



LUNAR SECTION CIRCULAR

Director Alan Wells
Assistant Director/Editor John Pedler

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Data on pages 7-8 are for Sept. 2004

Lunations 1010-1011

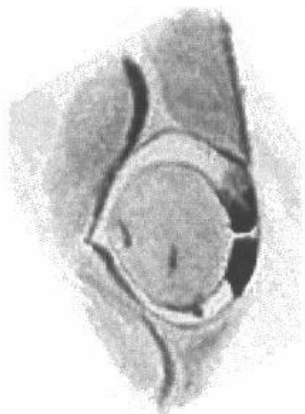
Aug. 2004

BAA/ALPO TRANSIENT LUNAR PHENOMENA

Tony Cook

June has been a poor month for observing, presumably due to the Moon's low altitude in the evening sky for many northern hemisphere observers. Despite this, routine observations have been received from: Jay Albert (Florida, USA), Clive Brook (Plymouth, UK), and Marie Cook (Frimley, UK). There were also attempts to look for meteor impact flashes in the Earthlit part of the Moon for the June Bootid meteor shower by Colin Ebdon and Brendan Shaw in the UK and by Raffello Lena of GLR in Italy. However attempts at observing impact flashes between June 21-24 were largely clouded out although Colin Ebdon did manage one hour of observing on June 21st and some observing on June 22nd until cloud rolled in - but saw no impact flashes.

Now one of the great things about participating in the TLP program, whatever you think about many of the past TLP reports, the programme is an excellent way to learn your way around the Moon and to see many craters under spectacular appearances. Also the observations you provide are of great use to other researchers in the BAA and ALPO. For example the following Proclus observation (top left) was received from Jay Albert "*The only thing I noticed that looked unusual was the shadow on the east wall of Proclus. The east wall was divided by a bright vertical feature. To the south of this feature, the shadow on the crater wall was black (as would be expected). To the north of the bright vertical feature, however, the shadow started black, but gradually lightened until it ended where the crater wall was brightly sunlit. I'm used to seeing lunar shadows as black with sharp boundaries, so this struck me as odd. Since I've never looked closely at Proclus before, it's possible that what I saw was normal for this solar angle and the intensity difference is due to the color of the feature*". Note all the sketches below are with north at the top.



2004 Jun 24 UT 01:15-03:15- Jay Albert
Sub-solar point 103.2E, 1.2N
Sub-observer point 7.5W, 5.0S
Solar Altitude +32.5deg
279mm Celestron x311
Seeing 8-10 (excellent)
Transparency magnitude 3



1978 Feb 13 UT 18:58-19:08- Tony Cook
Sub-solar point 108.1E, 1.1N
Sub-observer point 5.1E, 4.4N
Solar Altitude +27.8 deg
300mm reflector x240
Seeing Antoniadi III (moderate)



2003 Feb 08 UT 02:09-03:07– Robin Gray
Sub-solar point 103.5E, 1.5S
Sub-observer point 1.3W, 3.8N
Solar Altitude +31.3 deg
152mm refractor x305
Seeing 6-7 (good)
Transparency 6



2003 Apr 08 UT 03:49-04:50- Robin Gray
Sub-solar point 104.1E, 1.1S
Sub-observer point 6.9W, 2.7S
Solar Altitude +30.8 deg
152mm refractor x305
Seeing 5-6 (poor-good)
Transparency 5-6

Upon receiving this sketch I checked up a few past observations (not many of these are in my database yet, so apologize to observers whom I have missed out) and found the following additional three sketches. My own crude sketch (top right) from 1978 confirms a less dark area to the north of the bisecting line. Robin Gray (Winnemucca, USA) also has a couple of sketches from 2003, his Feb 8th observation (bottom left) description is as follows: *“The black shadow covering the east 40% of Proclus last night (Feb 7th) had broken up into three patches separated from each other by lighter bands. These were confined to the east crater wall. Only the central patch was black, the other two were considerably lighter. Running along the southwest edge of the crater floor was what appeared to be a ridge and on the east side of the crater floor appeared to be a hill to the north of which was a less elevated plateau. As the observing period progressed part of the brilliantly illuminated north crater wall developed a darker area which gradually became more prominent. As the sun is getting higher I would expect shadows and dark areas to diminish-what was happening here is unknown. However, this is not an unusual event for this part of Proclus.”* In his Apr 8th observation (bottom right) Robin makes no mention about the shadow densities.

So what does this tell us? Well Jay’s original suspicion of the bright bisecting line turns out to be a normal appearance, possibly caused by a notch in the rim, or some other topographic effect. What is interesting is that he has not drawn in the 2nd bisecting line or a 3rd shadow. I doubt if this is a TLP, but perhaps more due to the Sun being at a sufficiently high altitude that any remaining shadow vanishes. Why are some shadows black and others grey in Proclus? This could be due to whether shadow is contiguous and un-interrupted, or whether there are lots of unresolved topography and surface roughness protruding out of the shadow. Also all four sketches are at different libration angles (sub-observer lon/lats), so undoubtedly this may have an effect on appearance. Another point to note about Proclus is that it is only 30km in diameter and subtends a relatively small diameter of less than 15 sec of arc (or smaller than the disk of Saturn), so it is not surprising that the sketches differ slightly in what can be resolved and their internal geometric accuracy as seeing conditions will have a drastic effect on what you can and cannot see.

So what are the guidelines if you see something strange? Firstly make a brief sketch, notes and if you can please take some CCD images. Next, does the feature change over time? If it is a simple illumination related effect then it will change gradually. Please also check out the appearance of other similar sized nearby craters in order to judge whether the effect is seeing related - if so it will affect others. You should also be looking for colour and brightness variations. I cannot give advice on when it is appropriate to telephone/email myself or David Darling to initiate a TLP alert - this depends upon individual cases, but we will definitely ask you if nearby features are exhibiting similar effects, so please be prepared to answer any questions about these.

The following repeat illumination and libration events for UK observers occur for August:
Event: Proclus (Bartlett, 1950 Jul 21) can be seen on/from (UTC): 2004 Aug 21 (20:28-20:40) – [Can you see the central spot on the floor, how bright/dark is it?]
Event: Proclus (Bartlett, 1950 Jul 29) can be seen on/from (UTC): 2004 Aug 29 (23:27-03:32) – [How bright is the central spot?]
Event: Herodotus (Lowe, 1968 Aug 09) can be seen on/from (UTC): 2004 Aug 30 (20:00-20:11) – [How bright is Herodotus compared to Aristarchus and other craters?]

Event: Proclus (Bartlett, 1950 Jul 30) can be seen on/from (UTC): 2004 Aug 30 (23:38-03:33) – [*Can you see the central spot?*]

Event: Aristarchus (Bartlett, 1950 Jul 31) can be seen on/from (UTC): 2004 Aug 31 (23:34-23:59) – [*Can you see any colour on E., NE. Rim?*]

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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<u>CLOUDWATCH</u>		<u>Andrew Bytnar</u>			
<u>Tabulated data for April 2004</u>					
<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)	10 (33%)	4 (13%)	12 (40%)	0 (0%)	4 (13%)
A.Bytnar (Mansfield)	6 (20%)	10 (33%)	12 (40%)	2 (7%)	-----
M.Cook (Cromer)	9½ (32%)	4 (13%)	14½ (48%)	2 (7%)	-----
K.Hall (Warrington)	3 (10%)	11 (37%)	11 (37%)	1 (3%)	4 (13%)
A.Heath (Nottingham)	4 (13%)	9 (30%)	16 (53%)	1 (3%)	-----
J.Wrigley (Reading)	7 (23%)	9 (30%)	13½ (45%)	0½ (2%)	-----

TOPOGRAPHICAL SUB-SECTION

COLIN EBDON

The month of August is prime -time observing for the Moon between the phases of Last Quarter and New in the pre-dawn sky. This year, that means between August 7 and August 16, with 6, 7 and 8 August in particular falling conveniently on a Friday, Saturday and Sunday respectively. If you are at all interested in lunar observing at the telescope and these are free days for you, then I would urge you to make the effort to rise before dawn (or go to bed after midnight) in order to see the Moon -literally- in a different light. After the dearth of observing opportunities in the preceding lunations, August can potentially provide a welcome gateway to the Autumn and Winter months which, for lunar observers, usually provide the best opportunities for detailed topographical work to be progressed.

At 03.30 UT (04.30BST) on 7 August, about one hour or so before sunrise, the colongitude will be 164.76, which places the terminator at 15.24 east, giving fine views of sunset over the Ariadaeus rille system. Names of nearby features of interest in this area include Boscovich, Tempel and the splendid crater Agrippa. Mentally compare these names to the number of times you have heard the words 'Clavius' and 'Plato' and you will realise just how neglected some parts of the Moon are.

'At around the same time on 8 August, the setting sun has moved on and the shadow of the terminator now stands at approximate colongitude 177 degrees, or only 3 Degrees East Longitude, giving spectacular views of the Apennine Mountains. It is, of course, possible to observe successfully from midnight onwards at this phase and cross over between 7 and 8 August would provide the perfect opportunity to follow up investigations of the possible small 'Apennine Valley' which Brendan Shaw drew attention to (see Circulars for March and April 2004). Alternatively, you might like to try sunset over the Triesnecker rille system, or sunset over the Alpine Valley. Later you could take a look at the degraded pair of craters Pallas and Murchison, or sunset over the magnificent craters Aristillus and Autolycus. The list could go on and on.

I am currently in dire need of some fresh material for these pages and also 'The New Moon'. It would be nice to hear from members other than the 'usual suspects' so if you can contribute anything at all, please do so. Any observations would be more than welcome. In the meantime I have included my own drawing of the split crater Heraclitus - one of the few observations I was able to secure in the patchy June skies, and even then under mediocre seeing.

HERACLITUS

Observer: C.Ebdon

Date: 2004 June 25

Time: 21.45 to 22.45 UT

Transparency: Good, but
some intermittent cloud
interference

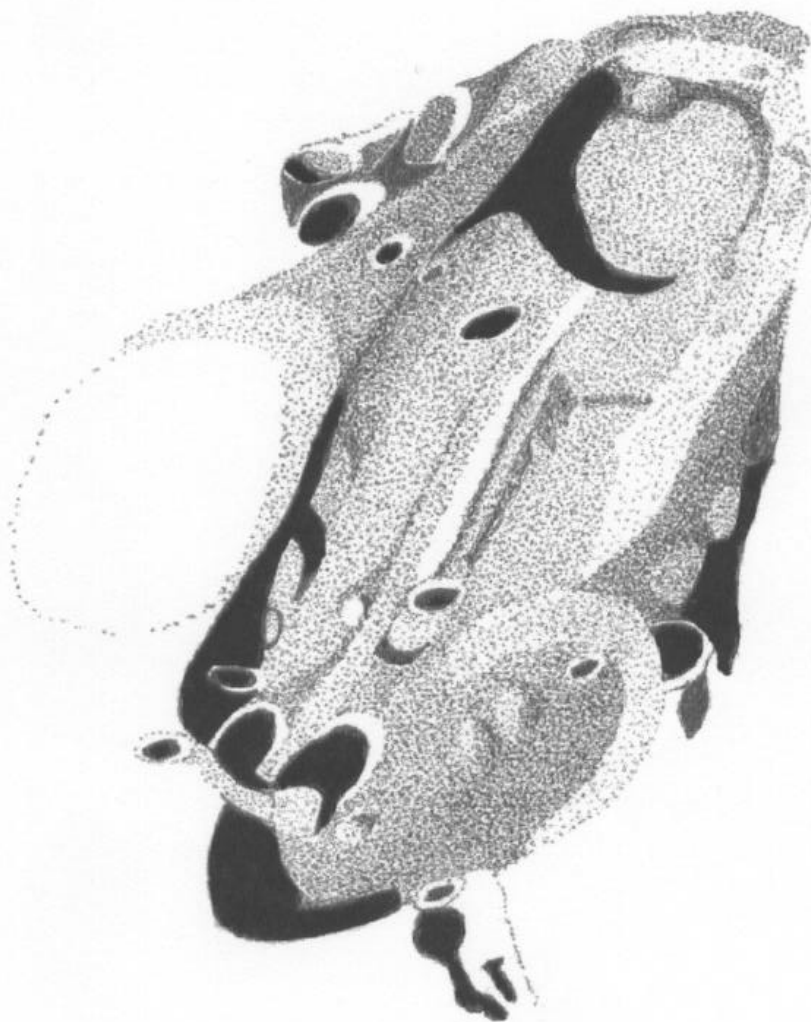
Seeing: variable around AIII

7" f15 Maksutov-Cassegrain

x225

D

Cuvier (Not
drawn)



Licetus

Earth's Sel. Longitude (Deg.)

-7.4 (0hrs 26 June)

Earth's Sel. Latitude

-3.6 (0hrs 26 June)

Sun's Sel. Colongitude

8.96 to 9.46

Sun's Sel. Latitude

+1.25 (0hrs 26 June)

Lunation: 1008

Three of us manned the Lunar Section stand at the Exhibition Meeting on June 26, but numbers visiting the exhibition seem to have dwindled over the years.

With the light nights, again there are no spectacular grazes or total occultations this month. On a more positive note, I finally got my observatory rebuilt and the telescope installed. But in true form, a week of bad weather means I haven't had "first light" yet. Roll-on!

ESOP XXIII

Unfortunately, in the last Circular, I omitted to mention this year's European Symposium on Occultation Projects, ESOP XXIII, in Paris. This is being held over the weekend of August 27-29 and, as always, will be followed by three days of excursions to places of interest. It should not be too late to register (online) by the time you read this. Please don't hesitate to contact me if you would be interested in attending. The Symposium web site is at <http://calys.obspm.fr/~ESOP2004/>. The Symposium will open with a reception in the historic Salle Cassini of the Observatoire de Paris, on the Paris Meridian. and I can confirm that this is a truly splendid venue which is wreathed in history. Four of us from the UK have registered so far.

Observations

Ken Hall, Great Sankey, Warrington, has submitted 13 occultation observations for the first half of this year. Many thanks to Ken again who is the subsection's only regular observer at present.

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

September 2004

Day	Time-UT	P	Object	O	Max	Sp	%	Elg	Sn	Mn	Mn	CA	PA	Watts	a	b	Star's	<u>apparent</u>
	H	M	S	D	Reference	Mag	Snlt	Alt	Alt	Az			Angle	Min/°		RA	Dec	
1/00	22	23/R	PPM 174697	95	7.2	G5	95-	155		33	156	49S	211	233	-.7	1.5	1803.3	-15008
2/00	32	33/GD	PPM 144254	96	6.8	F2	90-	142		37	143	18N	321	342	*****		10604.2	45605
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																		
2/00	38	22/RE	PPM 144256	95	7.6	F2	90-	142		38	145	26N	313	334	-6.6	-3.1	10606.4	45608
3/01	12	35/R	PPM 117764	76	7.0	F5	82-	130		42	139	78S	237	256	-1.0	1.7	15412.7	103816
5/00	48	59/RC	PPM 92559	65	7.9	G5	65-	107		35	103	45S	210	223	.0	2.7	33046.4	200714
6/00	27	34/RA	PPM 93423	66	7.5	A0	56-	96		28	87	69N	281	290	-.6	1.9	42002.0	234504
6/00	34	09/R	PPM 93427	65	7.7	G5	56-	96		29	88	74S	244	252	-.1	2.4	42020.4	233640
7/01	30	10/R	PPM 94193	76	7.5	A2	46-	85		31	87	25S	201	205	.7	3.9	51447.7	255527
8/01	37	12/R	PPM 95446	85	8.2	G0	36-	74		26	78	23N	339	337	-3.0	-2.7	60815.7	272545
8/02	38	28/R	PPM 95512	66	8.0	K0	36-	74		35	90	68S	250	249	-.4	2.5	60943.1	271141
8/03	36	42/R	PPM 95585	75	8.2	A0	36-	73		43	102	28S	211	209	.0	4.3	61203.3	270800
8/04	36	06/R	PPM 95614	65	8.5	F2	35-	73	-9	52	116	87N	276	274	-1.3	1.1	61317.1	272555
9/01	21	06/R	PPM 96874	65	7.8	K0	28-	63		16	67	70S	259	252	.4	2.3	70031.0	265225
9/01	21	54/RK	SAO 78968	86	7.2	K2	28-	63		17	67	30N	339	332	-1.5	-1.1	70114.3	270909
9/02	53	12/R	PPM 96961	66	8.0	G0	27-	63		30	83	90N	279	272	-.5	1.7	70353.0	270002
9/02	54	36/R	PPM 96969	65	8.1	K0	27-	62		30	83	49S	238	232	.0	3.1	70404.9	264953
10/04	54	12/R	FK5 1211	78	5.9	K0	19-	51	-6	39	98	77N	299	287	-1.1	.7	80111.4	252257
10/05	15	46/RC	PPM 98236	86	6.2	A0	18-	51	-3	42	103	33S	229	217	-.6	4.2	80159.2	250444
12/03	50	22/R	PPM 126689	95	9.3	G0	6-	29		10	73	44S	252	233	.5	3.1	94059.6	182226
12/04	35	35/RC	PPM 126716	95	9.0	A5	6-	29-10		16	81	28S	236	217	.4	4.8	94241.4	181220
22/18	21	17/D	PPM 269339	25	6.2	K2	63+	105	-3	8	170	58S	114	121	-1.5	.2	190748.5	-283755
24/20	02	10/DK	PPM 272233	55	6.9	A0	84+	132		14	165	64N	42	60	-1.0	.8	211418.6	-221138
30/00	10	08/RX	PPM 144733	96	6.6	K0	98-	162		44	161	63S	223	243	-.9	1.5	13333.7	81405

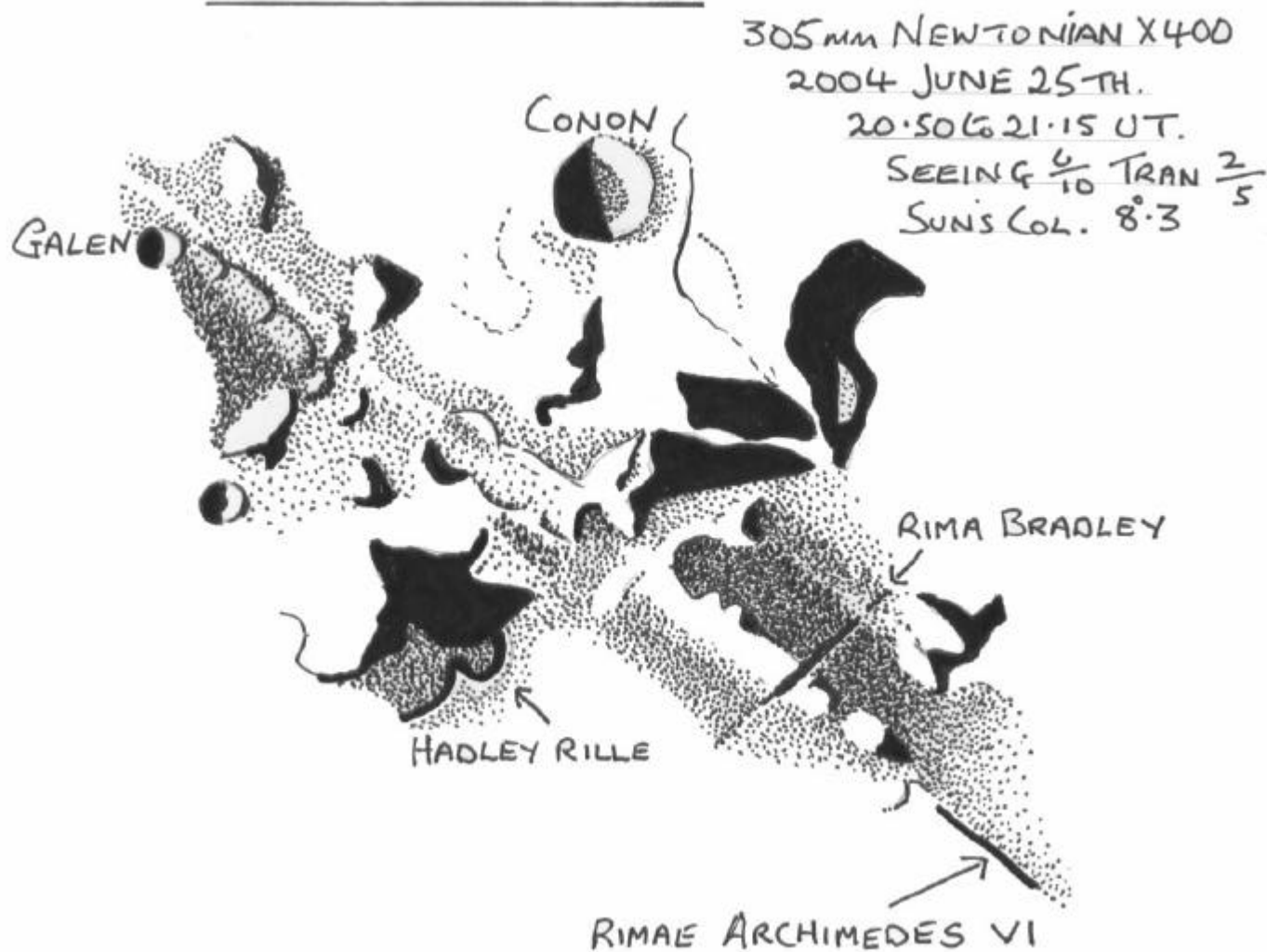
N.B. Don't forget to add 1 hour to the above times when British Summer Time is in Force!

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.

Apennine Valley



Some thoughts on the Apennine Valley

Phil Morgan

An opportunity to study the recently mentioned “Apennine Valley” noted by Brendan Shaw, presented itself on the evening of June 25th. Unfortunately, the observation was somewhat rushed due to the Moon getting low and seeing conditions deteriorating.

It was immediately apparent that the dark flooded section in the Palus Putredinis (crossed by the Rima Bradley) was slightly offset compared to the rest of the “valley”, but none-the-less seemed to be directly related since it followed the strike of the “Valley” precisely. This apparent offset may (in part) be due to later lava flooding and subsequent erosion of the valley walls. If we assume the “valley” is something of a graben structure formed along fault lines this offset presents no problems. However, if we take the view that this is a gash in the Apennines front caused by some projectile thrown out at the time of the Imbrium “birth”, then this presents some problems if we take the offset section as belonging to the “Valley”.

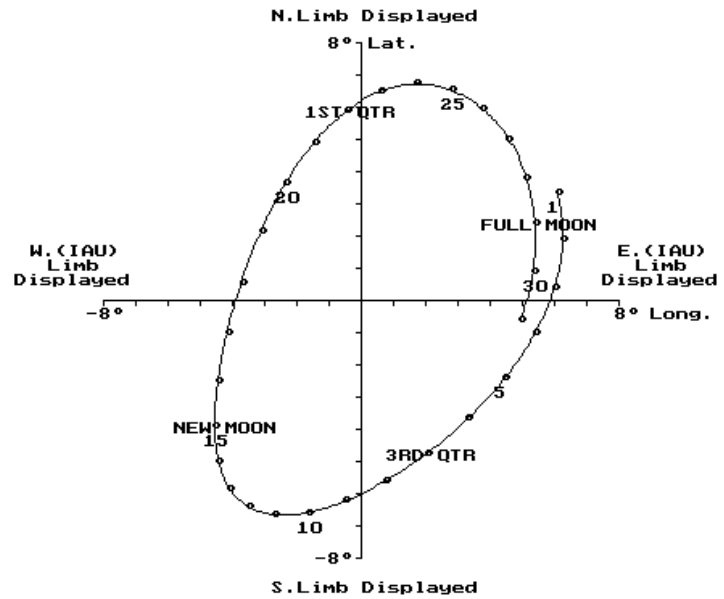
Interestingly, the strike of the “Valley” is resumed almost perfectly by the Rima Archimedes VI as it runs towards Archimedes itself, perhaps not surprisingly if fault lines are involved. Also, the graben-type structure running along the outer south-western outer glaciis of Archimedes seems to continue the fault line.

The “Valley” was seen to continue (albeit less distinctly) much further south-eastwards past Galen another 110 kilometres or so; though here it was only seen as elongated ridges and hills etc. Never-the-less, this seemed too perfect an alignment to be put down to chance. If all of these features are related then we could have a fault extending 700 kilometres or so! Another, and perhaps simpler possibility is that the “Valley” is just a run-off channel formed by the lavas of the Palus Putredinis when they were much higher in the past. In this respect it is interesting that the Hadley rille appears to have its source on the edge of the “Valley”, slightly higher up on the Apennine scarp.

Date	Libration amount \varnothing	PA \varnothing	Feature presented
1.0	7.3	304	Hahn*
2.0	6.9	293	Hubble*
3.0	6.3	281	Jansky*
4.0	5.7	267	Runge*
5.0	5.2	250	Schorr*
6.0	4.9	232	Gum*
7.0	4.9	213	Hanno*
8.0	5.1	195	Boussingault*
9.0	5.6	181	Short*
10.0	6.0	170	Klaproth*
11.0	6.4	160	Bailly
12.0	6.5	153	Phocylides*
13.0	6.3	145	Wargentini*
14.0	6.0	137	Catalan*
15.0	5.4	127	Bouvard*
16.0	4.7	113	Eichstadt*
17.0	4.2	95	Schluter*
18.0	4.1	72	Dalton*
19.0	4.4	51	Lavoisier*
20.0	5.1	33	Xenophanes*
21.0	5.9	20	Desargues*
22.0	6.6	10	Anaximenes*
23.0	7.2	1	Goldschmidt
24.0	7.5	352	Baillaud
25.0	7.5	343	Schwabe
26.0	7.4	334	De la Rue
27.0	7.0	324	Mercurius
28.0	6.6	313	Riemann
29.0	6.0	300	Rayleigh
30.0	5.5	286	Goddard*

LUNAR LIBRATIONS - September 2004

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



Thank you to everyone who has contributed to this issue of the LSC. To those who have not.....
Why not?

Program by Bob Roberts.

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

* indicates that the feature is not illuminated.

I've just treated myself to a copy of *Le Grand Atlas de la Lune*, by Thierry Legault and Serge Brunier. As the quick amongst you will have realised, this is a French atlas of the Moon, and a big one at that! It measures 14" x 11" and is spiral-bound.

After a little preamble and a couple of full-disk Moon maps, the first half of the book is taken up by a series of double-page spreads showing the Moon on each day of the lunation. The right-hand page is a photographic mosaic (presented as seen through a telescope) showing the Moon at a given age, while the left-hand page discusses, briefly, what can be seen at this time. There is a transparent overlay for the mosaic, naming craters and seas. This is extremely useful for a newcomer to the Moon, as it really does allow you to pin down key craters, which in turn provide stepping stones to the less obvious craters - a bit like learning those first few stars and constellations all those years ago!

I received my copy the day after our local astronomy society had an observing session - there was a nice half Moon in the sky and I was pressed into service, identifying what could be seen on old Luna. We played the usual game ... "what's the big one called?", "the one above the big sea or below it?", "the one near the edge, near the top, but not right at the top and it's dark inside", "which edge are we talking about?", etc, etc. I'm sure you've all been there :) If I'd had the atlas and overlays in hand, it would have been a breeze to get people oriented! It will accompany me to all future sessions when there's a Moon about.

The second part of the book discusses individual craters and seas, each illustrated by some good photographs, all taken by Legault. Obviously the text is in French, but it's easy enough to get the sense of what is being said. Again, the pictures would be very useful for showing at a society observing session or talk.

The final pages of the book talk about the Moon's orbital dynamics, how to observe the Moon and how to photograph/image the Moon. There is a very good section showing the effects of poor collimation on the amount of detail that can be seen - it's enough to scare anybody into collimating and collimating again! Finally there are a series of calendars, showing the phases, maximum and minimum lunar declinations and lunar and solar eclipses up to 2008. Curiously, the back cover repeats some of the information up to 2009.

All in all, despite being French(!), it's a very useful book. If you have some spare cash, I'd recommend getting a copy.

Brendan Shaw

2004 SEP.	Age d	Phase	Earth's		Sun's		R.A.		Dec. °	Rises		Sets		Transit		Alt °
			Selenographic Longø	Selenographic Latø	Selenographic Colongø	Selenographic Latø	h	m		h	m	h	m			
1.0	15.9	0.954	6.1	3.3	108.5	1.25	00	17	-0.9	19	50	07	54	01	37	37
2.0	16.9	0.900	6.3	1.9	120.7	1.23	01	05	5.3	20	02	09	14	02	22	43
3.0	17.9	0.829	6.0	0.4	132.9	1.22	01	52	11.1	20	15	10	31	03	07	49
4.0	18.9	0.746	5.4	-1.1	145.1	1.21	02	39	16.3	20	32	11	48	03	52	55
5.0	19.9	0.656	4.5	-2.4	157.2	1.19	03	28	20.8	20	53	13	04	04	38	59
6.0	20.9	0.562	3.4	-3.7	169.4	1.18	04	18	24.2	21	22	14	16	05	26	62
7.0	21.9	0.466	2.1	-4.8	181.7	1.17	05	10	26.6	22	01	15	21	06	16	65
8.0	22.9	0.373	0.8	-5.6	193.9	1.16	06	03	27.8	22	52	16	16	07	07	65
9.0	23.9	0.284	-0.5	-6.3	206.1	1.14	06	56	27.6	23	56	16	57	07	59	65
10.0	24.9	0.203	-1.7	-6.6	218.3	1.13	07	49	26.2	..	..	17	28	08	49	63
11.0	25.9	0.131	-2.7	-6.7	230.5	1.12	08	41	23.6	01	08	17	51	09	38	60
12.0	26.9	0.072	-3.5	-6.5	242.8	1.10	09	32	19.9	02	24	18	08	10	26	55
13.0	27.9	0.029	-4.1	-5.9	255.0	1.09	10	20	15.2	03	42	18	22	11	11	50
14.0	28.9	0.005	-4.4	-5.1	267.2	1.07	11	08	9.8	05	00	18	34	11	56	44
15.0	0.4	0.002	-4.6	-3.9	279.4	1.04	11	55	3.8	06	19	18	45	12	40	38
16.0	1.4	0.023	-4.5	-2.6	291.7	1.02	12	42	-2.4	07	38	18	57	13	25	32
17.0	2.4	0.066	-4.2	-1.1	303.9	1.00	13	30	-8.6	09	00	19	10	14	12	25
18.0	3.4	0.131	-3.7	0.5	316.1	0.97	14	21	-14.5	10	26	19	27	15	02	20
19.0	4.4	0.215	-3.1	2.1	328.4	0.95	15	15	-19.8	11	54	19	50	15	56	15
20.0	5.4	0.315	-2.4	3.6	340.6	0.92	16	12	-24.0	13	21	20	24	16	55	11
21.0	6.4	0.425	-1.5	4.9	352.8	0.89	17	13	-26.8	14	40	21	13	17	57	10
22.0	7.4	0.540	-0.5	5.9	5.0	0.87	18	17	-27.9	15	42	22	21	18	59	10
23.0	8.4	0.653	0.6	6.5	17.2	0.84	19	21	-27.2	16	26	23	44	20	01	12
24.0	9.4	0.757	1.7	6.7	29.3	0.81	20	23	-24.7	16	56	..	..	20	58	16
25.0	10.4	0.848	2.8	6.5	41.5	0.78	21	22	-20.7	17	17	01	13	21	52	21
26.0	11.4	0.920	3.8	5.9	53.7	0.75	22	17	-15.5	17	32	02	42	22	42	28
27.0	12.4	0.970	4.6	5.0	65.9	0.73	23	09	-9.6	17	45	04	07	23	29	34
28.0	13.4	0.996	5.2	3.8	78.0	0.70	23	58	-3.3	17	57	05	30	..	..	..
29.0	14.4	0.997	5.4	2.4	90.2	0.67	00	46	3.0	18	08	06	50	00	13	40
30.0	15.4	0.976	5.4	0.8	102.4	0.64	01	33	9.0	18	20	08	08	00	57	47
1(Oct)	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

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