THE BRITISH ASTRONOMICAL ASSOCIATION

LUNAR SECTION CIRCULAR

Director Alan Wells
Assistant Director/Editor John Pedler

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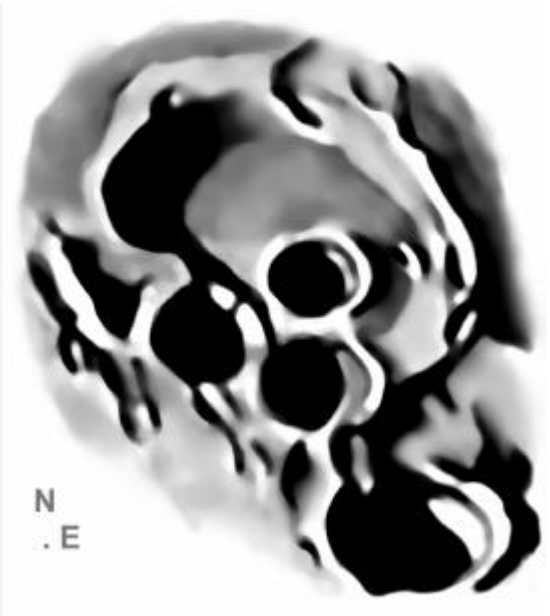
TOPOGRAPHICAL SUB-SECTION

Peter Grego

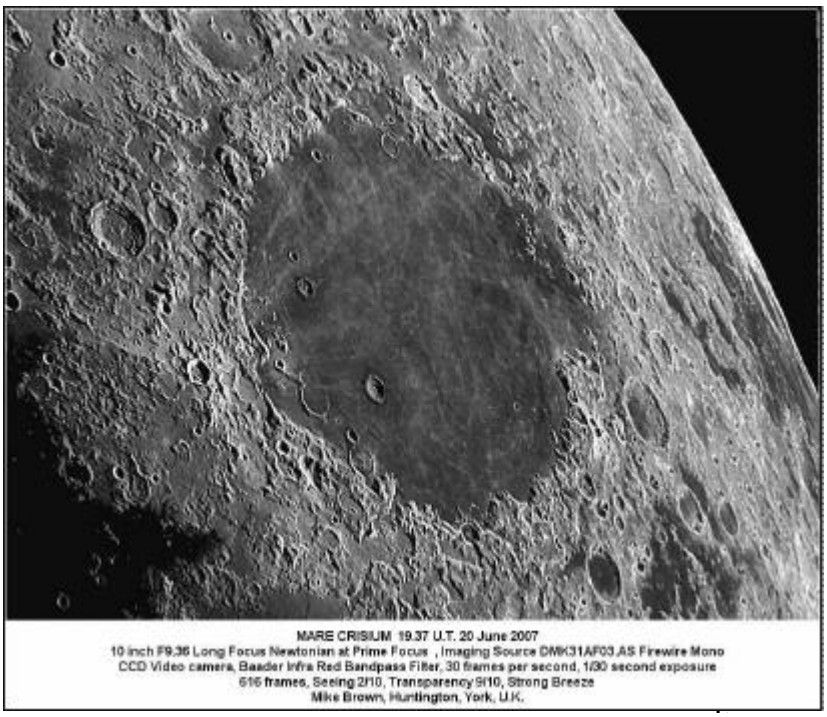
Observations

With the rain, floods and poor weather in general, combined with the low altitude of the Moon in its waxing to waning gibbous phases there have been few lunar observational opportunities of recent, for UK observers at least. A lack of others' topographical studies gives me the opportunity to present an observation of Heinsius, an old crater in the Moon's southern uplands to the west of Tycho. The drawing was made on a PDA and slightly enhanced using the free version of an easy-to-use program called NeatImage in order to remove the roughness and sharpen the edges. I recommend taking a look at NeatImage http://www.neatimage.com/ if you are interested in enhancing digital lunar images – the results on grainy photographs and images of the Moon can be quite dramatic.



Images

A number of images have been received from Maurice Collins (Palmerston North, New Zealand) and Mike Brown (Huntington, York, UK). Featured here is an excellent example of Mike's recent lunar imagery, magnificent shot of Mare Crisium. Mike writes:



MARE CRISIUM 19.37 U.T. 20 June 2007
10 inch F9.36 Long Focus Newtonian at Prime Focus , Imaging Source DMK31AF03.AS Firewire Mono CCD Video camera, Baader Infra Red Bandpass Filter, 30 frames per second, 1/30 second exposure 616 frames, Seeing 2/10, Transparency 9/10, Strong Breeze
Mike Brown, Huntington, York, U.K.

"For sometime now I've been concious of the limitations in terms of acreage covered on the Moon with my DMK21AF04 camera and I've now acquired a DMK31AF03.AS with a 1024 x 768 pixel array of 4.65 microns purely for Lunar Imaging (the DMK21AF04 is more than fine for planetary imaging). Imaging Source have now introduced a range of cameras specifically aimed at the amateur astronomer, probably to compete with the very popular Lumenera range of cameras, at a much more realistic price with exposures ranging from 1/10000 of a second to 60 minutes… With conditions being so poor here during this lunation I've only had the chance to use it once in very poor seeing and attach the three 'best' images from that session. The increase in coverage is substantial – I've never been able to

cover Theophilus to Fracastorius before at f/14.6 nor have I had so much space round Mare Crisium at prime focus. I'm quite certain that the results in decent seeing would have been excellent so please regard the images as perhaps a taster of things to come!"

BAA Exhibition Meeting, 30 June

It was very nice to have met a number of fellow lunar observers at the recent BAA Exhibition Meeting at the National Space Centre, Leicester, on 30 June. Also in attendance were Alan Wells, Tony Cook and Andrew Elliott. The BAA Lunar Section display consisted of occultation information, TLP information, some archive observations and a number of posters featuring the recent work of numerous topographic observers. I have hopes that those people who expressed an interest in joining us go on to become contributing members of the BAA Lunar Section

I might have spent longer at the BAA stand had I not had the additional task of taking my daughter Jacy around the space centre twice! I was pleased to discover that the centre has a good-sized Solar System gallery where visitors can find out about our cosmic neighbourhood – including the Moon. Unfortunately there wasn't any real Moon rock on display, but a Clanger in a Perspex case in some way made up for this. The large 1.5 metre diameter model of the Moon, shown here with me and my daughter, was surprisingly accurate in terms of topographic relief – the far side even had a cutaway segment where the Moon's interior could be seen.

Archive material scanned and databased

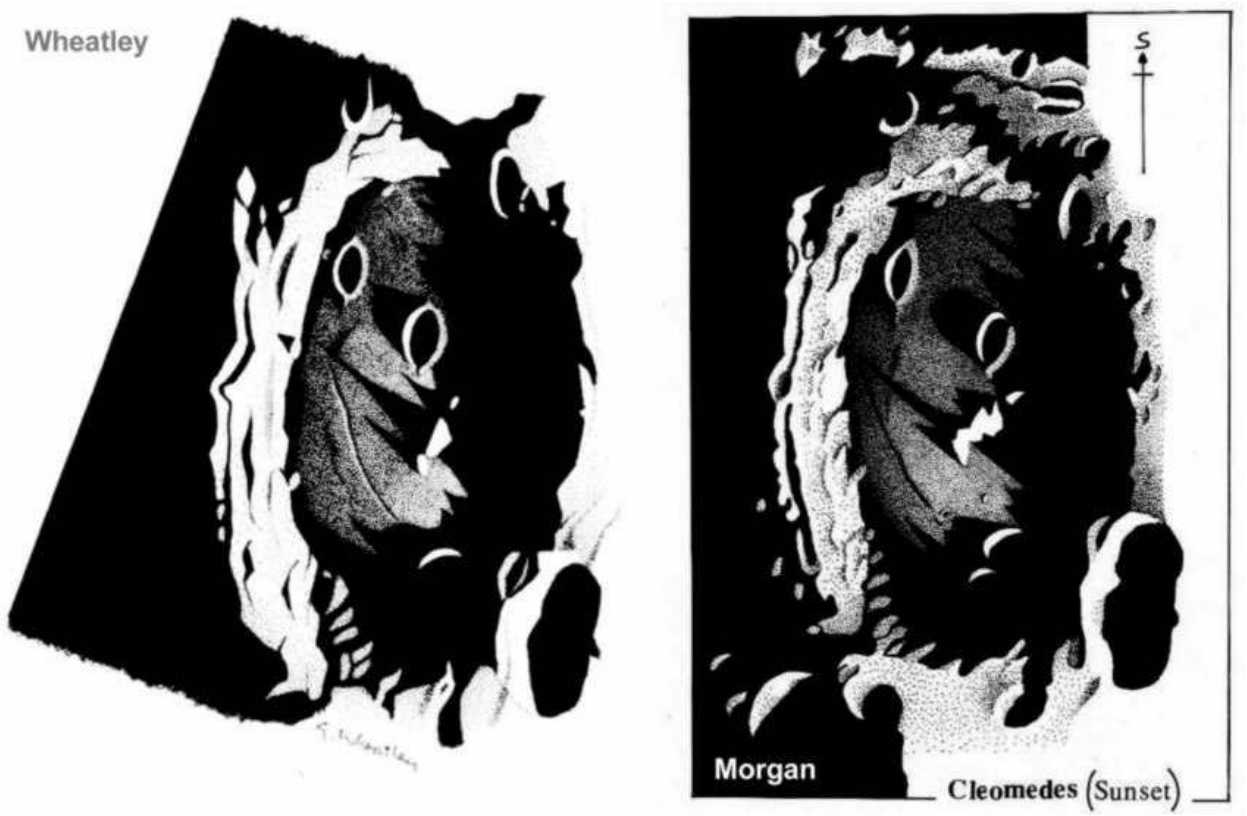
I'm pleased to announce that I have now scanned and databased all the BAA Lunar Section topographical material in my possession, along with a full listing of all the other BAA archive material in my possession. One of the advantages of having all the material to hand in a digital format is that we can compare observations of the same feature made at the same time or of the same feature under similar conditions of illumination. It makes research much easier and expands the possibilities for research. Featured here is one example, a comparison between observations of Cleomedes, made on 2004 September 2, the observers being Grahame Wheatley (at left) and Phil Morgan. The times are almost identical, Grahame's being 03:15-04:00 UT (Col 122.3-122.7), and Phil's 02:50-04:00 UT (Col 122.1-122.7).

Drawings are on the next page

Material in file:

1) Black hardback book (poor condition) containing an assortment of 15 loose board mounted lunar photographic images (possibly old BAA LS display material dating back to the 1930s, 40s or 50s).
2) Comb-bound copies of The New Moon; Vol 1 No 1 (May 1982); Vol 1 No 2 (Nov 1982); Vol 1 No 3 (Apr 1983); Vol 1 No 4 (Mar 1984).
3) Lunar eclipse photographic sequence (30 colour photographs), imager and date unknown, likely 1980s.
4) Lunar eclipse photographic sequence (5 colour photographs), G Denney, 9 February 1990.

A listing of the currently databased topographical archives can be found on a link at my own site at http://www.lunarobservers.com/baalunar.htm



BAA/ALPO TRANSIENT LUNAR PHENOMENA — Tony Cook

Observations were received from the following observers for June:. Clive Brook (Plymouth, UK), Maurice Collins (New Zealand), Marie Cook (Mundesley, UK), and Bob O'Connell (Florida, USA). On August 28th there will be a total eclipse of the Moon. Alas this will not be visible to European observers, but parts of it will be visible from the Americas and Asia. The times are as follows: 08:51 (UT) partial eclipse starts. 09:52 UT total eclipse starts. 10:37 UT maximum eclipse. 11:22 total eclipse ends. 12:23 partial eclipse ends. For TLP work, please use low light sensitive CCTV camera to look for flashes from impacts in the umbra – this is not ideal because the umbra is bright in the near-IR, but at least the visible light level is drastically reduced, thus improving chances of seeing impact flashes. It would also be worth watching the interiors of craters such as Tycho, Aristarchus, etc for flashes, short term brightness variation, or colour, once these are in the umbra.

My thanks to Bill Dembowski, of the ALPO Lunar Section, for pointing out to me a Scientific American magazine web site article on TLP. I followed the link and got through to a research group web site at Columbia University, New York, in the US. Here a team called AEOLUS ("Atmosphere seen from Earth, Orbit and the Lunar Surface)" has been set up to study the effects of the lunar atmosphere. Two robotic cameras have been built at Cerro Tololo observatory in Chile. One camera has a very low image scale, 10 km/pixel and takes an image 5 times per second – so this is ideal for wide area monitoring. The other, a 6" reflector, has an image scale of 1.2 km/pixel and takes an image every 10 sec. An automatic change detection algorithm is used to look for TLP without human intervention. More specialized equipment may be used in future to obtain spectra of any detected TLP. Prof. Arlin Crotts, from Columbia University, has submitted one paper to Icarus and four to the Astrophysics Journal, on the subject of TLP and has put these on-line on their web site: http://www.astro.columbia.edu/~arlin/TLP/ . I am not sure if these have been accepted for publication yet, but as the conclusions have been widely reported in the press I thought that I would take a stab at summarizing the papers, starting this month with the Icarus paper: "Lunar Outgassing, Transient Phenomena and The Return to The Moon I: Existing Data".

The paper attempts to do a statistical filter to find reliable TLP reports and then checks to see if these correlate with other factors such as geographical location. He utilizes observational reports from the Middlehurst (1968) and Cameron (1978) catalogs – this does not include reports from the last 29 years, but as those have not been published in official catalogs and the earlier catalogs cover a few hundred year time base, then this is OK. Furthermore he rejects the numerous Bartlett observations, less these incur an observational bias in the statistics.

Discussions are given about "band wagon" effects e.g. if one crater becomes notorious for TLP reports then one could imagine most observers wanting to study this in great detail to the neglect of other features. A prime case for this is Aristarchus. To get around this problem, he splits the TLP catalog information into half in years prior to and after 1930. This was around an era of a natural break in TLP reports in both catalogs. Prior to the 1930's TLP were not as famous as they are today and so it was not fashionable to go looking for TLP in Aristarchus. This was despite Wood's claim in 1911 to have found sulphur near Aristarchus and a brief increase of interest in this region. After the 1930's and especially post 1957 there was an incredible rise in observers looking for TLP on the Moon, especially in suspected hotspots like Aristarchus. So to avoid the band wagon effect he created two datasets of the Moon, one for reliable pre-1930's observations and one for reliable post-1930's observations. 1930 lies at the median of the Middlehust catalog (equal No. of observations before and after). The observations were used to create images with 300x300 km pixels, one image for each dataset. He then combined the two image datasets by taking the lower number for TLPs for a given pixel – this should remove any band wagon effect. The corrected frequency of occurrence shows 66 reports for Aristarchus, 16 for Plato, Grimaldi and Messier at 2 each, and then just 1 TLP report for the following features: Alphonsus, Bessel, Cassini, Copernicus, Gassendi, Kepler, Lichtenberg, Littrow, mare Humorum, Mare Nubium, Mons Pico, Pallas, Picard, Ptolemaeus, Riccioli, South Pole, Theaetetus and Tycho. The location of these TLP correlate well with Mare edges, and in the case of Aristarchus with a prime Radon (222) hotspot. A comparison is also made with the sites of Moon quakes and again a good correlation is found, except not for geologically young craters such as Aristarchus.

As to possible causes he implies that electrostatic dust levitation is not the cause because his selected sample does not show a significant increase near the terminator, where one would expect to see this effect. Instead he promotes the idea of outgassing. He suggests that one reason for Aristarchus being the prime candidate for TLP, was that it was the antipodal location of the impact of the South Pole Aitken Basin (SPA) and points out that others had suggested that the SPA was created in a glancing blow impact, so the antipodal point need not be exactly opposite the basin center. Aristarchus would therefore have a lot of deeply seated cracks from which gas from the interior could seep readily. He rightly points out though that if the SPA were due to a glancing blow impact, that we do not know the direction of the impact, so cannot say where the antipodal point would be; so in fact this theory is highly speculative. Another possible source of outgassing, related to the mare edges might be from the grinding action of the mare plate with rocks, and calculations suggest that this could release ~10-30 tonnes of gas per year over the whole Moon. Gas from rock grinding at other fault locations could also occur.

I will cover the other papers in other months, especially if get make it into published journals rather than internet copies. Although some of the theories seem to be a bit speculative, it does show that planetary scientists (in this case an astrophysicist) take TLP research seriously and it is welcome to see such papers after a glut in the last few years..

The following repeat illumination and libration events for UK observers occur for August...

Event: Plato (observed by Gray, 1877 Jul 29) can be seen on/from (UT): 2007 Aug 02 (04:24-04:34) - *[Can you see a bright streak in the crater or south of the crater?]*

Event: Torricelli B (observed by North, 1995 Apr 11) can be seen on/from (UT): 2007 Aug 24 (19:09-19:56) - *[Is the crater dark and can you see any colour?]*

Event: Aristarchus (observed by Bartlett, 1959 Mar 24) can be seen on/from (UT): 2007 Aug 27 (19:39-20:16) - *[Please image with colour equipped CCD cameras or visually with colour filters]*

Event: Littrow (observed by an unknown UK observer, 1915 Jan 31) can be seen on/from (UT): 2007 Aug 29 (04:04-05:18) - *[Can you see 6-7 spots arranged like a Greek Gamma letter?]*

Event: Plato (observed by Haas, 1938 May 17) can be seen on/from (UT): 2007 Aug 30 (20:10-20:38) - *[Does the floor have a coloured tint? If so, what colour?]*

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

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From the Ed...

Reading material for the LSC's, I become somewhat dispirited. Continually I read references to CCD's, Webcams, computers, digital cameras etc.etc. When I started astronomy way back in 1968 anyone with an 8 inch refector and a couple of filters was at the cutting edge of amateur observing. I remember at Winchester in about 1970 listening to Hedley-Robinson, (older members will remember him) seriously explaining that a 3 inch refractor could make useful observations of Venus. Sorry, I digress., but will someone try and take us back to the many members (I'm sure) that only have a modest telescope that has to be set up each observing session plus a filter or two. Where are all of the observing projects gone, spiral craters, banded craters, south polar region charting, the lunar rays , dome searching, for instance? Or where is the enthusiasm (which often took the place of big, shiny complicated pieces of equipment) gone. Future experts are made this way, but everyone seems hell bent aquiring the latest piece of technology. Bigger and shinier is not always better.

I have a feeling I may ruffle a few feathers with these words, but in these days of high technology a bit of good old-fashioned eyepiece work might work wonders.

Anyone care to comment J.P.

Occultation subsection news — Andrew Elliott

Only one grazing occultation is predicted for this month, in the early hours of Tuesday August 7. The star is 6.8 magnitude ZC 574, which is grazed by the entirely dark northern limb of the 35% sunlit waning moon. Commencing at around 0352UT (0452 BST), the track crosses the west coast of Wales north of Aberystwyth and travels north eastward through parts of Gwynedd, Clwyd, eastern Merseyside and Lancs, north Yorks, and Cleveland (using the old county names for simplicity!). The moon is almost due east at an altitude of over 44º, but the sun is between 8 and 4 degrees below the horizon so strong twilight may interfere. The grazed region of the limb is quite rugged so multiple events are possible. Please see the map in the February 2007 LSC. Let me know if you would like a detailed prediction.

Last month's LSC contains the total predictions, with an interesting **Pleiades passage** on the night of August 6/7, although the moon will be fairly low in the sky (~12-24 degrees).

Observations

Many thanks to Ken Hall, Great Sankey, Warrington, who has sent me a sheet of 6 occultations for the first half of 2007.

My friends in the Moray and Highlands Astronomical Societies had excellent views of the **daylight occultation of Venus** on June 18: Bill Leslie saw both the disappearance and reappearance and reported the latter as being like a searchlight coming round the moon's limb. Karen Cox and Antony McEwan also saw both phases. Alan Tough and Pauline Macrae just missed the actual occultations but reported how easy it was to see Venus with the naked eye against the sunlit limb. Alan sent an excellent image of the crescent moon and gibbous Venus taken just before cloud supervened. This does show just what can be seen. I attempted the occultation and did get Venus centred in the telescope just before the disappearance through a gap in cloud. But sadly the cloud became total thereafter.

Predictions for 1°44'44.0"W 52°27'41.4"N Alt. 50m, (Birmingham) Tel diam 150mm – Sept 2007

Day	Time-UT h	m	s	Ph	Star No	Sp D	Max Mag V	% Snlt	Elon	Sun Alt	Moon Alt	Az	CA º	PA º	WA º	a Min/º	b	Star's apparent R.A. h	m	s	Dec º	m	s
01/03	43	50	R		244	K0	6.7	82-	130		51	194	68N	267	288	+1.6	-0.2	1	39	41.4	14	19	37
03/01	26	34	r		512	cF5	8.1	62-	103		42	106	70S	235	249	+0.4	+1.9	3	32	10.4	23	40	40
03/01	32	54	r		513	cK0	7.3	62-	103		43	108	63S	229	242	+0.4	+2.0	3	32	28.6	23	40	30
03/02	27	58	r		75990	cK0	7.5	61-	103		50	122	64S	230	243	+0.6	+2.0	3	34	19.3	23	51	32
03/04	35	42	r		522	G5	7.8	60-	102	-7	61	169	79S	245	258	+1.3	+1.0	3	38	11.5	24	17	10
04/03	53	20	R		701	SF2	6.6	49-	89		56	126	89N	263	271	+1.2	+1.1	4	38	58.5	26	57	24
04/03	53	21	R	X	70481	M	7.3	49-	89		56	126	89N	263	271	+1.2	+1.1	4	38	58.5	26	57	27
05/01	26	35	R		840	cK0	6.3	39-	77		27	79	78S	257	260	+0.1	+1.7	5	36	24.6	27	40	7
05/03	28	45	r		77383	F5	8.2	38-	76		45	103	73S	252	255	+0.6	+1.8	5	41	9.5	27	47	27
05/04	04	49	r		77415	cB9	8.3	38-	76		50	111	62S	241	244	+0.7	+2.1	5	42	31.8	27	46	34
05/05	04	07	r		868	SA0	7.5	37-	76	-4	58	129	39S	219	221	+0.8	+3.1	5	44	50.3	27	44	11
05/09	22	55	m		890	cA0	4.6s	36-	74	34	54	240	6S	187	188	+1.2	-1.1	5	53	48.7	27	36	56
	890 = 136 Tauri																						
06/00	07	27	r		78501	K0	7.8	29-	65		8	55	89N	277	274	-0.4	+1.1	6	34	26.7	27	2	26
06/00	35	54	g		1013	cG0	7.0	29-	65		12	60	6N	360	357	-0.3	+1.1	6	36	55.1	27	16	24
06/01	49	21	r		78576	A0	8.3s	28-	64		21	73	58S	244	241	-0.2	+1.9	6	39	4.2	26	54	1
06/03	09	51	R		1028	G8	7.5	28-	64		33	87	84N	282	279	+0.5	+1.2	6	42	11.4	27	4	33
07/00	44	59	r		79521	cG2	7.4	19-	52		4	53	53N	318	310	-0.1	+0.4	7	35	18.2	24	56	19
07/01	10	59	r		79535	K0	8.3	19-	52		7	58	59N	313	305	+0.0	+0.5	7	36	22.6	24	53	30
07/03	59	31	D		1170	dG8	3.6	18-	51		30	88	-69S	124	115	+0.6	+0.6	7	44	54.4	24	22	52
	1170 = kappa Geminorum																						
07/04	59	01	R		1170	dG8	3.6	18-	50	-5	39	100	61S	254	245	+0.6	+2.0	7	44	54.4	24	22	52
	1170 = kappa Geminorum																						
08/03	18	45	r		80273	F8	8.9	11-	39		14	74	69S	267	254	-0.1	+1.6	8	36	10.2	20	49	20
09/04	05	32	r	X	14345	F0	9.8	5-	26		10	76	84S	285	268	+0.0	+1.1	9	28	45.7	16	4	40
24/20	00	52	d		3295	A3	7.0	94+	153		20	143	41S	116	136	+1.7	+0.8	22	27	8.0	-11	11	14
25/00	50	12	d		3313	K0	6.5	95+	155		21	218	68N	45	66	+0.7	+0.0	22	34	32.7	- 9	34	0
25/20	50	52	d		3431	F2	6.6	99+	167		27	140	64N	42	64	+0.8	+1.6	23	20	41.6	- 3	52	28
27/21	43	41	r		166	M*	6.7s	98-	164		33	121	30S	178	199	-0.4	+2.6	1	8	47.7	9	57	10
	Above event close to terminator																						
29/00	30	03	R		317	F5	6.4	93-	149		52	149	73N	261	280	+1.3	+0.9	2	9	50.2	17	15	49
29/04	55	37	r		336	F0	7.4v	92-	147	-11	41	244	23N	312	330	+1.1	-4.5	2	18	12.6	18	29	38
29/19	51	36	r	X	54005	DA2	5.6	87-	137		11	69	53N	287	303	-0.1	+1.2	2	59	40.7	21	22	26
29/19	51	36	R		440	SA2	4.7	87-	137		11	69	53N	287	303	-0.1	+1.2	2	59	40.7	21	22	26
	440 = epsilon Arietis																						
29/21	39	42	r		75715	cK0	7.3	86-	136		26	88	52S	212	227	-0.2	+2.0	3	4	43.3	21	30	21
30/00	48	45	r		75777	B9	7.6	85-	135		52	132	36S	196	211	+0.1	+2.9	3	11	47.8	22	12	9
30/02	44	28	R		470	WK0	6.8	85-	134		60	178	41N	300	315	+2.0	-1.6	3	14	45.6	22	59	7
30/04	12	13	r		75832	K0	7.3	84-	133		57	216	56N	284	299	+1.5	-1.3	3	17	25.5	23	9	28
30/04	20	31	r		75845	A3	7.6	84-	133		56	219	47S	208	222	+1.1	+1.9	3	18	18.2	22	51	47

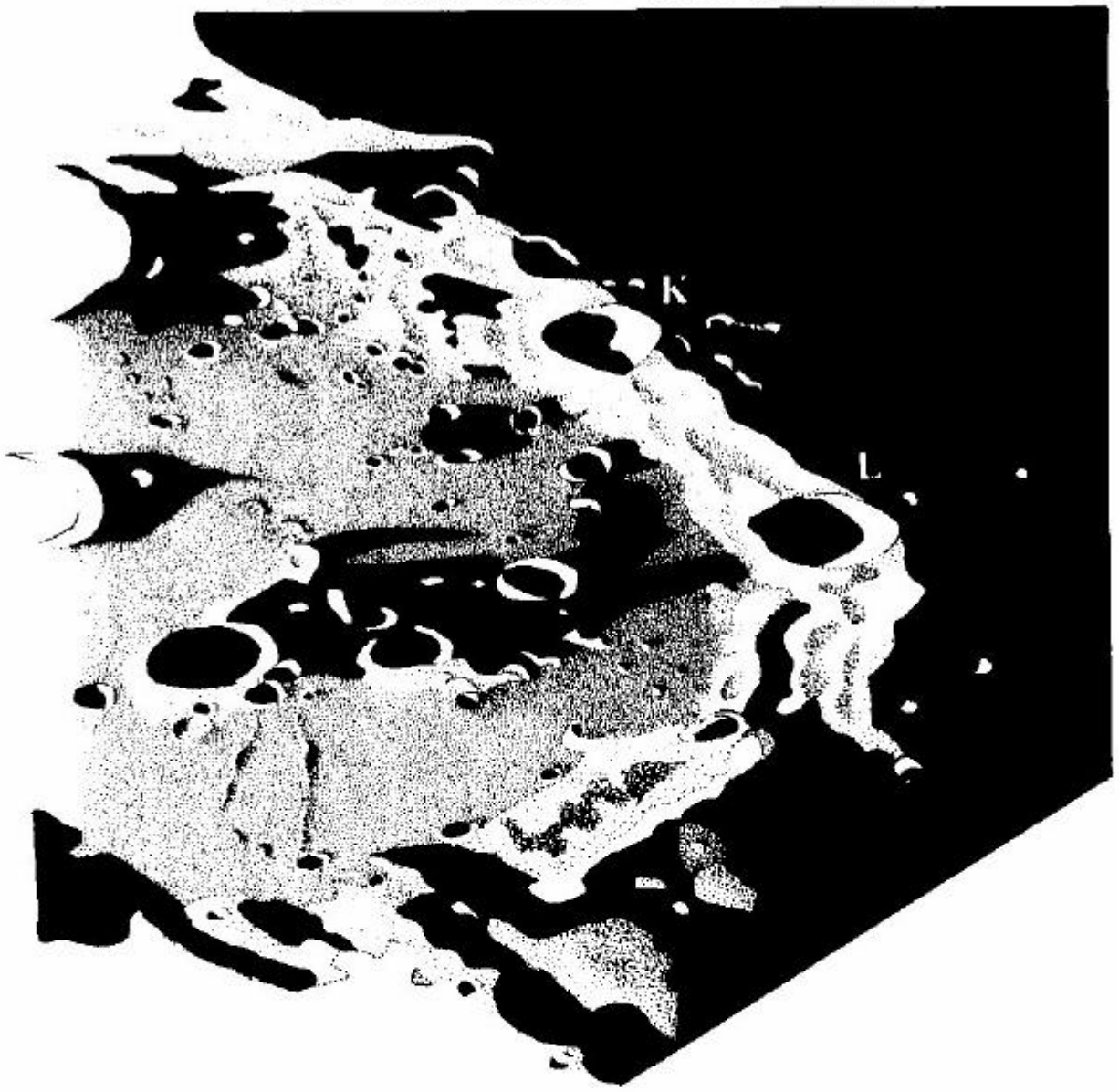
N.B. don't forget to add 1 hour to the above times during British Summer Time!

Key to changes and less obvious column entries in new predictions above:

- There is no longer an 'observability' or 'value' column. Predictions are computed for a telescope aperture of 150mm using a detailed observability algorithm. Lower case D, R, Gr in Phase column means the star is within 1 magnitude of observability limit, i.e. less easy to see.
- Star catalogue, nnnn = ZC, nnnnn or nnnnnn = SAO, Xnnnnn = XZ80, ?nnnn = other catalogue, where '?' is a letter indicating the catalogue.
- Character in 'D' column indicates a double star – careful timing/video recording may reveal the duplicity.
- Character in 'V' column indicates a variable star.
- Other entries are as for the pre-2007 predictions produced by 'OCCMOON' in previous LSC's.

Predictions courtesy of David Herald's **Winoccult** program, version 3.6.
See LSC **35**, 5 (May 1999) for comments on recording observations using the predictions.

The Western Floor of Clavius



Observer Phil Morgan 2005 May 17th. 305mm Newtonian x400. 20.30 to 21.30.UT. Seeing 7/10 Transparency 3/5. Sun's Col.21.15 to 21.65. Libration Long. -4.7 Lat. -4.1.

The magnificent Clavius needs no introduction from me , and when situated near the terminator the eye is drawn to its splendour like a magnet. Clavius never disappoints !

A fine view of the western floor presented itself on May 17th 2005, and the drawing that I secured is reproduced here. This shows the more busier western half of this great crater and includes most of the great decremental arc of craters that circle the southern inner floor region. As the early morning floor shadows lift these floor craters become rings of light , and as the lunarian R. Barker noted, look " like looking down the funnels of a large steamer".

The western inner rampart is also a splendid sight at this colongitude and is more rectangular than the eastern half. The two wall craters marked L and K, are so perfectly positioned on the summit of the crest of this west wall that it is hard to imagine that they are the result of chance impacts. I have noticed in the past that the more southerly one (K) seems to have some dusky markings running up the inner west slopes and so may be a banded crater.

“New Atlas of the Moon” Book Review Robert A. Garfinkle F.R.A.S.

“New Atlas of the Moon” By Thierry Legault and Serge Brunier. Translated from the French by Klaus R. Brasch. Firefly Books; 125 pages; $55.00

This outstanding lunar photographic atlas is in a class by itself, and I don’t say that lightly. The large format (12-½ x 11-½ inches) allows for the publication of incredibly clear images of the Moon. Thierry Legault took most of the images. The covers are hard, but the book is spiral-bound, which allows the reader to lay the book flat without bending pages at the center of the book.

The book contains two main sections; the “Moon from Day to Day”, and “Lunar Cartography”. The first section is divided by lunation day with a large-scale image for most of the days. One thing that I truly like is that for these large-scale images, they supplied a transparent layover with the feature names on them. Under some of the feature names is the page number where you will find a high-resolution image of the feature and descriptive text about it in the second section. Not all of the features called out on the lunation pages have high-resolution images in the second section. On the text page, the authors give you an image of the Moon as seen on that lunation day as viewed through binoculars (north up) and a larger image as seen through a refractor (south up). A small blurry image shows you what the Moon on that day looks like with the unaided eye.

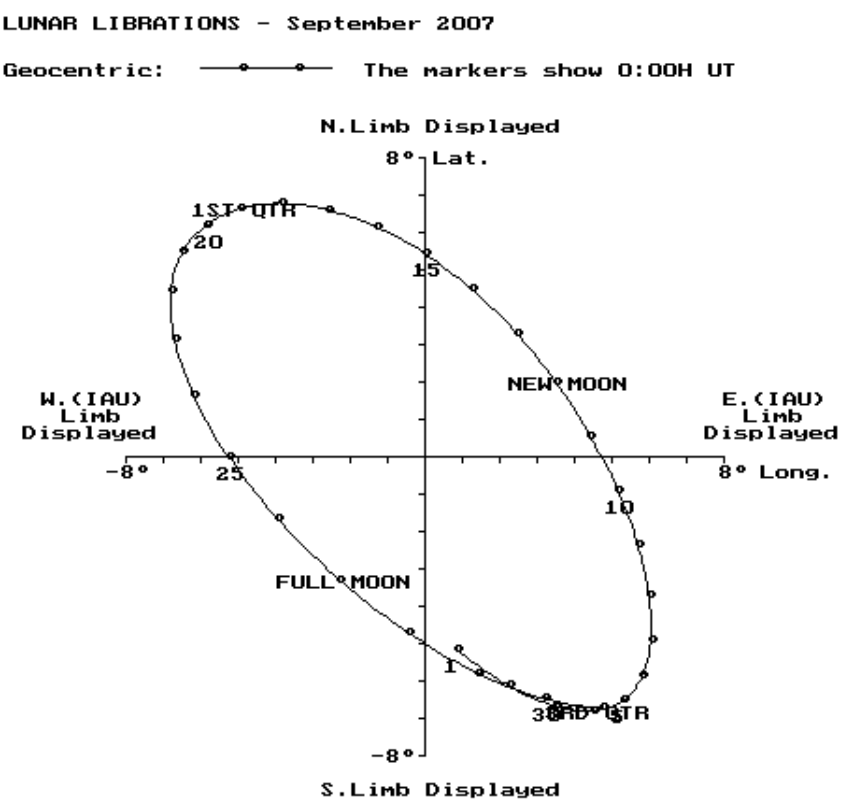
The book contains a clearly written “How to use this Atlas” page that shows typical pages from the book. One is an introduction for a lunation day and pages showing the high-resolution images.

A third section, “Lunar Movements” teaches you how the Moon moves around the Earth, covers both lunar and solar eclipses, observe occultations, and gives practical tips for observing the Moon, selecting and purchasing the right kind of telescope and photographic equipment or lunar observing. This section contains minor errors in the way they drew the Sun’s rays in their eclipse diagrams. They show the rays as a cone and inverted cone between the Sun and Moon in the solar eclipse drawing and between the Sun and Earth in the lunar eclipse drawing. The Sun’s rays are parallel; it is the shadow cast by a sphere that forms a cone pointing away from the light source. Also, the lunar eclipse scale is way off, because they show a series of moons passing through the Earth’s shadow taking up almost a quarter of the Moon’s orbit. The novice would have no idea that these drawings are not to scale, because that is not indicated. I own a number of lunar atlases (too many according to my wife) and this one is one of the best every produced for use by a beginning lunar

Continued on next page

Date	Libration amountø	PAø	Feature presente
1.0	4.5	194	Boussing
2.0	5.9	206	Gill*
3.0	7.1	214	Brisbane
4.0	7.9	220	Peiresci
5.0	8.2	226	Hamilton
6.0	8.2	232	Gum*
7.0	7.8	238	Barnard*
8.0	7.2	246	Curie*
9.0	6.4	256	Ritz*
10.0	5.6	269	Purkyne*
11.0	5.0	286	Goddard*
12.0	4.6	306	Gauss*
13.0	4.8	327	Endymion
14.0	5.3	346	Peterman
15.0	6.1	1	Goldschm
16.0	7.0	13	Poncelet
17.0	7.8	22	Pythagor
18.0	8.6	30	Oenopide
19.0	9.1	37	Repsold*
20.0	9.4	43	Gerard*
21.0	9.4	49	Lavoisie
22.0	9.1	55	Ulugh Be
23.0	8.4	62	Voskrese
24.0	7.2	70	Einstein
25.0	5.9	83	Olbers*
26.0	4.5	102	Maunder*
27.0	3.7	135	Baade
28.0	4.1	172	Casatus
29.0	5.4	197	Neumayer*
30.0	6.8	211	Hanno*

Program by Bob Roberts.
Observer at: Lat. 51.0øN, Long. 1.8øW
* indicates that the feature is not illuminated.



Continued from the previous page

observer. The images are downright spectacular and sharp. There are no out-of-focus images, except those previously mentioned. The large format allowed the authors to use large images, which makes it easier for you to see the finer details than what you could see if the images were smaller. When using some of the other lunar atlases that I own, I need a magnifying glass to see these finer details. This is not a problem with this work. The text is clear and informative, and the “how-to-use-this-book” is a big asset. I highly recommend this lunar atlas not only for new lunar observers, but for experienced observers as well. R.A.G.

CLOUDWATCH — Andrew Bytnar

Tabulated data for June 2007

Observer and location	Excellent *days*	Cloudy *days*	Overcast *days*	Hazy *days*	No watch *days*
A.Bytnar (Mansfield)	3 (10%)	4 (13%)	20 (67%)	3 (10%)	-----
M.Cook (Cromer)	5½ (18%)	2 (7%)	17½ (58%)	3½ (12%)	1½ (5%)
K.Hall (Warrington)	8 (27%)	7 (23%)	15 (50%)	0 (0%)	-----
A.Heath (Nottingham)	9 (30%)	1 (3%)	19 (63%)	1 (3%)	-----
J.Wrigley (Reading)	3 (10%)	7½ (25%)	18 (60%)	1½ (5%)	-----

Physical Data for Lunations: 1047/1048 — Computed by Gareth Williams

2007 SEP.	Age d	Phase	Earth's Selenographic Longø	Latø	Sun's Selenographic Colongø	Latø	R.A. h m	Dec. ø	Rises h m	Sets h m	Transit h m	Alt ø
1.0	19.0	0.832	0.9	-5.2	137.3	-0.04	01 33	14.0	19 54	10 46	02 59	52
2.0	20.0	0.735	2.3	-6.1	149.5	-0.07	02 29	19.7	20 17	12 18	03 54	58
3.0	21.0	0.627	3.5	-6.7	161.7	-0.11	03 27	24.2	20 50	13 47	04 51	62
4.0	22.0	0.513	4.6	-6.8	173.9	-0.14	04 29	27.1	21 38	15 06	05 51	65
5.0	23.0	0.401	5.3	-6.5	186.1	-0.18	05 31	28.3	22 42	16 07	06 52	66
6.0	24.0	0.296	5.8	-5.9	198.4	-0.21	06 33	27.8	23 59	16 50	07 52	65
7.0	25.0	0.203	6.1	-4.9	210.6	-0.24	07 32	25.6	00 03	17 19	08 48	62
8.0	26.0	0.125	6.0	-3.7	222.8	-0.27	08 27	22.1	01 21	17 39	09 40	58
9.0	27.0	0.064	5.7	-2.3	235.0	-0.29	09 19	17.6	02 42	17 54	10 27	53
10.0	28.0	0.023	5.2	-0.9	247.3	-0.32	10 07	12.4	04 00	18 05	11 11	47
11.0	29.0	0.003	4.5	0.6	259.5	-0.34	10 52	6.7	05 15	18 15	11 53	41
12.0	0.5	0.002	3.5	2.1	271.7	-0.37	11 36	0.9	06 28	18 25	12 33	35
13.0	1.5	0.021	2.5	3.4	284.0	-0.39	12 19	-4.9	07 40	18 35	13 14	30
14.0	2.5	0.057	1.3	4.5	296.2	-0.41	13 02	-10.4	08 52	18 46	13 54	24
15.0	3.5	0.110	0.0	5.5	308.4	-0.43	13 46	-15.5	10 05	18 59	14 37	19
16.0	4.5	0.176	-1.3	6.2	320.6	-0.44	14 32	-20.0	11 19	19 17	15 21	15
17.0	5.5	0.253	-2.6	6.7	332.9	-0.46	15 20	-23.7	12 32	19 41	16 09	12
18.0	6.5	0.340	-3.8	6.8	345.1	-0.48	16 11	-26.4	13 41	20 16	17 00	10
19.0	7.5	0.433	-5.0	6.7	357.3	-0.49	17 05	-28.0	14 42	21 04	17 52	9
20.0	8.5	0.531	-5.9	6.3	9.5	-0.51	18 00	-28.3	15 30	22 09	18 47	10
21.0	9.5	0.630	-6.5	5.5	21.7	-0.53	18 56	-27.1	16 05	23 25	19 41	12
22.0	10.5	0.726	-6.8	4.5	33.9	-0.56	19 52	-24.5	16 30	00 48	20 34	16
23.0	11.5	0.816	-6.7	3.2	46.0	-0.58	20 47	-20.5	16 49	00 49	21 25	22
24.0	12.5	0.894	-6.2	1.7	58.2	-0.61	21 41	-15.3	17 04	02 16	22 16	28
25.0	13.5	0.953	-5.3	0.0	70.4	-0.63	22 33	-9.1	17 17	03 44	23 05	35
26.0	14.5	0.990	-4.0	-1.7	82.6	-0.66	23 25	-2.3	17 30	05 13	23 56	42
27.0	15.5	0.999	-2.3	-3.3	94.7	-0.70	00 18	4.7	17 43	06 43	.. ..	..
28.0	16.5	0.979	-0.5	-4.7	106.9	-0.73	01 12	11.6	17 59	08 17	00 46	49
29.0	17.5	0.929	1.5	-5.8	119.0	-0.76	02 09	17.8	18 20	09 52	01 43	56
30.0	18.5	0.855	3.3	-6.5	131.2	-0.79	03 09	22.8	18 50	11 26	02 41	61

2007 Oct

1.0	19.5	0.763	4.8	-6.7	143.4	-0.82	04 11	26.4	19 33	12 52	03 43	64
2.0	20.5	0.658	6.0	-6.5	155.6	-0.85	05 15	28.1	20 33	14 01	04 45	66
3.0	21.5	0.548	6.9	-5.9	167.7	-0.88	06 18	28.0	21 48	14 50	05 46	65
4.0	22.5	0.438	7.3	-5.0	179.9	-0.91	07 19	26.2	23 09	15 23	06 44	63
5.0	23.5	0.335	7.3	-3.9	192.1	-0.93	08 15	23.0	.. ..	15 46	07 37	59
6.0	24.5	0.241	7.0	-2.6	204.3	-0.96	09 07	18.7	00 30	16 02	08 26	54
7.0	25.5	0.160	6.4	-1.1	216.5	-0.98	09 56	13.6	01 48	16 14	09 10	49
8.0	26.5	0.094	5.6	0.3	228.7	-1.01	10 41	8.1	03 04	16 24	09 52	43
9.0	27.5	0.045	4.6	1.7	241.0	-1.03	11 25	2.4	04 16	16 34	10 32	37
10.0	28.5	0.014	3.5	3.1	253.2	-1.05	12 07	-3.3	05 28	16 44	11 12	32
11.0	29.5	0.001	2.2	4.2	265.4	-1.07	12 50	-8.9	06 39	16 54	11 52	26
12.0	0.8	0.007	1.0	5.2	277.6	-1.09	13 34	-14.1	07 51	17 07	12 34	21

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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 2007 circular should reach the Editor by August 10th 2007