

THE BRITISH ASTRONOMICAL ASSOCIATION



LUNAR SECTION CIRCULAR

Director Alan Wells
Assistant Director/Editor John Pedler

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Data on pages 7-8 are for Nov. 2006

Lunations 1037/1038

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TOPOGRAPHICAL SUB-SECTION

Peter Grego

Many thanks to all those members of the BAA Lunar Section who have so far introduced themselves to me by email. It's jolly nice to establish communication with those who are fascinated by lunar topographical observation.

TNM
I hope to produce the next issue of the Topographical Subsection journal, *The New Moon*, some time in late autumn. I have already been sent a couple of very interesting articles. Do send in any material that you would like published, either by email to my new address at or by post, as hard copy or on disk/CD-ROM, by 15 October.

Electronic perils

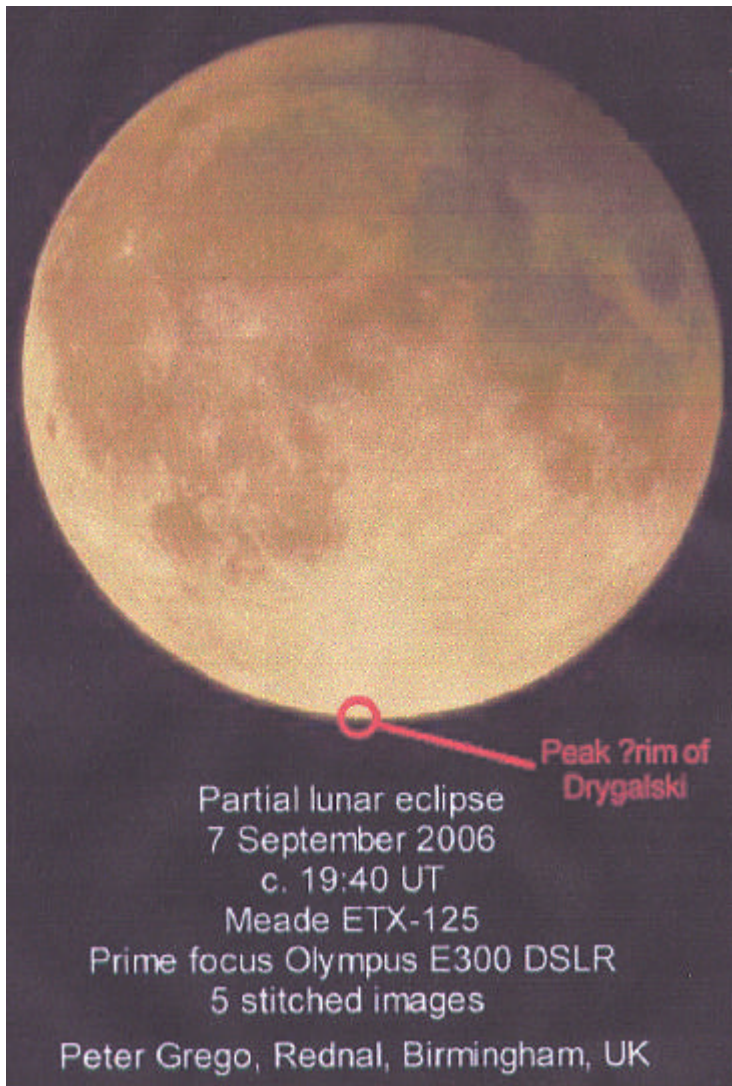
In this topographical report I had intended to include an observational drawing of Endymion that I made not two hours ago -- between 03:45 and 04:15 UT on 10 September -- having produced a neat copy around half an hour ago when the scene was very much fresh in my mind. I must admit to having been extremely pleased with the observational drawing when I had copied it up and made it presentable -- a thrill that all topographic sketchers experience when we step back, squint our eyes and admire the skill at which we have depicted the spiny shadow from this peak, the delicate play of light on that inner terraced wall, the subtle shading covering the plain between, etc.

Why no observational drawing of Endymion, then? Alas, my reliance upon computers has caused my downfall in this case. The original observational drawing was made on my PDA (a 'personal digital assistant', a handheld computer) and was based upon an enlarged image taken before the observing session commenced with a DSLR (digital SLR camera) at prime focus on my 200mm SCT. I transferred the drawing to my PC indoors and began to enhance it with a graphics tablet using Corel PhotoPaint, an old but usually reliable piece of drawing/image manipulation software, touching up areas here and there, clarifying certain features and so on. When I finally issued the command to save the masterpiece, up came the message: "PhotoPaint has encountered an error and will shut down." More than an hour of effort, wasted -- probably. As I write, my PC is running a recovery program which might find my effort and bring it back from oblivion. If it does, my intended article on Endymion, with the restored drawing in pride of place, will appear in the next LSC.

Of course, this wouldn't have happened if I had used pencil and paper to record the Moon!

Lunar eclipse, 7 September

Good conditions across much of the UK enabled many to view and image the latter part of the partial lunar eclipse on the evening of 7 September. Thanks to those who have sent in observations and images, including Andy Ball, Neill DeVall, Jamie Cooper, Pete Lawrence, Ralf Vandebergh, James Jefferson-Wilson and Andrew Greenwood. Although eclipse studies themselves have little to do with topography, it's fascinating to view the lunar landscape at a reasonably high magnification during an eclipse, noting the visual changes brought about as the inner penumbra and umbral shadow sweeps across the Moon. Did anyone else note a particularly prominent peak on



the southern limb? I reckon that this was produced by the profile of the southern rim of Drygalski (see Rukl's *Atlas of the Moon*, Chart 72) – but if you think different, do let me have your opinion!

Harold Percy Wilkins

An interesting communication from Alan Wells concerns correspondence from a member who thinks that the late H P Wilkins (1896-1960), former BAA Lunar Section Director, is deserving of greater recognition by the BAA for his contribution to lunar mapping. The member wonders how such greater recognition can be achieved. Do any other members think that further honours or memorials ought to be instituted in Wilkins' memory? Do let me know what you think. Personally, I can't help think that Wilkins would have been very satisfied simply knowing that he has a lunar crater officially named after him – surely the ultimate honour for any lover of the Moon?

Best wishes

Finally, on behalf of all in the Lunar Topographical Subsection, I would like to wish my predecessor Colin Ebdon all the very best in his recovery from his recent bout of cardiac problems. Colin spent a short time in hospital, but now he is out and about and doing fine. He sends the following observational drawing of Guericke,

an old, flooded crater around 60km in diameter lying to the north of Mare Nubium, around 100km southeast of Fra Mauro. There are plenty of features of low elevation visible in the observation, which Rukl only vaguely hints at in the latest *Atlas of the Moon*.

CLLOUDWATCH

[Andrew Bytnar](#)

Tabulated data for August 2006

<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)	5 (16%)	13 (42%)	1 (3%)	0 (0%)	12 (39%)
A.Bytnar (Mansfield)	6 (19%)	9 (29%)	11 (35%)	1 (3%)	4 (13%)
M.Cook (Cromer)	2½ (8%)	15½ (50%)	11½ (37%)	1½ (5%)	-----
K.Hall (Warrington)	2½ (8%)	8½ (27%)	14½ (47%)	0½ (2%)	5 (16%)
A.Heath (Nottingham)	4 (13%)	10 (32%)	17 (55%)	0 (0%)	-----
J.Wrigley (Reading)	3 (10%)	11 (35%)	17 (55%)	0 (0%)	-----

GUERICKE

Observer: C Ebdon

Date: 2006 July 19

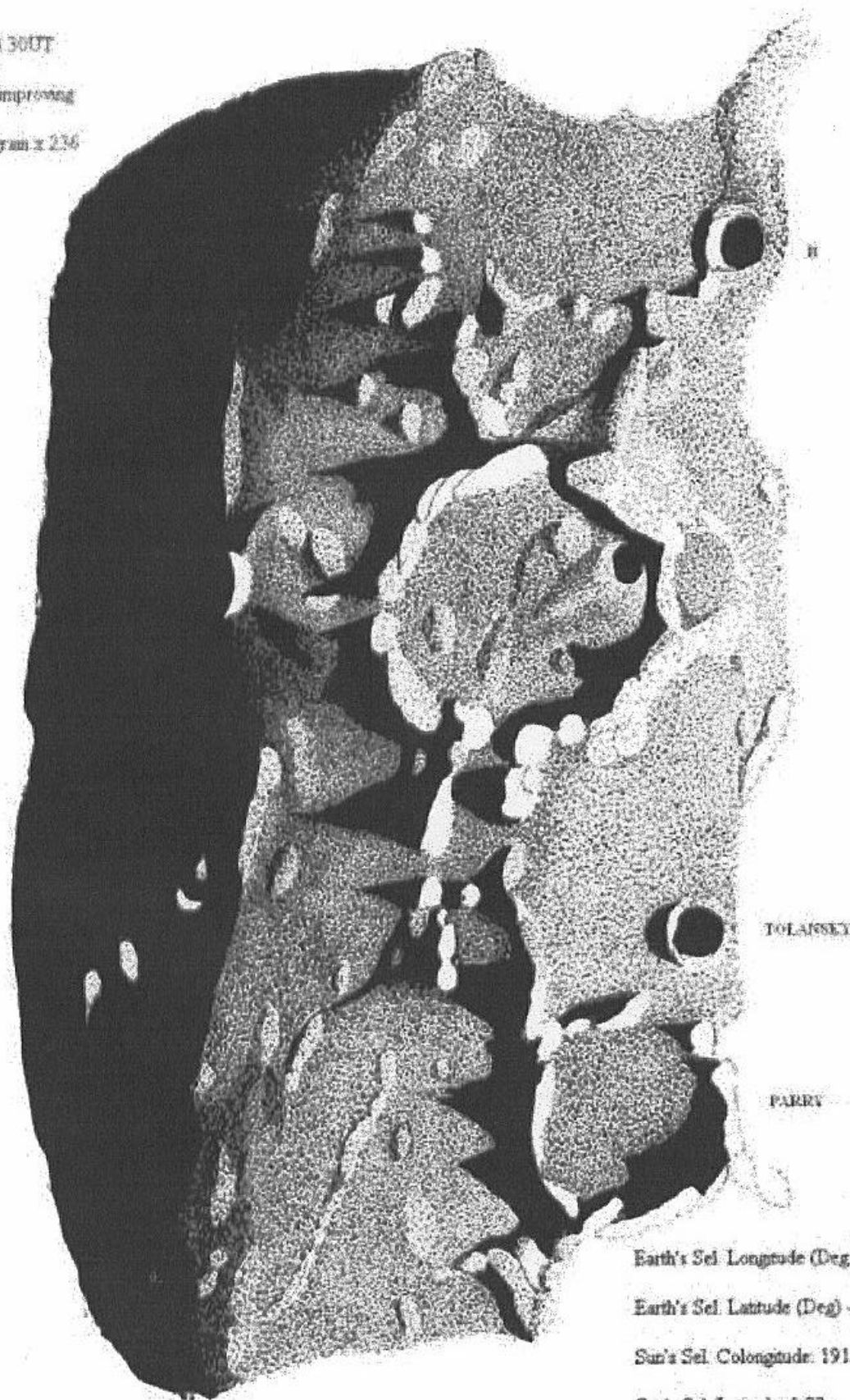
Time: 02 00UT to 03 30UT

Transparency: Good

Seeing: Poor at first, improving

AIII then AII

7" Makutov-Cassegrain x 236



TOLANSEY

PARRY

Earth's Sol. Longitude (Deg) 5.03 to 5.06

Earth's Sol. Latitude (Deg) -4.68 to -4.75

Sun's Sol. Colongitude: 191.22 to 191.98

Sun's Sol. Latitude: 1.33

Exposition: 1033

Only two observations were received for August – Michael Amato (West Haven, CT, USA) monitored Proclus, Menelous and Aristarchus. I did though receive a couple of images of Clavius from Praet Marnix of Belgium taken on 2006 Jun 5th and 06th – you can see these by going to the following web site: <http://users.skynet.be/mpraet/Clavius-dag.jpg> . These show some nice detail emerging from shadow – we are lucky having such talented observers working for us. A lot more observations were received for September, related to the SMART-1 impact and I will list these next month.

SMART-1 has now impacted the lunar surface to within a second or two of the predicted impact time, but it was a very close run thing with reports of a safe mode for the spacecraft shortly before a minor orbit correction to avoid a crater rim on the orbit before the desired impact. In correspondence with ALPO's Brian Cudnik, at the time of writing (11th Sep 2006), there would appear to be just one amateur report of a candidate flash on video by Peter Lipscomb (<http://cosmonut.org/Smart-1.gif>), but this is still being checked out for the possibility of other explanations such as a cosmic ray event, though I hope it turns out to be real! If not then any optical flash must have been fainter than magnitude 10 for it to have been invisible to amateur sized telescopes. Other than that I know only of the positive detection by the Canada France Telescope in Hawaii that was imaging in the thermal infrared at 2.1 microns and saw both a flash, and more importantly for us a cloud of material. The cloud of material moved to the SW of the flash (assuming the images are oriented with north at the top) and lasted about 150 sec, covering about 80km. For more information see Christian Veillet's excellent web site on: <http://www.cfht.hawaii.edu/News/Smart1/> . This is quite an area effected for a small washing machine sized spacecraft collision (the impact crater was at most probably about 10 m in diameter), though how much of this will leave a permanent change to the surface over the affected remains to be seen. Please monitor the impact site and compare with old images and photos. Actually the cloud is slightly puzzling because if it was traveling ballistically, one might expect it to have fallen down out of the lunar sky after a few seconds. So perhaps there are other effects taking place that we can only speculate on e.g. electrostatically charged particles, kinetic collision flow of debris across the surface, landslides of regolith on mountain slopes, ionization of gas emitted during the impact. The motion off to one side is also interesting – perhaps related to the shallow impact angle or could it be related to topographic slope (actually it is not very steep at the impact site), or could it be related to solar wind direction (from particles and not light). The point is that any impact that can produce a flash bright enough to be seen from Earth, may produce short term effects that create TLP cloud like features – though whether this is as true in the optical as in the thermal infrared is still open to question.

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

Event: La Hire (Kein, 1887 Feb 02) can be seen on/from (UT): 2006 Oct 01 (19:33-21:51) - *[If we believe the original report, look for anything that might resemble an intense streak-like feature that can cast shadows]*

Event: Ross D (Cross, 1965 Dec 04) can be seen on/from (UT): 2006 Oct 02 (23:22-23:32) - *[Does part of the rim look obscured and can you see any unusual small bright area?]*

Event: Gassendi (Cameron, 1961 Aug 25) can be seen on/from (UT): 2006 Oct 06 (00:54-04:17) - *[Can you see something resembling a “?” shape made up of star-like points?]*

Event: Schroter's Valley (Firsoff, 1955 Jul 03) can be seen on/from (UT): 2006 Oct 06 (01:40-04:26) - *[Can you see a star-like point at the north part of this valley?]*

Event: Proclus (Bartlett, 1958 Aug 30) can be seen on/from (UT): 2006 Oct 07/08 (20:59-00:20) - *[Observe intensity/sizes of bright spots in and around this crater]*

Event: Proclus (Farrant, 1972 Nov 21) can be seen on/from (UT): 2006 Oct 08 (02:16-05:24) - *[Study the thickness of the crater's bright ring appearance and look for any dark patches]*

Event: Aristyarchus (Bartlett, 1976 Aug 12) can be seen on/from (UT): 2006 Oct 09 (03:11-04:26) - *[Generally observe interior detail and look for any signs of colour]*

Event: Plato (Gledhill, 1870 Apr 17) can be seen on/from (UT): 2006 Oct 09 (05:11-06:27) - *[Just sketch or image the crater]*

Event: Callipus (Patrick Moore, 1952 Sep 09) can be seen on/from (UT): 2006 Oct 12 (21:06-22:05) - *[Can you see a hazy broad line from the NW to SE wall over the shadowed floor?]*

Continued on page 6

Don't forget to add 1 hour to the above times during British Summer Time up to October 29!

Total Predictions for 52°27'41.4"N 1°44'44.0"W (Birmingham) – November 2006

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			
2/19	15	14	D	PPM	143189	65	7.6	K2	90+	142		31	140	76S	81	103	-0.9	1.0	914.3	4357
3/19	38	41	DK	FK5	36	89	4.4	K0	96+	157		35	129	79S	84	105	-0.8	1.1	10319.1	75546
4/00	44	56	DA	PPM	144343	95	7.2	G0	96+	158		39	226	50N	34	55	-0.7	.7	11117.0	93613
4/21	29	15	DK	PPM	117881	96	6.8	K0	99+	171		47	141	78N	78	97	-0.9	.9	20213.9	150611
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																				
6/17	17	07	RU	FK5	142	97	3.8	B8	98-	163	-8	6	57	39N	293	305	.3	1.0	34935.6	240438
ABOVE STAR IS A VARIABLE STAR																				
6/20	26	02	R	SAO	76350	96	6.4	K0	97-	161		32	91	83S	237	248	-0.1	1.9	35752.4	242904
8/00	53	15	RC	PPM	94132	86	6.9	F5	92-	146		61	143	84S	252	257	-1.0	1.0	51031.0	273401
8/06	09	34	RJ	PPM	94294	97	6.3	B9	90-	144-10	41	263	36N	313	317		-0.2-2.3		52126.5	275758
8/19	40	18	RT	PPM	95226	96	6.1	B8	86-	136		11	59	50S	225	225	1.0	2.4	60127.5	273428
9/02	15	10	R	PPM	95676	85	8.0	K2	84-	133		63	152	55S	232	231	-1.1	1.8	61621.9	275140
9/02	18	19	R	PPM	95680	75	8.0	A0	84-	133		64	153	46N	311	310	-1.0	-1.0	61630.3	281205
9/03	30	12	R	PPM	95731	76	7.4	A0	84-	132		65	189	86N	271	270	-1.1	-1.1	61827.0	280021
9/03	54	08	R	PPM	95753	75	8.0	K0	84-	132		64	201	72N	285	284	-1.0	-0.7	61914.4	280315
9/05	55	29	R	PPM	95863	75	7.5	K2	83-	131		52	246	60N	298	296	-0.6	-1.6	62314.9	275905
9/06	04	45	R	PPM	95875	85	7.9	A0	83-	131-11	50	248	66S	243	242		-1.1 -0.2		62332.8	274346
9/06	43	37	R	PPM	95925	95	7.7	A0	83-	131 -5	45	257	24N	334	332		.1-2.9		62526.5	280147
9/23	50	05	R	FK5EXT	2553	78	5.6	A2	76-	122		37	93	57N	307	301	-0.7	.3	71149.5	265047
10/00	26	06	RX	PPM	97190	85	7.8	K0	76-	121		42	101	59S	243	237	-0.5	2.2	71257.6	263314
10/02	49	40	RV	PPM	97300	77	6.4	G5	75-	120		60	143	66N	298	292	-1.0	-0.3	71729.9	264041
10/02	46	33	R	PPM	97304	96	7.4	K0	75-	120		60	142	34S	219	212	-1.3	3.9	71741.9	262109
10/03	07	19	RV	PPM	97320	95	7.9	K0	75-	120		61	150	32S	217	210	-1.5	4.2	71820.8	261919
10/05	11	57	R	PPM	97404	65	8.0	A0	74-	119		62	209	61N	304	297	-0.8	-1.3	72141.9	262857
10/05	18	37	R	PPM	97409	85	7.9	G0	74-	119		61	212	43S	228	221	-1.6	1.4	72159.0	260851
12/02	02	26	R	PPM	99276	65	8.2	F5	56-	97		36	105	49N	328	312	-0.7	-0.5	90407.9	200212
12/07	05	06	R	PPM	126186	75	8.1	K2	55-	95 -3	54	209	48S	245	229		-1.6 .4		91116.8	185142
13/03	52	16	R	PPM	126901	76	7.7	G0	46-	85		41	125	47S	247	229	-1.2	2.3	95410.9	144227
13/05	35	35	R	PPM	126946	66	7.5	G5	45-	84		50	157	49N	331	312	-0.7	-1.2	95659.8	144132
15/04	16	03	R	PPM	157773	75	8.5	K5	28-	63		24	118	56S	259	238	-0.9	1.9	112150.1	35404
15/04	05	39	R	PPM	157774	66	7.9	F5	28-	63		23	115	64N	319	297	-0.5	-0.1	112154.6	41019
15/04	40	32	RZ	PPM	157794	85	8.0	F5	27-	63		27	123	23N	1	339	-0.1	-2.2	112323.3	40606
15/09	27	54	R	FK5	1297	65	5.2	K0	26-	62	13	37	209	86S	290	268	-1.0	-0.9	112816.9	24911
18/06	56	26	R	PPM	227469	95	8.4	K0	7-	30 -6	14	136	37S	233	213		-2.0 3.4		133323.6-133254	
18/07	17	42	RO	PPM	227511	95	5.8	A0	6-	29 -3	16	141	-1N	17	357		1.6-4.2		133501.2-131455	
26/17	16	18	D	PPM	272185	25	8.1	F8	34+	71-11	17	185	90N	74	90		-1.1 .0		211226.2-201825	
26/18	26	05	D	PPM	272229	25	7.9	K0	34+	71		15	201	88S	76	92	-1.0	-0.4	211420.6-200341	
26/19	01	25	D	PPM	272257	25	7.6	K0	34+	71		13	209	62S	102	118	-1.1	-1.0	211520.3-200239	
27/17	42	45	D	PPM	239795	26	7.1	F5	44+	83		23	179	60S	100	119	-1.3	-0.1	220635.8-145149	
27/18	40	05	D	PPM	239822	27	6.6	A0	45+	84		22	193	84N	64	83	-1.0	.0	220757.8-142730	
30/23	00	19	D	PPM	143892	37	6.2	G5	79+	125		33	231	53N	31	53	-0.7	.7	4745.9	64650

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 predictions.

After a relative dearth of grazes in recent month, six grazing occultations involving bright stars are predicted for October. Three of these involve Pleiades stars in the early morning of Tuesday 10th, but the circumstances for two of them are not good. Using the track numbers in the July LSC:-

Track 14, October 10, mag 4.3 ZC 539 (Taygeta) just hits the far north west Scottish coast in the early morning bright twilight, and against the bright limb. But the elevation of 40 degrees could still make it a reasonable prospect with a medium-sized telescope.

Track 15, October 10, Mag 2.9 ZC 552 (Alcyone) crosses Devon from its north west coast to the south east coast near Exeter and Sidmouth, starting from around 07:27 UT in the west. The sun will have just risen on the

opposite side of the sky, but the graze occurs against the moon's southern dark limb at an elevation of around 30 degrees. Since this graze occurs in the moon limb's rugged 'Cassini Region', it could be quite spectacular and valuable data could be obtained from timings. But because of the early daylight (sun elevation 7-9 degrees), a reasonably large aperture may be needed.

Track 16, October 10, mag 4.1 ZC 545 (Merope), also just hits the extreme north west coast of Scotland in bright twilight, at an elevation of 36 degrees. It, also, takes place against the dark limb in the Cassini Region, so could be quite spectacular (– if there is anybody there!).

Track 17, October 12, mag 5.3 ZC 1008, crosses the south coast near Eastbourne and travels north eastwards across east Sussex and Kent leaving the coast near Whitstable/Herne Bay, passing Ashford en route. The moon is at 25 degrees elevation and the graze occurs on the moon's northern dark limb near the terminator, commencing at around 23:36 UT.

Track 18, October 14, mag 5.3 ZC 1169, is another remote Scottish graze crossing west to east across the Isle of Skye and northern Highlands. It leaves the east coast near Aberdeen. The graze occurs against the northern bright limb in twilight commencing at about 05:30 although the moon will be at about 57 degrees elevation.

Track 19, October 30, mag 6.6 ZC 3150, travels from the south coast of Ireland north east to NI, Scotland near Glasgow, departing the Moray coast east of Elgin. The graze occurs against the northern dark limb of the moon which will be at around 13 degrees elevation. There is an exaggerated peak near the point of the graze so observations could be interesting. The graze commences from around 19:35 UT in the west.

As always, please let me know if you would like a detailed track prediction, which includes OS map references and a lunar limb diagram.

Continued from page 4

Event: Proclus (Cook, 1983 Jan 19) can be seen on/from (UT): 2006 Oct 07 (17:27-18:05) - [Look for any signs of colour]

Event: Dome at 8E, 18N (Newport, 1965 Dec 30) can be seen on/from (UT): 2006 Oct 29 (16:39-17:03) - [Can you see any white patch or haze effect present?]

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

From the Director.....

Smart 1 made a big impact last month both on the Moon and the astronomical world. This, together with more programmes on TV about the Moon should give a boost to members who would like to study this fascinating object.

Welcome to John Cave, who has joined the Section. He has taken some very good photo's that can be seen at <http://forum.skyatnightmagazine.com/albumphoto.asp?albumid=23&asortType=18&apage=2>

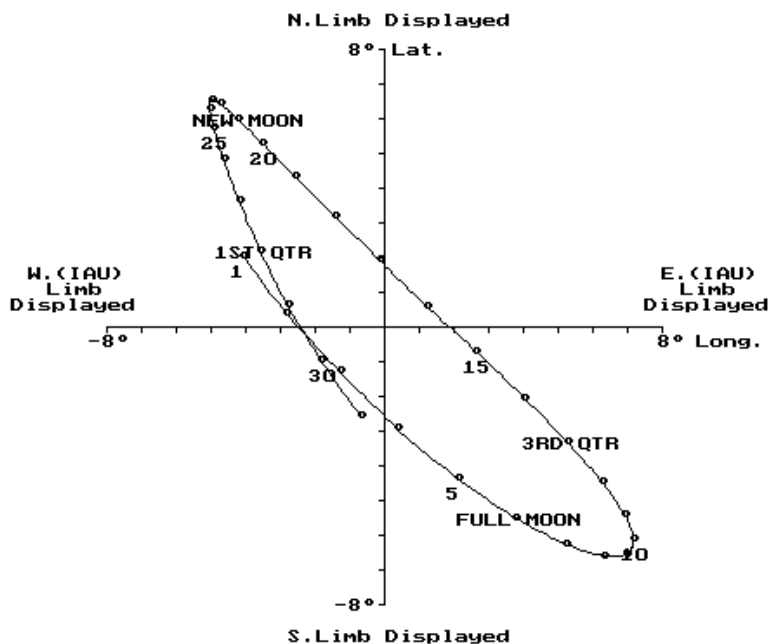
We hope that soon he will submit some images to the Lunar Section website. On that subject, don't be shy, let Mike have your images with details of how and when and with what equipment they were taken. It would be good to see a whole range of different images from beginners to the experts among you. I hope this marks the start of a good season of clear skies.

LIBRATION Nov 2006

Date	Libration amount	PA	Feature presented
1.0	5.6	61	Voskresenskiy*
2.0	3.7	74	Vasco da Gama*
3.0	2.1	110	Eichstadt*
4.0	2.4	177	Cabeus
5.0	4.3	205	Gill
6.0	6.2	216	Brisbane
7.0	7.9	223	Oken*
8.0	9.1	227	Hamilton*
9.0	9.6	231	Gum*
10.0	9.6	234	Abel*
11.0	9.1	237	Abel*
12.0	8.1	240	Barnard*
13.0	6.7	245	Hecataeus*
14.0	5.1	252	Gibbs*
15.0	3.4	266	Runge*
16.0	2.2	300	Rayleigh*
17.0	2.5	350	Baillaud*
18.0	3.8	15	Pascal
19.0	5.3	25	Babbage*
20.0	6.6	30	Oenopides*
21.0	7.7	33	Xenophanes*
22.0	8.4	35	Volta*
23.0	8.7	37	Repsold*
24.0	8.7	39	Galvani*
25.0	8.3	42	Harding*
26.0	7.5	45	Gerard*
27.0	6.5	50	Lavoisier*
28.0	5.2	58	Rontgen*
29.0	3.9	72	Einstein*
30.0	2.7	99	Schluter*

LUNAR LIBRATIONS - November 2006

Geocentric:  The markers show 0:00H UT



Program by Bob Roberts.

Observer at: Lat. 51.00N, Long. 1.00W

* indicates that the feature is not illuminated.

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2006 NOV.	Age d	Phase	Earth's		Sun's		R.A. h m	Dec. °	Rises		Sets		Transit		Alt °
			Selenographic Longø	Selenographic Latø	Selenographic Colongø	Selenographic Latø			h	m	h	m	h	m	
1.0	9.8	0.731	-4.1	2.1	31.7	-1.07	22 33	-10.9	14 59	00 58	20 33	32			
2.0	10.8	0.828	-2.8	0.5	43.9	-1.09	23 25	-4.2	15 11	02 27	21 23	40			
3.0	11.8	0.908	-1.3	-1.3	56.0	-1.12	00 17	2.9	15 23	03 56	22 14	47			
4.0	12.8	0.965	0.4	-2.9	68.2	-1.14	01 10	9.9	15 37	05 28	23 07	54			
5.0	13.8	0.995	2.1	-4.4	80.3	-1.17	02 06	16.3	15 55	07 02			
6.0	14.8	0.996	3.8	-5.5	92.5	-1.20	03 04	21.7	16 20	08 37	00 04	59			
7.0	15.8	0.969	5.3	-6.3	104.6	-1.22	04 06	25.7	16 57	10 07	01 01	63			
8.0	16.8	0.917	6.3	-6.6	116.8	-1.24	05 08	28.0	17 49	11 23	02 05	66			
9.0	17.8	0.847	7.0	-6.6	128.9	-1.27	06 11	28.5	18 56	12 18	03 06	66			
10.0	18.8	0.763	7.2	-6.2	141.0	-1.28	07 11	27.2	20 13	12 56	04 03	64			
11.0	19.8	0.670	7.0	-5.4	153.2	-1.30	08 07	24.5	21 32	13 21	04 56	61			
12.0	20.8	0.573	6.3	-4.5	165.4	-1.32	08 58	20.8	22 48	13 39	05 45	57			
13.0	21.8	0.476	5.3	-3.3	177.5	-1.33	09 46	16.2	13 52	06 29	52			
14.0	22.8	0.382	4.0	-2.1	189.7	-1.34	10 31	11.1	00 02	14 02	07 10	47			
15.0	23.8	0.293	2.7	-0.7	201.9	-1.36	11 14	5.6	01 13	14 11	07 50	41			
16.0	24.8	0.211	1.2	0.7	214.1	-1.37	11 55	0.0	02 23	14 20	08 28	36			
17.0	25.8	0.140	-0.2	2.0	226.3	-1.38	12 37	-5.6	03 33	14 30	09 07	30			
18.0	26.8	0.081	-1.5	3.3	238.4	-1.38	13 20	-11.1	04 45	14 40	09 48	24			
19.0	27.8	0.037	-2.6	4.4	250.6	-1.39	14 05	-16.2	05 59	14 54	10 32	19			
20.0	28.8	0.010	-3.6	5.3	262.8	-1.40	14 53	-20.8	07 17	15 13	11 19	15			
21.0	0.1	0.002	-4.3	6.0	275.0	-1.41	15 44	-24.5	08 35	15 39	12 10	12			
22.0	1.1	0.014	-4.7	6.5	287.2	-1.41	16 39	-27.1	09 48	16 18	13 04	10			
23.0	2.1	0.046	-5.0	6.6	299.4	-1.42	17 37	-28.4	10 51	17 14	14 01	9			
24.0	3.1	0.099	-5.1	6.3	311.6	-1.42	18 36	-28.1	11 38	18 25	14 59	10			
25.0	4.1	0.171	-5.0	5.8	323.8	-1.43	19 35	-26.1	12 11	19 48	15 55	13			
26.0	5.1	0.260	-4.7	4.9	336.0	-1.43	20 32	-22.7	12 35	21 15	16 48	18			
27.0	6.1	0.361	-4.2	3.7	348.2	-1.44	21 27	-18.0	12 52	22 41	17 39	24			
28.0	7.1	0.471	-3.6	2.3	0.3	-1.45	22 19	-12.4	13 05	18 27	30			
29.0	8.1	0.584	-2.8	0.7	12.5	-1.46	23 10	-6.0	13 17	00 07	19 15	37			
30.0	9.1	0.694	-1.9	-0.9	24.7	-1.47	00 00	0.8	13 29	01 33	20 04	44			
s															
DEC.															
1.0	10.1	0.795	-0.7	-2.5	36.8	-1.48	00 51	7.5	13 42	03 00	20 54	51			
2.0	11.1	0.880	0.6	-4.0	48.9	-1.49	01 44	14.0	13 57	04 30	21 48	57			
3.0	12.1	0.945	1.9	-5.1	61.1	-1.50	02 40	19.7	14 18	06 03	22 45	62			
4.0	13.1	0.985	3.3	-6.0	73.2	-1.51	03 39	24.2	14 49	07 34	23 45	65			
5.0	14.1	0.998	4.4	-6.5	85.3	-1.52	04 41	27.2	15 33	08 57			
6.0	15.1	0.986	5.4	-6.5	97.5	-1.53	05 44	28.4	16 34	10 03	00 45	66			
7.0	16.1	0.950	5.9	-6.2	109.6	-1.54	06 46	27.8	17 49	10 50	01 47	65			
8.0	17.1	0.894	6.1	-5.5	121.7	-1.54	07 45	25.6	19 09	11 21	02 44	63			
9.0	18.1	0.823	5.8	-4.6	133.9	-1.55	08 39	22.1	20 29	11 42	03 36	59			
10.0	19.1	0.741	5.2	-3.5	146.0	-1.55	09 29	17.7	21 45	11 57	04 22	54			
11.0	20.1	0.652	4.2	-2.2	158.1	-1.55	10 16	12.6	22 57	12 09	05 05	49			
12.0	21.1	0.558	3.0	-0.9	170.3	-1.55	10 59	7.2	12 18	05 46	43			

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Items for the November 2006 circular should reach the Editor by the 10th October 2006