



LUNAR SECTION CIRCULAR

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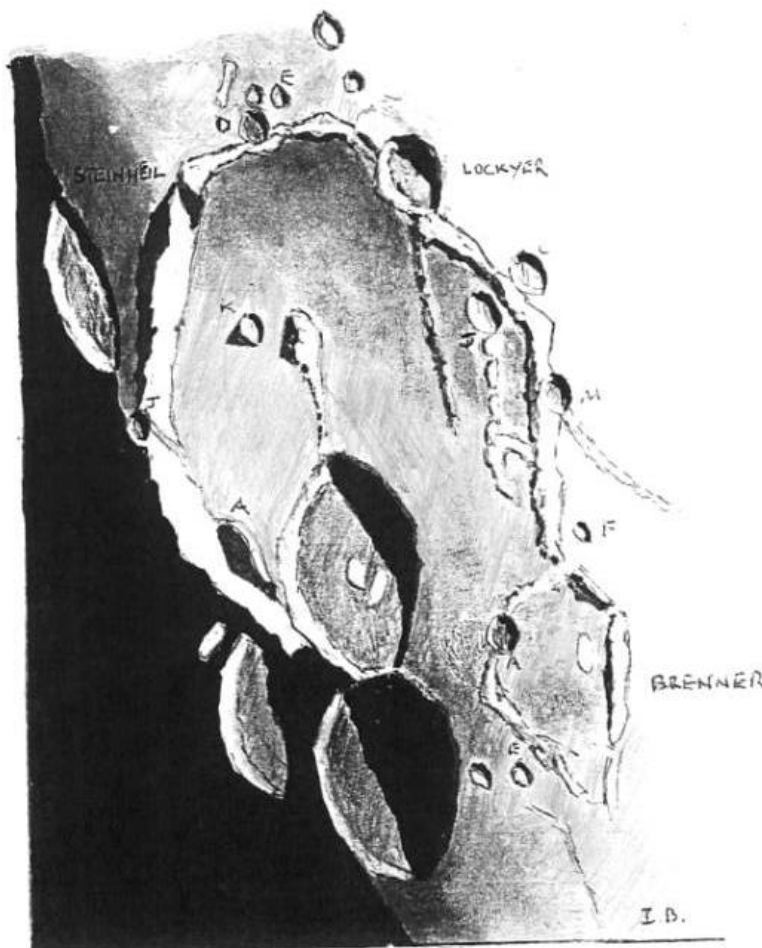
Data on pages 7-8 are for Nov. 2004

Lunations 1012-1013

Oct. 2004

TOPOGRAPHICAL SUB-SECTION

COLIN EBDON



JANSEN
FABRICIUS
METIUS

4'00
x100 - x160
21-04 - 21-5004
10-1-04
Seeing 5/5

This month I must thank in particular Ian Brown, who has contributed drawings of Deslandres, Janssen, Capella and Boussingault, and Phil Morgan, who, as well as contributing some very interesting material himself for these pages, sent me a drawing of his observation of the crater Boscovich made on 7 August.

I managed to observe Boscovich myself on the same night as Phil in order to follow up a 1991 drawing kindly sent to me by Harold Hill, and hopefully these observations will form the subject of an article in 'The New Moon' in due course. I have often overlooked Boscovich in favour of the nearby crater Julius Caesar, but this whole area contains much of topographical interest and is commended to observers generally. If anyone would care to follow this up, the next view of Boscovich under (lunar) sunset conditions will be from 0hrs UT onwards on October 5.

I have included here a copy of Ian Brown's observation of Janssen, including the craters Fabricus, Metius and Brenner, because it forms a timely accompaniment to an article in the Autumn issue of 'The New Moon' (which at the time of writing should hopefully be with members around the same time as this circular).

Ian's observation of **Deslandres**, described in Rukl's atlas as a 'ruined walled plain' some 234kms., in diameter held some significance for me as Deslandres formed the subject of an early drawing of mine made in 1996, included here. At this time I was not familiar with this feature, and I well remember my first view at the eye-

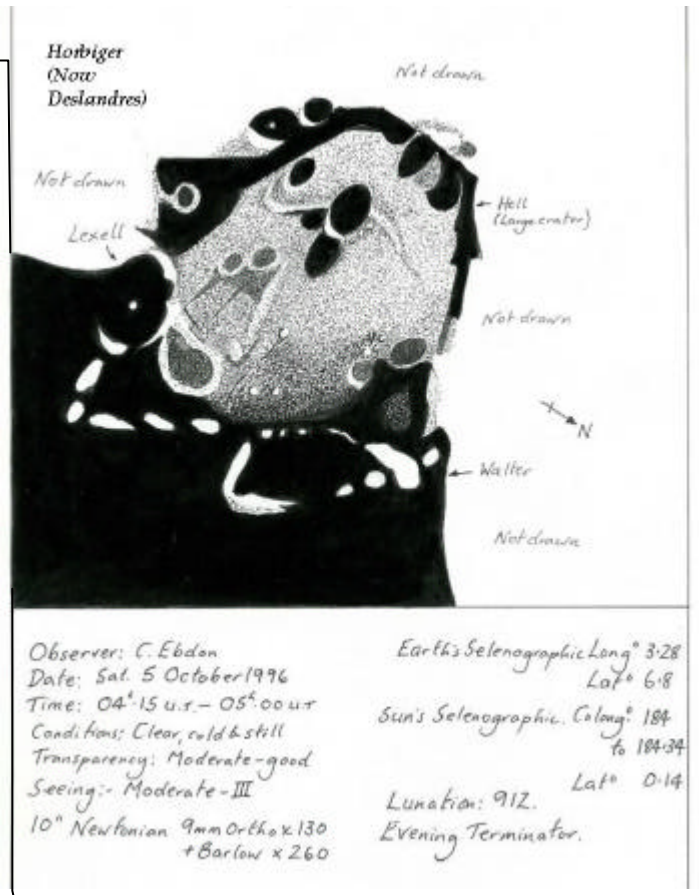
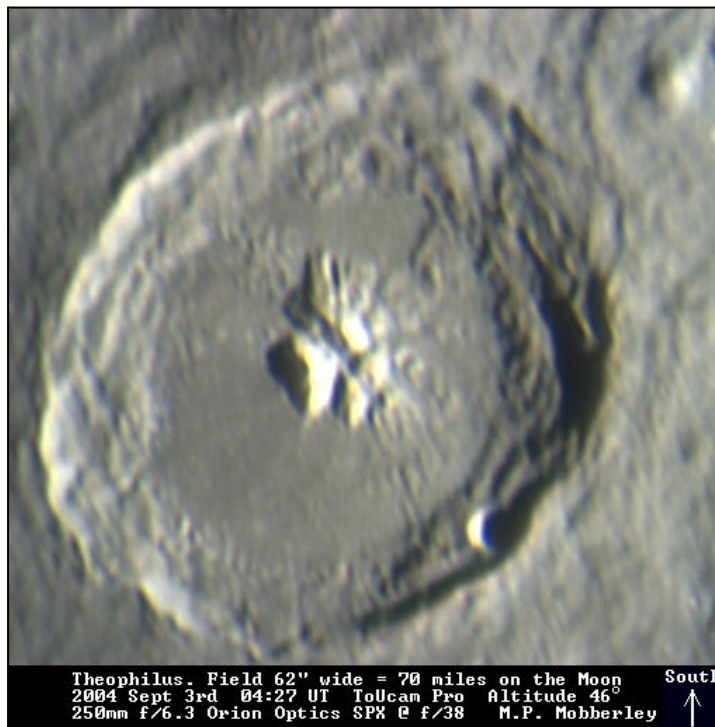
piece at about 4am when I was amazed to see a feature larger than Clavius poised on the terminator and wondered what I could be looking at. Away from the terminator, Deslandres dissolves swiftly into its individual features and fades into the surrounding lunar regions, when one is likely to give more regard the individual craters within it than the degraded walled plain itself. But catch the lighting just right and it is a very impressive feature indeed.

At the time of this observation I had recorded it under its old name of **Horbiger** which is how it is designated in 'Survey of The Moon' By Patrick Moore (1963). Patrick writes therein;

'Horbiger's name seems to have been attached to a very large walled plain associated with the crater Hell, and extending to the East of the Walter chain. I am not sure who put it there, but imagine it must have been Fauth. On some maps the enclosure is named Hellplain'. The map in this book shows **Deslandres** as the name associated with the crater now designated **Deslandres C**, although when the *Times Atlas* was published in 1969, Deslandres now designated the entire plain.

If there is any hardy soul out there who cares to observe in the pre-dawn sky of November 5, weather and personal commitments permitting of course, Deslandres should be well displayed.

Lastly, in response to Phil Morgan's interesting article last month regarding lave-filled features resembling Wargentín, Harold Hill sent me copies of two interesting observations of possible candidates, the more obvious looking candidate comprising a formation SW. of Zollner, adjoining Kant G. Again, further observations and comments would be welcomed.



BAA/ALPO TRANSIENT LUNAR PHENOMENA

2004 Oct

Observations for August have been received from: Clive Brook (UK), Marie Cook (Mundesley, UK), Robin Gray (Winnemucca, USA), and Brendan Shaw (UK). So far few observations have been received for the September's spurious colour study, but some images were submitted by Martin Mobberley and a visual report by Marie Cook. On 2004 Aug 31 Clive Brook was observing Gassendi and reported "a slight chestnut brown colouration in the dark area on the crater floor to the north of the central mountain leading to Gassendi A – the effect lasted for about two minutes between 22:30 and 22:35UT" – was anybody else observing around this time? Clive phoned me later but the effect had gone – I put out a limited alert to a couple of observers in the USA but results so far have been negative.

Last month we talked about spurious colour - this month I will discuss true permanent colour on the lunar surface. Now this is not easy because the Moon for most people is a very grey object. However there are some regions that can be seen visually to have a faint hint of colour when viewed through wide field, low magnification eyepieces. 1) Aristarchus has a blue tinge, 2) "Wood's Spot" is a plateau area on the NW of Aristarchus that has a slight reddish hue, 3) in the past permanent subtle hints of red have been seen on the floors of Fracastorius and Bullialdus craters, 4) the vast mare areas have faint shades of greens, browns, purples and other colours, 5) most geologically recent craters or landslips on steep walls are slightly bluish due to the

fact that space weathering has had less time to shallow out mineral absorption bands. For those of you interested in seeing coloured areas on the Moon, the following web site shows a medium resolution global mosaic of the colours at 415nm (blue), 750nm (green), and 950nm (red). Note this is not quite natural light, but as close as we can obtain from the Clementine spacecraft... http://cps.earth.northwestern.edu/MOON/clem_color.html.

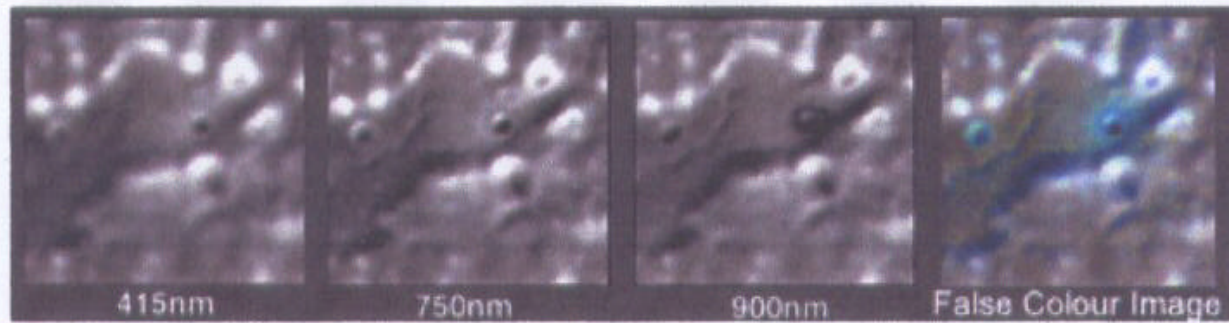


Figure 1: Clementine UVVIS images of the far NE end of the Alpine Valley – north is at the top. Far left image at 415 nm (blue light), left image at 750nm (red light), right image at 900nm (in the near IR), far right image is a false colour composite: blue=415nm, green=750nm, red=near IR. The individual colour channels have been calibrated by least-squares fit stretching in brightness and contrast to give an overall background grey colour.

For those of you equipped with high resolution CCD cameras with filters, figure 1 presents a challenge in terms of high resolution imaging and colour. Figure 1 shows an apparent a 1 km diameter craterlet with a strongly coloured 2 km diameter halo. The latter, at 1" diameter, should just about be detectable under the best seeing conditions close to Full Moon when there is minimal shadow from the walls - but probably only if your CCD camera can selectively image in the visible and in the near IR. There is a very slight chance that it may have a hint of colour for visual observers too, but probably this is pushing at the limits of detectability. To the west (left) of this crater is a slightly smaller craterlet with colour confined to its interior. Possibly what has happened here is that underneath the present floor, at this end of the Alpine valley, lies some material that is reflective in the visible but dark in the near IR. The impact from the larger of the two craters was deep enough to penetrate into this layer and distribute the material over its ejecta blanket. The second craterlet is slightly smaller/shallower and either did not excavate enough of this layer, or perhaps the layer is deeper or less extensive to the west? Just to ensure that this was not a TLP I checked the same area again on Clementine images from orbits on three different months and it was present on all three. There are other similar coloured halo craterlets elsewhere on the Moon that can probably be detected using high-resolution colour CCD imaging from Earth using narrowband filters in the visible and near-infrared.

At least two observers have been attempting colour imaging: Both Brendan Shaw and Martin Mobberley have sent me some excellent examples in recent months and these are illustrated on the “observations received” web site. Also Rik Hill (ALPO, Tucson) has emailed me some high resolution images taken through a 665nm filter. As for tips and advice in taking colour images: 1) Infrared blocking filters are essential when using filters down the visual end of the spectrum as traditional geletin filters such as Kodak Wratten 15 etc leak near IR. 2) refocus in each filter if you have glass transmission optics anywhere in the camera or telescope system, 3) monochrome images through three separate narrow band filters are better than a single colour CCD camera as the latter has a lower effective resolution, 4) when taking images through each of the filters try to keep the image window on the same part of the Moon with minimal displacement, 5) register the images together manually – the Moon may have moved slightly in between the exposures – for precise alignment you can enlarge the images by 2-3x, register the colour components together precisely and then resample (shrink) the image back to its original size, 6) there can sometimes be internal reflections and scattered light from the filters – so try taking a second 3-filter set of images with the image displaced should help determine what colours may be from glare and which are real – also it is a good way to confirm local colour changes that maybe TLP! 7) Once you have registered your 3 filter images together use the histogram of each channel to adjust the brightness and contrast so that the image mostly appears grey when viewed in colour e.g. do a contrast stretch in each channel between +/-3 standard deviations on the mean brightness.

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

Event: Agrippa (Bartlett, 1966 Jul 02) can be seen on/from (UTC): 2004 Sep 27/28 (21:26-01:40) –
[Observe the central peak]

Event: Cleomedes (Jean, 1968 Sep 10) can be seen on/from (UTC): 2004 Oct 01 (19:00-23:18) – *[Look for dark colour tints in the N. area of the crater]*

Event: Mare Crisium (Jean, 1968 Sep 10) can be seen on/from (UTC): 2004 Oct 01 (19:00-23:18) – *[Look for a rough surface in the SW of this mare region]*

Event: Limb (Jean, 1968 Sep 10) can be seen on/from (UTC): 2004 Oct 01 (19:00-23:18) – *[Can you see colour on the limb?]*

Event: Aristarchus (George, 1965 Oct 18) can be seen on/from (UTC): 2004 Oct 06/07 (23:36-02:33) – *[Look for colour]*

Event: Plato (Markov, 1918 May 18) can be seen on/from (UTC): 2004 Oct 21 (17:00-18:07) – *[Look for brightness in shadow and spots on floor]*

Event: Mare Marginis (Jean, 1968 Sep 30) can be seen on/from (UTC): 2004 Oct 21 (17:00-20:16) – *[Look for colour]*

Event: Goddard, Sacrobosco (Jean, 1968 Sep 30) can be seen on/from (UTC): 2004 Oct 21 (17:00-20:16) – *[Sketch or image]*

Event: Messier & A (Jean, 1968 Sep 30) can be seen on/from (UTC): 2004 Oct 21 (17:00-20:16) – *[Check brightness over time]*

Event: Schneckenberg (Jean, 1968 Sep 30) can be seen on/from (UTC): 2004 Oct 21 (17:00-20:16) – *[Can you see a dark spot in the center?]*

Event: W.Bond, Barrow, Goldschmidt, Gartner (Jean, 1968 Sep 30) can be seen on/from (UTC): 2004 Oct 21 (17:00-20:16) – *[Is there a hint of red on any of these craters?]*

Event: Agrippa (Bartlett, 1966 Nov 21) can be seen on/from (UTC): 2004 Oct 21 (19:00-21:32) – *[Check how dark is the shadow of the central peak and general detail inside the crater]*

Event: Plato (Jones, 1972 Jun 19) can be seen on/from (UTC): 2004 Oct 21 (21:25-22:52) – *[Note the brightness/visibility of central craterlet]*

Event: Aristarchus (Bartlett, 1967 Oct 15) can be seen on/from (UTC): 2004 Oct 25 (02:07-02:55) – *[Sketch or image]*

Event: Gassendi (Kemp, 1972 Feb 27) can be seen on/from (UTC): 2004 Oct 26 (21:53-22:35) – *[Look for colour between the central peak and Gassendi A]*

Event: Vieta (Chernov, 1923 Sep 23) can be seen on/from (UTC): 2004 Oct 26/27 (22:18-01:03) – *[Sketch/image both dark spots]*

Event: Aristarchus (Jaeger, 1966 Jun 02) can be seen on/from (UTC): 2004 Oct 26/27 (22:52-01:28) – *[Look for colour on the rim of the crater]*

Event: Lichtenberg (Schneller, 1966 Jun 02) can be seen on/from (UTC): 2004 Oct 26/27 (23:23-00:33) – *[Look for colour on W. wall]*

Event: Aristarchus (Jean, 1968 Oct 05) can be seen on/from (UTC): 2004 Oct 27 (17:00-17:10) – *[Is there a bright spot to W? of Aristarchus?]*

Event: Plato (Jean, 1968 Oct 05) can be seen on/from (UTC): 2004 Oct 27 (17:00-17:10) – *[Are there bright lines on top of Plato?]*

Event: Proclus (Bartlett, 1958 May 04) can be seen on/from (UTC): 2004 Oct 28 (23:16-03:35) – *[Please sketch/Image]*

Event: Aristarchus (Bartlett, 1958 May 04) can be seen on/from (UTC): 2004 Oct 28 (23:46-04:12) – *[Check for colour]*

Event: Aristarchus area (Bartlett, 1954 Nov 12) can be seen on/from (UTC): 2004 Oct 29/30 (23:03-00:54) – *[Check for colour]*

Event: Aristarchus area (Bartlett, 1954 Nov 12) can be seen on/from (UTC): 2004 Oct 30 (01:31-02:52) – *[Check for colour and obscurations]*

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!

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From the Editor...

I have been asked to bring to your attention a project coordinated by Bill Dembowski in the USA. This project has been under way for several years now and over a thousand observations have been made. However, still more participants are needed. It is the Bright Lunar Rays project, which is attempting to answer many questions regarding the rays. All kinds of observations are needed, from simple line drawings and written notes, to CCD imaging, and instruments from six inch reflectors upwards are suitable. A report has recently been printed in the Journal of the American Lunar Society and Bill has put the report on www.zone-vx.com/RaysReport2004.pdf but if anyone who does not have Internet access would like a copy please send me a large stamped addressed envelope (the report is five pages) and I will send you one. Whilst reporting on progress so far it also contains details of the what the project is trying to achieve. This is a very worthwhile project and I would ask you to consider it most carefully.

John Pedler.

On a flippant note, has anyone noticed that the new Tax Disc for cars has gone astronomical ? It shows two cut-out stars and two cut-out shapes of Saturn. Perhaps they intend to feature a different view each year. How about a picture of Copernicus ? Does any member know someone who works in the DVLA ?

Occultation subsection news

Andrew Elliott

October sees a wealth of opportunity, namely eight grazing occultations (plus one on November 1). I won't elicit these in detail here – please see tracks 23 to 31 in the graze chart in the 2004 June LSC. The tracks are widely distributed across the UK with four passing over Scotland although, unfortunately, most occur in the early hours of the morning. The brightest star grazed is 4.6 magnitude 136 Tauri (track 25) with the track crossing Ireland and the Scottish Borders at around 03.30 UT on October 5. This could be quite a spectacular graze, occurring against a mountainous region of the moon's dark northern limb with the moon high up in a dark sky.

Please let me know if you want a detailed prediction for any of these grazes. Bill Leslie of SIGMA (Moray Astronomical Society) has requested information for the graze of ZC 1270, whose track passes over northern Scotland on October 8, and this will be sent.

At last we are getting back to the dark autumn nights with the moon reaching higher elevations. Total occultations for October are listed in last month's LSC. Please look out for the occultation disappearance and reappearance of the 7.6 magnitude PPM star predicted during the lunar eclipse in the early hours of October 28. (I note the Astronomy Now Year Planner says the eclipse is not visible in the UK!!)

23rd European Symposium on Occultation Projects (ESOP XXIII)

I have just returned from ESOP XXIII held, for the first time in France this year, in Paris. It was great to see a record number of eight Brits out of a total of about 80 participants from 13 countries. The opening (champagne) reception was held in Paris Observatory's splendidly refurbished Cassini room, where we rubbed shoulders with other amateurs and professionals. The room houses the Paris Meridian line, which generated a certain amount of ribbing for us about the Paris/Greenwich controversy. Presented papers covered improved techniques in observing and predicting occultations, although the emphasis these days is on asteroid occultations and even TNO's. Papers were also presented on the increasing use of video, webcam and CCD timing, and on video time insertion using GPS. Marek Zawilski from Poland presented his regular paper on historical eclipses and occultations observed in France. There was even a paper on the first implementation of a serious occultation program "Linocult" for the Linux platform from Andrei Plekhanov from Russia. A long session was devoted to the transit of Venus and education in astronomy. One of the papers "Venus and Aphrodite" was presented by Alex Pratt (Leeds AS) and I showed my first successful video recording of last year's occultation by asteroid Miriam. Jean Arlot presented the preliminary results of the 2003 campaign to observe mutual events of the Galilean satellites, and Bruno Sicardy detailed the results of last year's pro-am expeditions to Namibia and central America to observe the "central flash" occultations by Titan. The valuable results will be used in conjunction with the Cassini-Huygens space mission.

As always, several tours had been organised including a tour of the facilities at the Observatory, and trips to Meudon Observatory, Nançay Radio Observatory, Versailles gardens, and Chambord Castle in the Loire Valley. This "occultation-fest" was, as always, intensely interesting, but also intensely tiring (and intensely expensive with beer at £7/pint)! Matti Suhonen from Finland gave a presentation on ESOP XXIV which is to be organised in Helsinki next year.

Predictions for 52°27'41.4"N 1°44'44.0"W Birmingham
November 2004

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					
1/03	14	21	R		PPM 94460	76	7.1	B5	85-	135		64	189	72S	245	247	-1.5	.9	53246.0	265912
1/04	11	42	R		PPM 94489	75	8.0	K0	85-	135		61	216	74N	279	281	-1.5-1.1		53412.8	271009
1/03	56	42	R		PPM 94495	95	7.7	A3	85-	134		62	209	27S	201	202	-1.4	3.9	53431.0	265312
1/04	10	30	R		PPM 94499	95	7.9	F0	85-	134		61	215	28N	326	328	-1.6-5.4		53440.0	272007
1/04	41	14	R		PPM 94512	75	8.0	F8	85-	134		58	227	56S	229	231	-1.5	.9	53516.9	265837
1/05	45	27	RM		PPM 94572	98	5.7	B8	85-	134		50	246	32S	206	208	-1.6	2.2	53727.3	265544
ABOVE STAR IS A VARIABLE STAR -- MINIMUM MAGNITUDE = 5.8.																				
1/22	17	43	RV		PPM 95737	96	6.7	K0	79-	126		27	80	23S	201	199	1.4	5.4	61839.1	271235
2/01	02	48	R		PPM 95875	75	7.9	A0	79-	125		51	114	59N	300	297	-1.5	.1	62324.2	274349
2/04	27	16	R		PPM 96029	75	7.7	K2	78-	123		64	200	85S	265	262	-1.6	-.1	62850.6	273758
2/05	47	21	R		PPM 96100	87	6.5	M8	77-	123		57	232	49S	229	225	-1.7	1.0	63118.2	272700
ABOVE STAR IS A VARIABLE STAR -- MINIMUM MAGNITUDE = 11.9.																				
2/22	23	19	R		FK5EXT 2553	68	5.6	A2	71-	115		20	72	70S	255	248	.2	2.5	71141.0	265100
3/01	31	06	R		PPM 97322	76	7.5	K0	70-	114		48	108	43N	323	315	-1.6-1.1		71817.4	270804
3/02	36	31	RV		PPM 97371	67	6.9	K0	70-	113		56	127	60S	245	237	-1.3	2.2	71948.7	264855
3/03	40	47	R		PPM 97408	75	8.2	F5	69-	113		62	152	50N	316	307	-1.5-1.7		72146.3	270340
3/21	32	49	RC		PPM 98236	65	6.2	A0	63-	105		6	55	61S	251	240	1.0	2.5	80201.0	250439
4/04	19	13	RK		PPM 98501	67	7.2	M8	60-	102		59	149	63S	255	242	-1.6	1.4	81500.6	244317
ABOVE STAR IS A VARIABLE STAR -- MINIMUM MAGNITUDE = 11.3.																				
4/05	55	29	R		PPM 98554	76	7.2	K0	60-	101-11		62	193	46N	326	313	-1.1-2.7		81753.3	244925
6/01	08	10	R		PPM 126822	65	7.8	K0	42-	81		16	81	66N	314	295	-.4	.4	94920.7	180214
6/04	55	05	R		PPM 126938	76	7.7	F2	41-	79		47	133	38N	343	324	-.9-2.2		95611.1	173113
7/01	39	04	R		PPM 127558	75	7.5	A0	32-	69		10	82	61S	265	244	.0	2.6	103716.0	125035
7/02	35	17	R		PPM 127586	65	8.3	K0	32-	69		19	93	77S	281	260	-.4	1.7	103902.0	124417
7/04	38	00	R		PPM 127633	65	8.5	K0	31-	68		36	120	90N	294	273	-1.0	.6	104229.9	122341
8/04	40	54	R		PPM 157905	75	8.7	K2	22-	56		26	114	69N	317	295	-.7	-.1	112926.8	64644
9/05	24	08	R		PPM 158676	85	8.0	K0	14-	44		20	118	80S	286	264	-.8	1.2	121711.7	1939
10/05	30	53	R		PPM 196149	95	8.3	K0	7-	31		9	113	45S	249	229	-1.0	3.5	130539.4	-61450
10/06	12	16	R		PPM 196187	95	8.1	A5	7-	30-10		15	122	50N	335	314	-.3	-.6	130724.6	-60620
17/16	53	52	D		PPM 271403	46	6.3	F0	33+	70 -7		13	179	35S	132	147	-2.3	-.7	203808.6	-250544
18/19	57	59	D		PPM 239212	26	7.1	K0	46+	85		13	209	83N	65	83	-1.0	-.5	214201.7	-194713
18/20	46	47	DU		PPM 239248	26	6.2	A3	46+	85		9	220	86N	67	86	-.8	-.8	214329.3	-193605
20/19	25	30	DF		PPM 207503	26	7.2	K0	67+	110		29	179	46N	22	44	-.6	1.2	232400.5	-82605
21/18	20	40	D		PPM 181921	46	7.2	K2	76+	122		30	147	53N	27	50	-.7	1.7	1010.2	-23203
22/20	40	01	D		PPM 144117	65	7.6	F8	85+	135		42	174	11N	347	9	.8	3.5	5857.9	41359
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																				
23/00	51	54	DD		PPM 144254	66	6.8	F2	86+	136		23	246	49S	107	128	-1.2-3.3		10604.7	45607
23/02	41	46	D		FK5EXT 2073	56	5.7	F0	87+	137		8	269	47N	23	44	-.2	.7	10837.6	54036
ABOVE STAR IS A VARIABLE STAR																				
23/16	55	06	D		PPM 144862	85	6.7	F2	91+	145 -8		19	101	42S	116	136	-1.1	1.9	14050.8	84713
24/20	09	45	DV		FK5EXT 2176	97	6.1	F5	96+	158		44	132	70S	94	111	-1.5	1.1	23310.8	150329
25/21	37	37	D		PPM 119052	95	7.2	K5	99+	170		53	142	72S	105	118	-1.8	.3	32418.4	195536
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																				
26/00	19	59	DB		PPM 92523	95	7.0	A3	99+	171		56	208	86N	85	98	-1.5	-.4	32819.0	202859
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																				
26/00	54	15	D		PPM 92537	95	7.2	A0	99+	171		53	221	69N	68	81	-1.3	.0	32905.8	203836
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																				
28/01	44	09	RV		PPM 94169	96	6.8	G5	99-	166		62	206	76N	263	267	-1.5	-.2	51240.5	262744
28/21	55	31	RL		SAO 77819	96	6.8	K0	96-	157		42	100	82S	252	251	-.7	2.2	60025.3	271626
28/22	10	51	RT		PPM 95226	97	6.1	B8	96-	156		45	103	25N	325	324	-2.1-1.5		60119.7	273427
29/19	40	55	R		PPM 96583	85	6.6	A2	92-	147		16	66	78N	279	274	.2	1.8	64929.3	271110
29/22	56	18	R		PPM 96757	86	7.0	B9	91-	145		44	102	81N	277	271	-1.0	1.4	65615.2	271651
30/01	52	41	RK		SAO 78968	86	7.2	K2	91-	144		64	160	70S	249	243	-1.6	1.3	70117.0	270905
30/07	52	35	R		FK5EXT 2553	85	5.6	A2	90-	142 -1		28	278	72N	289	281	-.1-2.5		71141.9	265058
30/20	37	13	R		PPM 97900	87	5.4	K5	86-	136		15	67	69S	254	244	.5	2.6	74425.4	254624
ABOVE STAR IS A VARIABLE STAR																				

N.B. above times are UT.

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

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

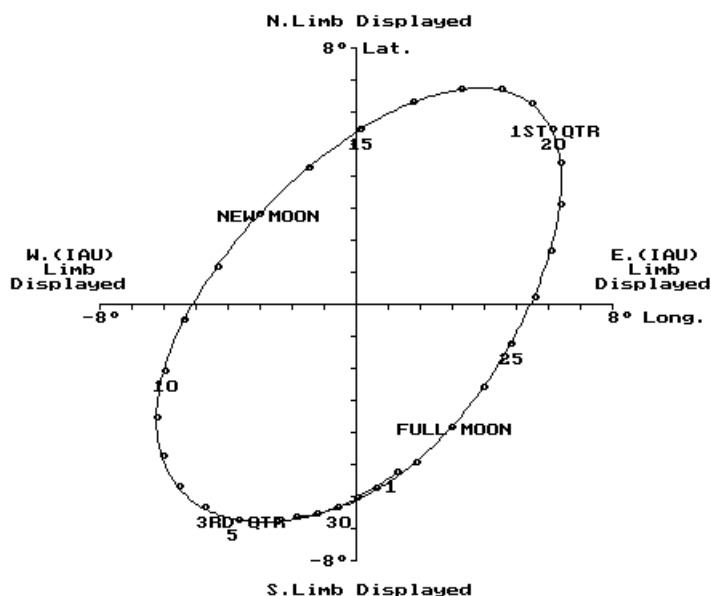
See LSC 35, 5 (May 1999) for comments on recording observations using the new format predictions.

LIBRATION November 2004

Date	Libration amount \emptyset	PA \emptyset	Feature presented
1.0	5.1	199	Neumayer*
2.0	5.7	185	Scott*
3.0	6.2	174	Casatus
4.0	6.6	164	Kircher
5.0	7.0	155	Segner
6.0	7.1	146	Pingre
7.0	7.1	138	Catalan
8.0	6.8	129	Drude
9.0	6.3	119	Pettit
10.0	5.7	107	Hohmann
11.0	4.9	90	Riccioli
12.0	4.4	68	Bartels
13.0	4.4	42	Harding*
14.0	5.0	19	Desargues*
15.0	5.9	1	Anaxagoras*
16.0	6.9	349	Peters*
17.0	7.6	340	Thales
18.0	8.1	332	Endymion
19.0	8.2	325	Mercurius
20.0	8.0	318	Zeno
21.0	7.4	311	Riemann
22.0	6.7	302	Hahn
23.0	5.9	292	Hubble
24.0	5.1	277	Neper
25.0	4.5	259	Brunner
26.0	4.4	239	Barnard
27.0	4.6	219	Lyt
28.0	5.0	203	Helmholtz
29.0	5.5	189	Boguslawsky
30.0	6.0	178	Short

LUNAR LIBRATIONS - November 2004

Geocentric:  The markers show 0:00H UT



Program by Bob Roberts.

Observer at: Lat. 52.0 \emptyset N, Long. 0.0 \emptyset W

* indicates that the feature is not illuminated.

CLOUDWATCH

Andrew Bytnar

Tabulated data for June 2004

Observer and location	Excellent <i>days</i>	Cloudy <i>days</i>	Overcast <i>days</i>	Hazy <i>days</i>	No watch <i>days</i>
P.Burt (Chatham)	7 (23%)	13 (43%)	10 (33%)	0 (0%)	-----
A.Bytnar (Mansfield)	2 (7%)	6 (20%)	3 (10%)	0 (0%)	19 (63%)
M.Cook (Cromer)	4 (13%)	10 (33%)	15½ (52%)	0½ (2%)	-----
K.Hall (Warrington)	8 (27%)	9 (30%)	13 (43%)	0 (0%)	-----
A.Heath (Nottingham)	5 (17%)	12 (40%)	13 (43%)	0 (0%)	-----
J.Wrigley (Reading)	4½ (15%)	14 (47%)	11 (36%)	0½ (2%)	-----

Tabulated data for July 2004

Observer and location	Excellent <i>days</i>	Cloudy <i>days</i>	Overcast <i>days</i>	Hazy <i>days</i>	No watch <i>days</i>
M.Cook (Cromer)	5½ (18%)	11½ (37%)	13½ (44%)	0 (0%)	0½ (2%)
K.Hall (Warrington)	7 (23%)	7 (23%)	17 (55%)	0 (0%)	-----
A.Heath (Nottingham)	5 (16%)	7 (23%)	19 (61%)	0 (0%)	-----
J.Wrigley (Reading)	3 (10%)	14 (45%)	13½ (44%)	0½ (2%)	-----

2004 NOV.	Age d	Phase	Earth's Selenographic		Sun's Selenographic		R.A.		Dec. ø	Rises		Sets		Transit		Alt ø
			Longø	Latø	Colongø	Latø	h	m		h	m	h	m			
1.0	17.9	0.861	1.3	-5.3	132.2	-0.24	05	27	27.3	18	32	11	58	02	50	65
2.0	18.9	0.790	0.0	-6.1	144.4	-0.26	06	20	28.0	19	26	12	50	03	41	66
3.0	19.9	0.708	-1.3	-6.6	156.5	-0.28	07	14	27.5	20	31	13	29	04	32	65
4.0	20.9	0.619	-2.5	-6.8	168.7	-0.30	08	06	25.7	21	43	13	58	05	22	63
5.0	21.9	0.525	-3.7	-6.8	180.9	-0.32	08	57	22.7	22	58	14	19	06	10	59
6.0	22.9	0.429	-4.8	-6.4	193.0	-0.34	09	45	18.8	..	..	14	35	06	55	55
7.0	23.9	0.333	-5.6	-5.8	205.2	-0.35	10	33	13.9	00	14	14	48	07	40	50
8.0	24.9	0.241	-6.1	-4.8	217.4	-0.37	11	19	8.4	01	31	14	59	08	23	44
9.0	25.9	0.158	-6.2	-3.6	229.6	-0.39	12	06	2.4	02	49	15	10	09	08	38
10.0	26.9	0.087	-6.0	-2.2	241.8	-0.41	12	53	-3.9	04	10	15	22	09	53	31
11.0	27.9	0.034	-5.4	-0.5	254.0	-0.44	13	43	-10.2	05	35	15	36	10	42	25
12.0	28.9	0.005	-4.4	1.1	266.2	-0.46	14	36	-16.2	07	04	15	55	11	35	19
13.0	0.4	0.003	-3.1	2.8	278.4	-0.49	15	34	-21.4	08	38	16	21	12	34	14
14.0	1.4	0.029	-1.5	4.3	290.6	-0.51	16	36	-25.4	10	09	17	00	13	37	11
15.0	2.4	0.082	0.2	5.5	302.8	-0.54	17	42	-27.6	11	27	17	58	14	42	9
16.0	3.4	0.159	1.8	6.3	315.0	-0.57	18	49	-27.9	12	25	19	15	15	47	11
17.0	4.4	0.255	3.3	6.7	327.2	-0.60	19	54	-26.2	13	04	20	42	16	48	14
18.0	5.4	0.362	4.6	6.7	339.4	-0.63	20	55	-22.8	13	30	22	11	17	44	18
19.0	6.4	0.474	5.5	6.2	351.6	-0.67	21	51	-18.2	13	48	23	37	18	35	24
20.0	7.4	0.584	6.1	5.4	3.7	-0.70	22	44	-12.7	14	02	..	..	19	22	30
21.0	8.4	0.688	6.4	4.4	15.9	-0.73	23	33	-6.7	14	13	00	59	20	07	36
22.0	9.4	0.782	6.4	3.1	28.0	-0.77	00	19	-0.5	14	24	02	18	20	50	42
23.0	10.4	0.861	6.1	1.7	40.2	-0.80	01	05	5.5	14	35	03	35	21	33	48
24.0	11.4	0.923	5.6	0.2	52.3	-0.84	01	51	11.2	14	48	04	51	22	18	54
25.0	12.4	0.968	4.9	-1.3	64.5	-0.87	02	38	16.4	15	03	06	08	23	04	58
26.0	13.4	0.993	4.0	-2.7	76.6	-0.90	03	27	20.9	15	23	07	25	23	52	62
27.0	14.4	0.999	3.0	-3.9	88.7	-0.93	04	18	24.4	15	50	08	39	..	..	..
28.0	15.4	0.987	1.9	-5.0	100.9	-0.95	05	10	26.8	16	28	09	47	00	41	64
29.0	16.4	0.956	0.7	-5.8	113.0	-0.97	06	04	27.9	17	17	10	44	01	34	65
30.0	17.4	0.910	-0.6	-6.4	125.2	-0.99	06	58	27.7	18	19	11	28	02	25	65
1 (Dec)	18.4	0.850	-1.9	-6.7	137.3	-1.01	07	50	26.2	19	28	12	00	03	16	63
2.0	19.4	0.777	-3.2	-6.7	149.4	-1.02	08	41	23.6	20	41	12	23	04	04	61
3.0	20.4	0.694	-4.4	-6.4	161.6	-1.04	09	30	20.0	21	56	12	40	04	50	57
4.0	21.4	0.602	-5.5	-5.9	173.7	-1.05	10	17	15.5	23	10	12	54	05	34	52
5.0	22.4	0.505	-6.4	-5.0	185.9	-1.06	11	02	10.3	..	..	13	05	06	16	46
6.0	23.4	0.405	-7.0	-3.9	198.1	-1.07	11	48	4.6	..	..	13	16	06	59	40
7.0	24.4	0.306	-7.3	-2.6	210.2	-1.08	12	33	-1.4	01	42	13	27	07	42	34
8.0	25.4	0.212	-7.2	-1.1	222.4	-1.09	13	21	-7.6	03	03	13	40	08	28	28
9.0	26.4	0.128	-6.6	0.5	234.6	-1.10	14	12	-13.7	04	29	13	56	09	18	22
10.0	27.4	0.062	-5.5	2.1	246.8	-1.11	15	07	-19.2	06	00	14	17	10	14	16
11.0	28.4	0.018	-4.0	3.7	259.0	-1.13	16	07	-23.8	07	34	14	49	11	15	12
12.0	29.4	0.001	-2.1	5.0	271.2	-1.15	17	13	-26.8	09	01	15	39	12	21	10

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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 November 2004 circular should reach the Editor by the 10th October 2004