

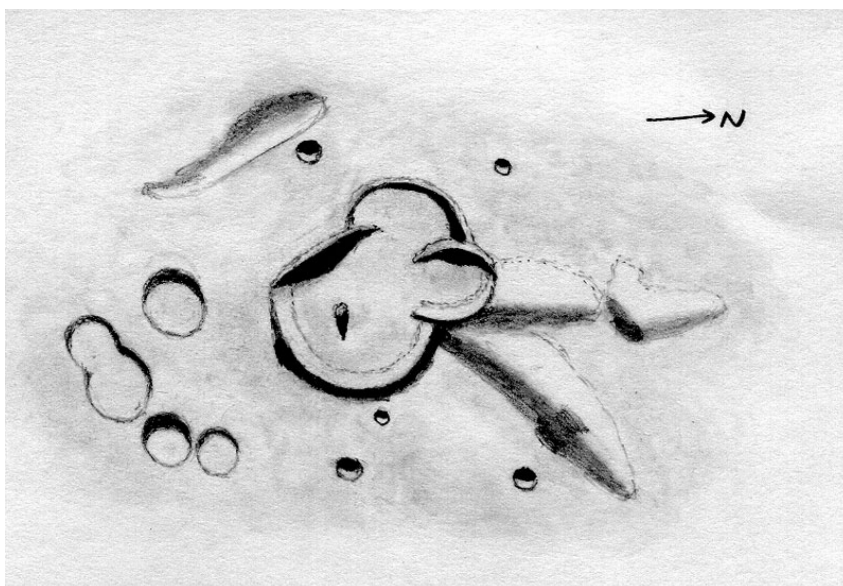


THE LUNAR OBSERVER

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

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.
EDITED BY: William M. Dembowski, F.R.A.S. - dembowski@zone-vx.com
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FEATURE OF THE MONTH - FEB. 2006



RITCHEY

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

October 23, 2005 - 09:52 to 10:32 UT

15cm Newtonian - 170x - Seeing 7-8/10

This feature is located east of the large crater Albatengius. Ritchey appears to be composed of three overlapping rings with most of the interior rims missing. Ritchey itself is the largest ring with a nearly straight southwest rim. It has a small peak south of center that cast a narrow, pointed shadow. The smaller partial ring to the north is Ritchey E, according to the Lunar Quadrant map, but the partial ring to the west is unlabelled there. Ritchey F is the small pit northwest of the Ritchey combination, while Ritchey A is the larger pit to the southwest. Ritchey C and Dare east and northeast of Ritchey, and a tiny pit are very near the east rim of Ritchey. Ritchey A, C, D all have bright sunlit interiors. A group of shallow craters is south of Ritchey, with Ritchey B somewhat deeper than the others. Two of these saucers form an overlapping pair. There are broad, low ridges north and northeast of Ritchey and a detached ridge near Ritchey A.

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.

INTERNATIONAL BRIGHT LUNAR RAYS PROJECT

CONDUCTED BY:

**The Association of Lunar & Planetary Observers
The American Lunar Society
The British Astronomical Association
The Society for Popular Astronomy of England
The Geological Lunar Research Group (Italy)
The Italian Union of Amateur Astronomers**

PROJECT COORDINATOR:

William M. Dembowski, F.R.A.S. - Dembowski@zone-vx.com

Although they are some of the most extensive features on the Moon, bright lunar rays are still among the most understudied. Therefore, the above mentioned organizations and dedicated independent observers have embarked upon a study of these beautiful and intriguing splash patters. In addition to basic mapping of the location, size, and extent of lunar rays there are many things yet to be learned about them. It is the aim of the project to answer the following questions:

DISTRIBUTION OF RAYS:

Do rays occur mainly in the highlands or marial areas?
Do rayed craters form any noticeable groups or clusters?
Are there indications that any of the rays emanate from the Moon's far side?

RAY STRUCTURE:

Are the rays distributed evenly around their parent crater?
If rays emanate from a crater do they start from its center, edge, or some way from the rim?
What is the start and end point of individual rays and ray systems?

APPEARANCE OF RAYS:

How does the brightness and/or color of a ray change during the lunation?
Are there brightness and/or color differences between one ray system and another?
Do the brightness and/or color of a ray change over its length?
When do individual rays or ray systems first become visible at sunrise or are lost at sunset, including colongitude and solar altitude?
Are the rays brightest at Full Moon, when the sun is overhead at their location, or at any other time during a lunation?
Are the parent craters consistently brighter than their rays, or do any of the rays exceed the brightness of their parent?
Does the appearance of the ray change with the use of color or polarizing filters?

INTERACTION OF RAYS WITH LOCAL FEATURES:

Do rays appear to be deflected, interrupted, or obscured by surface features?

Do the rays of different systems overlap?

Is there any sign of disruption where systems overlap?

Is it possible to determine which system is younger?

When a ray is not visible, is there evidence of its presence on the lunar surface; differences in color, texture, etc.?

Are there local features which mimic rays (rilles, ridges, crater chains, etc.)?

For further information on the project and how you may participate (affiliation with any astronomical organization is not required) please contact the Project Coordinator:

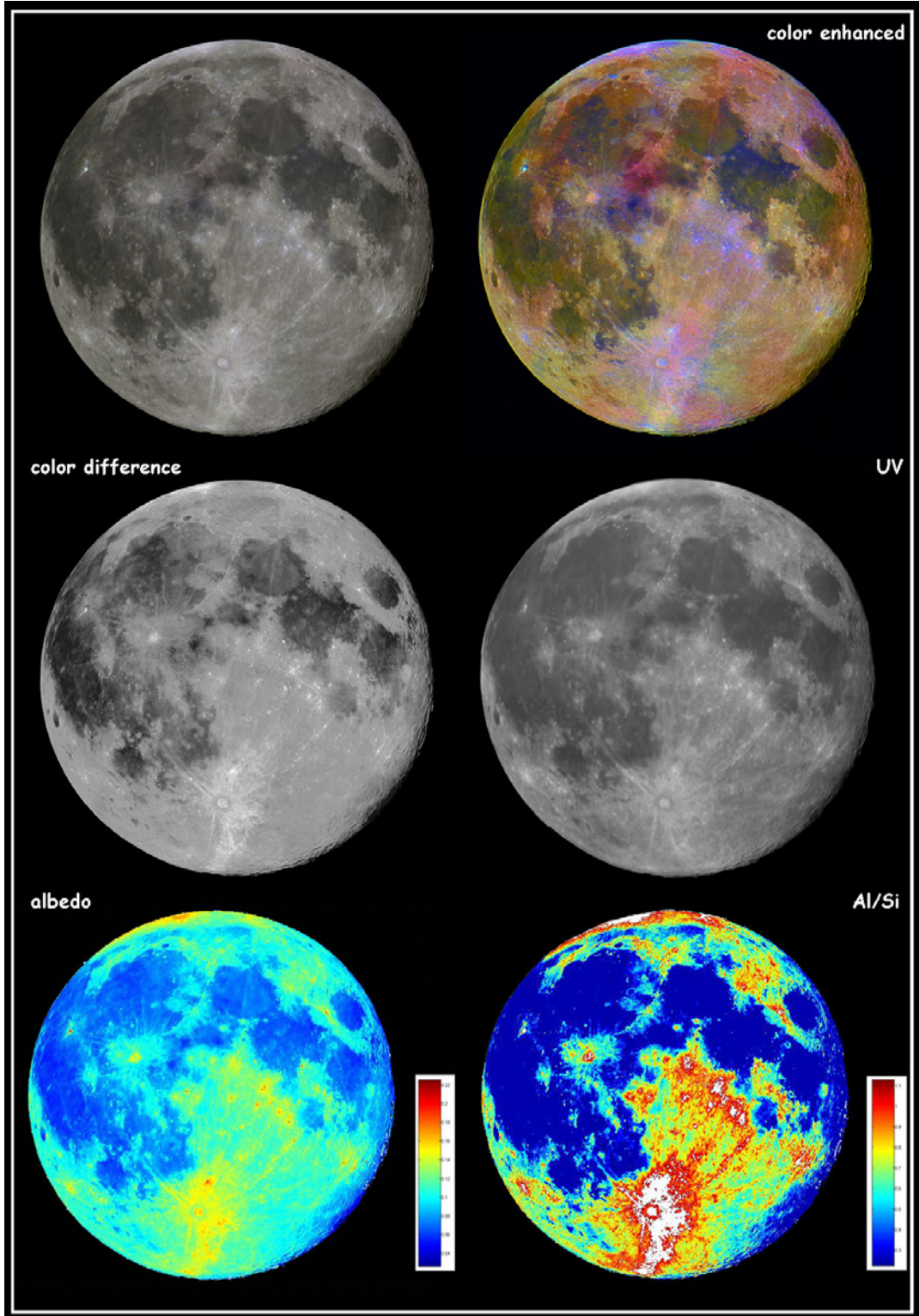
William M. Dembowski, F.R.A.S. - Dembowski@zone-vx.com

**Observations of any Ray System are welcomed and encouraged.
Here are 35 prominent Ray Systems requiring stud.**

	CRATER	LAT.	LONG.
1	ANAXAGORAS	73.4N	10.1W
2	ARISTARCHUS	23.7N	47.4W
3	ARISTILLUS	33.9N	01.2E
4	AUTOLYCUS	30.7N	01.5E
5	BESSEL	21.8N	17.9E
6	BIRT	22.4S	08.5W
7	BYRGIUS_A	27.7S	63.6W
8	COPERNICUS	09.7N	20.0W
9	EUCLIDES	07.4S	29.5W
10	FURNERIUS_A	33.5S	57.2E
11	GEMINUS_C	33.9N	56.8E
12	GODIN	01.8N	10.2E
13	HIND	07.9S	07.4E
14	KEPLER	08.1N	38.0W
15	LALANDE	04.4S	08.6W
16	LANGRANUS	08.9S	60.9E
17	MANILIUS	14.5N	09.1E
18	MENELAUS	16.3N	16.0E
19	MESSALA_B	37.1N	57.6E
20	MESSIER_A	02.0S	46.9E
21	OLBERS	07.4N	75.9W
22	OLBERS_A	08.3N	77.5W
23	PETAVIUS_B	27.9S	58.6E
24	PROCLUS	16.1N	46.8E
25	REINER GAMMA	08.0N	58.0W
26	SIRSALIS	12.5S	60.4W
27	SNELIUS	29.3S	55.7E
28	STEVINUS_A	32.1S	51.9E
29	STRABO	61.9N	54.3E
30	TARUNTIUS	05.6N	46.5E
31	THALES	61.8N	50.3E
32	THEOPHILUS	11.4S	26.4E
33	TIMOCHARIS	26.7N	13.1W
34	TYCHO	43.3S	11.2W
35	ZUCCHIUS	61.4S	50.3W

ANALYSIS OF THE FULL MOON

Images and notes by Alexander Vandenbohede - Ghent, Belgium



**All images taken January 14, 2006 - 23:00 UT
20cm Dobsonian mounted Newtonian
Webcam at prime focus**

Key to images on Page 5

Upper Left - Normal image

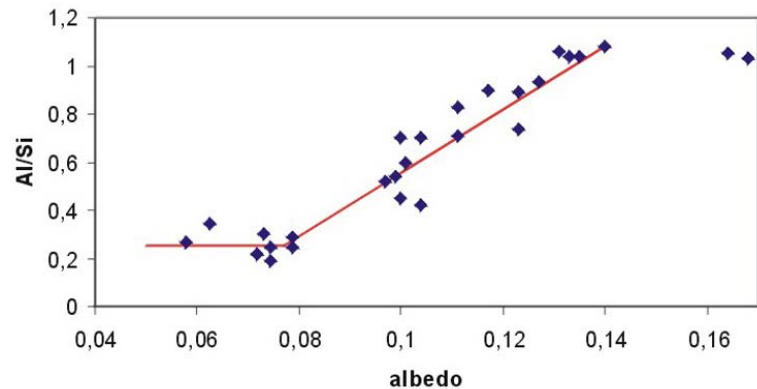
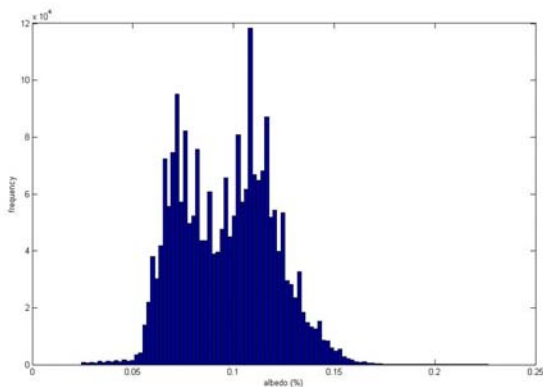
Middle Left - Red minus Blue Channel

Lower Left - Albedo

Upper Right - Colour enhanced

Middle Right - With UV filter

Lower Right - Al/Si



Notes:

An albedo map was made based on the image and known albedos of different formations ranging from low albedos to high ones. I also included a histogram of the albedo showing two peaks, one of 0.07 for the mare and one of 0.10 for the highlands.

Then, there is a relation between albedo and the Al/Si ratio of the rocks. This is more or less linear for relatively high values (0.1-0.14) and this I took from literature. Higher values are not included in the calculation since other factors also importantly influence the albedo. Low albedo areas have a more or less constant albedo, which I derived from rock analyses.

I presumed that the Al/Si ratio is more or less constant. The result is on the image. It clearly shows the different ratios between mare and highlands and also some variation in them. The highest Al/Si ratio is found around the fresh ejecta blanket. So in these cases I think that Al/Si ratio is calculated too high. The influence of the fresh ejecta is even, so perhaps more important for the albedo. This overprint of fresh ejecta, I think, must thus be ignored in looking at the Al/Si ratios.

CALL FOR OBSERVATIONS - FOCUS ON: ERATOSTHENES

Thanks to all who contributed to the last installment of *Focus On*. *Focus On* is a bi-monthly series of articles which includes observations received for a specific feature or class of features. The subject for the March 2006 edition will be Eratosthenes and immediate surroundings. 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 favorites to one of the addresses shown in the banner on Page One.

Deadline for inclusion in the Eratosthenes article is Feb. 20, 2005.

LUNAR CALENDAR - FEBRUARY 2006 (UT)

03 06:28 First Quarter
05 21:00 Moon 2.1 Degrees NNW of Mars
11 17:00 Moon 3.7 Degrees NNE of Saturn
13 04:44 Full Moon
14 01:00 Moon at Apogee (406,359 km - 252,500 miles)
20 05:00 Moon 4.8 Degrees SSW of Jupiter
21 07:17 Last Quarter
25 01:00 Moon 10.0 Degrees SSE of Venus
25 10:00 Moon 0.8 Degrees S of Ceres
26 16:00 Moon 3.6 Degrees SSE of Neptune
27 20:00 Moon at Perigee (356,883 km - 221,757 miles)
28 00:32 New Moon (Start of Lunation 1029)
28 03:00 Moon 1.4 Degrees SSE of Venus

A.L.P.O. LUNAR COORDINATORS

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Marvin W. Huddleston – Coordinator, Lunar Dome Survey
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LUNAR TOPOGRAPHICAL STUDIES

Acting Coordinator - William M. Dembowski, FRAS

dembowski@zone-vx.com

OBSERVATIONS RECEIVED

PAUL BRIERLEY - ENGLAND

Digital image of Copernicus

ED CRANDALL - WINSTON-SALEM, NORTH CAROLINA, USA

Digital images of Copernicus (2), Pitatus, Tycho & environs, Eratosthenes (4), Clavius, Abulfeda, Theophilus & Cyrillus & Catharina, Aristoteles & Eudoxus, Copernicus & Eratosthenes

COLIN EBDON - COLCHESTER, ESSEX, ENGLAND

Sketches of Oken & part of Mare Australe, Region east of Langrenus, Sunrise of Encke & Kepler (2), Cleomedes & Burkhardt & Geminus, Region north-east of Brenner, Region west of Marius

HOWARD ESKILDSEN - OCALA, FLORIDA, USA

Digital images of Kepler & Aristarchus, Olbers A & Eddington & Struve & Russell (2), Olbers A & Reiner Gamma

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

Sketches of Montes Spitzbergen, Santbech, Madler, Eratosthenes
Timings of 73 stars occulted by the Moon

RAFFAELLO LENA - ROME, ITALY

Digital images of Piccolomini, Theophilus & Cyrillus

RAFAEL BENAVIDES PALENCIA - POSADAS, CORDOBA, SPAIN

Digital images of Copernicus (2), Langrenus, Aristillus, Aristarchus, Plato & Mons Tenerife, Vallis Alpes, Archimedes & Aristillus & Eudoxus, Rupes Recta, Fra Mauro, Guericke & Opelt, Gambart

K. C. PAU - HONG KONG, CHINA

Digital images of Eratosthenes, Plato, Schroter, Aristillus

ALEXANDER VANDENBOHEDE - GHENT, BELGIUM

Digital images of Full Moon (4)

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



GUERICKE & OPELT

Digital image by
Rafael Benavides Palencia
Posadas, Cordoba, Spain

January 8, 2006 - 20:11 UT
15cm f/8 Refractor
3x Barlow - MV-1 Filter
Toucam Pro

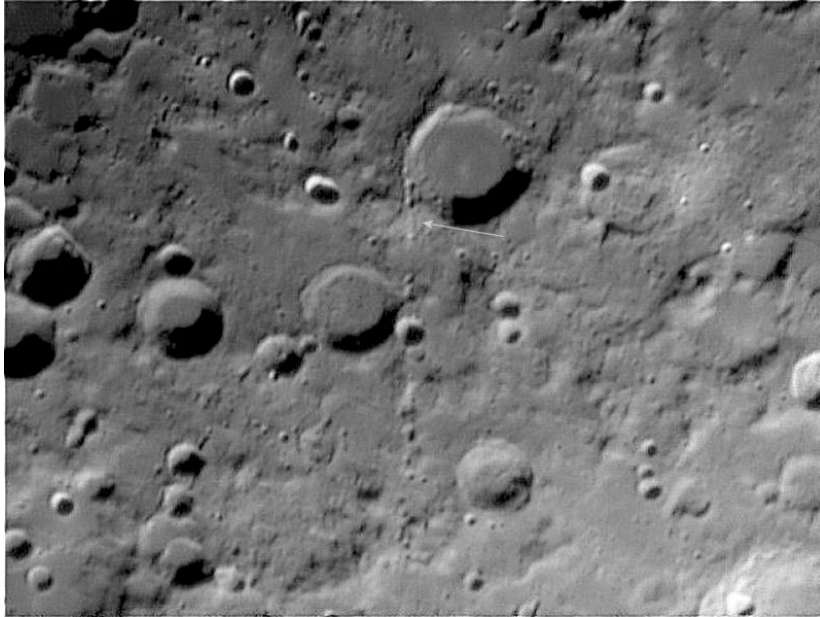


FRA MAURO

Digital image by
Rafael Benavides Palencia
Posadas, Cordoba, Spain

January 8, 2006 - 20:08 UT
15cm f/8 Refractor
3x Barlow - MV-1 Filter
Toucam Pro

RECENT TOPOGRAPHICAL OBSERVATIONS

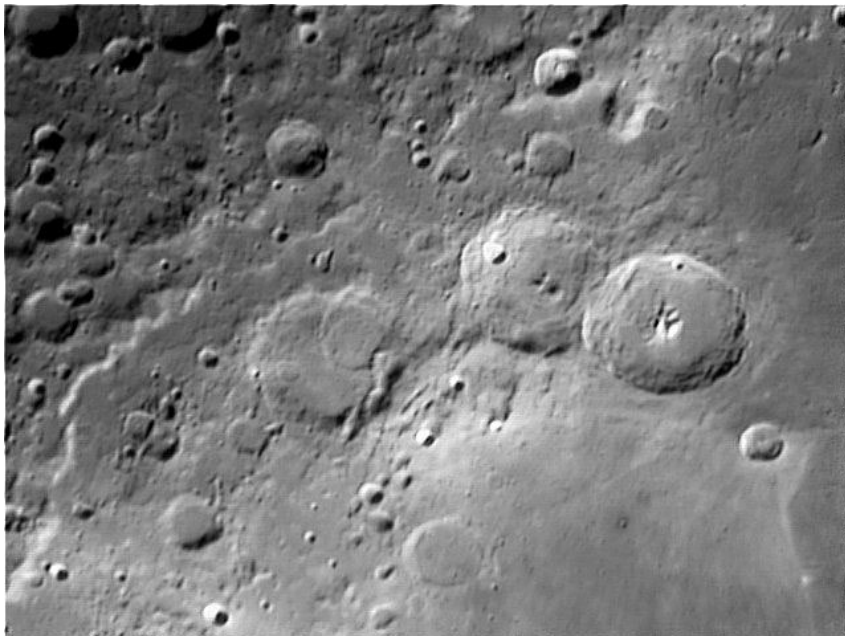


CRATER CHAIN AT ABULFEDA

Digital image by Ed Crandall - Winston-Salem, N. Carolina, USA

January 7, 2006 - 00:33 UT

110mm f/6.5 APO Refractor - 3x Barlow - Philips Toucam



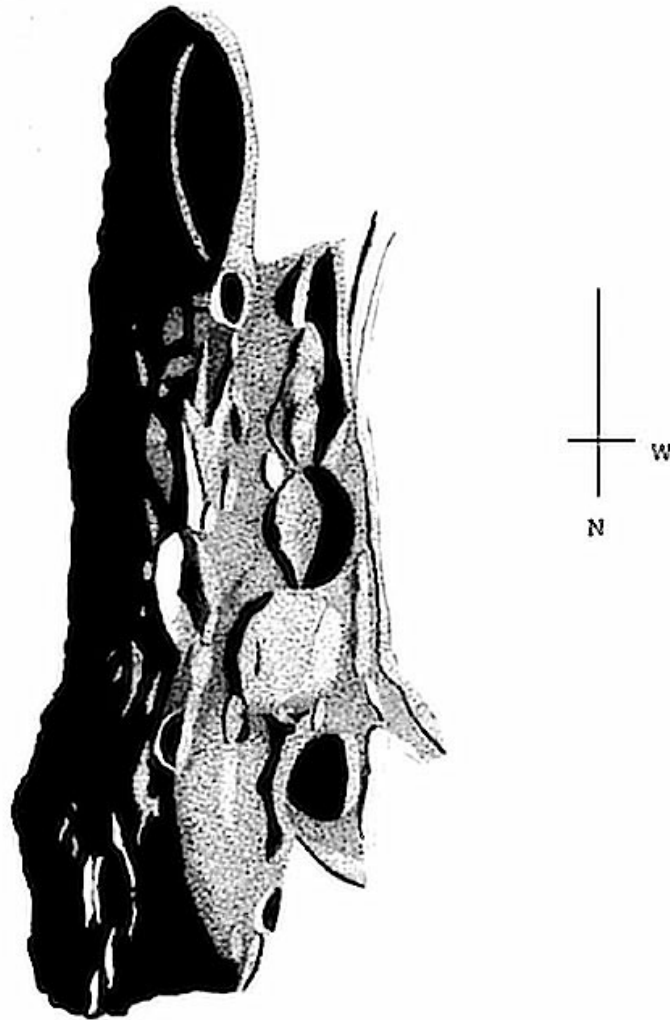
THEOPHILUS, CYRILLUS, & CATHARINA

Digital image by Ed Crandall - Winston-Salem, N. Carolina, USA

January 7, 2006 - 00:41 UT

110mm f/6.5 APO Refractor - 3x Barlow - Philips Toucam

RECENT TOPOGRAPHICAL OBSERVATIONS



REGION EAST OF LANGRENUS

Sketch and observing notes by Colin Ebdon

Colchester, Essex, England

December 17, 2005 - 20:45 to 21:30 UT

7 inch f/15 Maksutov-Cassegrain - 225x

NOTES:

Attention was drawn to this area by what appeared to be a very smooth dome-like feature, possibly a mountain block, immediately adjacent to Langrenus S. This was topped by a narrow slit or elongated craterlet towards its Eastern edge. It may also have been traversed by a thin rille, but unfortunately, seeing conditions were not favourable enough to hold the fine detail. There is some hint of such a feature in Rukl's atlas, although unclear.

RECENT TOPOGRAPHICAL OBSERVATIONS



SCHROTER

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

December 23, 2005 - 21:35 UT

250mm f/6 Newtonian - 20mm EP - Philips Toucam Pro



PICCOLOMINI

Digital image by Raffaello Lena - Rome, Italy

13cm f/6 Refractor - 2x Barlow and Extension Tube - Webcam

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 an excerpt from:

ONE DAY AT COPERNICUS CRATER

By Michael T. Kitt

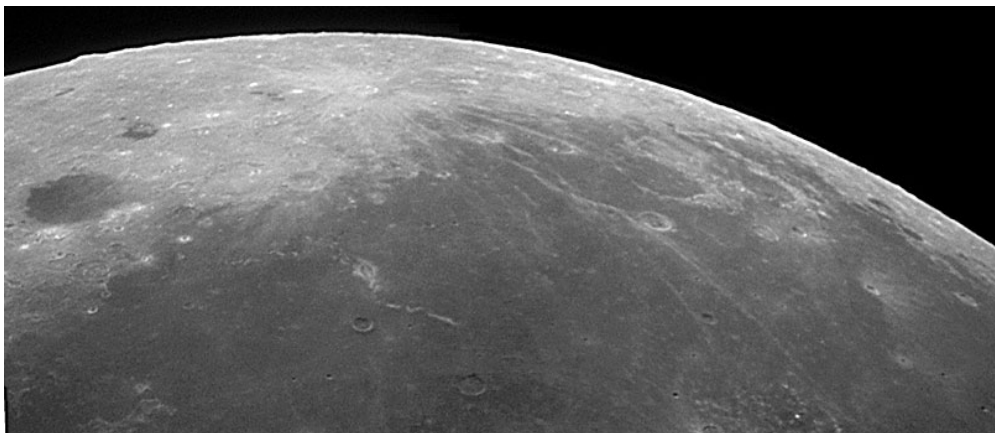
Astronomy Magazine - September 1988

As Full Moon approaches, Copernicus brightens swiftly and detail fade. At Full Moon our line of sight parallels the blazing light from the Sun and shadows disappear. All detail is washed out completely in the noon-time glare. But don't put your scope away! Full Moon is the best time to examine the intricate systems of light colored rays that stretch away from Copernicus in a huge, webbed net that drapes across hill and plain alike.

Now the force of the impact that created Copernicus and pulverized millions of tons of rock is very apparent. The ray system is a titanic splash pattern, and the rays radiate outward in all directions for many hundreds of miles. And although they do not dominate the view as do those from Tycho in the southern highlands, their pattern is beautiful to look at for its own sake.

An unusual feature in the ray system is the lovely "oval rays". Although most lunar rays run arrow-straight, for some unknown reason a few Copernican rays fell to the ground in two looped patterns, one nested inside the other. Located two diameters southeast of the crater, the interior of the oval rays contain the darkest lava plain in Copernicus' immediate vicinity.

RECENT RAY OBSERVATIONS



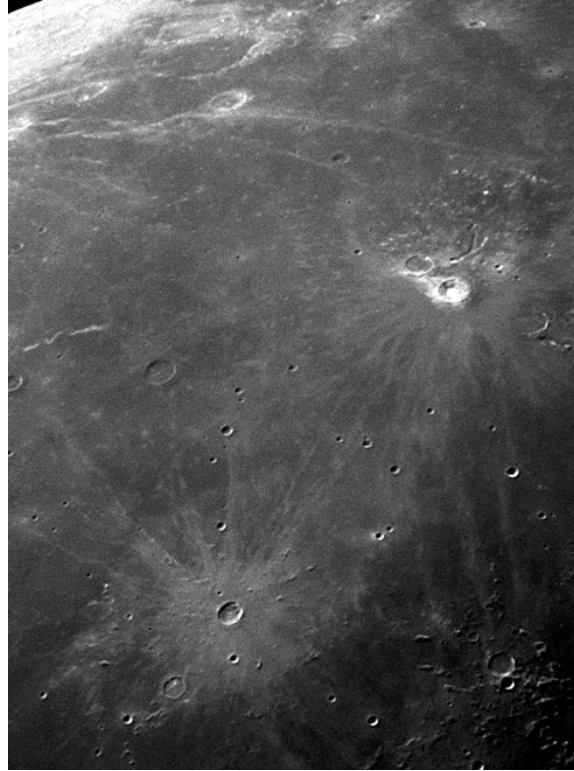
REINER GAMMA & RAYS FROM OLBERS-A

Digital image by Howard Eskildsen - Ocala, Florida, USA

December 24, 2005 - 11:51 UT

6 inch f/8 Refractor - Nikon Coolpix 4300

RECENT RAY OBSERVATIONS

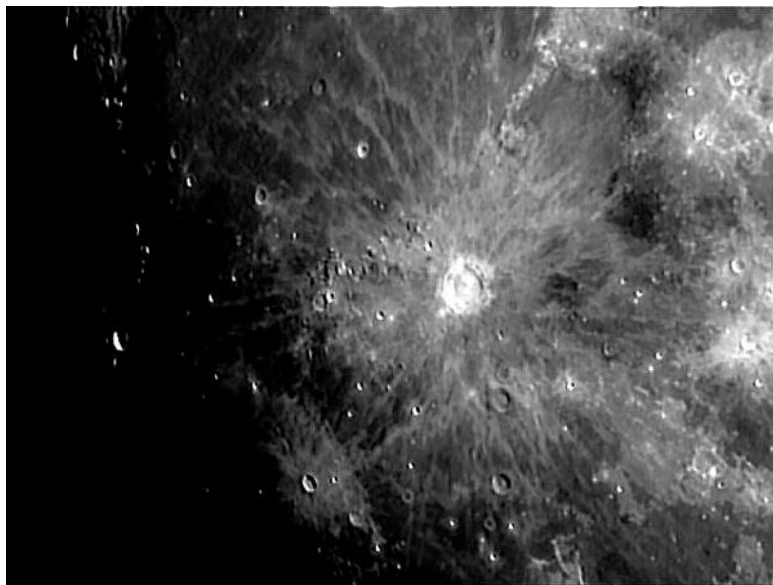


RAYS ON NORTHWEST OCEANUS PROCELLARUM

Digital image by Howard Eskildsen - Ocala, Florida, USA

December 24, 2005 - 11:49 UT

6 inch f/8 Refractor - Nikon Coolpix 4300



COPERNICUS & KEPLER

Digital image by Paul Brierley - England

January 1, 2006 - 20:03 UT

120mm f/8 Kronus Refractor - Green Filter - 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 2006

Dr. Anthony Cook - Coordinator

Observations for December were received from: Michael Amato (USA), Clive Brook (Plymouth, UK), Marie Cook (Mundesley, UK), Robin Gray (Winnemucca, USA), Gerald North (UK), Brendan Shaw (UK), and myself. The total number of hours observations received at present exceeds 6 hours.

For the next 5 months my teaching workload at University will be 50% greater than in 2005. David Darling is unable to help out as much as he did last year, so there may be some months when we cannot get the usual LTP article out, or where it is shorter than normal. Please do not worry about this, we are still taking your observations in, and hopefully a normal service will be restored after May! Thank you for your anticipated patience over the subsequent months.

So for the next few months I will just highlight representative samples of some of the observations received. For example for December 2005 we received the following reports:

Routine Report : 2005 Dec 08 UT 21:34 Brendan Shaw obtained an image of the floor of Alphonsus that showed the central peak emerging through shadow; as it does every month! This observation was made to show that a LTP report from Hopp in 1972 Sep 15, where a diffuse white to blue area was seen within the crater, could partly be explained as a normal appearance. Hopp was using a small 75 mm refractor back in 1972, and so could have easily mistaken the central peak's emergence for this diffuse area, though it does not explain fully the white to blue color, however the observer at the time sounded slightly uncertain about what they had seen.

Routine Report : 2005 Dec 10 UT 03:26-04:18 Robin Gray examined the floor of Proclus and found it to be featureless except for two bright, notch like projections from the SE and SW inner walls. Under the same illumination conditions back in 1976 Jul 06, Bartlett claimed surprise to see nothing on the floor. In fact we know now, based upon Robin's observation, that this is quite normal at this colongitude and perhaps the original interpretation by Bartlett was mistaken.

Routine Report : 2005 Dec 10 UT 16:55 Brendan Shaw imaged the floor of Plato and found no strong sign of interior craters. This is in agreement with Fitton's claimed 1970 Dec 8 LTP report when he was surprised that the floor looked blank, so in fact this is entirely a normal appearance and Fitton's report has been removed from my LTP list.

Possible LTP or impact flash? : 2005 Dec 10 UT 20:46 Clive Brook (4" refractor) noted a flash on the floor of Plato of duration 1-2 sec and white in color. Observing conditions were excellent with the Moon at a high altitude. Brendan Shaw, who was observing independently just missed this area by 5 min prior to this – his image shows nothing out of the ordinary. The flash seen by Clive is unusual for an impact flash as all those that have been confirmed before, last just a fraction of a second, however these have so far only been observed on the dark side. There have been other cases of dayside flashes though of varying duration e.g. the Stuart flash near Pallas in 1953, the Thornton flash in Plato back in 1945, and a recent flash seen on 2005 Oct 17 in Madler by Robin Gray. Mechanisms for these remain

uncertain and may not be impact related. Sun glint from satellites have been suggested as a cause of some past flashes e.g. the Kolovos flash in 1985. Although Cosmos 767 was passing close to the Moon at the time Clive Brook was observing from Plymouth (this is being checked), the angular velocity of the satellite may be too fast to produce the flash observed.

Further predictions, including the more numerous illumination only events can be found on the following web site: <http://www.lpl.arizona.edu/~rhill/alpo/lunarstuff/ltp.html> For members who do not have access to the internet, please drop me a line and I will post predictions to you. If you would like to join the LTP telephone alert team, please let me know your phone No. and how late you wish to be contacted. If in the unlikely event you see a LTP, please give me a call on my cell phone: +44 (0)798 505 5681 and I will alert other observers. Note when telephoning from outside the UK you must not use the (0). When phoning from within the UK please do not use the +44!

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

Russian Rocket Builder Aims for Moon Base by 2015

http://www.space.com/news/ap_060126_russia_moon.html

Russia Plans to Put Mine on the Moon

<http://news.independent.co.uk/europe/article341273.ece>

Crawling to the Moon

http://www.space.com/news/cs_060126_crawler.html

Moon is Dragging Continents West

<http://www.inform.kz/txt/showarticle.php?lang=eng&id=139367>

Italy and China to Make Moon Robots

http://ansa.it/main/notizie/awnplus/english/news/2006-01-25_615173.html

Book Review: Return to the Moon

<http://www.countdowncreations.com/bookretmoon.htm>

Stepping Back to the Moon

http://www.space.com/business/technology/060104_moon_return.html

NASA Team Sees Explosion on the Moon

<http://news.bbc.co.uk/1/hi/sci/tech/4570730.stm>