



LUNAR SECTION CIRCULAR

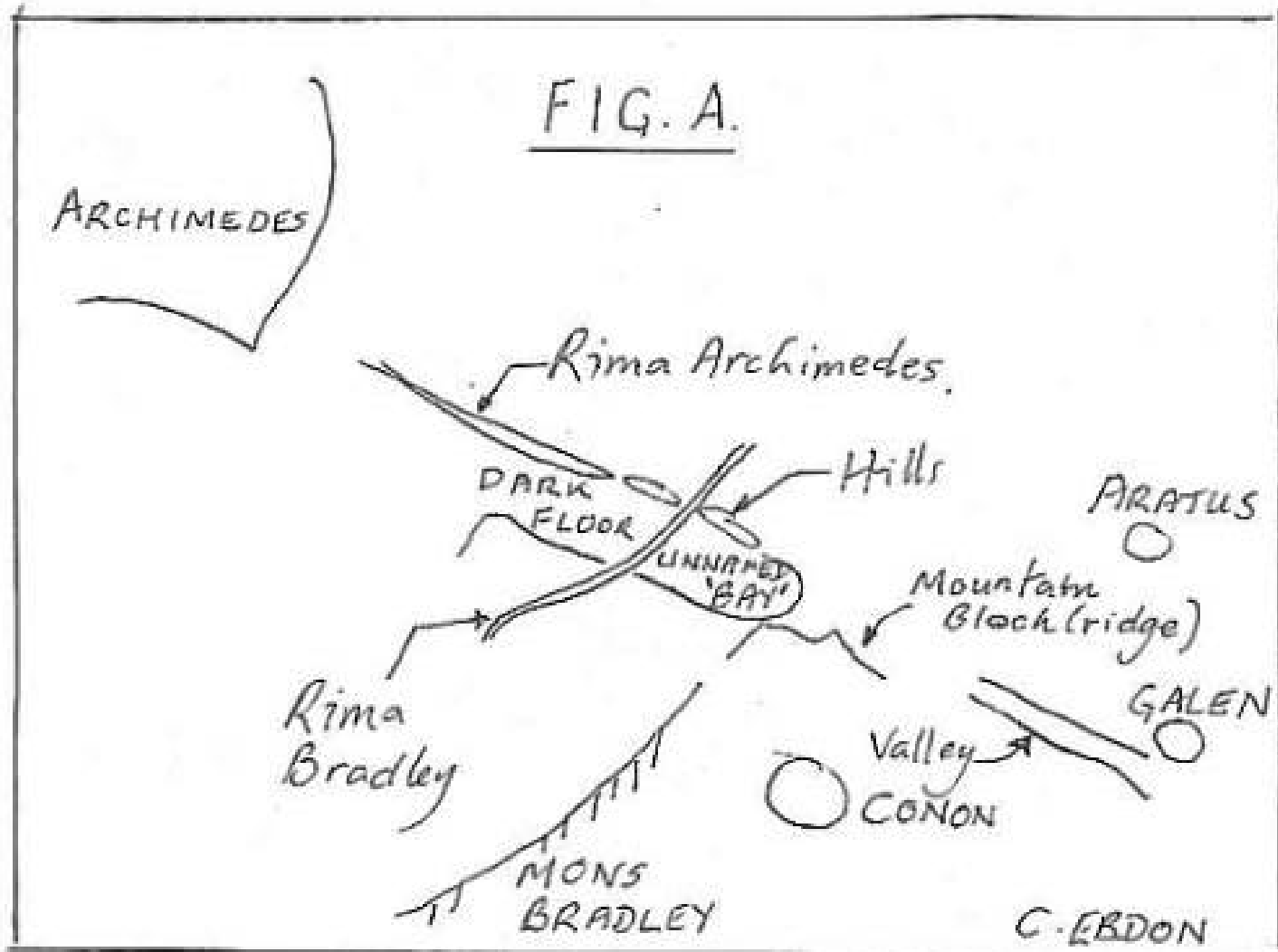
Director Alan Wells
Assistant Director/Editor John Pedler

Volume 41 No. 4

Data on pages 7-8 are for May 2004

Lunations 1006-1007

April 2004



TOPOGRAPHICAL SUB-SECTION

COLIN EBDON

With continuing mediocre weather conditions prevailing at the time of writing (2004 March 1) I thought that I would take the opportunity for some 'Armchair Astronomy' for a change. I have therefore had a look to see what I could make of the possible 'Apennine Valley' mentioned by Brendan Shaw in the March 2004 Circular (Vol.41, No3).

Leaving aside for the moment the possibility of an electronic 'artefact' in the video frames or their processing, I have looked at available maps and atlases to see if there might a single real feature here or, as Brendan puts it just 'a chance alignment of shadows.....etc'.

There is an interesting wider issue here, in that people often wonder as to the point of detailed topographical studies when the Moon has, by now, been mapped and recorded in such great detail. The answer is not a lot of point, except for the sheer pleasure of observing. However, there is a very real and on-going issue as to the interpretation of lunar features, which to me is something that is regrettably often taken for granted as if it were set in stone.

Compared, for example, to the continuing process of the re-classification and (often to the irritation of gardeners) re-naming of plants by Botanists, the classification of lunar features does not seem very rigorous. Take for example the Altai Scarp, which is no longer considered to be properly thought of as a scarp at all but as mountains. Or the Hyginus Rille, which, in part at least, could be considered as a crater chain. Come to think of it, what is the difference (in terms of geological origins) between a crater chain and a rille on the Moon? As to the naming of features (which has the tendency to confer upon them the status of true geological features in their own right) this also has a chequered history and can at time seem dubious. Take, for example the so called flooded basin area adjoining Plato, once known as 'Ancient Newton'. This was renamed in recent years as BLISS by the IAU, although its true nature as a singular feature remains open to some debate (LS. Circular 38,11, Nov.2001).

In this instance, whilst I can find no trace of an extended feature covering the distance of the 'valley' picked out by Brendan, I think that there are several distinct linear features here which probably get conjoined by the eye into one single line. (See Fig.A)

First, the Mare floor adjoining Rima Archimedes immediately to the SE., consists of a very distinct rectangular shaped 'inlet' or bay with well defined edges, and I think this marks the start of the 'valley', probably enhanced by the fact that Rima Archimedes terminates in a couple of hills in one continuous line. The linearity continues past the hefty and sharply defined mountain block North of Conon, mentioned by Brendan, which presumably adds to the illusion of a single feature. Most interestingly, however, there does seem to be a true narrow valley, about 100km long, again on the same line, commencing about halfway between the craters Conon and Aratus and terminating at the small (10km) crater Galen. This valley can be seen to advantage in Plate 2d of the Hatfield Lunar Photographic Atlas.

This is not the end of the story of course, and further observations would be welcomed. Meanwhile, my thanks to Brendan for getting me looking at this often taken for granted region in more detail - I already feel better acquainted with it than ever before!

SECTION ARCHIVIST

Brendan Shaw

As the newly appointed Section Archivist (or "the mug who's doing the scanning" as I prefer to think of it), I thought a brief word might be in order ...

The Section Archives went "astray" at some point in the past, so it appears that, as a Section, we don't have any "history". Which is a shame. Maybe we can do something about this?

Andrew Elliot kindly supplied me with a (nearly) complete set of Lunar Section Circulars going back to 1981. They make fascinating reading! The older members will probably remember the days when letters to the editor were commonplace and letters one month drew a spirited reply the next! Whatever happened to those times, I wonder? "Been there, done that" perhaps? I suppose I have the advantage over most of you in that I'm fairly new to the Moon and thus there is still lots for me to see and "discover" and enthuse about.

Anyway, scanning is proceeding, slowly. Glacially slowly. It's not the most interesting thing in the world to do, and sometimes I find myself reading a page or three from a circular, rather than getting on with the scanning. Of the seventeen years I have to scan (1981-1997, i.e. up to the point at which electronic circulars appeared) I have done 1981-1985. If anybody has electronic versions of any years before 1998, please let either me (shawbrendan@hotmail.com) or John Pedler know. If I can avoid unnecessary scanning I would like to!

And if you have any pre-1981 circulars that you would be prepared to lend for scanning, I'd love to hear from you. If we can get a complete set of circulars onto a CD, it would make a great Section resource. Now, to track down those 1950's copies of "The Moon" that your editor always tells me were bursting to the seams with drawings, photographs, ideas and correspondence ...

"The website, www.BAALunarSection.org.uk has been re-vamped, and new photographs and drawings are being added on a continuing basis, with articles, book lists etc. to follow. Many thanks to those who have already provided material and ideas - don't stop now! As soon as possible, I hope to add a search engine to ease the task of finding articles, pictures, references or even single words on the site.

Mike Carson-Rowland

Tabulated data for November 2003

<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)	0 (0%)	4 (13%)	21 (70%)	1 (3%)	4 (13%)
A.Bytnar (Mansfield)	6 (20%)	7 (23%)	16 (53%)	1 (3%)	-----
M.Cook (Frimley)	2 (7%)	2½ (8%)	8½ (28%)	2 (7%)	15 (50%)
K.Hall (Warrington)	5½ (18%)	9 (30%)	14½ (48%)	1 (3%)	-----
G.Johnstone (Rugby)	7 (23%)	1 (3%)	19 (63%)	0 (0%)	3 (10%)
A.Heath (Nottingham)	5 (17%)	7 (23%)	18 (60%)	0 (0%)	-----
J.Wrigley (Reading)	4 (13%)	3½ (12%)	21 (70%)	1½ (5%)	-----

Tabulated data for December 2003

<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)	6 (19%)	4 (13%)	15 (48%)	5 (16%)	1 (3%)
A.Bytnar (Mansfield)	5 (16%)	5 (16%)	20 (65%)	1 (3%)	-----
K.Hall (Warrington)	6 (19%)	6 (19%)	8½ (27%)	1 (3%)	9½ (31%)
A.Heath (Nottingham)	4 (13%)	8 (26%)	19 (61%)	0 (0%)	-----
G.Johnstone (Rugby)	8 (26%)	3 (10%)	20 (65%)	0 (0%)	-----
J.Wrigley (Reading)	8 (26%)	3 (10%)	19½ (63%)	0½ (2%)	-----

Tabulated data for January 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)	1 (3%)	7 (23%)	22 (71%)	1 (3%)	-----
A.Bytnar (Mansfield)	6 (19%)	12 (39%)	13 (42%)	0 (0%)	-----
K.Hall (Warrington)	4 (13%)	9 (29%)	14½ (47%)	0 (0%)	3½ (11%)
G.Johnstone (Rugby)	5 (16%)	2 (6%)	17 (55%)	0 (0%)	7 (23%)
A.Heath (Nottingham)	0 (0%)	11 (35%)	20 (65%)	0 (0%)	-----
J.Wrigley (Reading)	4 (13%)	8½ (27%)	18½ (60%)	0 (0%)	-----

Tabulated data for February 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%)	6 (21%)	19 (66%)	0 (0%)	1 (3%)
A.Bytnar (Mansfield)	5 (17%)	9 (31%)	14 (48%)	1 (3%)	-----
M.Cook (Cromer)	6 (21%)	7 (24%)	15 (52%)	0 (0%)	-----
K.Hall (Warrington)	8 (28%)	10½ (36%)	10 (34%)	0½ (2%)	-----
G.Johnstone (Rugby)	7 (24%)	18 (62%)	4 (14%)	0 (0%)	-----
A.Heath (Nottingham)	6 (21%)	8 (28%)	15 (52%)	0 (0%)	-----
J.Wrigley (Reading)	6 (21%)	8 (28%)	15 (52%)	0 (0%)	-----

BAA/ALPO TRANSIENT LUNAR PHENOMENA

For February, the only observations received were from Clive Brook (Plymouth, UK). Most other observers have reported quite bad weather problems. Fortunately some early observations for March have been received from Clive Brook, Robin Gray, Gerald North and Martin Mobberley. Martin has been busy attempting high resolution colour imaging of the Moon.

This month is again a short report due to pressure of work from teaching at University - I will though be attending the Lunar and Planetary Science Conference in Houston and hopefully can report on any relevant news concerning research into the Moon, directly or indirectly related to understanding TLP observations. This year's conference will be particularly interesting in view of NASA's new manned lunar/Mars initiative set by President Bush - just hope this continues to receive funding over successive US governments.

The following repeat illumination and libration events occur for April, please observe if you can:

Event: Gassendi (Moseley, 1967 Mar 22) can be seen on/from (UTC): 2004 Apr 01 Germany, Italy, Ukraine (18:01-21:58); UK (19:00-21:58) [*check for colour*]

Event: Aristarchus (Bartlett, 1955 Sep 29) can be seen on/from (UTC): 2004 Apr 02 Germany, Italy (18:00-20:30); UK (19:00-20:30); Ukraine (17:12-20:30) [*does the floor look a blue clay colour?*]

Event: Herodotus (Kozyrev, 1955 Oct 28) can be seen on/from (UTC): 2004 Apr 02 Germany, Italy, Ukraine (19:31-23:14); UK (19:00-22:59); Puerto Rico (23:00-23:14) [*look for change in brightness of the rays in blue/violet*]

Event: Cobra Head (Sartory, 1967 Mar 23) can be seen on/from (UTC): 2004 Apr 02 Puerto Rico (23:00-23:02) [*look for colour*]

Event: Aristarchus (Marsh, 1967 Mar 23) can be seen on/from (UTC): 2004 Apr 02 Puerto Rico (23:00-23:44) [*look for colour on inner SW or SE wall*]

Event: Stevinus and Furnerius (Cameron, 1961 May 29) can be seen on/from (UTC): 2004 Apr 04 New Zealand (08:13-11:23) [*look for glittering point-like spots on crater rims*]

Event: Aristarchus Area (Firsoff, 1955 Sep 30) can be seen on/from (UTC): 2004 Apr 04 New Zealand (11:22-12:12) [*look for a westward yellow smear*]

Event: Proclus (Bartlett, 1955 Aug 03) can be seen on/from (UTC): 2004 Apr 04 Germany, Italy (18:00-21:57); UK (19:00-21:57), Ukraine (17:51-21:57) [*check appearance of floor through red, green and blue filters*]

Event: Proclus (Bartlett, 1956 Oct 19) can be seen on/from (UTC): 2004 Apr 04 Germany, Italy (18:00-20:26); UK (19:00-20:26); Ukraine (17:00-20:26) [*check brightness of spot at foot of NE wall*]

Event: Aristarchus (Olivarez, 1968 Mar 14) can be seen on/from (UTC): 2004 Apr 04 Germany, Italy (18:00-19:41); UK (19:00-19:41); Ukraine (17:00-19:41) [*check for colour*]

Event: Near Aristarchus (Bartlett, 1955 Aug 03) can be seen on/from (UTC): 2004 Apr 04 Germany, Italy (18:18-22:17); UK (19:00-22:17); Ukraine (18:18-21:59) [*any violet colour nearby?*]

Event: Kepler (Wildev, 1962 Jul 17) can be seen on/from (UTC): 2004 Apr 05 DC, Madison, New York, Pittsburgh (04:54-09:48) [*compare brightness to other craters*]

Event: Aristarchus (Bartlett, 1955 Oct 31) can be seen on/from (UTC): 2004 Apr 05 New Zealand (07:00-09:39) [*look for colour*]

Event: Timocharis (Firsoff, 1955 Aug 03) can be seen on/from (UTC): 2004 Apr 05 New Zealand (13:00-14:18) [*through which filter does the crater appear brightest and does the crater appear large and diffuse?*]

Event: Manilius (Firsoff, 1955 Aug 03) can be seen on/from (UTC): 2004 Apr 05 New Zealand (13:00-14:18) [*through which filter does the crater appear brightest?*]

Event: Proclus (Bartlett, 1956 Oct 20) can be seen on/from (UTC): 2004 Apr 05 New Zealand (16:26-17:59) [*check visibility of interior spots*]

Event: Aristarchus (Bartlett, 1956 Oct 20) can be seen on/from (UTC): 2004 Apr 05 New Zealand (16:26-17:59) [*check for colour*]

Event: Littrow (Unknown, 1915 Jan 31) can be seen on/from (UTC): 2004-Apr-06 Germany (03:44-03:59); Italy (03:44-03:59); UK (03:44-04:59) Puerto Rico (04:46-07:34) [*look for 7 spots arranged like a "gamma"*]

Event: Mare Crisium (Wildev, 1962 Jul 18) can be seen on/from (UTC): 2004-Apr-06 Madison (08:29-10:59) [*image floor at regular intervals to check for brightness changes*]

Event: Mare Crisium (Wildev, 1962 Jul 19) can be seen on/from (UTC): 2004-Apr-07 Madison (08:26-10:59) [*image floor at regular intervals to check for brightness changes*]

Event: Gassendi (Haas, 1940 Sep 19) can be seen on/from (UTC): 2004 Apr 07 LA, Phoenix, Winnemucca (11:49-12:59); Las Cruces (11:49-11:59) [*compare brightness of largest bright spot on SE floor and compare to measurements on other nights*]

Event: Agrippa (Bartlett, 1962 Jul 21) can be seen on/from (UTC): 2004 Apr 09 UK (04:30-04:59); DC, New York, Pittsburgh (05:35-08:35) [*compare darkness of central peak shadow to that of wall*]

Event: Agrippa (Bartlett, 1962 Jul 22) can be seen on/from (UTC): 2004 Apr 10 Atlanta, DC, Houston, New York, Orlando, Pittsburgh, Puerto Rico (06:33-09:28); Madison (07:00-09:28) [*compare darkness of central peak shadow to that of wall*]

Event: Plato (Kelsey, 1967 Apr 18) can be seen on/from (UTC): 2004-Apr-18 Atlanta, Houston, Las Cruces, Orlando (02:17-05:57); DC, New York, Phoenix (02:17-05:07); LA (03:00-05:07); Madison (02:17-04:59); Phoenix (03:00-05:57); Puerto Rico (01:20-04:59) [*sketch/image and check for colour of streaks on floor*]

Event: Posidonius (McConnell, 1968 Apr 04) can be seen on/from (UTC): 2004-Apr-25 Ukraine (17:00-17:21) [*look for haziness in NE (or NW) corner of crater, does the floor have a hint of colour, and how sharp does the N wall appear?*]

Event: Near Menelaus (Darnella, 1968 Apr 04) can be seen on/from (UTC): 2004-Apr-26 New Zealand (08:55-08:59); LA, Winnemucca (07:55-07:58) [*look for an area the size of Menelaus - just coming into sunlight and check for colour*]

Event: Proclus (Barrett, 1877 Mar 21) can be seen on/from (UTC): 2004-Apr-26 Germany, Italy, UK (20:21-23:12); Ukraine (20:21-22:48); Puerto Rico (23:00-23:12) [*look for brilliant illumination*]

Event: Alphonsus (Wise, 1968 Apr 06) can be seen on/from (UTC): 2004-Apr-28 New Zealand (10:49-11:44); Winnemucca (09:37-09:55) [*Check for glow on W(?) wall*]

Event: Plato (Wise, 1968 Apr 06) can be seen on/from (UTC): 2004-Apr-28 New Zealand (10:49-11:44); Winnemucca (09:37-09:55) [*Check for glow on W(?) wall*]

Event: Straight Wall (Wise, 1968 Apr 06) can be seen on/from (UTC): 2004-Apr-28 New Zealand (10:49-11:44); Winnemucca (09:37-09:55) [*Check for shadow between the N. part of the Straight Wall and Birt*]

Event: Tycho (Barker, 1931 Mar 27) can be seen on/from (UTC): 2004-Apr-28 New Zealand (10:55-11:44) [*How dark/visible is the central peak?*]

Event: Proclus (Farrant, 1967 Apr 18) can be seen on/from (UTC): 2004-Apr-28 Germany, Italy (19:00-20:36); UK (20:00-20:36); Ukraine

(17:00-20:36) [How dark is the crater?]

Event: **Terminator: Copernicus to 20S (Barker, 1932 Mar 16)** can be seen on/from (UTC): 2004-Apr-28/29 Germany (23:25-01:51); Italy (23:25-00:59); UK (23:25-02:54); Ukraine (23:25-23:50); Atlanta, Houston, Madison, Pittsburgh (01:00-04:04); DC, New York, Orlando (00:00-04:04); LA, Phoenix, Winnemucca 03:00-04:04; Las Cruces (02:00-04:04); Puerto Rico (23:25-04:40) [compare the sharpness of this area to other regions of the terminator]

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

Again, the four grazing occultations at the end of this month are not a very inspiring bunch – see tracks 14-17 in the January LSC:

- ? Weds April 21, mag 7.5, strong twilight, moon altitude 15°, against the ‘bright limb’ of the setting 4% crescent moon. However, the track crosses north Wales then over well populated areas on a line from Birmingham to Essex.
- ? Mon April 26, just clips the north eastern tip of Scotland in some twilight. But the star is magnitude 5.9 and the other conditions are favourable.
- ? April 27 (Monday/Tues night 26/27), the track crosses northern Ireland, south Wales near Cardiff and Somerset and Dorset. But again, the moon is setting low in the west after 01:00 UT and the star magnitude is 7.3 needing larger telescopes.
- ? Thurs April 29, running on a track from Leeds to East Anglia, this early graze of a 5.4 magnitude star is quite favourable but occurs in strong twilight (sun altitude -3°).

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

May 2004

2/21	24	33/D	PPM	196123	85	7.5	K0	95+	153	31	162	85S	122	101	-.7	-.2	130403.4	-51111	
3/22	31	40/D	PPM	228092	95	7.1	G5	99+	168	25	168	73S	131	113	-.6	-.2	135841.2	-120456	
LUNAR ECLIPSE - SPECIAL MAGNITUDE LIMITS CALCULATED:-																			
4/20	13	23/RM	PPM	229313	95	7.0	G0	0E	180	-5	5	126	81U	265	249	-.5	1.1	144846.6	-172136
END OF LUNAR ECLIPSE																			
21/11	10	42/D	VENUS		89	-3.9		5+	25	56	51	115	57N	48	49	-.6	2.5	54136.9	264434
ABOVE PREDICTION IS FOR CENTRE OF VENUS - DURATION FOR DISK IS 141 SECONDS.																			
21/12	16	49/R	VENUS		89	-3.9		5+	25	58	59	137-64N	286	287	-1.6	.2	54136.6	264412	
ABOVE PREDICTION IS FOR CENTRE OF VENUS - DURATION FOR DISK IS 150 SECONDS.																			
22/22	01	04/D	PPM	96719	75	7.5	A0	12+	40	12	298	34S	146	140	1.5-3.8		65443.5	263140	
23/20	14	33/D	PPM	97900	37	5.4	K5	18+	51	-1	34	269	79N	85	75	-.7-1.8		74421.3	254636
ABOVE STAR IS A VARIABLE STAR																			
23/21	12	47/R	PPM	97900	35	5.4	K5	18+	51	-8	25	281-58N	308	298	.3-3.0		74421.3	254636	
25/22	04	43/DM	PPM	126500	25	8.2	F5	36+	73-12	27	267	21S	175	158	1.0-4.1		92914.4	191619	
26/14	38	57/DC	FK5	379	25	3.6	A0P	43+	82	47	37	114	17N	37	17	*****		100733.6	164437
ABOVE STAR IS A VARIABLE STAR																			
26/22	40	25/D	PPM	127304	15	8.2	K2	46+	85	25	262	48S	153	133	.1-2.9		101930.2	143854	
27/20	28	18/DV	PPM	157468	15	8.2	K2	55+	96	-2	43	215	67S	136	115	-.9-1.9		110410.4	95541
29/22	56	59/D	PPM	178868	46	6.6	A2	77+	122	26	224	85N	109	88	-1.1-1.6		124424.7	-25201	

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 May, 2004

Date	Libration amount \varnothing	PA \varnothing	Feature presented
1.0	8.5	123	Wright*
2.0	7.3	117	Pettit*
3.0	5.8	109	Hohmann*
4.0	4.1	93	Riccioli
5.0	2.9	57	Rontgen
6.0	3.4	11	Anaximenes
7.0	5.0	346	Petermann*
8.0	6.8	334	De la Rue*
9.0	8.4	328	Chevallier*
10.0	9.5	323	Mercurius*
11.0	10.1	319	Zeno*
12.0	10.1	316	Boss*
13.0	9.7	313	Riemann*
14.0	8.9	310	Riemann*
15.0	7.8	306	Rynin*
16.0	6.4	301	Rayleigh*
17.0	4.8	293	Hubble*
18.0	3.3	278	Neper*
19.0	2.2	244	Phillips*
20.0	2.3	195	Boussingault*
21.0	3.5	167	Wilson*
22.0	4.9	154	Segner*
23.0	6.3	146	Pingre*
24.0	7.4	140	Inghirami*
25.0	8.4	135	Baade*
26.0	9.0	131	Drude*
27.0	9.3	126	Shaler*
28.0	9.1	121	Wright*
29.0	8.6	116	Nicholson*
30.0	7.7	108	Hohmann*
31.0	6.5	97	Schluter*

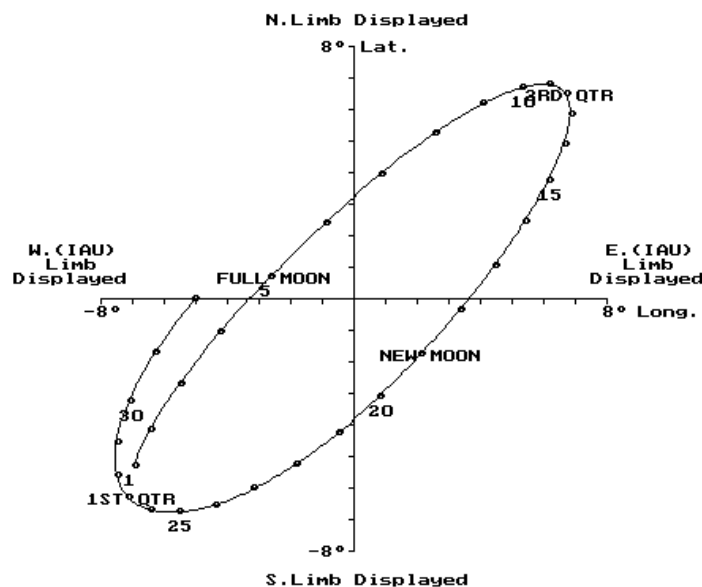
Program by Bob Roberts.

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

* indicates that the feature is not illuminated.

LUNAR LIBRATIONS - May 2004

Geocentric: —●— The markers show 0:00H UT



From the Editor,

No doubt you have noticed that this circular only contains seven pages. Why ? Simply because I do not have enough material for more.

The co-ordinators do an excellent job writing a piece each month, but even they have their limits. They do have lives of their own. I have said many times before that this circular is not for just them to air their views only, but it is for everyone to use.

Does no-one ever put pen to paper any more ? Or never make any observations ? This time of year is the best for observing the moon before Full, yet where are the observations ?

It may have seemed in the past that, as the circular is always full, always eight pages, that there must be material galore. Yes, there does seem to be just enough each month. But I play tricks. A little larger font size, a wider margin or a image larger that necessary can work wonders in filling an awkward space. But this works in reverse. With plenty of items to go in, well, font size down from 12 to 10 pt., narrower margins, etc. etc, can give me an extra half page. Or, better still, I could add an additional two pages !!

So, it really is up to you. There is a phrase going about now which simply says "Use it or lose it." This circular can be a lively thing full of interest and comment, or it can degenerate into a simple list of whats on, or just where the moon will be. Sad that would be...

2004 MAY.	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	11.4	0.813	-7.0	-5.4	45.9	-0.05	11	29	7.9	15	00	03	34	21	32	40
2.0	12.4	0.891	-6.5	-4.2	58.1	-0.02	12	18	1.6	16	24	03	46	22	19	33
3.0	13.4	0.952	-5.6	-2.8	70.3	0.01	13	08	-4.9	17	51	03	59	23	09	26
4.0	14.4	0.989	-4.3	-1.1	82.5	0.04	14	01	-11.4	19	23	04	14	..	..	..
5.0	15.4	1.000	-2.7	0.6	94.7	0.08	14	57	-17.4	20	57	04	32	00	04	20
6.0	16.4	0.981	-1.0	2.4	106.8	0.12	15	57	-22.3	22	30	04	58	01	00	15
7.0	17.4	0.933	0.8	4.0	119.0	0.15	17	01	-25.8	..	..	05	35	02	05	11
8.0	18.4	0.860	2.6	5.2	131.2	0.19	18	08	-27.5	..	..	06	30	03	11	10
9.0	19.4	0.768	4.1	6.2	143.4	0.22	19	14	-27.2	00	53	07	43	04	15	11
10.0	20.4	0.663	5.3	6.7	155.6	0.26	20	17	-25.1	01	35	09	06	05	16	13
11.0	21.4	0.552	6.2	6.8	167.8	0.29	21	15	-21.5	02	03	10	33	06	12	17
12.0	22.4	0.442	6.7	6.5	180.0	0.32	22	09	-16.8	02	22	11	56	07	02	22
13.0	23.4	0.338	6.8	5.8	192.2	0.35	22	59	-11.4	02	37	13	16	07	49	28
14.0	24.4	0.243	6.6	4.9	204.4	0.38	23	46	-5.6	02	49	14	32	08	33	34
15.0	25.4	0.161	6.1	3.8	216.7	0.41	00	32	0.2	03	00	15	46	09	15	40
16.0	26.4	0.094	5.4	2.4	228.9	0.43	01	16	5.9	03	11	16	59	09	56	46
17.0	27.4	0.045	4.5	1.0	241.1	0.45	02	01	11.4	03	23	18	13	10	38	51
18.0	28.4	0.013	3.3	-0.4	253.4	0.48	02	46	16.3	03	37	19	27	11	22	56
19.0	29.4	0.001	2.1	-1.8	265.6	0.50	03	34	20.6	03	55	20	40	12	08	60
20.0	0.8	0.006	0.8	-3.1	277.9	0.52	04	23	24.0	04	18	21	50	12	56	63
21.0	1.8	0.030	-0.6	-4.3	290.1	0.54	05	15	26.3	04	49	22	51	13	46	65
22.0	2.8	0.070	-1.9	-5.3	302.3	0.56	06	08	27.5	05	32	..	..	14	37	65
23.0	3.8	0.126	-3.2	-6.1	314.6	0.57	07	01	27.4	06	27	..	..	15	28	64
24.0	4.8	0.196	-4.5	-6.6	326.8	0.59	07	54	26.0	07	33	..	..	16	18	62
25.0	5.8	0.278	-5.6	-6.8	339.0	0.61	08	45	23.5	08	45	00	49	17	06	58
26.0	6.8	0.369	-6.5	-6.7	351.3	0.62	09	35	19.8	10	01	01	10	17	53	54
27.0	7.8	0.468	-7.2	-6.3	3.5	0.64	10	24	15.3	11	18	01	26	18	38	49
28.0	8.8	0.570	-7.5	-5.6	15.7	0.66	11	11	9.9	12	36	01	40	19	22	43
29.0	9.8	0.673	-7.6	-4.6	27.9	0.68	11	59	4.0	13	56	01	52	20	08	36
30.0	10.8	0.771	-7.2	-3.3	40.1	0.71	12	47	-2.3	15	19	02	04	20	55	30
31.0	11.8	0.859	-6.3	-1.8	52.3	0.73	13	37	-8.7	16	46	02	17	21	47	23
1 (Jun)	12.8	0.931	-5.1	-0.1	64.5	0.76	14	31	-14.8	18	19	02	34	22	43	18
2.0	13.8	0.979	-3.4	1.7	76.7	0.79	15	30	-20.3	19	55	02	55	23	44	13
3.0	14.8	0.999	-1.5	3.3	88.9	0.82	16	33	-24.5	21	24	03	26	..	..	..
4.0	15.8	0.989	0.5	4.7	101.0	0.85	17	39	-27.0	22	38	04	13	00	48	10
5.0	16.8	0.949	2.6	5.8	113.2	0.88	18	48	-27.5	..	..	05	20	01	57	10
6.0	17.8	0.882	4.4	6.5	125.4	0.91	19	54	-25.9	..	..	06	43	03	03	12
7.0	18.8	0.796	5.9	6.7	137.6	0.94	20	57	-22.7	..	..	08	12	04	03	16
8.0	19.8	0.697	7.0	6.5	149.8	0.96	21	54	-18.1	..	..	09	40	04	57	20
9.0	20.8	0.591	7.6	5.9	162.0	0.99	22	46	-12.8	00	44	11	02	05	46	26
10.0	21.8	0.484	7.7	5.0	174.3	1.02	23	35	-7.0	00	58	12	21	06	31	32
11.0	22.8	0.381	7.4	3.9	186.5	1.04	00	21	-1.1	01	09	13	36	07	14	38
12.0	23.8	0.286	6.8	2.6	198.7	1.06	01	06	4.7	01	20	14	49	07	56	44

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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 May 2004 circular should reach the Editor by the 10th April 2004