



LUNAR SECTION CIRCULAR

Director Alan Wells
Assistant Director/Editor John Pedler

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Data on pages 7-8 are for Feb. 2007

Lunations 1040/1041

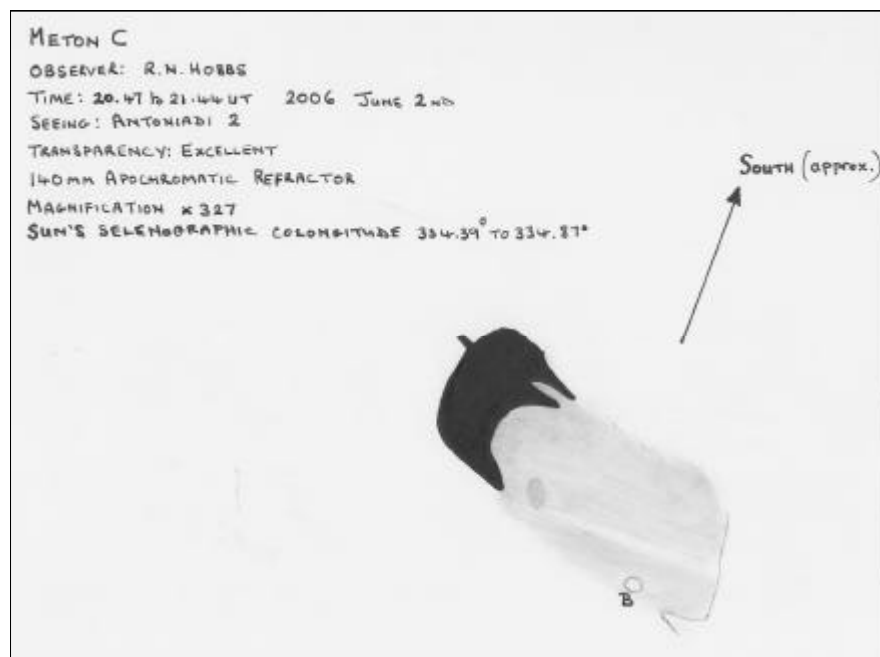
Jan. 2007

Markings on the floor of Meton C.

Rod Hobbs

Meton was unfavourably placed due to libration and relatively close to the terminator as the Moon approached first quarter. A faint linear 'ray' was observed crossing the floor of Meton C. The 'ray' was judged to diagonally cross the area of the impact ray material in Meton C visible on Lunar Orbiter photographs and in other images, including those in the Hatfield Photographic Lunar Atlas. The 'ray' extended from the mid-point of the brightly illuminated west wall in an approximately north-east direction, passing to the south of Meton B and appeared to terminate immediately adjacent to a well-defined small dark grey area outside of the shadow of the opposite wall. My diagram indicates the position of the observed features.

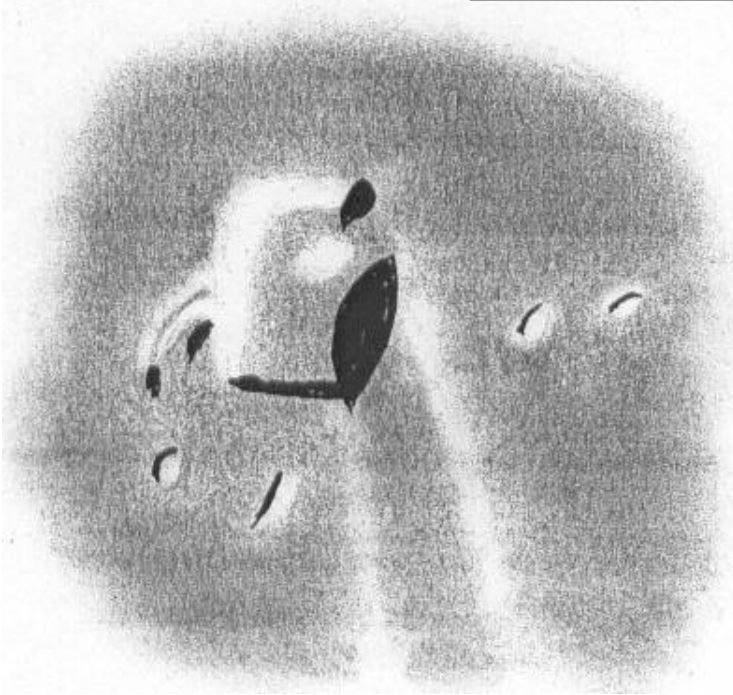
By chance, I saw a photograph in a popular astronomy book, 'The Practical Companions Practical Skywatching' published by Fog City Press, San Francisco (2002) and attributed to the University of California Observatory/NASA. Though encompassing a large area of the Moon including essentially the whole of the terminator region of the northern hemisphere and well beyond, this photo clearly shows the dark feature in Meton



C that I observed. The photograph was taken at approximately first quarter and therefore under similar illumination conditions to my observation, though I do not know other technical details about the photograph. However, I could not see this dark feature in a high definition photograph taken by the Galileo spacecraft of the Moon's north polar region (Sky and Telescope May 2006, page 29).

The dark feature does not appear to be a shadow as it was not black, though very distinct. Close examination of a Lunar Orbiter photograph (iv_104_h2) does indeed show a rather darker grey area with a well-defined boundary on the crater floor at this approximate location. In this photograph the northern edge of this feature is bordered by a narrow bright area with a broader light area of impact ray material to the west. It is

possible that the 'ray' might be a result of viewing these features at lower resolution. However, material from impact craters is generally much more visible when the Sun is almost overhead and not under low angle illumination conditions near the terminator. The bright ray of impact material that this 'ray' crossed is prominent nearer full Moon, but was not visible at the time of my observation. An image of Meton taken by Jerome Grenier (www.astrosurf.com) with illumination from the west, shows extremely faint darker areas extending in a north-easterly direction from a point on the west wall of Meton C. Does this area mark a change in elevation of the flood lava, appearing either dark or light depending on the angle of illumination? Further observations on the visibility of these features will be interesting. As a novice in lunar observing, this observation took me by surprise and I would be interested in any comments from more experienced observers.



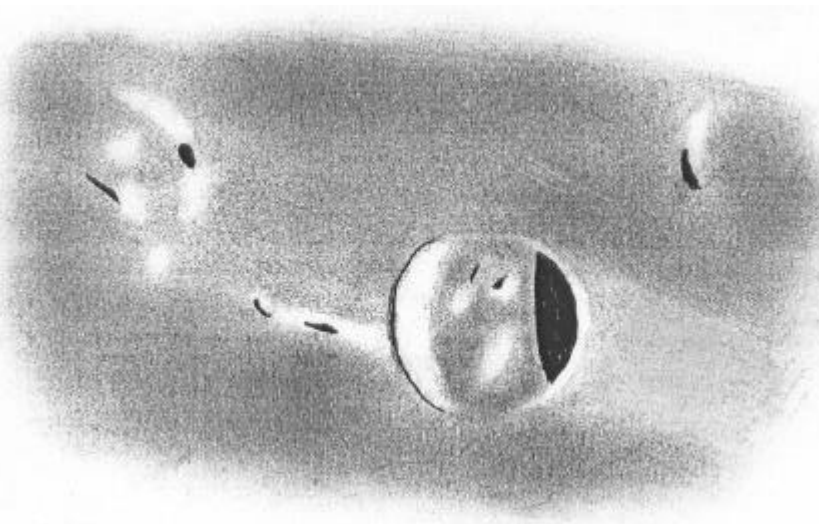
PROCLUS

2006 November 7th 21.00 UT

X175 10 inch Reflector - S3

Co-long. 112.99d

This crater is 18 miles in diameter and the Walls are steep, rising to 8,000ft. The West wall was extremely bright, with the East wall casting a conspicuous Shadow. Two rays could be seen running NE, one from the East wall and one from the North wall. A light feature was also seen on the floor of Proclus just south of centre.



MENELAUS

2006 November 9th 22.50 UT

X175 - 278 10 inch Reflector - S3

Co-long 132.18d

A fine crater which is 20 miles in diameter with terraced walls rising 8,000ft above the floor. The west wall was bright and the east wall cast a conspicuous shadow. Three features were seen within the crater, two of which had small shadows. The region NE of Menelaus was lighter than the surrounding area. The small crater AUWERS was seen to the SW in the hilly region

An Interesting Valley in the Southeast Quadrant of the Moon

By Maurice Collins

On the evening of 2006 November 23 at 0815UT (21:15 NZDT) I observed a 2.4 day old crescent Moon just after the clouds had cleared. My telescope is a Meade ETX-90/RA Maksutov-Cassegrain, 1250mm focal length and I was using my 9mm eyepiece giving me 138x. I noticed a valley in the Southeast limb region beginning between the craters Petavius and Furnerius and extending almost to the apparent limb of the Moon.

It appeared to be a line of craters, I counted four of them, and using my new "Hatfield SCT Lunar Atlas" that had arrived the day before, on Map 16, I took it to be associated with the crater Adams, "B", "D" and "E" and Hase "D". The Moon was 15° above my horizon at the time. I thought that was a pretty positive identification using the Hatfield atlas and I was pleased at how easy the atlas is to use at the telescope, albeit upside down for us observers "down under". So I did not give it too much thought until later when back inside when I tried to identify it with the Virtual Moon Atlas, it showed up as a line of craters, but no name except Rima Hase.

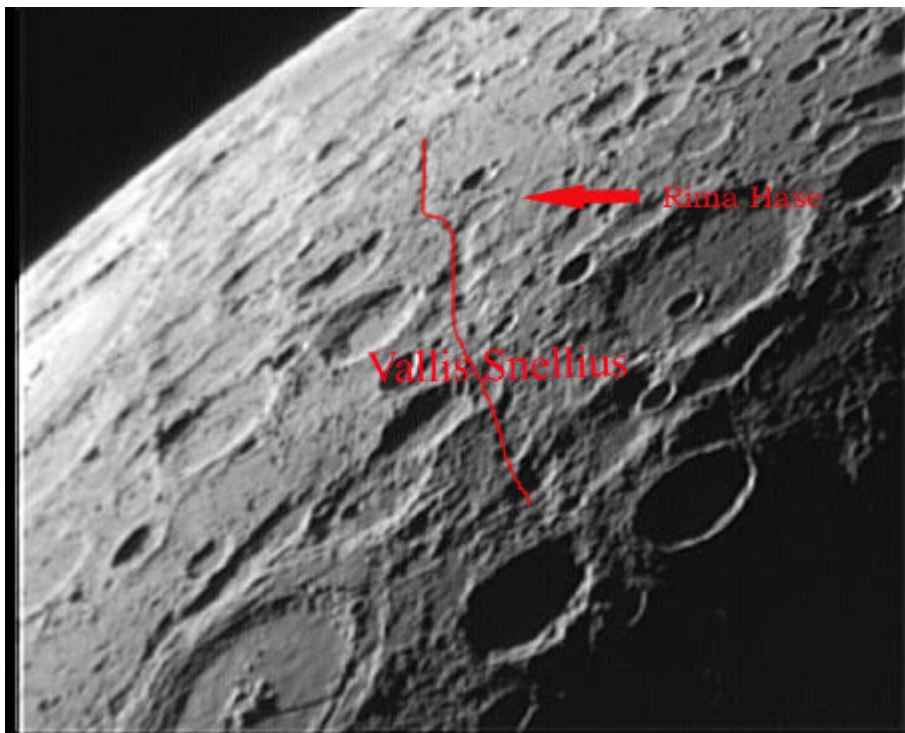


Image courtesy of Brendan Shaw, 2005 May 11 20:06UT, with 10" reflector.

I mentioned it to Brendan Shaw and he kindly supplied an excellent image of the region he took on 2005 May 11 at 20:06UT, which clearly shows a valley in the position I was viewing. On the night I observed it, the libration was putting it more up towards the limb than in his image I believe. There is a nice straight rille nearby which Brendan has also captured in the image, and it is called Rima Hase, but would have been too small to be the valley I was seeing.

On searching for the feature on the internet I found references to this valley being named Vallis Snellius, and it being described as the longest valley on the Moon at approximately 592km (370 miles) long. It is also thought to have been formed by secondary ejecta from the Nectaris basin impact.

It is very close to where I saw the "valley" of those four craters, so expect that the craters beside the Snellius valley brought it to my attention in the first place at the telescope. Rukl (chart 69) has Vallis Snellius, but at the time I was looking for the Adams series of craters and did not connect the two features and did not turn to chart 69.

I also checked Wilkins and Moore "The Moon" but there is no reference to the feature when describing the craters Snellius, Adams or Hase. So I wonder when this feature was first named and by whom? Or was it just overlooked in the Wilkins and Moore book (unlikely as it is so comprehensive).

While out observing, the two and a half day old Moon also provided a spectacular sunrise on Mare Crisium with the western walls being lit beyond the terminator for what I estimated to be equal to the apparent diameter of Langrenus. Speaking of which, Langrenus also was looking very impressive with the central peak totally dark and back silhouetted against the floor which was lit. The dark east inside crater rim was dark and so were the exterior west walls. I made a rough sketch of it. I could not discern any detail on the crater floor however.



Langrenus 2006 Nov 23 0815UT 138x M.Collins.

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Best wishes for the 2007 and I hope that you have plenty of clear sky when the Moon is around - it will be an exciting year with a lead up to several international lunar missions from this year on - will these solve the problem of TLP once and for all? Observations were received from the following observers for November: Jay Albert (FL, USA), Clive Brook (Plymouth, UK), Maurice Collins (New Zealand), Marie Cook (Mundesley, UK), myself (Nottingham, UK), Robin Gray (NV, USA), Nigel Longshaw (UK), Gerald North (Narborough, UK), Steve Knight (Hampshire Astronomical Group, UK – observation via Geoff Burt), Piergiovanni Salimbeni (GLR group, Italy), Brendan Shaw (UK), and Don Spain (KY, USA,).

Two observers, myself and a Hampshire Astronomical Group observer, Steve Knight, had a go at re-observing Copernicus under the same illumination as Geoff Burt's 2006 Jun 05 observation, but again, neither of us imaged anything unusual. Consequently I am coming to the conclusion that Geoff's blob may have been a TLP as I cannot find another explanation and we have had several attempts to re-observe but with no repeat performance. It was very welcome to start receiving reports from three past observers again, Robin Gray, Maurice Collins and Nigel Longshaw.

The Earthlit Moon on 26th November 2006 generated some unanticipated excitement, and for a change I was the one who noticed the possible activity. With hindsight I think I could have done a better job, but observing and telephone alert pressures force quick decisions. Is it better to get other observers out looking as soon as possible, or to do a thorough monitor and analysis before instigating an alert? The danger of the former is that we could go back to the old days of having seemingly too many alerts, although the danger of the latter is by the time an alert is issued a TLP may have finished! Bearing this in mind, here is what happened.....

“On the previous night of the 25th November UT 17:03-17:34, I had used a Celestron 11” robotic telescope and taken some CCD images that showed up Earthshine quite nicely with relatively little glare from the illuminated limb. Aristarchus was quite bright, but I was used to this, so ignored it”. On the next night, 18th November UT 16:34-18:39, and putting out of my mind what I had seen the previous day. “When moving around the Aristarchus, Kepler, Copernicus area, I noticed that the crater Pytheas, at times, was almost, and perhaps as bright as Aristarchus (see Fig 1a). A quick check in the Hatfield photographic lunar atlas (under analogous full Moon illumination) revealed that this seemed a bit odd. I immediately issued text message alerts to Italian UAI and GLR groups, and raised a few BAA members in the UK by telephone - the objective was to monitor the brightness of Pytheas and Aristarchus. Whilst I was doing this I set the robotic telescope at Nottingham University to take images automatically approximately every 5 sec in white light (unfortunately the filter wheel was stuck so I could not image in other wavebands). I also contacted David Darling in the US and he put out an email alert to other observers” It was only much later when I had time to sit down and compare the Earthshine images with those from the 25th Nov, that it became obvious that Pytheas was not the culprit, but instead Aristarchus appeared obviously fainter on 26th Nov than it did on the 25th Nov (Compare Fig 1a and 1b), or was it brighter on the 25th and normal on 26th? Unfortunately most observers were either clouded out or had problems seeing much in Earthshine at all - however you can see from the images how obvious to the eye this was!

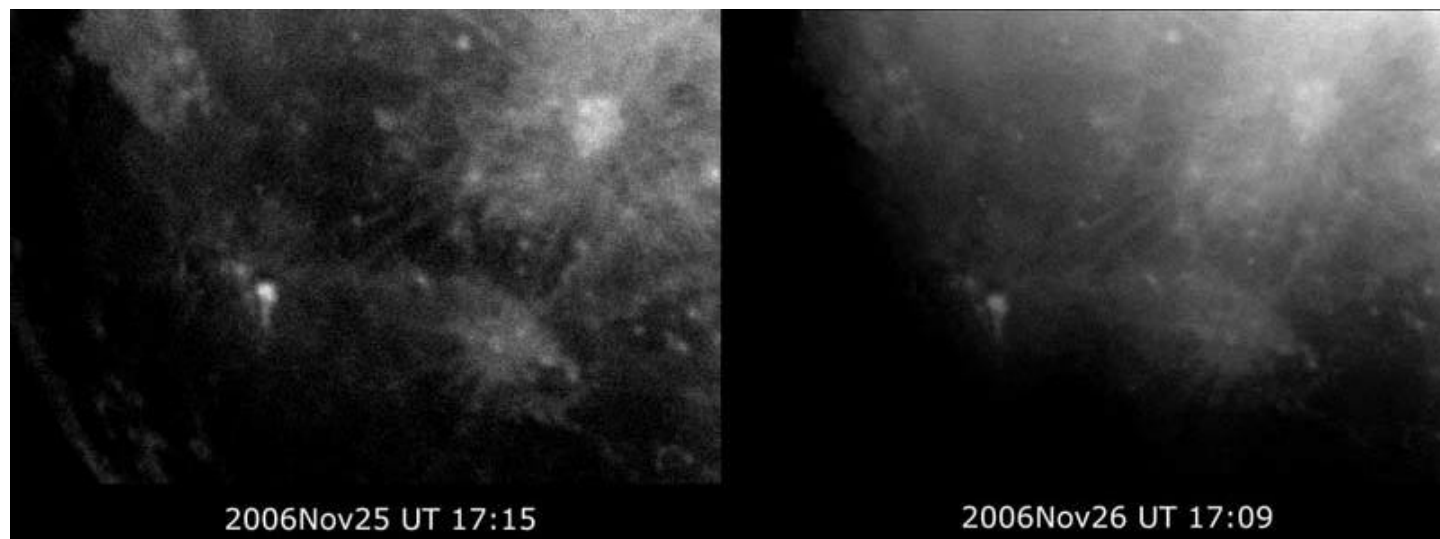


Fig 1a Aristarchus much the brightest feature

Fig 1b Aristarchus fainter than Pytheas etc

One immediate possibility, looking at Fig 1b, was that a lot more glare from the illuminated side was visible on the 26th Nov and this artificially offset the brightness of the lunar image towards the top of that image. After some lengthy measurements of some sample CCD images I plotted some preliminary graphs for localised points (less affected by glare) for the Aristarchus region, and for the Copernicus region, and these suggest strongly that this is the case as there are two offset lines of points with the same gradient: one for the Aristarchus region and one for the Copernicus region. Therefore the 2006 Nov 26 TLP alert was probably a false alarm (subject to further analysis), for which I am sorry if this definitely proves to be the case, although taking a look at Fig 1a and Fig 1b above, and in particular the similarity of Aristarchus and Pytheas on Nov 26th, it is easy to see why it was suspected as being a TLP at the time.

So what does this tell us? There have been a lot of Earthshine TLP in the past referring to the visibility of Aristarchus - typical comments being: Aristarchus is "brighter" or "fainter" than normal. Well if initial visual inspection of CCD images can fool us, the same too must apply easily to many of the past visual Earthshine Aristarchus TLP. Glare problems may also affect estimates of the magnitude of impact flashes seen in Earthshine too! How then can one be more quantitative in future? CCD images are to be preferred to visual observations as they can be more quantitative, i.e. one can get brightness numbers out and compare to other localized features. In Fig 1b I would say that Pytheas looks very similar of similar brightness to Aristarchus - in fact the CCD brightness of Pytheas is greater. I do not wish to discourage visual monitoring of Earthshine features, but please make lots of comparisons with other nearby features if you are going to attempt this.

Finally, Jay Albert has asked me to write some advice on optical filters to use when looking for colour on the Moon with the human eye. My advice is as follows: Kodak Wratten filters are expensive, and one should be very careful to buy the correct combination. In the BAA we have always recommended the Wratten 25 (or 29) red and Wratten 44a filters. However different observers have different colour sensitivity and may, if they find one filter lets in more light than the other, wish to use some Neutral density filters to even up the contrast. I have also heard that a Wratten 25 and 38a pair may work well too. The key thing is when you put the filters one in front of another, and look at a bright light, they should yield a dark image i.e. red must block the blue and blue must block the red. If you see a greyish image then the filters spectral response overlaps and they are less suitable. One alternative to Kodak Wratten filters is to purchase a booklet of gelatin filters from Edmund Optics - these are a fraction of the price and contain spectral curves for each of the 100 or so filters in the booklet. You will have to experiment to find which filter pair combination is best, but it will save you some money!

The following repeat illumination and libration events for UK observers occur for January...

Event: Herodotus (Bartlett, 1957 Sep 06) can be seen on/from (UT): 2007 Jan 01 (00:00-00:17) - [*Can you see a pseudo peak on the floor?*]

Event: Ross D (Harris, 1965 Apr 14) can be seen on/from (UT): 2007 Jan 01 (21:49-16:20) - [*Image or sketch*]

Event: Plato (Unknown Observer, 1916 Oct 10) can be seen on/from (UT): 2007 Jan 03 (02:00-05:55) - [*Can you see any colour?*]

Event: Proclus (Bartlett, 1976 Sep 08) can be seen on/from (UT): 2007 Jan 03 (03:48-06:35) - [*Can you see anything that looks like a central peak, and is there a bright spot on the north wall crest and how bright is it?*]

Event: Eratosthenes (Bartlett, 1976 Sep 08) can be seen on/from (UT): 2007 Jan 03 (05:10-07:58) - [*Can you see any pseudo shadows or gray shadings that resemble shadows?*]

Event: Archimedes (Haas, 1940 Jun 20) can be seen on/from (UT): 2007 Jan 03 (17:37-21:34) - [*How bright is the NE wall?*]

Event: Alphonsus (McLaria, 1965 May 08) can be seen on/from (UT): 2007 Jan 25 (21:07-00:53) - [*Look out for flashes on the central peak and can you see colour elsewhere?*]

Event: Plato (Porter, 1976 Sep 04) can be seen on/from (UT): 2007 Jan 28 (17:31-22:20) - [*Monitor how dark the floor is over time*]

Event: Proclus (Bartlett, 1958 Sep 24) can be seen on/from (UT): 2007 Jan 29 (16:42-17:09) - [*how bright are interior spots, how visible are ridges inside the crater and can you see a pseudo central peak?*]

Event: Ross D area (Cross, 1964 Apr 23) can be seen on/from (UT): 2007 Jan 29 (16:43-20:19) - [*Is there any part of the surface here that might appear hazy or diffuse?*]

Event: Gassendi (Robinson, 1976 Oct 04) can be seen on/from (UT): 2007 Jan 30 (02:12-05:32) - [*Can you see any red colour i.e. spots or on the rim? Any developments of white hazy areas, west of the central peaks, as the colongitude progresses?*]

Event: Aristarchus (Bartlett, 1964 Mar 26) can be seen on/from (UT): 2007 Jan 31 (02:04-05:30) - [*Does the floor have the colour of blue clay?*]

Event: Aristarchus (Cutts, 1969 Nov 22) can be seen on/from (UT): 2007 Jan 31 (23:44-23:59) - [*Any sign of activity in the patch on the west wall, between the two radial bands? Please keep a record of your seeing conditions. Also any sign of red colour in the interior?*]

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 TLP 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 TLP, 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!

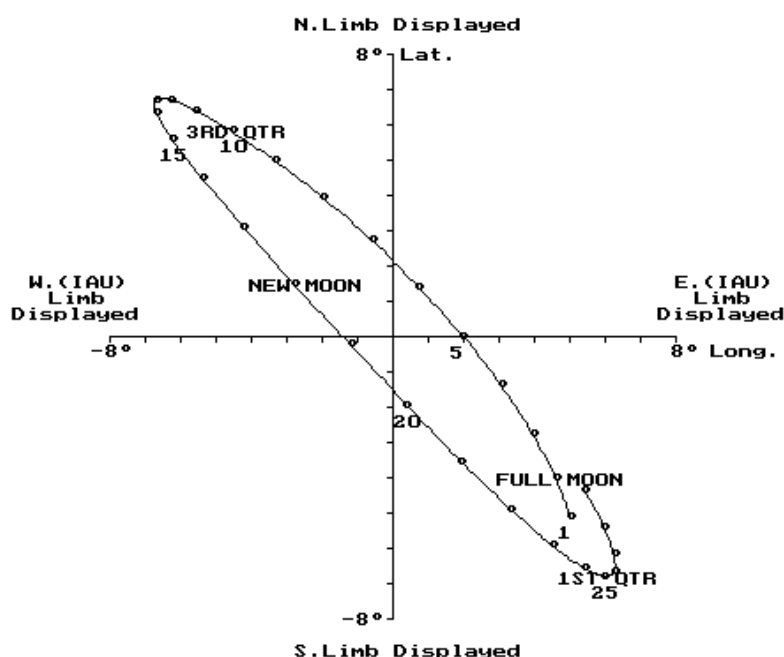
Dr Anthony Cook, School of Computer Science & IT, Nottingham University, Jubilee Campus, Wollaton Road, Nottingham, NG6 1BB, UNITED KINGDOM. Email: acc@cs.nott.ac.uk

LIBRATION FEB 2007

Date	Libration amount \emptyset	PA \emptyset	Feature presented
1.0	6.8	227	Hamilton
2.0	5.9	233	Abel
3.0	4.8	242	W. Humboldt
4.0	3.6	256	Ritz*
5.0	2.6	282	Ibn Yunus*
6.0	2.4	326	Endymion*
7.0	3.3	359	'Byrd
8.0	4.7	16	Anaximander
9.0	6.1	25	Babbage
10.0	7.5	31	Xenophanes
11.0	8.5	35	Volta
12.0	9.2	38	Galvani
13.0	9.5	41	Galvani
14.0	9.3	43	Gerard
15.0	8.6	45	Gerard
16.0	7.4	47	Bunsen
17.0	5.8	50	Lavoisier*
18.0	3.8	56	Aston*
19.0	1.8	78	Bohr*
20.0	1.4	169	Drygalski*
21.0	3.2	202	Helmholtz
22.0	5.0	211	Hanno
23.0	6.5	215	Brisbane
24.0	7.6	218	Lyot
25.0	8.2	220	Peirescius
26.0	8.4	223	Oken
27.0	8.1	226	Hamilton
28.0	7.5	229	Gum

LUNAR LIBRATIONS - February 2007

Geocentric: The markers show 0:00H UT



Program by Bob Roberts.

Observer at: Lat. 51.0 \emptyset N, Long. 1.8 \emptyset W

* indicates that the feature is not illuminated.

Occultation subsection news

Andrew Elliott

As at the deadline for submitting this copy for the January 2007 Circular (2006 December 3), I regret to have to inform you that the IOTA occultation data for 2007 has still not arrived, so I am unable to provide predictions once again. Please accept my apologies for this. I understand that the person who managed the 'OCCMOON' (total occultations) program for the last ten years had to retire earlier this year. Unfortunately, much of his work was undocumented and the IOTA President is having difficulty getting to grips with the system. The OCCMOON program is an extremely complex piece of software, written in Fortran, that has 'evolved' over at least 20 years. But it produces highly accurate predictions, in a very comprehensive format, that is suitable for automatically generating predictions for many stations. The (other) person who generates the graze data, usually emails it to me in the first week of December.

If the situation persists I may need to try other software such as 'Lunar Occultation Workbench' (LOW). However, there would be a new learning curve which I haven't started yet, and it outputs predictions in a different format to OCCMOON. (If anyone wants to try it for themselves, it is available as a free download from the Dutch Occultation Association website: <http://www.doa-site.nl/>.) If in the meantime I receive the data, I will attempt to send the routine predictions to section members on our email list before the next Circular.

Best wishes for 2007.

2007 FEB.	Age d	Phase	Earth's		Sun's		R.A.		Dec. ø	Rises		Sets		Transit		Alt ø
			Selenographic Longø	Latø	Selenographic Colongø	Latø	h	m		h	m	h	m	h	m	
1.0	12.8	0.983	5.0	-5.1	70.6	-0.90	08	00	24.6	15	45	07	47	..	..	..
2.0	13.8	0.999	4.6	-4.0	82.7	-0.88	08	53	20.7	17	04	08	07	00	05	58
3.0	14.8	0.994	3.9	-2.8	94.8	-0.85	09	42	16.0	18	21	08	21	00	51	54
4.0	15.8	0.970	3.1	-1.4	107.0	-0.83	10	28	10.7	19	34	08	32	01	35	48
5.0	16.8	0.928	2.0	0.0	119.1	-0.81	11	12	5.1	20	46	08	42	02	16	42
6.0	17.8	0.872	0.7	1.5	131.2	-0.78	11	54	-0.6	21	56	08	51	02	55	36
7.0	18.8	0.802	-0.7	2.8	143.4	-0.76	12	36	-6.2	23	07	09	00	03	34	30
8.0	19.8	0.722	-2.0	4.0	155.5	-0.73	13	19	-11.6	..	..	09	10	04	14	25
9.0	20.8	0.634	-3.4	5.0	167.7	-0.71	14	03	-16.6	00	20	09	23	04	56	20
10.0	21.8	0.541	-4.6	5.9	179.8	-0.69	14	50	-21.1	01	35	09	39	05	41	15
11.0	22.8	0.444	-5.6	6.5	192.0	-0.67	15	40	-24.7	02	51	10	03	06	30	12
12.0	23.8	0.348	-6.4	6.8	204.2	-0.65	16	34	-27.2	04	05	10	38	07	23	10
13.0	24.8	0.254	-6.7	6.8	216.4	-0.62	17	31	-28.5	05	10	11	29	08	19	9
14.0	25.8	0.168	-6.7	6.4	228.6	-0.60	18	31	-28.2	06	02	12	39	09	17	10
15.0	26.8	0.095	-6.3	5.7	240.7	-0.57	19	31	-26.2	06	39	14	03	10	16	13
16.0	27.8	0.039	-5.5	4.6	252.9	-0.55	20	30	-22.6	07	04	15	34	11	13	17
17.0	28.8	0.007	-4.3	3.2	265.1	-0.52	21	28	-17.5	07	23	17	07	12	07	23
18.0	0.3	0.002	-2.9	1.5	277.3	-0.49	22	23	-11.4	07	38	18	39	12	59	30
19.0	1.3	0.025	-1.3	-0.2	289.5	-0.46	23	16	-4.5	07	50	20	09	13	49	37
20.0	2.3	0.077	0.4	-1.9	301.7	-0.43	00	09	2.6	08	02	21	39	14	40	44
21.0	3.3	0.153	1.9	-3.5	313.9	-0.40	01	01	9.5	08	15	23	10	15	31	51
22.0	4.3	0.247	3.3	-4.9	326.1	-0.37	01	55	15.9	08	31	23	12	16	24	57
23.0	5.3	0.353	4.5	-5.9	338.3	-0.34	02	51	21.2	08	51	00	42	17	20	62
24.0	6.3	0.464	5.4	-6.5	350.5	-0.32	03	50	25.3	09	21	02	11	18	18	65
25.0	7.3	0.575	6.0	-6.8	2.7	-0.28	04	50	27.8	10	02	03	31	19	17	66
26.0	8.3	0.679	6.3	-6.7	14.8	-0.25	05	50	28.6	11	00	04	35	20	15	65
27.0	9.3	0.772	6.3	-6.2	27.0	-0.22	06	50	27.8	12	11	05	21	21	10	63
28.0	10.3	0.853	6.0	-5.4	39.1	-0.19	07	46	25.4	13	30	05	52	22	01	60

MAR 2007

1.0	11.3	0.917	5.4	-4.3	51.3	-0.16	08	39	21.9	14	49	06	14	22	48	55
2.0	12.3	0.963	4.7	-3.1	63.4	-0.13	09	29	17.4	16	06	06	29	23	32	50
3.0	13.3	0.991	3.7	-1.7	75.6	-0.10	10	15	12.3	17	20	06	41	..	..	..
4.0	14.3	1.000	2.6	-0.3	87.7	-0.07	10	59	6.8	18	32	06	51	00	13	44
5.0	15.3	0.990	1.4	1.1	99.9	-0.04	11	41	1.1	19	42	07	00	00	52	39
6.0	16.3	0.963	0.1	2.5	112.0	-0.01	12	23	-4.6	20	53	07	08	01	32	33
7.0	17.3	0.919	-1.3	3.7	124.2	0.01	13	06	-10.1	22	05	07	18	02	11	27
8.0	18.3	0.861	-2.7	4.8	136.3	0.04	13	49	-15.3	23	19	07	30	02	52	22
9.0	19.3	0.789	-4.0	5.7	148.5	0.06	14	35	-19.9	23	19	07	44	03	36	17
10.0	20.3	0.707	-5.2	6.4	160.6	0.09	15	24	-23.7	00	34	08	05	04	23	13
11.0	21.3	0.615	-6.2	6.8	172.8	0.11	16	16	-26.6	01	48	08	34	05	13	10
12.0	22.3	0.518	-7.0	6.8	185.0	0.13	17	11	-28.3	02	56	09	17	06	07	9
13.0	23.3	0.417	-7.5	6.6	197.2	0.16	18	08	-28.5	03	53	10	16	07	03	9
14.0	24.3	0.316	-7.6	6.0	209.4	0.18	19	07	-27.2	04	35	11	32	08	00	11
15.0	25.3	0.220	-7.2	5.1	221.6	0.20	20	05	-24.3	05	04	12	59	08	56	15

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Contributions related to a specific sub-section should be sent to the appropriate co-ordinator, but send any material of a more general nature to the Editor at:

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Items for the Feb. 2007 circular should reach the Editor by January 10th 2006