THE LUNAR OBSERVER

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.
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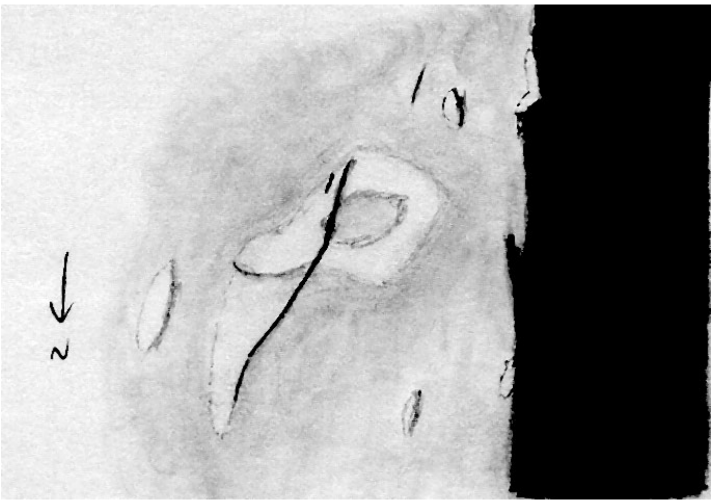
FEATURE OF THE MONTH - JAN. 2005



REINER GAMMA

Sketch and Text by Robert H. Hays, Jr. - Worth, Illinois, USA
June 30, 2004 - 03:32 to 03:50 UT
15cm Newtonian - 170x - Seeing 8/10

I observed this feature on the evening of June 29/30, 2004 after watching the moon hide 6th-magnitude ZC 2328. This feature was close to the terminator this evening so I decided to check it again. It looked much as usual with a large, diamond-shaped area and a smaller eastern lobe. The larger portion had a dusky, oval interior patch; the edge of this patch was darker than the center. The eastern lobe had a grayish northern edge. There was a narrow, sharp strip of shadow that appeared like a crack through Reiner gamma. From the south point of the diamond area, it went almost due north to the east edge of the dusky oval, than angled northeasterly until it turned northerly again near its end. A relatively bright area adjoined this shadow north of Reiner gamma's east lobe. It was brighter than the surrounding mare, but not as bright as Reiner gamma. I have to wonder if this brighter area was a relief feature as well as an albedo feature. (Reiner gamma itself appeared to be purely an albedo feature.) A small bit of shadow was seen within Reiner gamma near the long shadow's southern end. I had not seen this sharp, narrow shadowing previously; the terminator's proximity must have made the difference. There were a few low hills in the area, some of them causing irregularities in the terminator.

LUNAR TOPOGRAPHICAL STUDIES

Acting Coordinator - William M. Dembowski, FRAS
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OBSERVATIONS RECEIVED

ANTHONY AYIOMAMITIS - ATHENS, GREECE
Digital images of Aristarchus, Messier A

RAFAEL BENAVIDES PALENCIA - POSADAS, CORDOBA, SPAIN
Digital images of Plato, Alpine Valley, Archimedes, Montes Tenerife, Mons Piton

ED CRANDALL - WINSTON-SALEM, NORTH CAROLINA, USA
Digital images of Aristoteles, Maurolycus, Copernicus

DANIEL DEL VALLE - AGUADILLA, PUERTO RICO
Sketch of Hahn

HOWARD ESKILDSEN - OCALA, FLORIDA, USA
Digital images of Moon occulting Jupiter (4)

ROBERT H. HAYS, JR. - WORTH, ILLINOIS, USA
Complete report of Total Lunar Eclipse including crater timings, sketches (4) and photographs (6)

ROBERT WLODARCZYK - CZESTOCHOWA, POLAND
Sketch of la Condamine

FROM THE COORDINATOR

Submissions to the Topographical Section were down a little this month, perhaps due to the combination of the holiday season and approaching winter … but the quality of those received by the Coordinator was certainly not compromised in any way.

As we in the northern climes become re-acclimated to the cold temperatures, I trust that the number of observations will increase. There is also the added attraction of better seeing conditions as the Moon rides higher in the evening sky. In addition, lunar sketchers and imagers should remember that observations submitted to the Topographical Section do not need to be recent. Perhaps on a few of the upcoming cold winter nights some of you might browse through your personal files and share some of your more enjoyable lunar moments with your fellow observers. Images, written notes, or full fledged articles on features or techniques are most welcome.

Clear & steady skies …. and a peaceful & prosperous New Year to you all,
William M. Dembowski, FRAS Dembowski@zone-vx.com

Topographical observations submitted should include the following:

Name and location of observer
Name of feature
Date and time (UT) of observation
Size and type of telescope used
Magnification (for sketches)
Medium employed (for photos and electronic images

TAKING THE MEASURES OF RUPES RECTA

By Alexander Vandenbohede - Ghent, Belgium

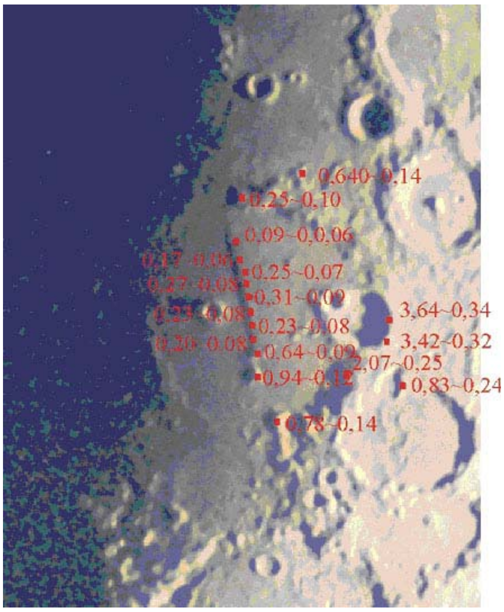
Introduction

Rupes Recta is found on the eastern shore of Mare Nubium and is probably the best and certainly the most spectacular example of a lunar fault. When it is near the terminator at sunrise, an impressive shadow can be seen west of the structure. During the day the width of this shadow decreases. During sunset the 120 km long fault is very bright because the sun shines directly on the fault face. This shows that the mare east of the rupes is higher than the western mare. The fault is thus of a normal fault type with the eastern part higher than the western part. The origin of the faulting has to do with the subsidence of the Nubium basin. Now, what is the height and slope angle of the fault?

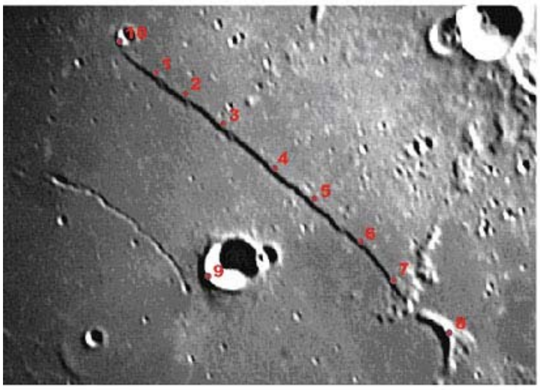
Available data and analyses

To determine the height of Rupes Recta three images were initially used, one of Wilfried Devriese, one of Leo Aerts and one of Alexander Vandenbohede. The height of the mountain south of Rupes Recta is also determined as reference to the reproducibility of the calculations. On basis of the pictures of Vandenbohede and Devriese maximum heights of 310 meters are found. This corresponds very well with values found in literature. These range between 200 to 400 metres. The heights are largest in the central part of the rupes and decrease slightly towards the south where the rupes ends on a mountain. The heights also decrease towards the north were the rupes fades away on the mare floor. Interestingly, the heights determined with the picture of Aerts and which has the highest resolution, are lower. The central part rises only 250 meters above the mare floor. The height of the mountain south of rupes recta is, however, not lower than the other pictures in this report, with the exception of the picture of Vandenbohede (20/04/2002) which has the lowest quality.

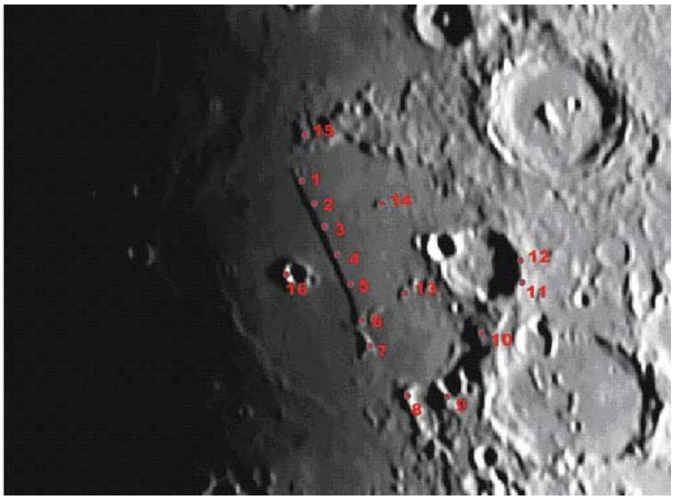
During sunset the fault face of Rupes Recta is seen as a bright line giving indication of the width of the fault. Using such a picture and the height measurements the slope of the fault can be calculated. This has been done for three points on a picture made by Emmanuel Thienpondt. In this way a slope of 7° is found. East of the fault a small shadow can be seen in many parts along the rupes. This height is in the order of 50 m. It indicates that the transition between the fault plane and the mare is not sharp but rather smooth.



20/04/2002 (2030 UT), using a 20 cm F6 Newton with reflex camera and eyepiece projection



21 April 2002 (2030 UT) using a 20 cm F15 SCT (Leo Aerts)



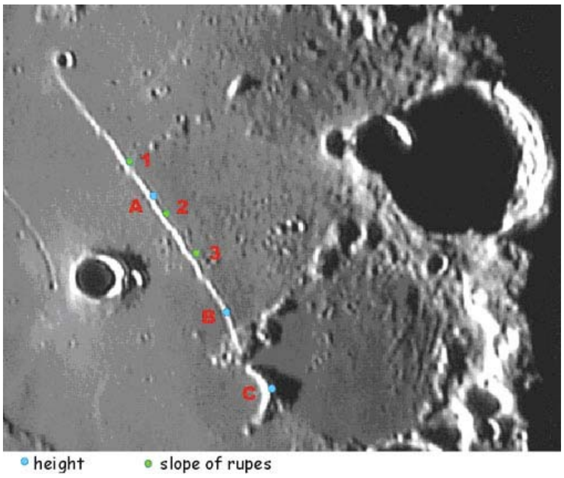
20 November 2004 (2000 UT) using a 20 cm F4 Newton (Wilfried Devriese)

Height measurements based on the picture of Leo Aerts of 21 April 2002

1	0.16 ± 0.05 km	6	0.19 ± 0.05 km
2	0.17 ± 0.05 km	7	0.17 ± 0.05 km
3	0.20 ± 0.05 km	8	0.41 ± 0.05 km
4	0.24 ± 0.05 km	9	0.48 ± 0.09 km
5	0.25 ± 0.05 km	10	0.20 ± 0.05 km

Height measurements based on the picture of Wilfried Devriese of 20 November 2004

1	0.15 ± 0.05 km	9	1.16 ± 0.09km
2	0.26 ± 0.06 km	10	1.14 ± 0.10 km
3	0.30 ± 0.06 km	11	4.15 ± 0.15 km
4	0.29 ± 0.06 km	12	3.90 ± 0.14 km
5	0.24 ± 0.06 km	13	0.28 ± 0.07 km
6	0.42 ± 0.06 km	14	0.17 ± 0.07 km
7	0.49 ± 0.07 km	15	0.44 ± 0.06 km
8	0.54 ± 0.06 km	16	0.59 ±0.05 km



20 august 2003 (412 UT) using a 7 inch Mak-Newton F30 (Emmanuel Thienpondt)

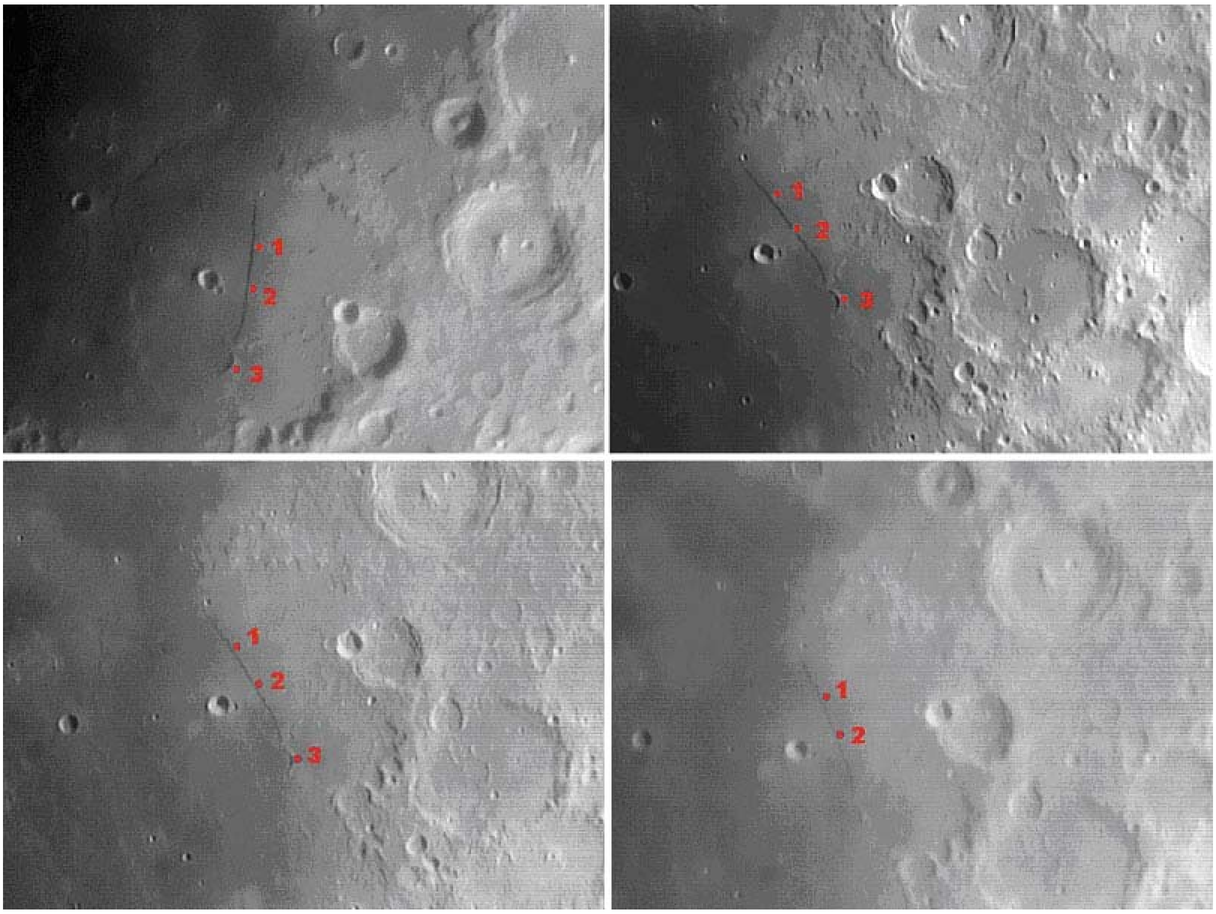
Height and slope measurements based on the picture of Emmanuel Thienpondt of 20 November 2004

1	7° ± 1	A	0.04 ± 0.02 km
2	6° ± 1	B	0.06 ± 0.01 km
3	7° ± 1	C	0.62 ± 0.08 km

These slope measurements are intriguing because different values can be found in literature. The largest value is given by Dethier (1988) (40°). Wood (2003) states that the slope is larger than 20°. However, North (2000) gives an average value of 7° and also Legault and Brunier (2004) mention a value in the order of 10°. This is in accordance with these measurements here.

Why are very different values found for a very straightforward question? Simply stated a height of 300 m and a width of about 2.5 km (on which literature does agree), results indeed in slope of 7°. Besides the different reported slope angles, there is also a geometrical problem. If the slope is 7°, this means that no shadow can be seen if the Sun rises higher than 7° in the sky above the rupes. Obviously, this is not the case. Shadows can be seen when the Sun is much higher above the straight wall.

In my opinion this is due to a combination of two reasons: the slope angle varies along the fault and surface roughness. Consider a slope angle which is gentler on the lower part of the straight wall and which is steeper on the upper part. This has an interesting consequence on the height measurements based on shadow lengths. If the Sun is still very low the shadow length extends the width of the fault and is cast on the western mare. But when the shadow is cast on the gently sloping foot of the rupes, shadow length is smaller then it should be when it would be seen on a non-sloping surface. This means that the height of the straight wall would be underestimated. Thus when the Sun climbs higher above the rupes, shadows are measured on a sloping surface and the calculated heights of the rupes should decrease. To test this, height measurements were made on four more observations so that data are available between colongitudes 10,7° and 30,6°. Then the heights determined on two locations (7.8W, 21.1 S (loc1) and 7.6W, 22.0 S (loc2)) were plotted in function of the colongitude and the height of the Sun above this location. In general, the heights of these two locations are indeed decreasing slightly in function of colongitude and of Sun height. When the Sun is 2.5° above the rupes, the calculated height of loc2 is about 60 m higher then when the Sun stands 13.7° above it. This is more or less the same for loc2. From a colongitude of 25° (height of the Sun above the rupes is then about 15°), the calculated heights increase.



All pictures were made with a 20 cm F15 refractor and webcam (Vandenbohede).

10/04/2003 (1920 UT)

1	0.23 ± 0.04 km
2	0.26 ± 0.04 km
3	0.38 ± 0.05 km

11/04/2003 (1940 UT)

1	0.45 ± 0.07 km
2	0.43 ± 0.07 km
3	0.51 ± 0.07 km

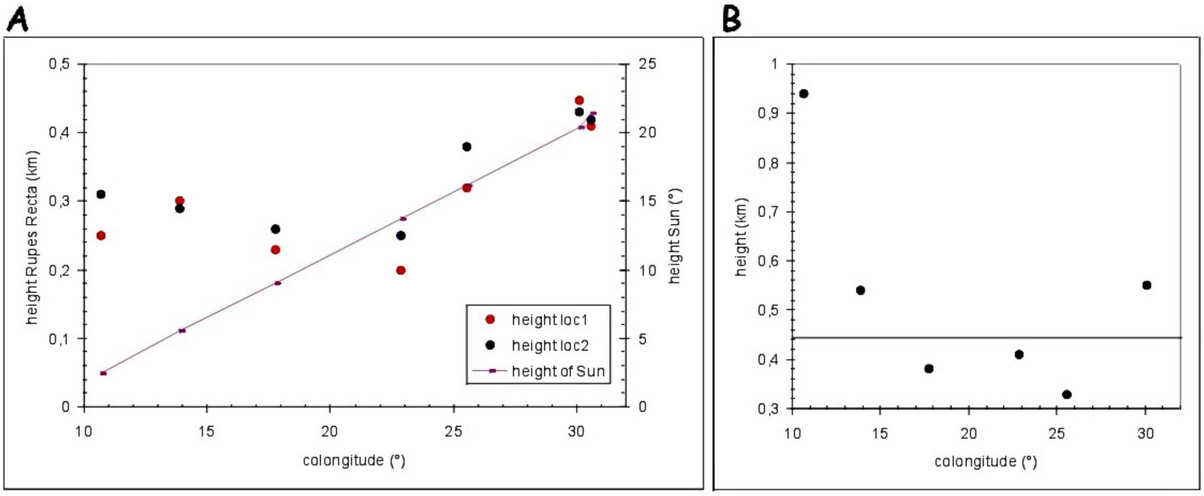
30/03/2004 (1930 UT)

1	0.32 ± 0.09 km
2	0.38 ± 0.09 km
3	0.33 ± 0.09 km

09/06/2003 (2000 UT)

1	0.41 ± 0.07 km
2	0.42 ± 0.07 km

Now what to make of this data? The calculated heights from pictures were the Sun is still very low above the rupes reflects the true topography. When the Sun climbs higher the shadow does not fall any more on the flat mare but on the gently sloping foot of the straight wall. Therefore, measured shadows are smaller than they should be and heights are also smaller. This is the case until the Sun is about 15° above the rupes. Then the calculated heights are increasing indicating that the shadow is longer than it should be. From this it can be derived that the maximum slope angle is in the order of 15°. It is most logical that this is the slope angle of the upper part of the fault and that the slope decrease to much lower values towards the foot of the fault. This is also what can be expected from a geological point of view. This gently sloping foot of the rupes is caused by slumping of material downhill.



Calculated heights for loc1 and loc2 in function of colongitude and height of the Sun above the rupes (A). Different height measurements of the mountain just south of the straight wall (B). The mean is indicated with the straight line.

Question remains why we calculated much higher heights when the Sun is higher than 15° above the rupes. This must be due to the roughness of the terrain. The fault is everything but a smooth surface. Therefore, shadows can be seen for much larger Sun heights than 15°. This is also indicated by the fact that the shadow is then much more diffuse and not well defined and that the length of the shadow more or less equals the width of the fault. Measuring the length of the shadow therefore becomes an almost impossible task.

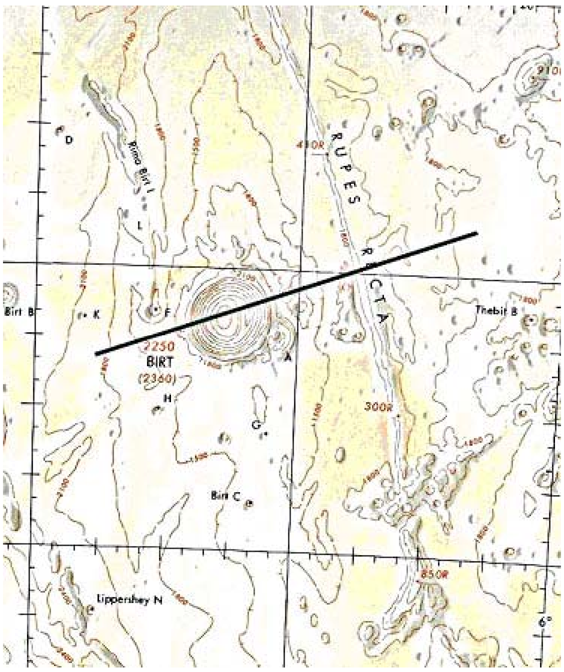
Now if we consider a very simple model where the fault can be divided in two parts with two different slope angles, where thus the transition occurs. Here the height measurements give a clue. For a colongitude of 23° a height of 0.25 km is calculated on loc2 whereas this height is in real in the order of 0.31 km. Therefore, I expect this flexture at a height of 60 meters above the fault's foot. This is of course a simplification because there will be a transition between the upper and lower part.

This picture was made by Vandenbohede on 29/06/2004 using a 20 cm F6 Dobson and a webcam. Altough the colongitude is 56.9° and the Sun is 45° above the rupes shadow can be seen. This is due to surface roughness. Shadows seen under such large colongitudes are not well defined, difficult to measure accurately and results in unrealistically large heights.

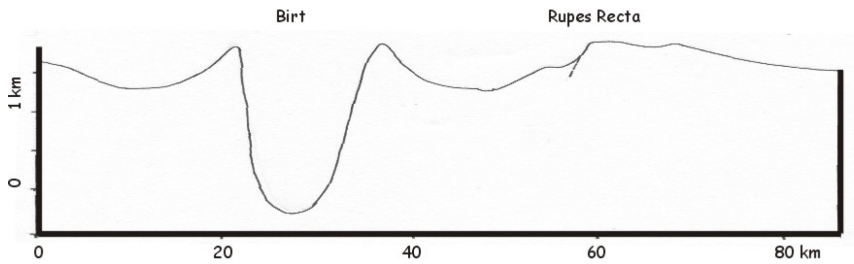
Perhaps the dependence of height measurements in function of colongitude is an artefact? Proof that this is not the case is given by the height measurements of the mountain just south of Rupes Recta. When plotted against the colongitude, they give no similar trend like loc1 and loc2. There is only one rare value of 0.94 km base on the picture of Vandenbohede (20/04/2002) but this has to do with the quality of the picture. The shadow of the mountain is not well defined making accurate measurements difficult. The shadow of the straight wall is luckily sharp so that for this feature reliable measurements were possible.

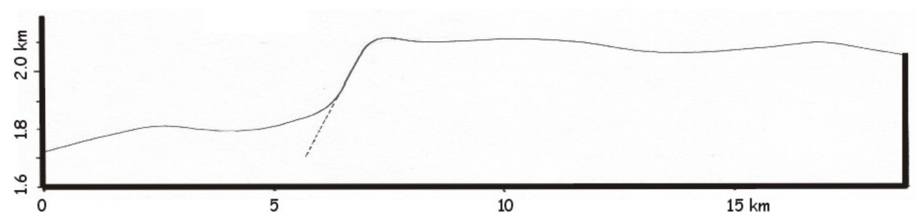
Conclusions

Based on the measurements of shadow lengths and of the width of fault, the height and the slope angle of Rupes Recta was calculated. Height is about 300 m in the centre and diminishes slightly towards the south. Towards the north, the height diminishes until the fault fades away in the mare plane. The slope angle is about 15° for the upper part of the fault and diminishes towards the foot. This is most probably due to slumping. These data are finally visualised in a cross-section.



Map of the region of Rupes Recta with indication of the cross-section (Lewis, 1969). East of Rupes Recta, topography is rising gently towards the rupes. West of it, crater Birt is present in a depression on the foot of the straight wall. This depression has its axis almost parallel to the rupes.





Cross-section through Birt and Rupes Recta. The gentle sloping terrain east of Rupes Recta is visible as is the large height difference east and west of the fault and the depression in which Birt can be found. The different slope of the fault is good visible on the lower cross-section. Maximum angle is 15° and is found in the upper part. The vertical scale is exaggerated in both drawings. Therefore the slope looks steeper than it actually is.

Besides the data on the straight wall, this example illustrates also that care must be taken with the interpretation of height measurements based on shadow length measurements. These are here dependent of colongitude (or the height of the Sun above the feature) because they are measured on a gently sloping surface. This explains why heights between 200 and 400 meters for the Rupes Recta are reported in literature. Different slope angles can be explained by different methods use (based on width and height or based on the Sun height for which no shadow can be seen).

References

Dethier, T. (1988). Maanmonografieen. Vereniging voor Sterrenkunde. *(in Dutch: Description of the Moon)*

Legault, T. & Brunier, S. (2004). Le Grand Atlas de la Lune. Larousse.

Lewis, H.A.G. (Ed.) (1969). The Times Atlas of the Moon. Times Newspapers Limited Printing House Square London.

North, G. (2000). Observing the Moon, the modern astronomer’s guide. Cambridge University Press.

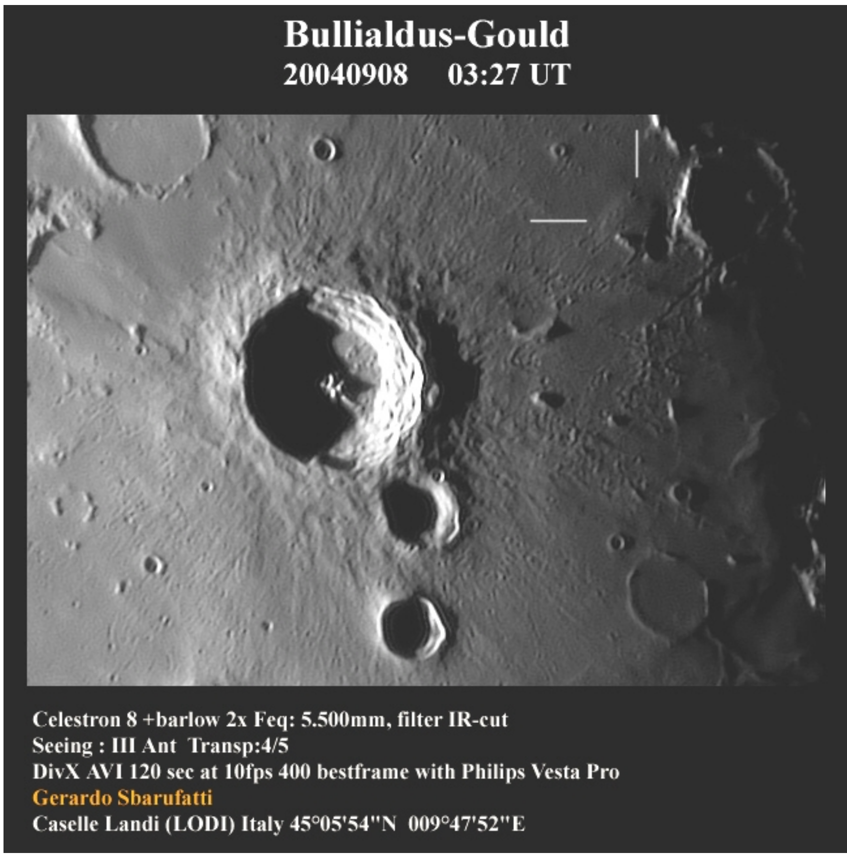
Wood, C.A. (2003). The Modern Moon, a Personal View. Sky Publishing Corp.

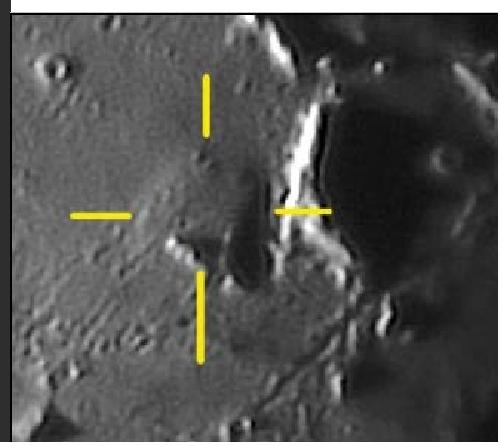
A DOME-LIKE FEATURE NEAR CRATER GOULD

Fernando Ferri (fernando.ferri@libero.it),
Antonio Marino (antoniomarino@libero.it), Raffaello Braga (rafbraga@tin.it).
U.A.I. Lunar Section, Italy

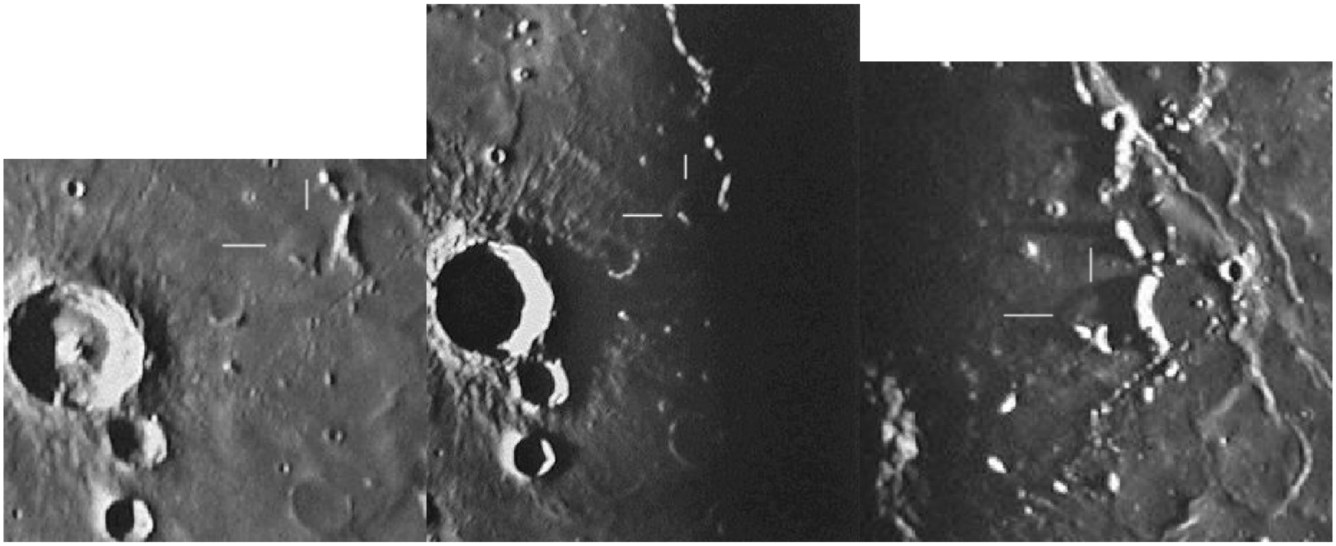
A possible domelike feature is reported at the following coordinates:
Lat -19.33°, Long -18.42°, Xi -.2982 Eta -.3310.

The feature is visible in an image by G. Sbarufatti (Italy) taken on September 08, 2004 at 03.27 UT, using a 8" SC, Barlow 2x. The image is the result of the processing of a 120 sec AVI (see image for details). The colongitude was 195.6° and the Sun height above the suspected dome was calculated using H. Jameson's Lunar Tool Kit to be 2.27°.





This domelike feature is located just West of crater Gould, ENE of Bullialdus (Mare Nubium, Rukl table 53) and its shape appears slightly irregular with dimensions of approximately 12 x 17 km. It is not included in the ALPO Lunar Dome Survey Catalogue and we are not aware of any previous report on this structure. This could be explained considering its position, very close to the crater Gould which can completely hide it from view at local sunrise with its relic western ramparts. Moreover the dome appears limited to the S by a small highland mountain and by a ghost crater, making the study of the real shape of the dome difficult. Very narrow linear features are also present and this adds to the complicated morphology of the area, there is some indication (for example see LAC 94) for a small linear rille cutting part of the dome, whose surface shows small craterlets of possible impact origin.



Detail of CLA f17 **Detail of CLA f20** **Detail of CLA f14**

This possible dome is also visible on the Consolidated Lunar Atlas (CLA) plates F17, F14 and F20. In CLA plates F14 and F20 the feature is very close to the terminator, and both opposite illuminations show well its curved western boundary. CLA plate F17, taken at a higher illumination angle (6°), shows the complete structure: it is important to note that no black shadow is cast by the suspected dome which confirms its low relief character. Domes of similar morphology can be observed in the Appenines bench (Rukl table 22) or Tobias Mayer Alpha (Rukl table 30) areas. A preliminary analysis shows that the reported domelike feature could be a member of Class 5 of the lunar mare domes classification by of Head and Gifford but an origin more closely related to lunar volcanic sources cannot be excluded at this stage of our study. No particular albedo signature can be observed on the dome area and this can be explained considering its short distance from the Eratosthenian crater Bullialdus whose ejecta blanket extend further then Gould's position .

Clearly this preliminary data and interpretation can be much improved with new specific observations. The UAI Lunar Section (http://luna.uai.it) welcomes any report, drawing and image of this feature. Please send your files to the authors email addresses.

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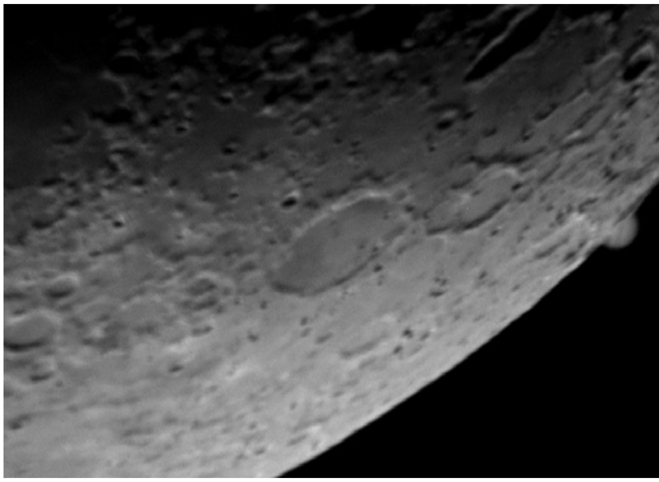
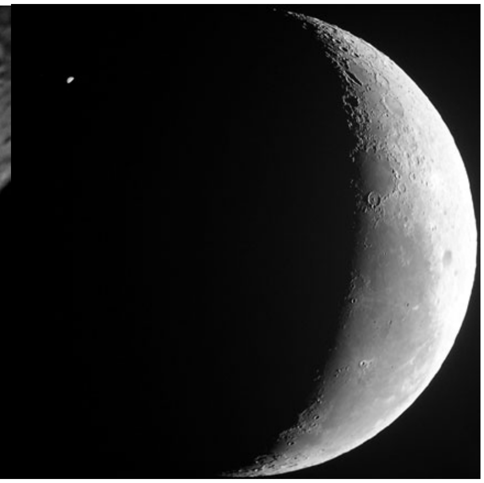
OCCULTATION OF JUPITER BY THE MOON

Digital images by Howard Eskildsen - Ocala, Florida, USA
8 inch Newtonian - Nikon Coolpix 4300

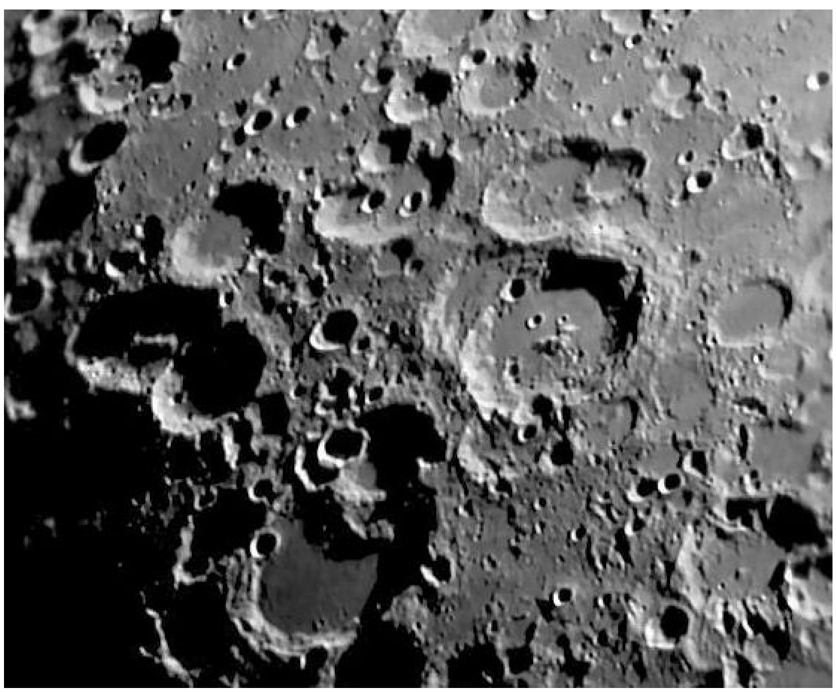


Dec. 7, 2004 - 09:04 UT



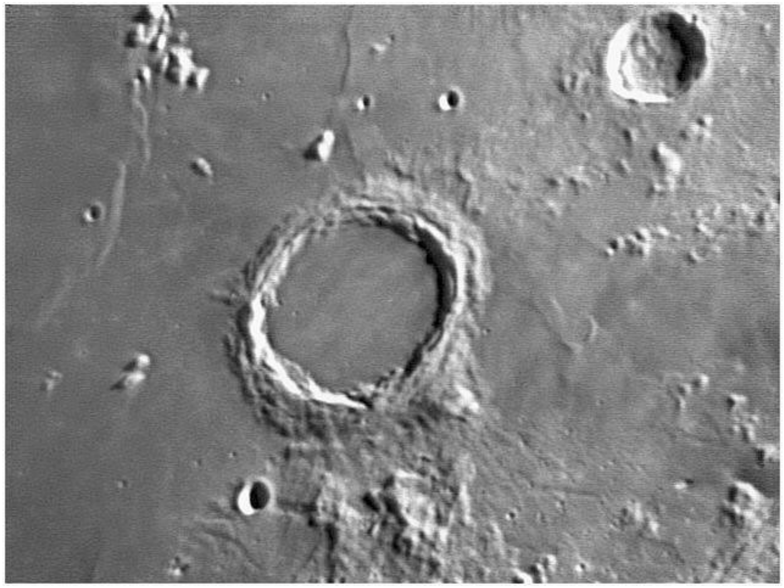
Dec. 7, 2004 - 09:51 UT

RECENT TOPOGRAPHICAL OBSERVATION

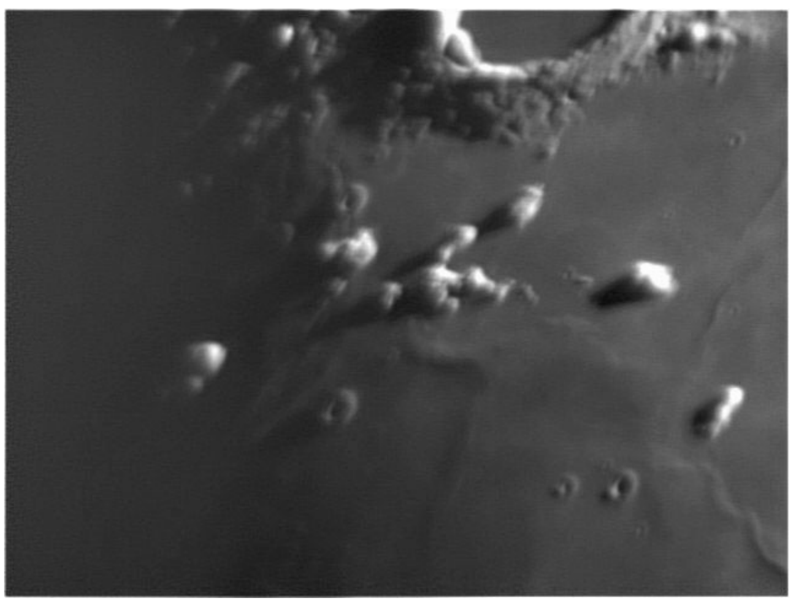


MAUROLYCUS
Digital image by Ed Crandall - Winston-Salem, North Carolina, USA
December 19, 2004 - 11:49 UT
4.3” f/6.5 APO Refractor - 3x Barlow - Toucam

RECENT TOPOGRAPHICAL OBSERVATIONS



ARCHIMEDES
Digital image by Rafael Benavides Palencia
Posadas, Cordoba, Spain
December 20, 2004 - 19:55 UT
235mm f/10 SCT - 2x Barlow ToUcam Pro 1



MONTES TENERIFE
Digital image by Rafael Benavides Palencia
Posadas, Cordoba, Spain
December 20, 2004 - 19:52 UT
235mm f/10 SCT - 2x Barlow ToUcam Pro 1

BRIGHT LUNAR RAYS PROJECT

Coodinator - William M. Dembowski, FRAS

EXCERPT OF THE MONTH:

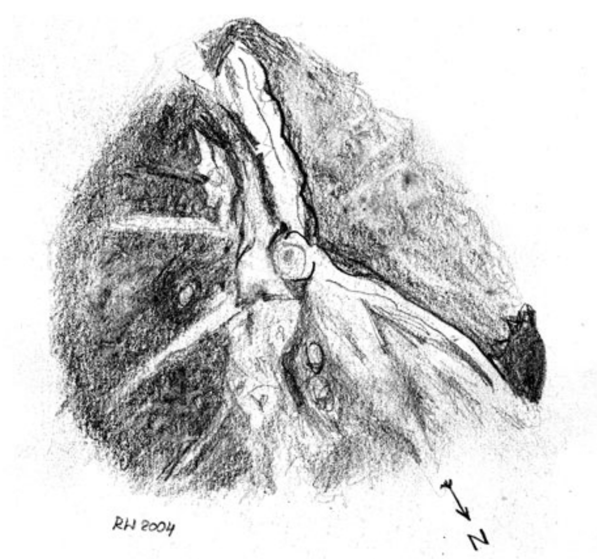
SKY & TELESCOPE'S NEWS BULLETIN FOR OCTOBER 27, 2000
LUNAR CRATER RAYS: ANCIENT OR MODERN?

The bright, petal-shaped ray systems surrounding lunar craters like Copernicus and Tycho are more than fascinating telescopic targets. Planetary geologists use them as time markers to help establish the sequence of lunar history -- a chronology that relies in part on the belief that rays surround young craters but not old ones. Lunar material darkens with time as the iron in its minerals becomes less oxidized after exposure to space. So once a crater forms, its rays presumably fade to invisibility over several hundred million years.

But new results are challenging these long-held assumptions. A team of investigators led by B. Ray Hawke (University of Hawaii) reassessed several rayed lunar craters using data from the Clementine mission. They judged the rays' maturity using not just brightness as the sole criterion but also their iron and titanium content and the ratio of their color intensity at deep red and near-infrared wavelengths. They find that some rays form when bright highlands material is thrown from the impact site and splashes onto darker plains, as occurred around the 20-kilometer-wide crater Lichtenberg. Other ray systems arise from the plains themselves, because chunks ejected from the main crater stir up the surface on which they fall. The bright tails of Messier and Messier A are examples of recently exposed mare material.

Distinguishing between these two origins is critical to determining a crater's age, because Lichtenberg-type rays, which contain lots of highlands debris, will never darken completely. "We've assumed that rayed craters are all younger than about 800 million years," Hawke explains. "But these bright, mature ray systems could be 2, 2«, or even 3 billion years old." This has serious implications for how geologists decipher lunar history, he warns. If further work shows that many crater rays are extremely old instead of relatively young, the whole chronology of the Moon's surface evolution will need to be revised.

RECENT RAY OBSERVATION



RAY SYSTEM OF PROCLUS
Sketch by Robert Wlodarczyk
Czestochowa, Poland
October 24, 2004 - 21:15 UT
18cm f/6.6 Newtonian - 96x

RECENT RAY OBSERVATION

ARISTARCHUS REGION
Digital image by Anthony Ayiomamitis - Athens, Greece
October 25, 2004 - 20:46 - 21:08 UT+3
Celestron 14" SCT - Philips Webcam

Notes by Anthony Ayiomamitis: Submitted is a high power view of the crater Aristarchus and immediate area which is characterized with a wide spectrum of features (Aristarchus, Herodotus, Vallis Schroeteri, Aristarchus Plateau) and colors visible at high magnification including the elevated plateau (2 km) which provides a surreal three-dimensional experience. Please note the coloration (mustard-yellow, bluish tint as well the brownish/muddy red) reported by Apollo mission astronauts and various ground-based observers.

This area of the moon, an astrophotographer's nightmare, was imaged at the prime focus of my 14" SCT where a Philips webcam was used for the capture of 6225 frames over a 22-minute interval. Analysis of each frame led to a subselection of 244 frames which were then used for further processing.

I kindly direct you to http://www.perseus.gr/Astro-Lunar-Crater-Aristarchus.htm were you will find additional image and imaging details as well as more background information in relation to this fascinating area of the moon.

LUNAR TRANSIENT PHENOMENA

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LTP NEWSLETTER - JANUARY 2005

Dr. Anthony Cook - Coordinator

I would like to wish all our observers a happy and fruitful 2005. Observations received for November have overwhelmed me somewhat in terms of posting these on the web site in a timely manner. As you can see a eleven observers have submitted reports during November with observations beeing received from: myself, Jay Albert (USA), Michael Amato (USA), Clive Brook (UK), Marie Cook (UK), David Darling (USA), Robin Gray (USA), Jeffrey James (USA), Brendan Shaw (UK), Don Spain (USA), and Robert Spellman (USA).

One of our US observers reports that they videod a dark object (~1/100th the diameter of the Moon) passing across the lunar disk surface (along the line of sight) on 2004 May 05 around 10PM PST from Mission Viejo, CA, USA. The observer reports an earlier dark object seen 29 minutes prior to this. I have examined the frames and think that this was probably a distant insect or a bird. I have seen several spectacular examples of this myself, especially of aircraft, though the altitude of the Moon at the time certainly favors the former explanations due to size constraints and atmospheric ceiling for typical planes. But just to be 100 % sure that it was not the silhouette of some meteoroid, or tiny asteroid, between the Earth and the Moon, if anybody else was observing the Moon around this time can they please let me know. There have been quite a lot of reports of such phenomena in the past and after having spent > 100 hours videoing Earthshine, looking for impact flashes, I can confirm that birds, insects, aircraft, helicopters, satellites quite frequently pass across the field of view, especially the lower the altitude of the Moon.

On Nov 7th the illumination conditions repeated for a LTP seen on 1970 Aug 27 by Merosi concerning a brightening on the dark size, near Elger and ~1.5 x the size of Elger itself. Robin Gray took the challenge and re-observed this region and reports: *"Found the Elger area on the Moon through its location relative to Hainzel. Although Elger was on the night side of the terminator, at its approximate site there was a narrow, sem-sinuous band of light extending SE to NW. This band was somewhat shorter than the short diameter of the northern part of Hainzel. Near the northwest end of the band was a separated point of light. The northwest part of the band was the brightest part of the feature, followed by the southeast tip. The area in between was less bright than these two spots. The separated point was about as bright as the southeast tip. The feature gradually faded. At 14:05 UT only the northwestern tip was visible and by 14:15 UT that was gone as well. This was the only feature seen well into the night side of the terminator, and gave the impression through its appearance and gradual fading out of a ridge or crater rim projecting up into the sunlight. While observing I estimated its length against the diameter of the Northwestern part of Hainzel. When I measured this in Rukl's Atlas and compared it with the diameter of Elger, it came out close to 1.5 the diameter of Elger."* So it seems that this is probably what Merosi saw and we can now cross this LTP off of our list!

On Nov 20th Robert Spellman reported three candidate impact flashes in Earthshine from possible Leonids at 01:43:36, 02:34:03, and 03:12:29 UT. If you were observing at this time then please contact Brian Cudnik of ALPO. I was also observing but earlier on Nov 19th (so did not overlap in time) and took ~4 hours of video, though weather conditions were not ideal and I am still analyzing my tapes.

At long last the European Space Agency's SMART-1 mission is in orbit around the Moon and will obtain images at a variety of resolutions down to 40m. Although few lunar images have been released at the time of writing, observers are encouraged to actively observer the Moon so that we can compare our sketches and CCD observations with SMART-1 images - when they are eventually released. Incidentally a recent paper at by Bhandari et al, at the recent International Conference on the Exploration and Utilization of the Moon, held in India on Nov 22-26 suggests that the Indian Chandrayan-1 Moon mission for 2007 will actively image past LTP sites. I am grateful to David Darling for supplying me with this information. So now is really a good time to observe the Moon and help eliminate many past LTP reports so as to narrow down the range of LTP sites to monitor.

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!

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MOON MISSIONS - PAST & PRESENT

LUNAR RECONNAISSANCE ORBITER (LRO)

http://www.space.com/businesstechnology/lro_apollo_040714.html

See the above website for a brief overview of what may prove to be NASA's next lunar mission.
The following is an excerpt from that site:

NASA engineers are hard at work on a lunar spacecraft expected to be the first in a wave of robotic probes that will pave the way for future human missions. The spacecraft, called the Lunar Reconnaissance Orbiter (LRO), is the first mission out of the gate under NASA's space vision of sending more robot and human explorers beyond Earth orbit.

"This mission is the first concrete step in laying the groundwork for humans to go back to the moon," said Jim Garvin, the lead scientist for moon and Mars exploration at NASA headquarters in Washington. "So there's a lot resting on its shoulders."

Set for a 2008 launch, the probe is expected to circle the moon for at least one year and return detailed maps of the lunar surface, data on the moon's radiation levels and an in-depth look at its polar regions for resources that could be tapped by future astronauts.

SMART-1

The European Space Agency's SMART-1 spacecraft continues to orbit the Moon. See the latest orbital information at this site: http://smart.esa.int/science-e/www/object/index.cfm?fobjectid=36202