23:29:51 UT - Seeing 8/10
10 inch f/10 SCT - No Filter - ToucamPro**



PHILOLAUS

**Digital image by Guilherme Grassmann - Americana, Brasil
August 6, 2006 - 23:16:02 UT - Seeing 8/10
10 inch f/10 SCT - No Filter - ToucamPro**

RECENT TOPOGRAPHICAL OBSERVATIONS



GUERICKE

Sketch by Colin Ebdon - Colchester, Essex, England
July 19, 2006 - 02:00 to 03:30 UT - Seeing Ant. III to II
7 inch Mak-Cass - 236x



THEOPHILUS CHAIN & MARE NECTARIS

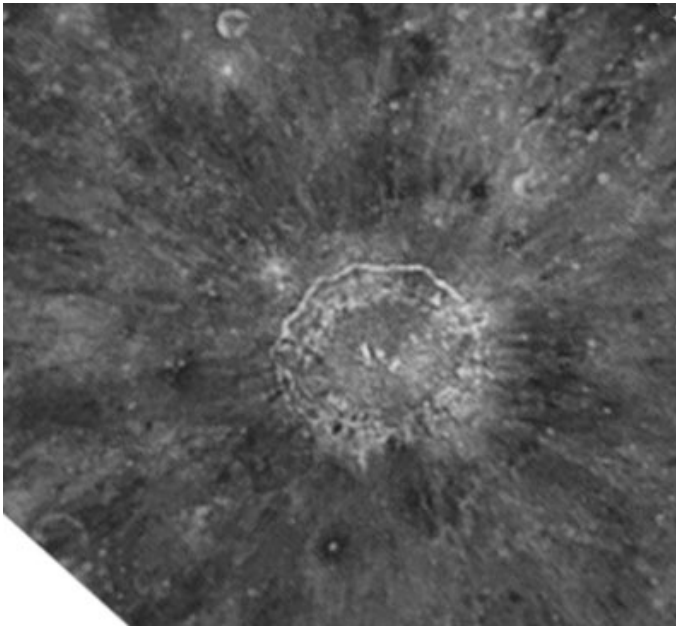
Klaus Petersen - Glinde, Germany
May 3, 2006 - 19:34 UT - Seeing 5/10
8 inch f/10 SCT - Philips Toucam

BRIGHT LUNAR RAYS PROJECT

Coordinator - William M. Dembowski, FRAS

A NOTE TO RAY IMAGERS

Present and potential contributors to the Rays Project are reminded that rayed areas should be imaged both when the rays are visible and when they are not. We are interested, not only in the times and lighting conditions under which the rays can/cannot be seen, but in the appearance of the terrain in both circumstances. With that in mind, here are views of Copernicus, with and without its rays.



COPERNICUS WITH RAYS

**Digital image by
Rafael Benavides Palencia
Posadas, Cordoba, Spain
December 14, 2005 - 22:27 UT
15cm f/8 Refractor
2x Barlow - Filter IR-Blocking
Philips Toucam Pro**



COPERNICUS WITHOUT RAYS

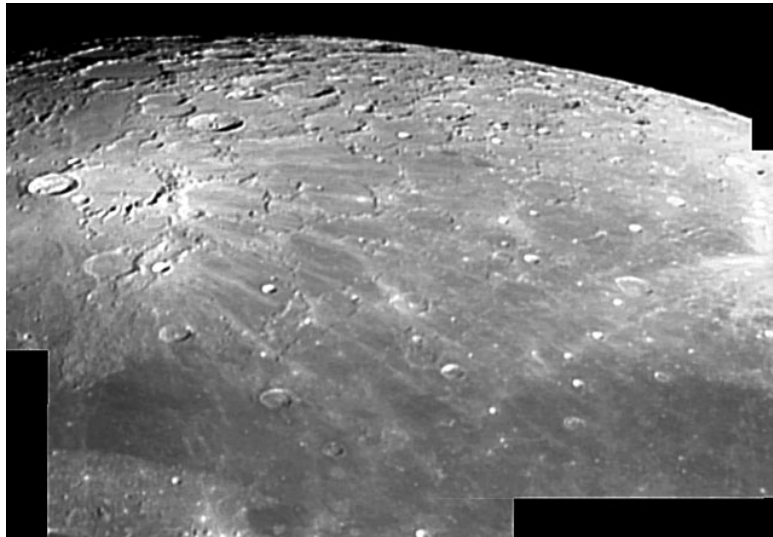
**Digital image by
K.C. Pau - Hong Kong, China
June 9, 2003 - 13:24 UT
Seeing 5-6/10 - Trans. 3/10
CN212 at Prime Focus
Philips Toucam Pro**

RECENT RAY OBSERVATIONS



ARISTARCHUS

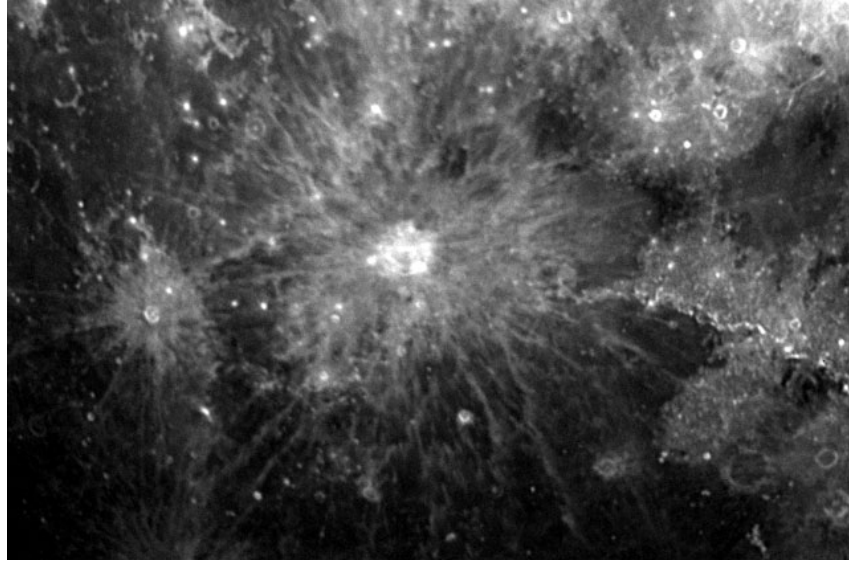
**Digital image by Guilherme Grassmann - Americana, Brasil
August 6, 2006 - 23:23:42 UT - Seeing 8/10 - Trans. 8/10
10 inch f/10 SCT - No Filter - Philips Toucam Pro**



RAY SYSTEMS OF ANAXAGORAS & THALES

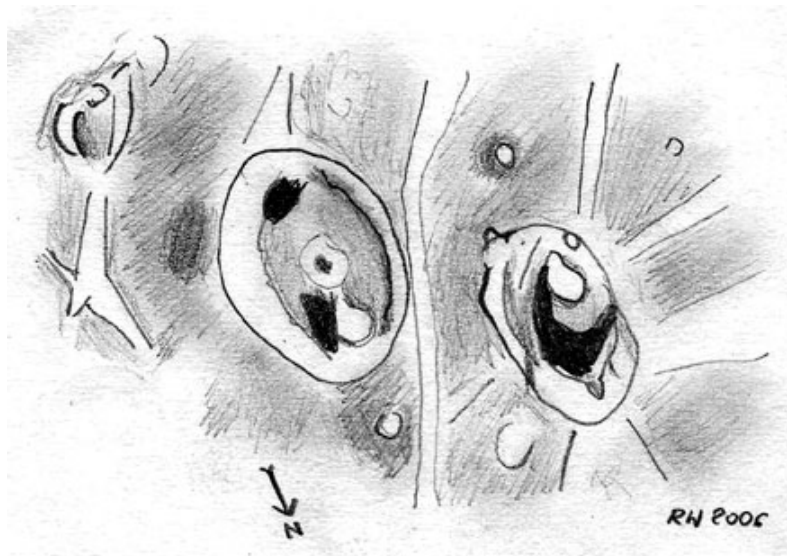
**Digital image by Howard Eskildsen - Ocala, Florida, USA
August 7, 2006 - (4 image mosaic) 01:25 to 01:28 UT
6 inch f/8 Refractor - 2x Barlow - IR Block Filter - NexImage Camera**

RECENT RAY OBSERVATIONS



COPERNICUS & KEPLER

Digital image by Wayne Bailey - Sewell, New Jersey, USA
August 10, 2006 - 06:10 - 06:42 UT - Colog. 102.3
11 inch f/5.4 SCT - HiSys 22 CCD Camera - Schuler B Filter



REGION OF ATLAS & HERCULES NEAR FULL MOON

Sketch by Robert Wlodarczyk - Czestochowa, Poland
August 9, 2006 - 22:00 UT - Seeing 6/10 - Trans. 4/6
15cm f/6 Newtonian - 112x

LUNAR TRANSIENT PHENOMENA

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

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

LTP NEWSLETTER - SEPTEMBER 2006

Dr. Anthony Cook - Coordinator

Only one set of observations were received for July – Michael Amato (West Haven, CT, USA) reported Aristarchus to be normal in appearance on July 15th. From the UK the Moon has been incredibly low on the horizon (and orange) and I certainly do not encourage our observers to make observations when it is so low, unless there is a repeat illumination/libration event in the predictions.

Following on from the “blob in Copernicus” report from June I can now supply more details as one of our Belgium observers, Rony De Laet, has kindly forwarded a sketch and an image that he took prior to Geoff Burt’s report. There is a sequence shown in Fig 1 that includes the reports from these two observers, a consolidated Lunar Atlas photo, and two images from Brendan Shaw - just to get some idea of illumination chronology.

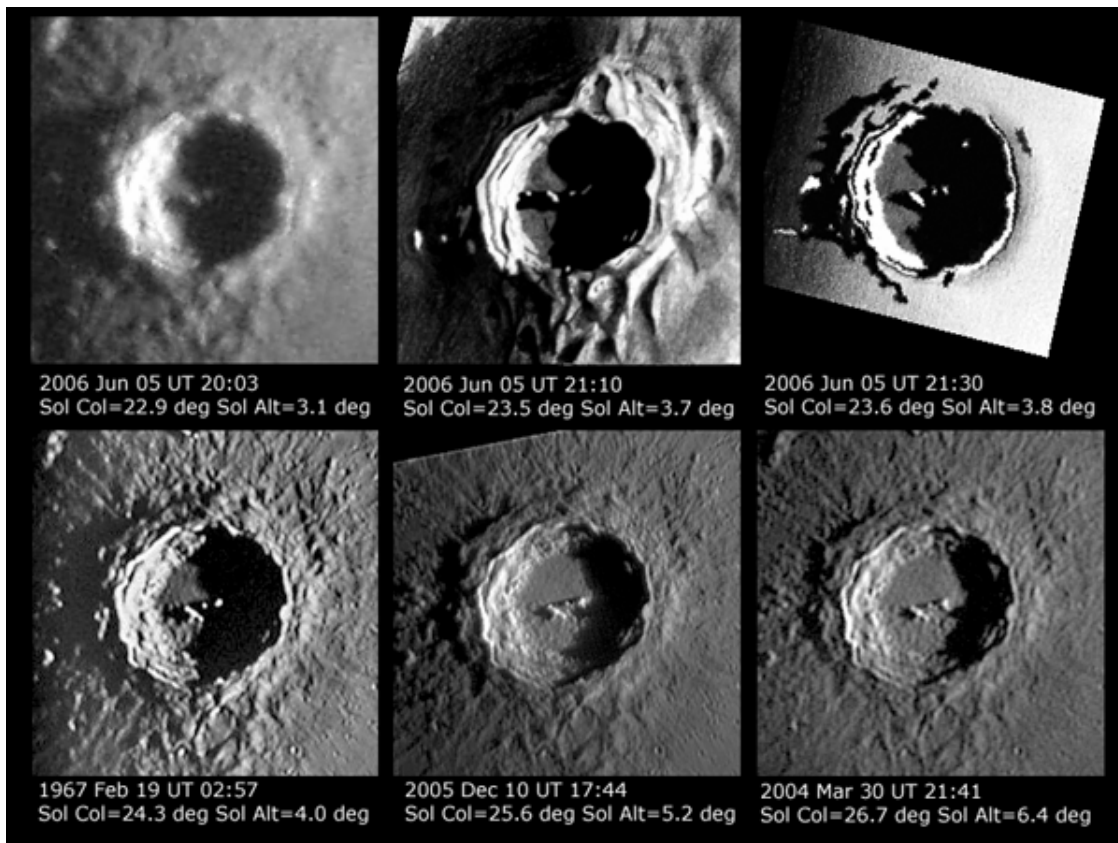


Figure 1. Top left – mobile phone CCD image by Rony De Laet; Top center sketch by Rony De Laet; top Right sketch by Geoff Burt (Society for Popular Astronomy observation); bottom left – consolidated Lunar Atlas (CLA) photo D17 (plate C4195); bottom center and bottom right – CCD images by Brendan Shaw. All images have been affine transformed to match the CLA photograph arranged in order of increasing solar altitude.

You can see quite clearly the blob in the north west corner of the shadowed floor of the crater. I have been in email correspondence with both observers. Rony was using an ETX 105 at a magnification of x240, and seeing was Antoniadi II. Geoff was using a 20cm Newtonian at x130 with seeing at Antoniadi II-III. Both observers took approximately one hour to make their sketches, centred upon the UT values given above. In analyzing these observations three relevant points should be considered, and I will attempt to answer these:

- 1) Could the blob just be terrain emerging from shadow or a shaft of light from a valley in the crater rim hitting some raised peaks temporarily? Shadows and rays of light are very directional so close to the terminator and fractions of a degree can make a lot of difference.
- 2) The two observers may have overlapped in time during their sketches, so why did one see a blob and the other not?
- 3) Could it be that what Geoff Burt really saw was just a ridge emerging from Sun light on the north east rim as seen in Brendan Shaw's images, but that for some reason it was displaced in his sketch?

Taking a look at (1) you can see from the sequence of images that a blob does not appear in the correct location in the lower images, so this seems an unlikely explanation, unless there was a narrow valley in the NE rim that just happened to allow through a shaft of sunlight, that just happened to intercept some raised topography for a short while. This seems improbable, but we can check this out by observing at similar solar azimuth's and elevations to within a tolerance of +/-0.5 deg - to allow for the diameter of the solar disk.

Concerning (2), whether the two observers may have overlapped in time, it is possible, but as they recorded only the approximate mid point of their observations, we cannot be sure. Also lunar sketches are very subjective in the way that different observers go about making these. Here is a comment from Rony that I think is very relevant to interpreting this set of observations, and indeed any sketches made in the past by others: *"I observed for about an hour. I used the following procedure. First I paid attention to the shadows in the crater, the central peaks and the structure of the inner walls. Then I studied the outer walls of the crater. I can imagine that, while being focused at drawing a feature outside the crater, I totally neglected other areas of the scene. Therefore it can be possible that the LTP already started during my watch on an area that I mapped earlier. I was not looking for LTP's as such let alone that I would recognize one"* A comment from Geoff adds: *"Copernicus is 93km in diameter (quoted from the internet Wikipedia entry) and as shown in my sketch is 25mm in diameter, giving roughly 4km/mm. The bright spot on my sketch is 1mm in size, so assuming it to be a gas/dust cloud it would have appeared around the time Rony's observation finished and mine began, expanding rapidly to about 4km in diameter and staying more or less the same size and brightness for at least an hour, throughout my observation."* *"I haven't overcrowded the sketch with detail because there is plenty to contend with. Firstly, to attempt all the detail would probably have taken too long, bearing in mind that the light's changing all the while and secondly, at the x130 magnification I was using it would be difficult to accurately depict fine detail apart from high contrast features like the bright central peaks."*

Concerning (3), whether the location of the spot could have been misdrawn/displaced from the one on the rim that shows up in Brendan's images, this seems unlikely as the ridge concerned does not appear on the Consolidated Lunar Atlas photograph and so probably should not have been seen at Col.=23.6 deg. In addition I received the following communication from Geoff, again..... *"I guess that however much one attempts to take a scientific approach when sketching, there is an inevitable element of subjectivity. If we had been observing in the same location at the same time, our sketches wouldn't have been identical. Any discrepancies should be minor however, which seems to be the case here apart from that mysterious spot. Obviously, there are going to be nuances in form and tone but as I've*

mentioned before, it does seem odd if I've drawn a bright spot in an area of deep shadow if it wasn't there to begin with! I used to make my living as a technical illustrator and also trained at life drawing, so my sketches should be reasonably accurate." So these would seem to rule out this possibility of (3).

Given that all three explanations listed above are improbable, I have decided to add the 2006 Jun 05 observation to the LTP catalog. If any members out there have images/sketches of Copernicus taken around a colongitude of 23.1-24.1 deg, then please get in contact as I would be very interested to see these for a comparison! In addition here are some future dates and times for which the selenographic colongitude should be the same – however please check on the Moon's visibility above the horizon from your locality:

2006 Sep 02 UT 07:11	2006 Oct 01 UT 19:35	2006 Oct 31 UT 08:45
2006 Nov 29 UT 23:02	2006 Dec 29 UT 13:35	2007 Jan 28 UT 04:04
2007 Feb 26 UT 18:01	2007 Mar 28 UT 07:07	2007 Apr 26 UT 19:22
2007 May 26 UT 06:45	2007 Jun 24 UT 18:01	2007 Jul 24 UT 05:05
2007 Aug 22 UT 16:29	2007 Sep 21 UT 04:34	2007 Oct 20 UT 17:31

In September, the European Space Agency's lunar probe SMART-1 will be crashed into the Moon. This should occur at approximately 05:41UT on 2006 Sep 03 at 46W, 36S, or perhaps one orbit earlier at 00:36UT at ~44W, ~36S (at the time of writing). The different times are a result of orbit and topography uncertainties. This area is on the night side of the Moon, but there is a small chance that ejecta thrown 20 km upwards might make it into sunlight and be visible from Earth. The terminator is approximately 60 arc sec away. There is also a very slight chance of seeing the impact flash, although the crash velocity is relatively low at 2 km/sec compared to typical meteorite velocities - so it may not be very bright. According to ESA dust thrown up might obscure the surface around the crash site for 5-10 minutes, a man made kind of LTP! Observing sites in the western US, Hawaii, South America, and possibly Australia and New Zealand might capture the event – but please check that the Moon is above your horizon at this time before attempting this. Observations can be made with CCD video or just looking through a telescope – be careful of glare though from the terminator. Unfortunately from the UK, where I am writing this newsletter from, the Moon will be below the horizon at the time. Any reports sent to me from the network of LTP observers, I shall forward to ALPO's impact flash coordinator: Brian Cudnik,

If you are unable to see the impact, then it might be worth while attempting to observe the impact site at lunar sunrise. One theory, for some LTP, is that they are due to electrostatically levitated dust particles. Well after the impact there might well be lots of charged dust particles, as surely these must have been rubbing against each other or the surface - unless their charge has been conducted away by the plasma of the impact. So if there ever was a time to test this theory, it should be at sunrise. Sunrise occurs at the two possible impact sites at the following times: 2006 Sep 03 at UT ~22:36 and Sep 04 at ~04:00. So please keep a look out for things around these times like e.g. temporary gray shadows, obscurations, and faint glows. It is a long shot, but it will not hurt to attempt to observe these, especially if you missed the actual impact.

There may be changes in the impact time due to course corrections at the end of Aug/start of September so please check the ESA web site for news updates on:

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

Finally a correction to the ALPO only version of this newsletter that appeared in the TLO – Fig 1 should have read: “University of Nottingham Robotic Telescopes” and Fig 2 should have read: “BAA Exhibition Meeting at the Cavendish Laboratory, Cambridge – Lunar Section Stand”

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>. If you would like to join the LTP telephone alert team, please let me know your phone No. and how late you wish to be contacted. If in the unlikely event you see a LTP, please give me a call on my cell phone: +44 (0)798 505 5681 and I will alert other observers. Note when telephoning from outside the UK you must not use the (0). When phoning from within the UK please do not use the +44!

Dr Anthony Cook, School of Computer Science & IT, Nottingham University, Jubilee Campus, Wollaton Road, Nottingham, NG6 1BB, UNITED KINGDOM. Email: acc@cs.nott.ac.uk

THE MOON IN THE NEWS

ESA/SMART-1 - Last call for observations:

http://www.esa.int/esaCP/SEM_TU0Z7QQE_Expanding_0.html

Expected phenomena:

<http://sci.esa.int/science-e/www/object/index.cfm?fobjectid=39839>

Anticipated impact site:

<http://sci.esa.int/science-e/www/area/index.cfm?fareaid=98>

Projected impact time table:

<http://sci.esa.int/science-e/www/object/index.cfm?fobjectid=39841>

NASA Plans to impact Moon:

<http://www.nasa.gov/centers/ames/research/exploringtheuniverse/lcross.html>

SMART-1 Close-up of Cuvier Crater ridge:

http://www.esa.int/SPECIALS/SMART-1/SEM_OB7BUQPE_0.html

NASA names new lunar spacecraft:

<http://news.bbc.co.uk/2/hi/science/nature/5277736.stm>

Moon's composition and its origin:

http://www.esa.int/esaCP/SEM1RHBUQPE_index_0.html

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