



LUNAR SECTION CIRCULAR

Director Alan Wells
Assistant Director/Editor John Pedler

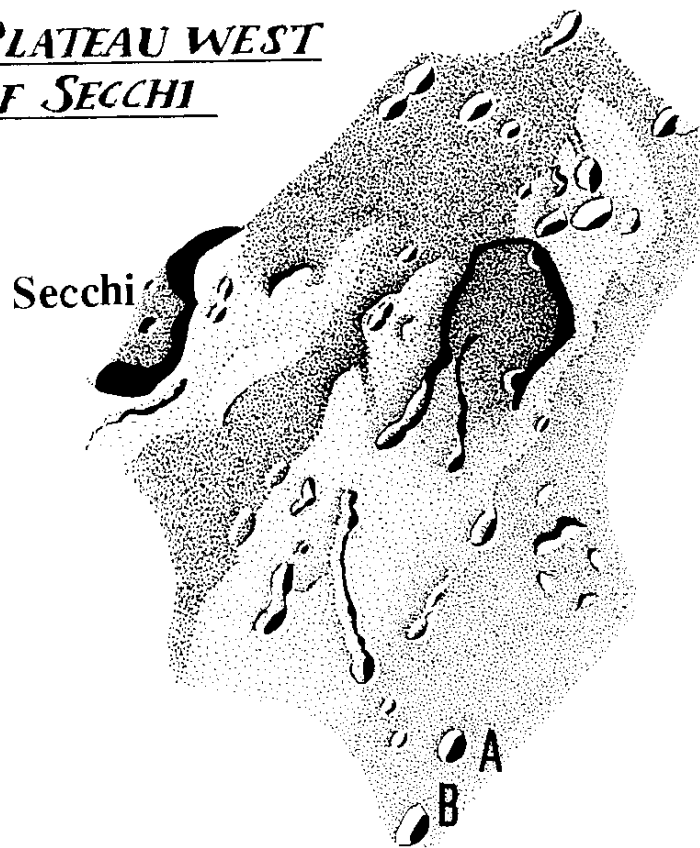
Volume 41 No. 9

Data on pages 7-8 are for Oct. 2004

Lunations 1011-1012

Sept. 2004

PLATEAU WEST OF SECCHI



OBSERVATION BY PHIL MORGAN. 2002 NOVEMBER 23.
305mm f5 REFLECTOR X400 02:55 to 03:40 UT.
SEEING $\frac{8}{10}$ TRANS $\frac{3}{5}$. SUNS CAL. 130.06 to 130.43.

Genuine Wargentín type craters are few and far between on the lunar surface. They have the appearance of having been filled with lava from fissures or conduits inside the crater ramparts. In the case of Wargentín, this appears to have reached such a level as to have breached the west wall and flowed out over it onto the surrounding plain.

Always on the look out for similar features, I believed I had found one immediately to the west of the crater Secchi on the morning of 2002 November 23. The appearance was of a small plateau crater, the interior of which was darker than the surrounding area. The west wall was fairly intact, but the remainder was largely eroded away. I have to say that the effect is not so pronounced or noticeable under morning illumination. The appearance under afternoon lighting is shown here—those that are interested might like to try and confirm the impression I had on this occasion.

Phil Morgan

The Lunar Section website - www.BAALunarSection.org.uk - has attracted nearly 1100 new visitors since its relaunch. A Search facility has been added and several LSCs are available in pdf format. We now have pages devoted to the sub-sections of the Lunar Section - although so far only the Geological Subsection has contributed. I invite the other subsections to send me some (any!) material. This is an ideal opportunity to get your valuable work disseminated worldwide. (Yes, you would be surprised how many people in far-flung places have had a look at the Lunar Section's web page.) Richard Baum has provided a comprehensive reading list. He has also highlighted the fact that many of those who are new (or maybe not so new) to astronomy, have only a scant knowledge of its history. I think that we could build a first-class reference site that would be a valuable resource to students."

Mike Carson-Rowland. Computing Co-ordinator.

The writer seeks the personal experience of telescopists, regarding the extent to which dewing affects the optical components of their instruments.

The question arises because of recent correspondence with an old observing colleague who asserts that he has never had dewing problems with his skeleton tubed reflector over the last two years despite much usage under all atmospheric conditions. His mirrors are mounted virtually all fresco - ie, unprotected against the elements by any shields. Yet in the same locality it was found necessary to provide the 6 inch refractor which he originally owned with a dewcap two feet long, and still dewing was experienced. The present writer used an amply diametered pvc tubed reflector of 10 inches aperture F/10 for many years in the open; access to the primary mirror was by means of a hinged side-door to a metal cell with a fairly tight fitting lid. Yet it was never predictable, even having regard to weather conditions, whether the primary would dew up on opening up or during the course of observing. Often this would occur to a much greater degree than the flat which simply required the nearby placing of a warmed cupped hand to drive away any moisture that might form.

The corrector plates of the Schmidt-Cassegrain and Maksutov-Cass.Newt. Telescopes, now much in vogue, are obviously much more vulnerable to the dewing problem - sometimes requiring lengthy dewcaps. Whilst dispersal can be achieved by the discreet use of heater fans such as hair dryers, the immediate effect is to upset definition with delayed restoration of previous seeing.

So little is found in the literature, both past and present, about combating the deposition of moisture on optical surfaces, except to advise some form of protective shield, that it would be interesting to have the benefit of whatever methods other amateurs employ. There could be independent or combinatory factors such as local atmospheric conditions, locality peculiarities, rising and falling temperatures, the influence of wind etc. It would be of interest to have readers contributions.

In the old days I had no problem over dewing using a 12 inch reflector F/6.3 housed beneath a nine foot-dome with an aluminium roof. However, trouble was experienced with definition caused by the body-heat of visitors in such a confined space !

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Orrell,
Wigan. WN5 8QZ.

(N.B. Any replies direct to Harold please. Ed.)

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Observations for July have been received from: Jay Albert (Boca Raton, FL), Michael Amato (West Haven, CT, USA), Clive Brook (Plymouth, UK), and Jim Fisher (Austin, TX, USA). In addition many thanks for observations for June and earlier that were received from Marie Cook (Mundesley, UK), Jacques van Delft (Wepener, South Africa), John Hauk (Stafford, VA, USA), Richard Hill (Tucson, AZ, USA), Sander Klieverik (Denekamp, the Netherlands). I would like to remind members to please include the date and UT that observations are made at (make sure that the date is a UT date, and not local) and also other information such as telescope, seeing, transparency, magnification (if visual), CCD camera, filters etc.

Several members kindly made follow up observations for Jay Albert's Proclus anomaly and I received also a detailed CCD image that Jay took. The latter showed that some spurious colour was present – so I did some image processing and separated out the red, green and blue colour components and registered these back together again after compensating for spectral dispersion offset. This removed the spurious colour and improved overall image contrast – something that Jay would have been unable to do when making his sketch. The re-constituted image does in fact show that there was a faint shadow to the south of the dark shadow, so everything appears to have been normal on the night of June 24th, it was just that atmospheric conditions reduced visibility of the southern shadow.

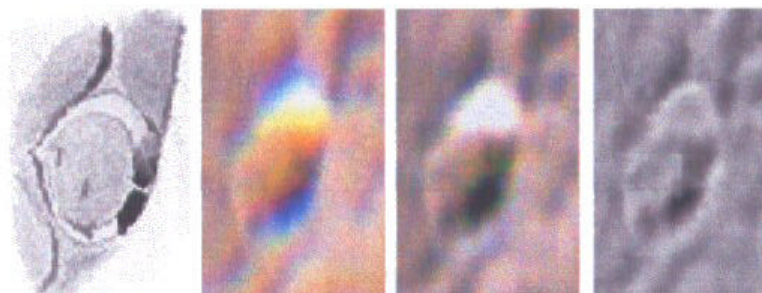


Figure 1: Proclus observations by Jay Albert, 2004 Jun 24 UT 02:30 with north at the top. (Far left) Jay's sketch. (Left) Colour image taken with an Olympus C5050 digital camera – showing spurious colour. (Right) colour image with spurious colour removed by manual registration of the RGB channels – note you can just about see the southern shadow here. (Far right) – high pass filtered version: confirming presence of southern shadow.

Observations Sought: Staying on the subject of spurious colour, I would like to encourage all members to go out and observe the Moon during September with the specific intention of capturing CCD images/sketches showing examples of spurious colour. Spurious colour is caused by: 1) refraction in our atmosphere – blue light is bent (refracted) more than red light and the effect worsens the lower the Moon is in the sky. 2) telescope refractive optics that are not fully achromatic/aligned properly. 3) in the 1970's Lawrence Fitton (UK) suggested that atmospheric pressure differences between weather systems moving across the observing site might cause spurious colour too. 4) although not strictly spurious colour, on many colour CCD cameras RGB filters “tile” the CCD surface, so one pixel has a red filter, another a green filter, and the third adjacent pixel a blue filter (often “L” shaped tiling patterns are used) – you normally do not notice the effect of this in everyday images, but it can create apparent colours on edge-like features.

So I would very much like to receive images/sketches that you take during September showing spurious colour and please also note down which way the Moon is orientated in the sky as seen with the naked eye using clock directions i.e. 12 O'Clock the S-N line of the Moon is vertical, 3 O'Clock the south pole of the Moon is on the left and the north pole is on the right etc. Please also note down the atmospheric transparency and experiment with rotating the CCD camera and/or eyepiece/Barlow e.g. rotated to the left 90 deg - just to see if these have some effect – again please note down the arrangement for each image. We will do this for just one month and I will then comment on the results in the October newsletter. If you are new to the TLP team then think of this as an exercise to gain experience in determining what is spurious and what is real colour on the Moon – as ever you should ALWAYS check for the presence of spurious colour on other lunar features of similar size, contrast and illumination. If you see colours on these too then it is almost certainly spurious.

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

Event: Aristarchus (Bartlett, 1950 Jul 31) can be seen on/from (UTC): 2004 Sep 01 (00:00-04:35) –
[Check for colour on N/NE rim]

Event: Alphonsus (Hall, 1964 Oct 27) can be seen on/from (UTC): 2004 Sep 05 (21:00-22:15) – [Look
for a red/pink coloured spot/patch]

Event: Appenines (Jean et al, 1968 Sep 01) can be seen on/from (UTC): 2004 Sep 22 (19:00-19:23) –
[Look for an unusual dark area in the S. region?]

Event: S.E. of Ross D (Cross, 1966 Oct 25) can be seen on/from (UTC): 2004 Sep 24/25 (22:08-00:52)
– [Is there a bright area obscuring half of the crater wall?]

Event: Plato (North, 1992 May 13) can be seen on/from (UTC): 2004 Sep 25 (18:00-20:37) – [Look for
colour and visibility of floor craterlets]

Event: Aristarchus and Herodotus (Seeliger, 1967 Sep 16) can be seen on/from (UTC): 2004 Sep 26/27
(21:59-01:56) – [Look for dark streaks on outside E(?) walls of both craters – also please confirm that there is
no shadow from Herodotus wall?]

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: Aristarchus (Bartlett, 1950 Aug 28) can be seen on/from (UTC): 2004 Sep 28/29 (23:45-04:47) –
[Look for colour on the east wall bright spot]

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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TOPOGRAPHICAL SUB-SECTION

COLIN EBDON

This month I have been thrown a lifeline by Nigel Longshaw, who has sent me an interesting set of three
drawings, all very different, which he managed to complete in May and June in between bouts of inclement
weather.

At the time of writing (end of July) we have had a full week of sunny weather here in the South East, and there
is a Gibbous Moon in the sky. Unfortunately, it is deep orange and just about managing to haul itself through the
tops of some nearby trees, before sinking back towards a murky horizon!

This is not, traditionally, a time of maximum activity for keen lunar observers, who are now hoping for some fine
autumn nights to make up for what has been a rather lacklustre year generally. I therefore make no apologies for
including my usual request for material from members, to allow me to continue to fill this page each month; one
day I may just run out completely, in which event you will have to put up with my telling you a bedtime story
instead.

Even if you have no new observations to offer, I would be pleased to receive written comments on anything that
appears in these pages or 'The New Moon' at any time.

In the longer term, I hope to be able to produce a small catalogue of areas of particular topographical interest to
provide members with specific features worth following up, culled from previous articles in 'The New Moon' the
'Circular' and individual observations and comments I have received over the years. I am currently working on
this as and when I can, but it is fairly slow going, so please bear with me. If there is any particular feature that
you feel could be included in such a catalogue/list, please let me know.

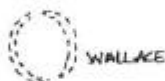
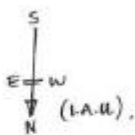
In the meantime, why not make a note to follow up Nigel's dome observation and his observation of the crater
Vitello to see what you can make of these features. Vitello in particular is a very rugged crater of considerable
geological interest, and it is worth comparing Nigel's drawing to Orbiter photos IV 136 H3, 137 H1, 142-H3 and
143-H1. Harold Hill has also drawn my attention to a detailed image from Orbiter V, 168 M.

2004 JUNE 25TH

21:45 U.T.

78mm APD REFRACTOR x 157

SEEING - II-III



Good view of this v. large dome with ridge running E/W. could not see if dome was continuing to the south of the ridge.

Dome surface quite dark with secondary shadow feature forming a 'spur' to the North.

Dome is catalogued in ALPO "LUNAR DOME CATALOGUE" APRIL 30TH 1992.

COORDINATES - 108 316 designated 'F' (fund) 45 km ϕ

SUNRISE ON MAGINUS



2004 JUNE 26TH

78mm APD REFRACTOR x 157

SEEING: III-II (variable)

SUN'S COL: 8:46° - 8:57°
 " LAT: 1:25° - 0hrs 26th

21:10 - 21:35 (U.T.)

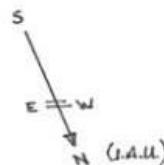
TRANSP: GOOD

EMERUS SEL LONG: -7:4° } 0hrs 26th
 " " LAT: -3:6°

A wonderful sight. The first rays of sunlight catching the crater floor illuminating the flooded small central crater and the ridge to the West. The floor to the East of the central crater looked quite bright - but may have been a contrast effect with the surrounding shadows.

N. Longley

VITELLO



2004 MAY 30TH

150mm MAK-CASS x 225

SEEING: III-II (VARIABLE)

SUN'S COL: 50:1° - 51:41°
 " LAT: 0:73° - 0hrs 31st

21:40 - 22:16 (U.T.)

TRANSP: V. GOOD

EMERUS SEL LONG: -6:3° } 0hrs 31st
 " " LAT: -1:8°

An interesting crater showing much detail on its floor. The curving rille or ridge to the East of the floor terminating in a shallow elongated crater pit at its Northern end. The central mountain mass appeared to be "curved" along with a further feature on the S/W floor.

N. Longley

Two grazing occultations are predicted for September 2nd and 9th – tracks 21 and 22 respectively in the chart and list in the June 2004 LSC. Both occur in the early hours of the morning on those dates. Many of this half-year's grazes coincidentally line up in close but unrelated pairs. Track 21 is the westernmost of the two close tracks running from the south west to the north east of England, passing over the densely populated Midlands. Track 22 is the easternmost of the two close tracks running through the north west corner of Wales, and the north west to north east England.

While on the subject of coincidences, many of the tracks also intersect leading to many places being able to witness two, three, or even four grazes. Does anyone know if the four-graze intersection in the North Sea is near an oil rig?!

At the time of writing, we are in the middle of one of the worst summers on record. I hope the sky has cleared up by the time you receive this. Good luck...

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

October 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	
2/00	25	13/R	PPM 118885	85	7.8	K0	87-	138	48	131	63S	226	240	-.7	2.1	31059.4	184547	
2/01	56	27/R	PPM 118924	95	6.7	K5	87-	138	56	163	9S	172	186	.8	5.1	31411.4	185934	
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																		
2/22	06	03/R	FK5EXT 2283	88	5.8	F0	81-	128	25	85	53N	294	304	-.8	1.7	35709.1	222936	
4/00	20	31/RH	PPM 93858	76	7.2	A0	72-	116	40	100	36S	207	213	.2	3.4	45353.9	252232	
4/04	15	14/R	PPM 93945	65	8.0	G5	71-	115	63	181	72S	244	249	-1.4	1.0	45954.1	255640	
5/01	35	38/RV	PPM 94914	75	8.1	B8	63-	105	45	103	61N	297	297	-1.4	.6	54906.6	272201	
5/02	30	29/R	PPM 94958	86	7.1	F5	62-	104	53	117	42N	316	316	-2.1	-1.2	55057.3	273028	
5/03	21	52/DV	FK5 1158	85	4.5	A0	62-	104	59	133-25N	23	23			-.5	4.6	55337.2	273653
ABOVE STAR IS A VARIABLE STAR -- MINIMUM MAGNITUDE = 4.6.																		
5/04	04	49/RV	FK5 1158	89	4.5	A0	62-	104	63	150	39N	320	320	-2.2	-2.8	55337.2	273653	
ABOVE STAR IS A VARIABLE STAR -- MINIMUM MAGNITUDE = 4.6.																		
5/05	19	22/R	PPM 95072	65	8.0	F5	62-	103	-9	65	187	62S	240	240	-1.5	1.1	55521.3	272041
5/22	45	48/RO	PPM 96242	66	6.9	G0	55-	95	13	62	83S	266	262	.4	2.1	63643.6	271633	
6/02	27	19/R	PPM 96457	65	8.2	B9	53-	93	45	103	90N	274	269	-1.1	1.5	64429.4	272836	
6/02	59	09/RX	PPM 96498	77	6.8	K0	53-	93	50	111	42N	322	317	-1.9	-1.3	64552.5	274011	
6/04	27	43/R	PPM 96546	65	8.4	K0	53-	93	60	139	62S	247	242	-1.4	1.8	64801.7	272329	
7/00	06	52/RC	PPM 97667	85	7.8	A2	44-	83	16	68	26S	216	207	1.4	4.7	73329.4	260620	
8/00	09	08/R	PPM 98679	65	7.3	F0	35-	72	8	61	55S	251	237	.8	2.7	82511.1	235556	
8/01	37	05/RV	PPM 98739	78	6.1	A5	34-	71	20	76	49N	327	313	-.8	-.1	82852.7	240752	
ABOVE STAR IS A VARIABLE STAR -- MINIMUM MAGNITUDE = 6.1.																		
8/02	57	17/RK	FK5EXT 2666	79	5.7	F0	34-	71	32	91	37N	339	325	-1.3	-1.6	83146.4	240402	
8/03	49	13/R	PPM 98790	65	8.5	G0	34-	71	39	102	66S	262	248	-.9	2.2	83240.0	234357	
8/04	26	17/R	PPM 98821	85	8.4	K2	33-	71	45	111	29N	347	333	-1.4	-3.4	83434.8	235745	
9/02	02	19/R	PPM 99490	65	8.0	K2	25-	60	14	75	75N	306	289	-.3	.8	91954.5	203144	
9/04	02	08/R	PPM 99541	76	7.8	G0	25-	59	32	98	57N	325	307	-.9	-.5	92402.0	202048	
10/03	14	49/R	PPM 127175	75	7.8	F0	17-	48	14	83	62S	267	247	-.1	2.4	101057.0	154101	
20/19	00	29/D	PPM 270473	39	4.6	K2	49+	88	10	192	54S	115	126	-1.7	-.8	195713.9	-270936	
23/23	57	11/D	PPM 240909	55	7.2	K0	82+	130	14	227	76S	78	100	-1.0	-1.1	225422.7	-120956	
24/18	36	01/D	FK5 888	66	6.5	K0	88+	140	20	134	73S	79	102	-1.1	1.6	233547.4	-72616	
LUNAR ECLIPSE - SPECIAL MAGNITUDE LIMITS CALCULATED:-																		
28/03	46	11/D	PPM 117990	97	7.6	B9	1E	180	29	253	99U	7	25	-.6	2.2	21002.7	131202	
28/04	21	04/R	PPM 117990	96	7.6	B9	50E	180	24	260101U	303	322			-.7	-6.0	21002.7	131202
END OF LUNAR ECLIPSE																		
29/02	21	41/R	PPM 118656	95	6.9	A3	99-	169	49	222	65N	271	286	-1.5	-1.1	25512.0	174523	
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																		
29/03	13	27/R	FK5EXT 2204	96	5.6	F5	99-	169	43	238	32N	305	320	-1.8	-4.8	25643.1	180240	
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																		
29/05	25	57/RM	PPM 118742	95	6.9	A0	99-	168	25	268	56S	212	228	-.7	.4	30048.4	180135	
29/21	47	39/R	PPM 92695	96	6.4	A0	97-	159	40	109	31S	192	204	.4	3.5	33917.4	205600	
29/23	08	38/R	PPM 92726	95	7.2	A5	97-	159	51	130	76N	265	277	-1.3	1.2	34039.0	212524	
30/05	12	54/R	PPM 92958	97	5.9	B9	96-	157	37	258	84N	258	269	-.9	-1.3	35012.6	221539	
31/03	38	23/R	FK5EXT 2343	87	6.3	A3	91-	146	58	221	79N	268	274	-1.5	-.7	43941.3	251347	

N.B. Don't forget to add 1 hour to the above times when British Summer Time is in Force (until 2004 October 31).

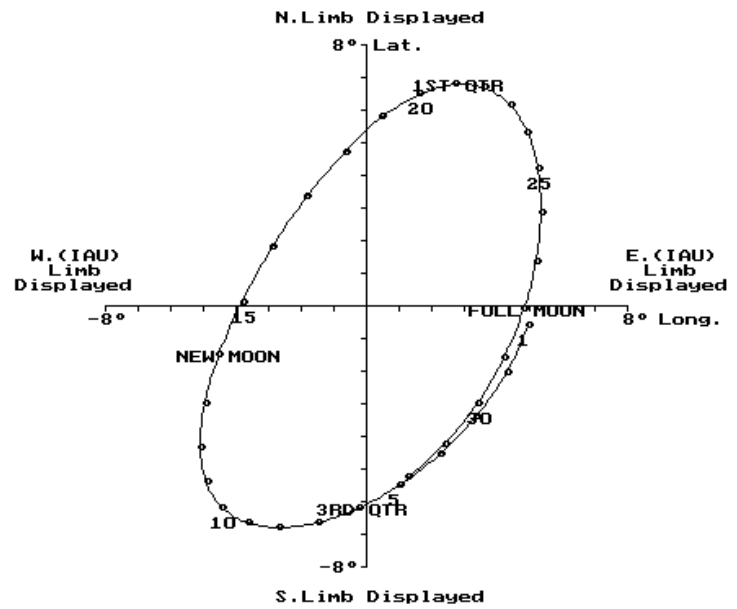
P.T.O.

LIBRATION October 2004

Date	Libration amount \emptyset	PA \emptyset	Feature presented
1.0	5.1	270	Purkyne*
2.0	4.8	251	Schorr*
3.0	4.7	232	Gum*
4.0	4.9	214	Brisbane*
5.0	5.2	197	Neumayer*
6.0	5.7	183	Simpelius*
7.0	6.2	172	Casatus
8.0	6.6	162	Bettinus
9.0	6.8	154	Phocylides
10.0	6.8	146	Pingre
11.0	6.5	138	Catalan
12.0	5.9	129	Drude
13.0	5.2	118	Pettit
14.0	4.4	102	Maunder
15.0	3.8	79	Bohr*
16.0	3.8	52	Lavoisier*
17.0	4.4	28	Cleostratus*
18.0	5.4	12	Poncelet*
19.0	6.3	0	Gioja*
20.0	7.1	352	Baillaud
21.0	7.6	345	Arnold
22.0	7.8	338	Strabo
23.0	7.7	332	Endymion
24.0	7.3	324	Mercurius
25.0	6.6	316	Boss
26.0	5.9	305	Hahn
27.0	5.2	291	Hubble
28.0	4.6	274	Babcock
29.0	4.3	254	Ritz*
30.0	4.3	234	Abel*

LUNAR LIBRATIONS - October 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.

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.

[CLOUDWATCH](#)

[Andrew Bytnar](#)

Tabulated data for May 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)	12 (39%)	5 (16%)	14 (45%)	0 (0%)	-----
A.Bytnar (Mansfield)	6 (19%)	14 (45%)	8 (26%)	3 (10%)	-----
M.Cook (Cromer)	10½ (34%)	8½ (27%)	8 (26%)	4 (13%)	-----

2004 OCT.	Age d	Phase	Earth's Selenographic		Sun's Selenographic		R.A.		Dec. °	Rises		Sets		Transit		Alt °
			Longø	Latø	Colongø	Latø	h	m		h	m	h	m	h	m	
1.0	16.4	0.935	5.0	-0.7	114.5	0.62	02	21	14.6	18	35	09	27	01	43	52
2.0	17.4	0.877	4.3	-2.1	126.7	0.59	03	10	19.4	18	54	10	45	02	29	57
3.0	18.4	0.805	3.4	-3.5	138.9	0.57	04	00	23.3	19	19	12	00	03	18	61
4.0	19.4	0.723	2.3	-4.6	151.0	0.55	04	52	26.1	19	54	13	09	04	07	64
5.0	20.4	0.635	1.0	-5.5	163.2	0.53	05	45	27.7	20	41	14	08	04	58	65
6.0	21.4	0.542	-0.3	-6.2	175.4	0.51	06	38	28.0	21	40	14	55	05	50	65
7.0	22.4	0.447	-1.5	-6.7	187.6	0.49	07	31	27.0	22	48	15	30	06	41	64
8.0	23.4	0.354	-2.7	-6.8	199.8	0.47	08	24	24.8	..	..	15	55	07	30	61
9.0	24.4	0.264	-3.7	-6.7	212.0	0.45	09	14	21.4	00	03	16	14	08	18	58
10.0	25.4	0.182	-4.4	-6.2	224.2	0.43	10	03	17.1	01	20	16	29	09	03	53
11.0	26.4	0.110	-4.9	-5.5	236.4	0.41	10	51	11.9	02	38	16	41	09	48	47
12.0	27.4	0.054	-5.1	-4.4	248.6	0.39	11	38	6.1	03	56	16	53	10	33	41
13.0	28.4	0.016	-5.0	-3.1	260.8	0.37	12	25	-0.2	05	16	17	04	11	18	34
14.0	29.4	0.000	-4.5	-1.5	273.1	0.34	13	14	-6.6	06	39	17	17	12	05	28
15.0	0.9	0.010	-3.8	0.1	285.3	0.31	14	04	-12.8	08	05	17	32	12	55	22
16.0	1.9	0.046	-2.9	1.8	297.5	0.28	14	59	-18.4	09	35	17	53	13	49	16
17.0	2.9	0.106	-1.9	3.3	309.7	0.25	15	57	-23.1	11	06	18	23	14	48	12
18.0	3.9	0.188	-0.7	4.7	321.9	0.22	16	58	-26.4	12	30	19	08	15	50	10
19.0	4.9	0.287	0.5	5.8	334.1	0.19	18	02	-27.9	13	39	20	11	16	53	10
20.0	5.9	0.397	1.7	6.5	346.3	0.16	19	07	-27.6	14	28	21	30	17	55	11
21.0	6.9	0.511	2.7	6.8	358.5	0.12	20	09	-25.5	15	01	22	57	18	54	15
22.0	7.9	0.623	3.7	6.7	10.7	0.09	21	09	-21.9	15	24	..	..	19	47	20
23.0	8.9	0.728	4.4	6.2	22.8	0.05	22	04	-17.0	15	40	00	25	20	37	25
24.0	9.9	0.820	5.0	5.3	35.0	0.02	22	55	-11.4	15	53	01	50	21	24	32
25.0	10.9	0.895	5.3	4.2	47.2	-0.02	23	44	-5.3	16	05	03	11	22	08	38
26.0	11.9	0.951	5.4	2.8	59.3	-0.05	00	31	0.9	16	16	04	30	22	52	44
27.0	12.9	0.986	5.2	1.3	71.5	-0.09	01	18	7.0	16	27	05	48	23	36	50
28.0	13.9	1.000	4.9	-0.2	83.6	-0.12	02	04	12.7	16	41	07	06	..	..	..
29.0	14.9	0.992	4.2	-1.7	95.8	-0.15	02	53	17.8	16	58	08	24	00	21	55
30.0	15.9	0.965	3.4	-3.1	107.9	-0.18	03	42	22.1	17	20	09	41	01	07	60
31.0	16.9	0.921	2.4	-4.3	120.1	-0.21	04	34	25.3	17	50	10	54	01	59	63
1 (Nov)	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

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