

THE BRITISH ASTRONOMICAL ASSOCIATION



LUNAR SECTION CIRCULAR

Director Alan Wells
Assistant Director/Editor John Pedler

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Data on pages 7-8 are for Feb. 2005

Lunations 1015-1016

Jan. 2005

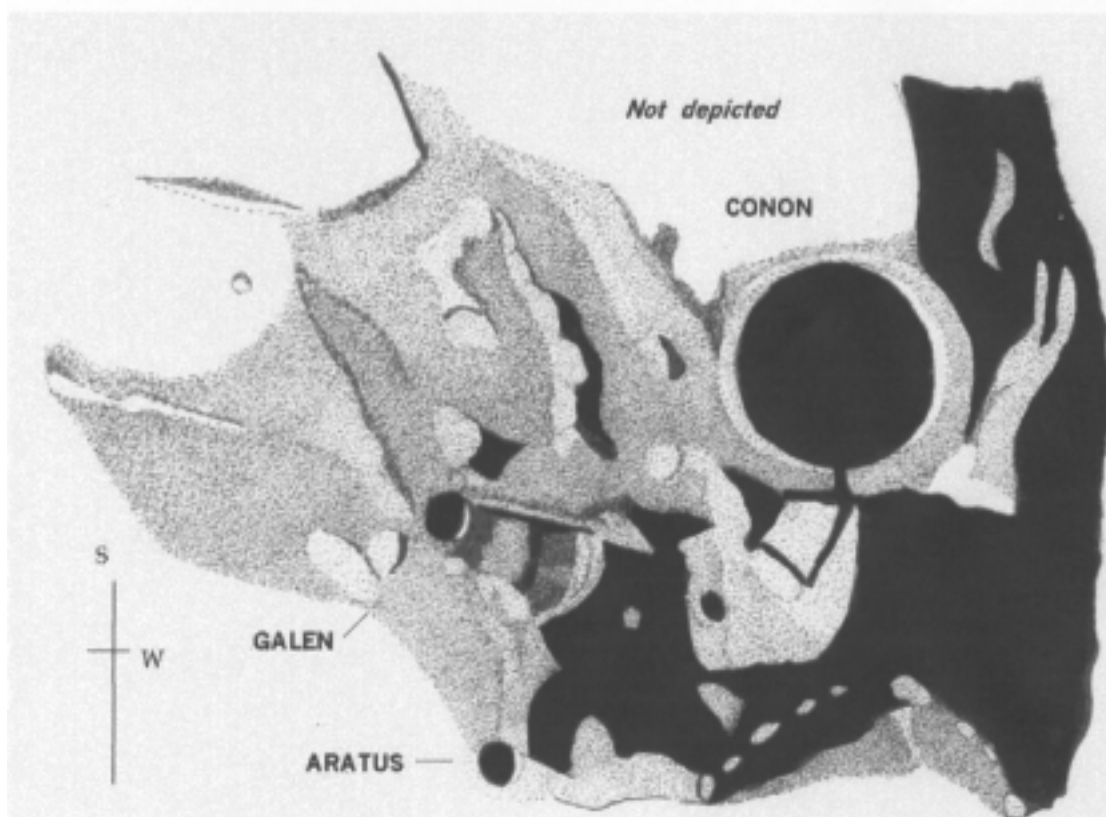
TOPOGRAPHICAL SUB-SECTION

COLIN EBDON

CONON. By Colin Ebdon. 2004 November 19. 18.00 - 19.00 UT. Seeing generally poor, averaging III. Transparency good, but passage of Cirrus cloud interfering. 7 inch Maksutov-Cassegrain X225

At the time of writing (December 2004) it looks as if the year is going to go down in the annals of observing history as a pretty poor one for lunar observers, with each lunation characterised by the onset of cloud cover during the nights when the Moon was best placed for observing. Only early September saw a short break in this run of bad luck. with the addition of a few single nights throughout the year when matters improved somewhat. It is therefore with considerable gratitude that I pass on my thanks to those hardy persons who have taken

advantage of whatever opportunities have presented themselves to get back to the eyepiece and generate the work that has appeared in these pages and in 'The New Moon'. Let us hope that 1995 brings a reversal of fortune, in which event I look forward to your drawings photos and written commentary arriving thick and fast on my doormat and in my e-mail in -tray!

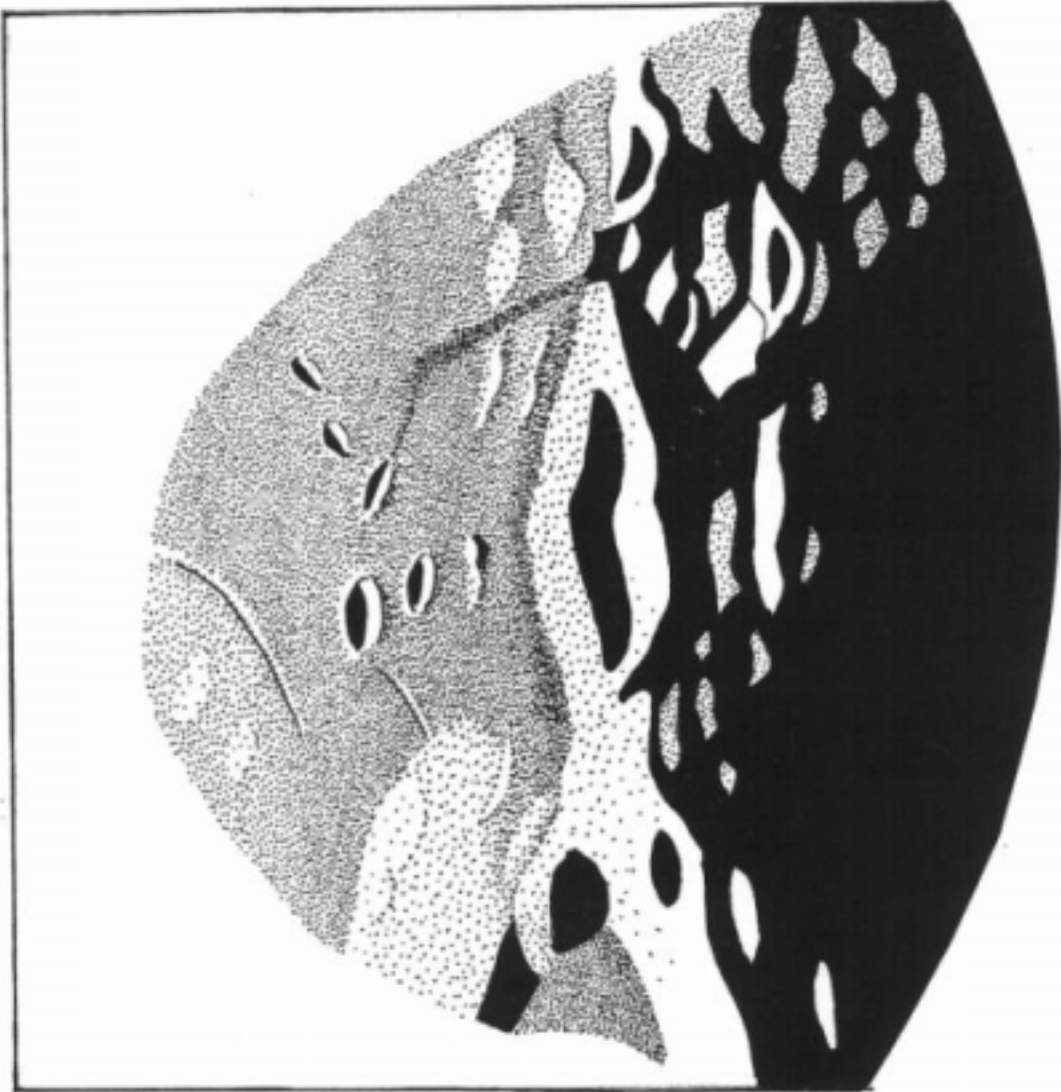


This month I have included one of the few drawings that I actually got to complete, which is a depiction of the area of Conon

and Galen, where I managed to catch sunrise over the short, deepest section, of what has been described as the 'Apennine Valley'. This was originally drawn to our attention by eagle-eyed Brendan Shaw, who spotted this feature on a mosaic photograph he had constructed. (See Circulars for March, April and August 2004). Nothing like as grand as the well know 'Alpine Valley' of course, but worth recording nonetheless as a definite valley feature amongst others in this very rugged part of the Moon. Worth also further observations in an attempt to

determine its true extent. As with many other linear features on the Moon when observed with low powers (and given the tendency of the human mind to construct patterns) the eye seems to conjoin it with other objects nearby into a longer line and it is interesting to investigate further if this is a true connection or if the effect is entirely spurious.

Also included here is a drawing of the Miyamori Valley made in October 2004 by Phil Morgan, of which Phil writes: 'On the 26th, I made a further study of the Miyamori valley, though most of the valley itself was largely in shadow. My interest was in a further valley, or rather fault, running about 10 miles to the South and parallel to the valley and seeming to terminate at the Southern tip of Lohrmann. Earlier studies that I've made seem to indicate that the Miyamori valley is in fact a step-fault with a down-throw to the North, at least the part just West of Lohrmann and the fault shown seems to mimic this'.



THE MIYAMORI VALLEY

OBSERVATION BY PHIL MORGAN.
2004 OCTOBER 26th. 305mm NEWTONIAN X440
20.25 to 21.05 U.T. SEEING $\frac{5}{10}$
TRANSPARENCY $\frac{3}{5}$
SUN'S COL. 69.50 to 69.84.

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 being 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 videoed 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 TLP 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 TLP 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 observe 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 TLP 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 TLP reports so as to narrow down the range of TLP sites to monitor.

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

Event: Aristarchus (Bartlett, 1956 Jul 28) can be seen on/from (UT): 2005 Jan 01 (01:29-04:58) - [*Can you see any colour inside the crater and where?*]

Event: Earthshine (Quadrantids) can be seen on/from (UT): 2005 Jan 04 (03:33-07:36) - [*Look for and time any impact flashes that you may see?*]

Event: Vitello (Haas, 1939 Jul 11) can be seen on/from (UT): 2005 Jan 05 (02:55-06:27) - [*how dark is the south part of the dark area and how does this compare with other dates/ times under similar illumination?*]

Event: Earthshine (Quadrantids) can be seen on/from (UT): 2005 Jan 05 (05:27-07:36) - [*Look for and time any impact flashes that you may see?*]

Event: Aristarchus-Herodotus (Taboada, 1968 Dec 31) can be seen on/from (UT): 2005 Jan 21 (18:21-22:32) - [*Check the terminator between these two craters and look for two dark spots*]

Event: Gassendi (Haas, 1939 Sep 25) can be seen on/from (UT): 2005 Jan 21/22 (23:20-01:08) - [*What is the brightness of the NE part of the central peak and how does it compare with other days/times under similar illumination?*]

Event: Aristarchus (Foley, 1975 Oct 16) can be seen on/from (UT): 2005 Jan 22 (01:18-03:58) - [*Is there a deep blue-violet spot in the NW or NE? interior?*]

Event: Herodotus (Taboada, 1969 Jan 01) can be seen on/from (UT): 2005 Jan 22 (18:06-22:02) - [*Monitor brightness in crater edge and cleft (Schroter's Valley?)*]

Event: Aristarchus (Foley, 1975 Sep 18) can be seen on/from (UT): 2005 Jan 23 (16:31-18:09) - [*Is there a deep blue-violet spot in the NW or NE? interior?*]

Event: Plato (Kidd, 1971 Nov 01) can be seen on/from (UT): 2005 Jan 24 (00:01-04:57) - [*Is there any sign of obscuration on the NW or NE rims near a bright spot?*].

Event: Aristarchus-Herodotus (Taboada, 1969 Jan 03) can be seen on/from (UT): 2005 Jan 24 (18:11-22:37) - [*Monitor brightness between the two craters and look for colour in N. part of Aristarchus and on Schroter's valley*]

Event: Aristarchus (Bartlett, 1954 Oct 12) can be seen on/from (UT): 2005 Jan 25 (04:42-07:53) - [*Report any colour that you might see?*].

Event: Plato (Klein, 1878 Nov 09) can be seen on/from (UT): 2005 Jan 25 (05:24-07:53) - [*Can you see anything that might have resembled a faint white cloud?*].

Event: Aristarchus-Herodotus (Taboada, 1969 Jan 04) can be seen on/from (UT): 2005 Jan 24 (18:11-22:37) - [*Monitor brightness near to the Schroter's Valley cleft and look for colour anywhere in the region*]

Event: Torricelli B (Foley, 1985 Dec 27) can be seen on/from (UT): 2005 Jan 26 (03:43-06:35) - [*Monitor the brightness over time*].

Event: Aristarchus (Pasternak, 1973 Oct 12) can be seen on/from (UT): 2005 Jan 26 (05:41-08:04) - [*Is there any hint of colour in the bright region of the south of the crater?*].

Event: Proclus (Bartlett, 1955 Oct 03) can be seen on/from (UT): 2005 Jan 26/27 (21:17-01:43) - [*How visible is the usual bright white spot on the East floor?*].

Event: Aristarchus (Bartlett, 1955 Oct 03) can be seen on/from (UT): 2005 Jan 26/27 (23:52-04:08) - [*How fuzzy is this crater when compared to Herodotus?*].

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

Occultation subsection news

Andrew Elliott

I have now received the graze map data for 2005. The January to June information is published in this circular. I have reduced the magnitude slightly, which has left 28 graze predictions for the year.

Three grazes are predicted for January – tracks 1-3 on the map. The first, just after midnight on the night of January 2nd/3rd, is also the brightest of the year at magnitude 3.9. Unfortunately (of course!) the altitude of the moon is less than 6 degrees and the track runs from west to east across sparsely populated areas of the Scottish Borders and north Northumberland.

The second is a bright limb graze of 5.6 magnitude 32 Tauri in the early hours of January 20th. The track runs south west from south west Scotland through the north east of England and out along the river Humber. The altitude is also below 10 degrees with a gibbous moon so this also is not easy to observe.

The last is a dark limb graze of 7.0 magnitude 52 Virginis just after midnight on the night of 29/30 January. The altitude is around 20 degrees and the track passes over northern counties of the Irish Republic, north Wales, north and east Midlands, and east Anglia.

Please let me know if you want detailed predictions (including OS map references to simplify plotting).

Happy new year to all and clear nights in 2005.

Predictions for 52°27'41.4"N 1°44'44.0"W Birmingham

February 2005

Day	Time-UT	P	Object	O	Max Sp	%	Elg	Sn	Mn	Mn	CA	PA	Watts	a	b	Star's	apparent		
	H	M	S	D	Reference	V	Mag	Snlt	Alt	Alt	Az	Angle	Min/°	RA	Dec				
1/07	16	48	/R		PPM 227894	65	8.0	MA	61-	103	-5	20	213	61N	319	300	-0.8	-1.2	135001.0-123438
2/06	40	18	/R		PPM 229094	65	7.9	F8	51-	91-	10	19	191	52N	326	310	-0.8	-0.8	143939.5-175438
4/05	22	14	/R		PPM 265618	96	6.2	K0	29-	65		6	149	40S	227	219	-1.6	1.7	163140.5-263258
13/17	43	29	/D		PPM 117634	45	8.7	K5	28+	63	-5	45	211	16N	355	15	0	4.2	14448.3 105601
13/18	36	16	/D		PPM 117664	15	8.7	A0	28+	64		40	227	89S	70	90	-1.0	-0.3	14712.2 105744
13/18	42	03	/D		PPM 117669	17	7.0	B9	28+	64		39	228	63S	96	115	-1.1	-1.2	14724.4 105209
13/18	50	46	/D		PPM 117672	15	8.6	K2	28+	64		39	230	80S	79	98	-1.0	-0.7	14736.9 105842
14/18	55	03	/D		PPM 118362	25	8.1	K2	38+	76		48	222	30N	12	29	-0.7	2.4	23557.0 163808
14/21	09	31	/D		PPM 118426	16	7.9	A2	39+	77		31	257	65S	97	114	-0.6	-1.7	24025.3 164458
15/16	37	04	/D		PPM 92448	16	5.2	K0	47+	87	5	56	150	45N	31	44	-0.6	2.2	32302.3 204541
15/17	43	24	/R		PPM 92448	16	5.2	K0	47+	87	-4	58	179-70N	275	288	-1.3	-0.1	32302.3 204541	
15/17	28	44	/D		PPM 92473	17	5.9	B9	47+	87	-2	58	171	75N	61	74	-1.1	1.0	32443.2 204922
15/19	44	04	/D		PPM 92521	15	8.3	K0	48+	88		52	225	50S	116	129	-1.2	-1.9	32808.4 205639
18/18	06	17	/D		PPM 95320	25	7.8	A0	75+	121	-7	55	123	67S	116	115	-1.2	0	60420.8 273421
19/20	09	16	/DK		SAO 78968	56	7.2	K2	84+	132		62	150	44S	147	141	-1.2	-2.0	70117.9 270907
20/02	00	14	/D		FK5EXT 2553	48	5.6	A2	85+	134		33	273	88S	104	97	-0.3	-1.8	71142.9 265100
20/04	36	19	/DV		PPM 97300	55	6.4	G5	86+	135		11	300	57N	70	62	0.2	-1.3	71723.3 264055
21/00	27	03	/D		FK5 1211	77	5.9	K0	91+	144		52	239	34N	53	42	-1.6	0.4	80115.5 252248
21/00	51	08	/DC		PPM 98236	67	6.2	A0	91+	145		49	245	86S	113	102	-0.7	-1.6	80203.3 250436
26/02	24	45	/R		PPM 158396	95	7.0	K0	96-	159		39	194	34N	344	322	-0.4	-1.7	115940.6 14747
27/03	45	58	/R		PPM 195815	95	7.3	K2	92-	146		30	204	67S	268	247	-1.3	-0.6	124548.6 -45027

A letter in the "D" column indicates a possible double star.

See LSC 35, 5 (May 1999) for comments on recording observations using the new format predictions.

Grazing Occultations, UK and Ireland, January-June 2005, Magnitude <= 7.0

See accompanying graze track map in this LSC

TRACK NO.	DATE (2005)	USNO REF:	SAO/PPM REF:	D	MAG	%SUN-LIT	L	W.U.T. HH	MM	M	CUSP ANGLE	T	STAR NAME	MAG1	MAG2
1	JAN 3	ZC 1772	138721	Q	3.9	56-	S	0	12.7	6.3	D	A	15 eta Vir(Zaniah)	4.6	5.9
2	JAN 20	ZC 582	76339		5.6	76+	S	3	17.4	0.8	B	C	32 Tau		
3	JAN 30	ZC 1746	119234		7.0	81-	S	0	3.9	10.8	D	C	52 B. Vir		
4	FEB 4	ZC 2373	184437		6.1	29-	S	5	4.6	14.6	D	A	116 B. Sco		
5	FEB 10	ZC 3419	146598A		4.2	4+	S	17	40.7	18.0	D	A	91 psil Aqr	4.5	8.5
6	FEB 17	ZC 780	77028V		6.8	67+	S	19	48.0	6.1	D	A		7.6	7.6
7	FEB 21	ZC 1206	79861		5.9	90+	N	0	26.4	1.3	D	A	2 omega Cnc		
8	MAR 17	ZC 750	769030		6.9	41+	N	0	2.1	4.8	D	B		7.1	8.4
9	MAR 17	ZC 885	77625Y		5.6	50+	N	21	31.5	4.2	D	A	406 B. Tau	5.9	7.2
10	MAR 20	ZC 1270	80204V		6.0	77+	N	20	5.3	1.7	D	A	28 CX Cnc	6.9	6.9
11	MAR 22	ZC 1393	80809		6.5	85+	N	0	12.8	6.7	D	B	9 B. Leo		
12	APR 1	ZC 2609	186237V		4.7	59-	S	5	43.8	1.7	D	C	W Sgr	5.1	5.1
13	JUN 13	ZC 1576	99305		5.3	38+	N	21	10.1	12.9	D	A	53 l Leo		

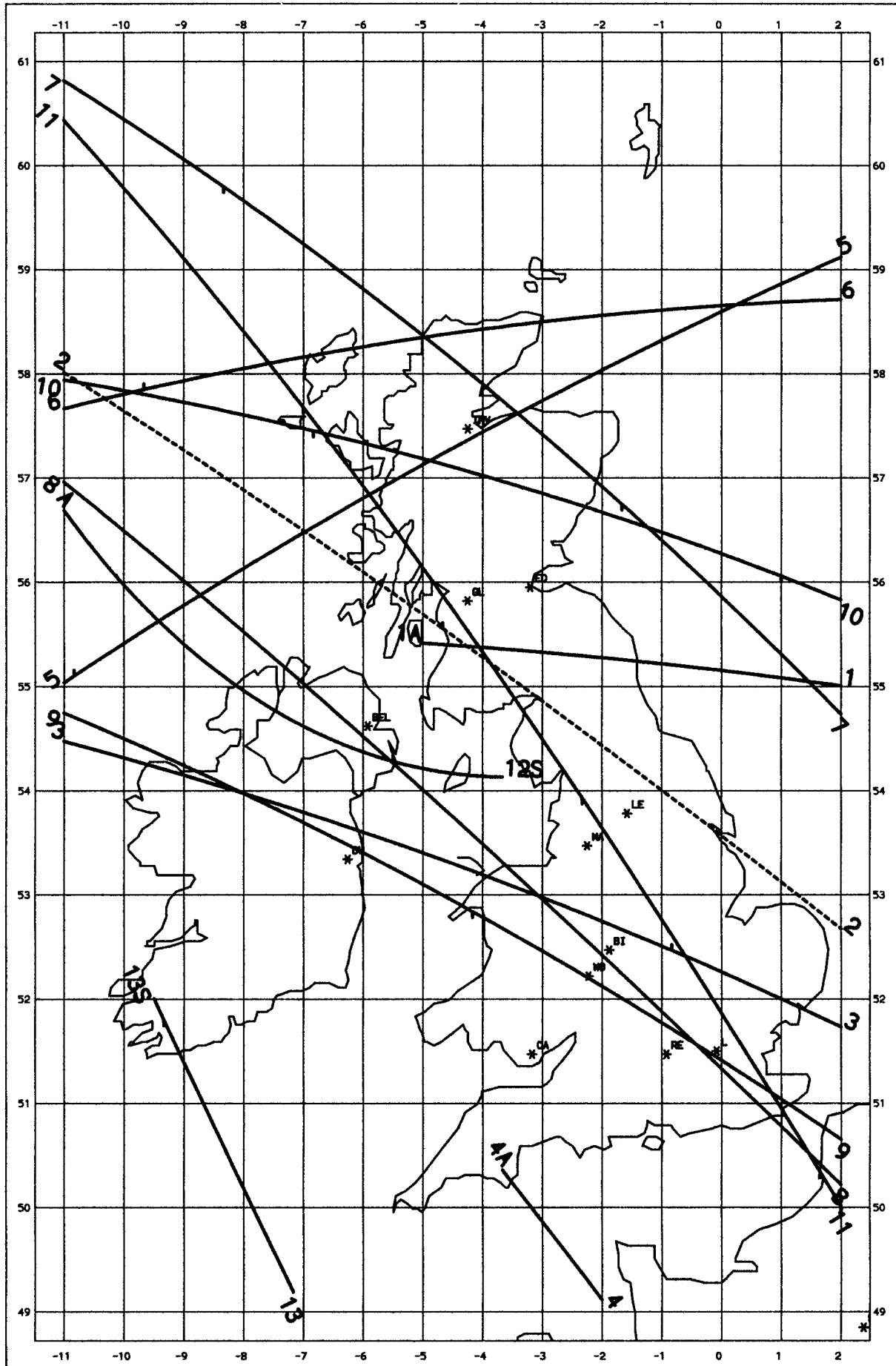
'D' column after PPM indicates double star code. 'W.U.T.' = Start UT of west end of track

Letter in column after "CUSP ANGLE": - Column 'T' = Telescope size required: -

- 'B' = Bright Limb
- 'D' = Dark Limb
- 'T' = Near Terminator
- 'A' = 4"
- 'B' = 6"
- 'C' = >6"

Predictions courtesy of the International Occultation Timing Association – European Section (IOTA/ES) – “OCCMOON” and “GRAZEREG” programs.

GRAZING OCCULTATIONS UK/IRELAND JANUARY-JUNE 2005
SEE ACCOMPANYING LIST IN THIS LSC (JAN 2005) FOR DETAILS

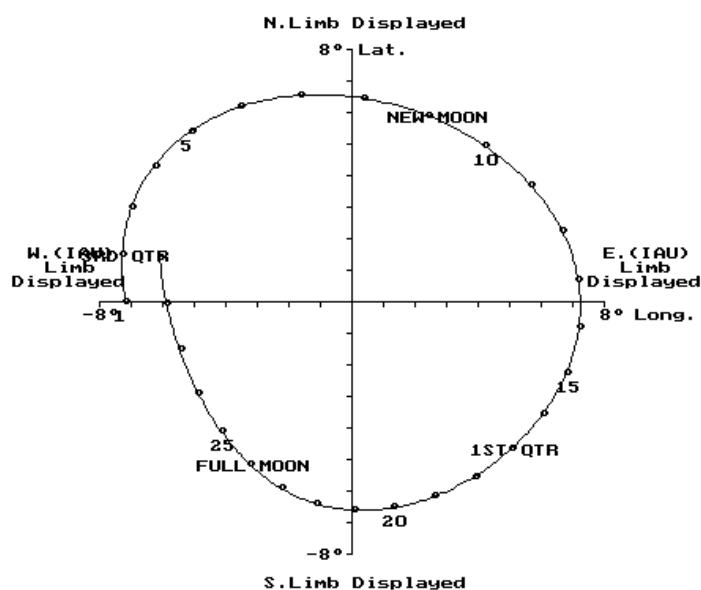


LIBRATION February 2005

Date	Libration amount \varnothing	PA \varnothing	Feature presented
1.0	6.4	85	Hedin
2.0	6.8	73	Dalton
3.0	7.2	61	Voskresenskiy
4.0	7.4	50	Lavoisier
5.0	7.5	38	Langley
6.0	7.4	26	Babbage
7.0	7.1	12	Poncelet*
8.0	6.9	357	Scoresby*
9.0	6.7	341	Schwabe*
10.0	6.6	325	Mercurius*
11.0	6.6	309	Riemann
12.0	6.6	295	Joliot
13.0	6.6	281	Jansky
14.0	6.5	267	Runge
15.0	6.3	254	Ritz
16.0	6.2	240	Barnard
17.0	6.1	227	Hamilton
18.0	6.1	213	Hanno
19.0	6.1	201	Helmholtz
20.0	6.2	189	Boguslawsky
21.0	6.2	179	Short
22.0	6.1	169	Wilson
23.0	5.9	158	Bailly
24.0	5.6	147	Pingre
25.0	5.3	134	Graff
26.0	5.0	119	Pettit
27.0	5.0	102	Maunder
28.0	5.3	85	Olbers

LUNAR LIBRATIONS - February 2005

Geocentric:  The markers show 0:00H UT



Program by Bob Roberts.

Observer at: Lat. 51.0 \varnothing N, Long. 1.5 \varnothing W

* indicates that the feature is not illuminated.

CLLOUDWATCH

Andrew Bytnar

Tabulated data for October 2004

<u>Observer and location</u>	<u>Excellent</u> <i>days</i>	<u>Cloudy</u> <i>days</i>	<u>Overcast</u> <i>days</i>	<u>Hazy</u> <i>days</i>	<u>No watch</u> <i>days</i>
P.Burt (Chatham)	4 (13%)	5 (16%)	22 (71%)	0 (0%)	-----
A.Bytnar (Mansfield)	8 (26%)	8 (26%)	15 (48%)	0 (0%)	-----
M.Cook (Cromer)	7½ (24%)	9 (29%)	14½ (47%)	0 (0%)	-----
K.Hall (Warrington)	4½ (27%)	14½ (47%)	12 (39%)	0 (0%)	-----
A.Heath (Nottingham)	5 (16%)	8 (26%)	18 (58%)	0 (0%)	-----
J.Wrigley (Reading)	3½ (11%)	12 (30%)	15½ (50%)	0 (0%)	-----

Tabulated data for November 2004

<u>Observer and location</u>	<u>Excellent</u> <i>days</i>	<u>Cloudy</u> <i>days</i>	<u>Overcast</u> <i>days</i>	<u>Hazy</u> <i>days</i>	<u>No watch</u> <i>days</i>
P.Burt (Chatham)	3 (10%)	5 (17%)	22 (73%)	0 (0%)	-----
A.Bytnar (Mansfield)	3 (10%)	11 (37%)	16 (53%)	0 (0%)	-----
M.Cook (Cromer)	3½ (12%)	11 (37%)	13½ (45%)	2 (7%)	-----
K.Hall (Warrington)	4 (13%)	5½ (18%)	20½ (68%)	0 (0%)	-----
A.Heath (Nottingham)	4 (13%)	7 (23%)	19 (63%)	0 (0%)	-----
J.Wrigley (Reading)	4½ (15%)	5 (17%)	20½ (68%)	0 (0%)	-----

2005 FEB.	Age d	Phase	Earth's		Sun's		R.A. h m	Dec. ø	Rises h m	Sets h m	Transit		Alt ø
			Selenographic Longø	Selenographic Latø	Selenographic Colongø	Selenographic Latø					h	m	
1.0	21.5	0.639	-7.2	0.0	171.1	-1.48	13 37	-10.2	10 03	05 01	26	
2.0	22.5	0.535	-7.3	1.5	183.3	-1.46	14 26	-15.8	01 07	10 19	05 48	20	
3.0	23.5	0.426	-7.0	3.0	195.4	-1.44	15 19	-20.7	02 32	10 39	06 40	16	
4.0	24.5	0.318	-6.3	4.3	207.6	-1.42	16 17	-24.7	04 00	11 10	07 38	12	
5.0	25.5	0.216	-5.1	5.4	219.8	-1.41	17 20	-27.3	05 23	11 57	08 41	10	
6.0	26.5	0.127	-3.6	6.2	232.0	-1.39	18 26	-28.1	06 31	13 06	09 47	10	
7.0	27.5	0.058	-1.7	6.5	244.2	-1.38	19 34	-26.8	07 20	14 34	10 53	12	
8.0	28.5	0.015	0.4	6.4	256.4	-1.36	20 39	-23.5	07 52	16 10	11 55	16	
9.0	0.1	0.002	2.4	5.9	268.6	-1.35	21 41	-18.7	08 14	17 46	12 52	22	
10.0	1.1	0.018	4.2	4.9	280.7	-1.34	22 38	-12.8	08 31	19 17	13 45	28	
11.0	2.1	0.061	5.7	3.7	292.9	-1.34	23 31	-6.2	08 44	20 43	14 34	35	
12.0	3.1	0.127	6.7	2.2	305.1	-1.33	00 21	0.4	08 56	22 06	15 21	42	
13.0	4.1	0.210	7.2	0.7	317.3	-1.32	01 10	6.9	09 07	23 27	16 07	48	
14.0	5.1	0.302	7.2	-0.9	329.5	-1.32	01 58	12.8	09 20	00 46	16 53	54	
15.0	6.1	0.401	6.8	-2.3	341.7	-1.32	02 47	18.0	09 36	00 47	17 40	59	
16.0	7.1	0.500	6.1	-3.6	353.9	-1.31	03 37	22.2	09 57	02 05	18 29	62	
17.0	8.1	0.597	5.1	-4.7	6.0	-1.31	04 29	25.4	10 24	03 19	19 19	65	
18.0	9.1	0.688	3.9	-5.6	18.2	-1.30	05 22	27.4	11 02	04 26	20 11	66	
19.0	10.1	0.772	2.6	-6.2	30.3	-1.30	06 15	28.2	11 53	05 22	21 02	65	
20.0	11.1	0.845	1.3	-6.6	42.5	-1.29	07 09	27.6	12 55	06 05	21 52	63	
21.0	12.1	0.906	0.1	-6.7	54.6	-1.28	08 01	25.7	14 05	06 36	22 40	60	
22.0	13.1	0.954	-1.2	-6.5	66.8	-1.27	08 51	22.8	15 20	06 58	23 26	56	
23.0	14.1	0.985	-2.3	-6.0	78.9	-1.25	09 40	18.8	16 35	07 15	
24.0	15.1	0.998	-3.3	-5.2	91.1	-1.23	10 26	14.0	17 49	07 28	00 10	52	
25.0	16.1	0.993	-4.2	-4.2	103.2	-1.21	11 11	8.6	19 04	07 39	00 51	46	
26.0	17.1	0.968	-4.9	-3.0	115.3	-1.18	11 56	2.9	20 18	07 49	01 34	40	
27.0	18.1	0.924	-5.5	-1.6	127.5	-1.15	12 41	-3.1	21 35	08 00	02 16	34	
28.0	19.1	0.861	-5.9	-0.1	139.6	-1.12	13 26	-9.1	22 55	08 11	02 59	28	
1Mar	20.1	0.782	-6.1	1.4	151.8	-1.09	14 14	-14.7	08 24	03 46	22	
2.0	21.1	0.688	-6.1	2.9	164.0	-1.06	15 06	-19.8	00 18	08 43	04 35	17	
3.0	22.1	0.583	-5.7	4.2	176.1	-1.03	16 02	-24.0	01 44	09 09	05 30	13	
4.0	23.1	0.471	-5.1	5.3	188.3	-1.00	17 01	-26.9	03 08	09 48	06 29	10	
5.0	24.1	0.359	-4.1	6.2	200.5	-0.97	18 05	-28.2	04 20	10 46	07 32	9	
6.0	25.1	0.252	-2.9	6.6	212.7	-0.94	19 10	-27.6	05 14	12 04	08 36	11	
7.0	26.1	0.157	-1.4	6.6	224.9	-0.91	20 14	-25.1	05 51	13 35	09 38	14	
8.0	27.1	0.081	0.3	6.2	237.1	-0.89	21 15	-21.0	06 17	15 09	10 36	19	
9.0	28.1	0.028	1.9	5.4	249.3	-0.86	22 13	-15.5	06 35	16 42	11 30	25	
10.0	29.1	0.003	3.4	4.2	261.5	-0.84	23 07	-9.2	06 49	18 10	12 21	32	
11.0	0.6	0.006	4.6	2.8	273.7	-0.82	23 59	-2.4	07 01	19 36	13 09	39	

From the Ed....

An inch of space to fill. So... This is the first LSC of 2005, with only eleven issues to go to the end of the year. A lot of space to fill. The co-ordinators are marvellous, but if we are to have LSC's of ten or (dare I say it), twelve pages, I shall need input from you. Anything lunar, serious or outrageous, something to argue over perhaps, something provocative. But in the words of a long-ago song "You can do it if you try".

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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 February 2005 circular should reach the Editor by the 10th January 2005