

THE BRITISH ASTRONOMICAL ASSOCIATION



LUNAR SECTION CIRCULAR

Director Alan Wells
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Lunation 1026

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TOPOGRAPHICAL SUB-SECTION

COLIN EBDON

A Happy New Year to everyone and I look forward to making the acquaintance of more of the membership in the coming months; whether by e-mail or letter, your observations, drawings, photos, feedback, historical papers, or comments on the lunar topography/geology will be assured of a warm reception at this end. The more I receive, the more I can filter back to the membership as a whole in these pages and those of 'The New Moon'. My thanks to all who sent me material in 2005 and helped to keep the flag flying for lunar observing. It was particularly encouraging to have new members, such as Paul Brierley sending in photos and even having a go at drawing the Moon, a method of

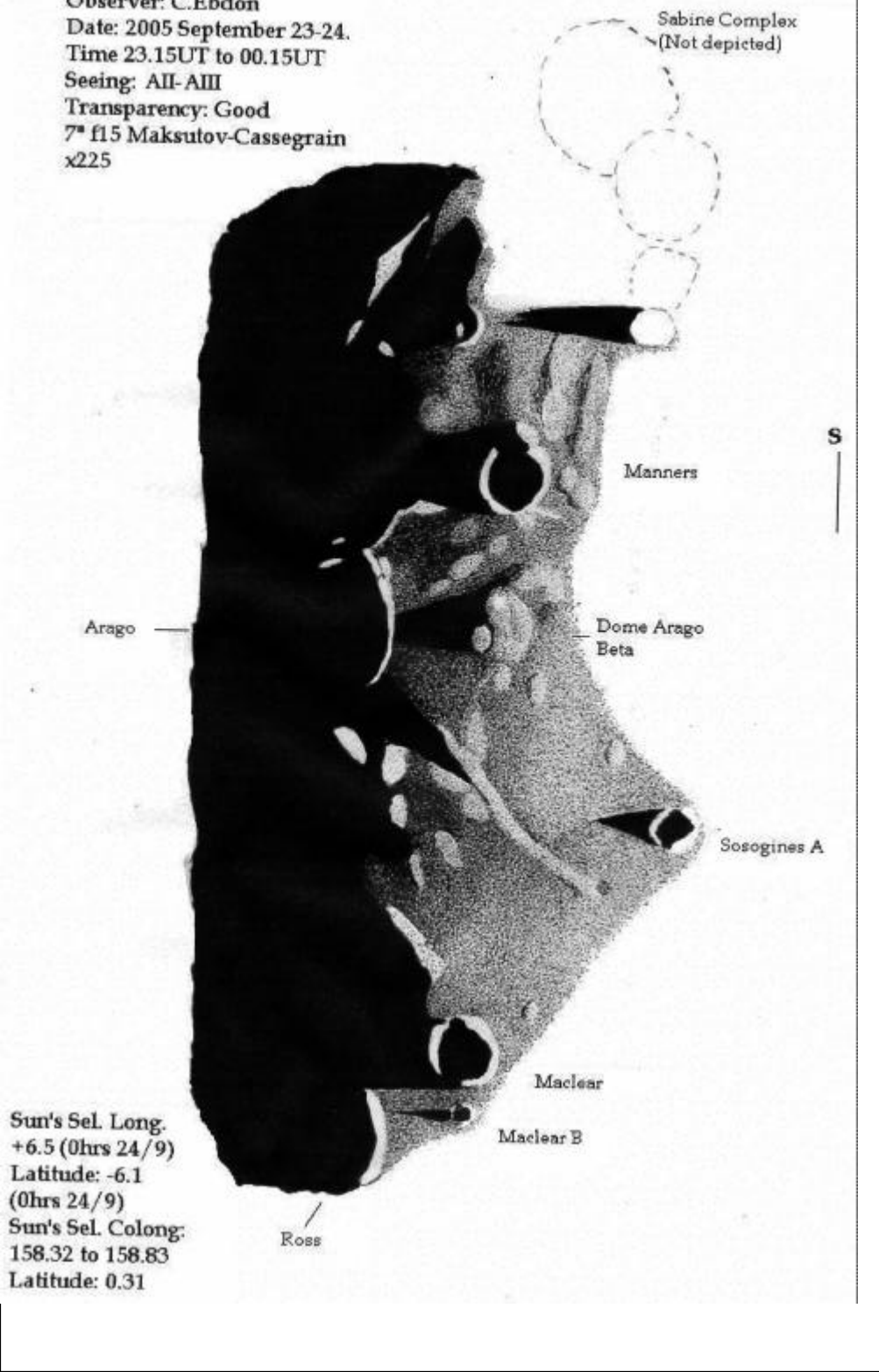


recording features which may seem rather laborious a first, but which will hone one's observing skills as no other approach can. The more you look, the more you will see.

In November last, I received another fine batch of TOUCAM images from Ed Crandall in America and have included here a copy of his fine image of Gassendi. Details as follows: 2005, November 13. 01.52UT. 110mm f6.5 APO Refractor and ToUcam with 3x TV Barlow and 2" extension tube. Although this will be a very familiar lunar feature to most readers, Ed's image also reveals much of interest in the outlying regions. In particular, the image also depicts the Rupes Liebig and Rima Mersenius very well. I have also noted what appear to be three small domes just East of Rima Billy, which are unfamiliar to me (albeit that I am no expert on the mapping of these features) and certainly do not show up on Rukl's atlas. Anyone care to try and observe these, or perhaps even check through the latest catalogues available on the web?

2005 will not be remembered as one of the finest series of lunations in history as most were clouded out for the large part. However, many of us had a memorable run of fine skies from 13 to 20 November or thereabouts which also afforded fine views of Mars. I was so busy observing that I still have not finished off many of the drawings at the time of writing, but have included an earlier drawing of the **Arago** region here, along with my notes on same.

ARAGO & ENVIRONS
Observer: C.Ebdon
Date: 2005 September 23-24.
Time 23.15UT to 00.15UT
Seeing: AII-AIII
Transparency: Good
7" f15 Maksutov-Cassegrain
x225



**Note to drawing of Arago and Environs. Colin Ebdon
2005 September 23-24**

The scene appeared quite complex with many undulations visible on the Mare surface, and several domes visible. No attempt was made to depict the Sosigenes rille system in whole or in part.

The well known dome Arago Beta was well displayed and showed considerable structure. There must be some doubt as to whether this constitutes a lunar dome in the classical sense, as its general appearance, as previously noted by Harold Hill, is more akin to the complex formation Rumker. Under these extreme lighting conditions, the westernmost portion of the dome seemed to be detached and isolated from the rest of the structure. The ground immediately adjoining the dome to the South appeared to dip down, being partly in shadow and then to rise again, curving clockwise to a brighter region. Two further domes were noted immediately to the North of Arago Beta, not obviously depicted in Rukl's Atlas. There must be some doubt about the small third dome depicted closer to Sosogines A, as in the Atlas, this seems to be in the spot occupied by the tiny craterlet Sosogines C, with which it may have been confused under the less than adequate seeing conditions

North of Arago, there were several bright spots on the terminator which were indeterminate, but seem to mark a position close to the edge of (or possibly the edge of) the second large dome in this area, Arago Alpha, itself engulfed in shadow at this stage.

Two domes were also seen immediately to the East of Manners; again, neither of these seems to be depicted in Rukl. There was also another dome on the terminator to the SSW of Manners, which is hinted at in Rukl, although covered by the name of the crater in the Atlas.

The small dome to the SE of Maclear is shown in Rukl.

Occultation subsection news

Andrew Elliott

Total occultation predictions for January and February, and a graze map and predictions for January to June, are included below. I apologise for their absence from last month's LSC.

The graze tracks this year are remarkable for their lack of passage over populated areas, or occurrence under difficult circumstances! I was going to say make a note in your diaries for the early hours of October 10th when three grazes of bright Pleiades stars will occur. However, these occur only in the extreme north west of Scotland and south west of England. They will be included in the July Circular.

Of this month's three grazes, the first passes over the extreme north of Scotland, and the second over Central Ireland, and the third passes over central Ireland and the western boundaries of Somerset and Dorset. As always, let me know if you would like detailed local circumstance predictions for any particular graze.

Let's hope for a better observing year in 2006!

**Predictions for 52°27'41.4"N 1°44'44.0"W Birmingham
January/February 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
3/17	22	17/D	PPM 240189	65	8.4	A3	18+	49-11	20	207	52S	110	130	-2.0-1.7			222326.8-141101	
3/18	31	46/D	FK5EXT 3791	68	5.9	G5	18+	50	14	223	38N	19	39	-.1	.6	222445.5-133006		
4/16	22	39/D	PPM 207323	35	7.7	MA	27+	63 -2	30	179	84N	62	83	-1.2	.6	231507.8 -74019		
4/17	58	44/D	PPM 207370	38	6.7	F0	28+	63	27	206	60N	38	60	-.7	.5	231717.3 -70747		
4/18	24	25/D	PPM 207393	45	8.5	F5	28+	63	25	212	56S	101	123	-1.7-1.5		231821.9 -71628		
5/19	21	05/D	PPM 143195	15	8.5	F5	39+	77	31	218	38N	14	36	-.4	1.4	942.7	617	
6/19	20	15/DC	PPM 144137	18	6.0	M1	50+	90	41	206	76S	81	102	-1.5	-.4	10008.3	63058	
ABOVE STAR IS A VARIABLE STAR -- MINIMUM MAGNITUDE = 6.1.																		
9/01	05	00/D	PPM 118599	26	6.6	F8	73+	117	21	274	84N	69	85	-.3-1.0		25103.5	191115	
10/03	04	20/DK	PPM 92918	47	5.5	B8	82+	130	15	290	76S	95	107	.2-1.6		34842.9	232632	
10/03	49	50/D	PPM 92951	55	6.1	B8	83+	131	9	298	46N	37	49	-.2	-.2	35005.7	234358	
11/19	54	57/DM	PPM 94373	75	7.8	F8	94+	151	55	122	81N	86	89	-1.2	1.2	52725.3	273703	
11/22	25	33/DX	PPM 94443	75	7.4	F8	94+	152	65	186	78N	84	87	-1.6	.1	53146.7	274633	

12/01	03	27/DV	PPM	94540	76	6.5	K0	94+	153	51	247	73S	114	117	-0.9-2.1	53619.5	274007	
12/19	23	54/D	PPM	95863	95	7.5	K2	98+	162	43	100	46N	64	62	-0.5 2.2	62312.0	275908	
13/01	10	12/DX	PPM	96140	95	7.5	K5	98+	164	57	234	68N	89	86	-1.3-1.0	63326.2	274921	
13/18	43	49/DV	PPM	97300	95	6.4	G5	100+	172	29	82	63N	108	101	-0.4 1.2	71727.4	264046	
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																		
17/02	54	27/R	PPM	126978	95	7.6	G5	94-	151	52	194	81S	276	257	-1.7 -.6	95832.6	151130	
18/02	25	39/R	PPM	127634	85	7.3	K5	88-	140	47	167	63N	317	296	-1.1-1.2	104236.8	101922	
20/01	52	48/R	PPM	178689	85	7.8	K0	74-	118	29	138	28N	356	334	-0.1-2.1	120730.5	-3953	
21/00	57	21/RC	PPM	195845	76	6.3	F8	65-	107	13	119	83S	286	265	-0.6 1.1	124752.5	-62009	
21/02	18	28/R	PPM	195874	95	7.5	A0	65-	107	22	137	23S	226	205	*****	125001.8	-65450	
24/04	21	12/R	FK5EXT	3206	96	5.7	K2	34-	72	7	141	8N	6	352	1.2-2.3	151643.5	-222521	
FEBRUARY																		
1/17	08	54/D	FK5	1623	68	5.6	K0	14+	44	-3	29	215	68N	45	67	-0.6 .2	234814.4	-24347
1/18	12	38/R	FK5	1623	65	5.6	K0	14+	44	23	231	-86S	244	266	-0.6 -.4	234814.4	-24347	
1/18	52	38/D	PPM	208036	75	8.5	K0	14+	44	18	240	50S	107	130	-0.7-1.6	235127.7	-22919	
2/17	55	19/D	PPM	143762	25	8.2	G5	23+	58	-9	36	218	66N	42	64	-0.7 .4	4108.0	43039
2/18	51	53/D	PPM	143791	25	8.8	G5	23+	58	31	233	64N	40	62	-0.6 .3	4237.7	44643	
2/20	26	32/D	PPM	143847	25	8.0	A5	24+	59	18	254	62N	38	60	-0.4 .1	4522.6	51251	
2/21	56	06/D	FK5	1019	37	5.8	G5	25+	59	6	272	48S	109	131	0.0-2.0	4841.4	51840	
3/17	31	39/D	PPM	117419	16	7.6	G5	34+	71	-6	47	197	84N	62	82	-0.9 .3	13201.5	105515
3/17	32	52/D	PPM	117422	16	8.7	K5	34+	71	-6	47	198	74S	84	104	-1.0 -.1	13210.7	104938
4/17	26	50/DJ	PPM	118163	27	6.8	A0	44+	83	-5	54	178	21N	1	19	-0.1 4.6	22253.0	165357
4/20	30	21/DM	PPM	118253	15	8.4	F5	45+	85	41	241	79N	60	78	-0.8 -.2	22842.8	172341	
4/22	01	10/D	FK5	1069	18	6.4	G5	46+	85	29	262	61N	42	60	-0.6 .0	23114.4	174356	
5/22	05	08/D	PPM	92475	17	6.9	A0	57+	98	39	255	45S	122	135	-0.5-2.1	32455.8	220350	
6/22	39	12/D	PPM	93432	25	7.7	B9	67+	110	44	254	49N	41	50	-0.9 .4	42053.1	255041	
6/23	31	41/DY	PPM	93459	19	5.4	B9	67+	110	37	265	70S	102	111	-0.4-1.4	42257.6	253847	
6/23	31	49/DB	PPM	93460	15	7.8	F8S	67+	110	37	265	71S	101	110	-0.4-1.4	42258.2	253906	
7/00	44	55/D	PPM	93502	15	7.7	F5	68+	111	26	279	84S	88	97	-0.2-1.3	42533.6	254557	
7/18	33	35/DC	PPM	94132	27	6.9	F5	75+	120	60	136	61N	59	64	-0.8 1.4	51027.6	273400	
8/23	55	58/D	PPM	95680	55	8.0	A0	85+	134	51	249	53N	59	58	-1.0 -.1	61627.4	281209	
9/00	52	17/D	PPM	95731	45	7.4	A0	85+	134	43	262	84N	91	89	-0.6-1.1	61824.1	280024	
9/17	57	46/DK	SAO	78968	75	7.2	K2	90+	142	-8	41	97	42S	150	145	-0.9 -.8	70122.2	270901
10/00	03	13/D	FK5EXT	2553	78	5.6	A2	91+	145	55	234	48S	146	139	-0.4-2.1	71147.1	265053	
10/02	50	46/DV	PPM	97300	66	6.4	G5	91+	146	32	273	82N	97	90	-0.3-1.4	71727.5	264047	
10/21	51	05/DC	PPM	98236	87	6.2	A0	95+	155	61	154	52N	74	63	-1.1 .8	80207.3	250425	
14/20	51	37/RC	FK5	418	98	4.7	F0	97-	161	18	101	81S	278	257	-0.4 1.1	110521.2	71805	
16/01	48	14/R	PPM	158301	86	6.4	A5	93-	149	38	171	77S	279	258	-1.0 .0	115410.1	3059	
18/00	18	38/R	PPM	227071	85	7.2	F0	81-	127	15	130	59S	262	242	-0.8 1.3	131747.3	-103450	
19/01	57	54/R	PPM	228262	86	6.4	A2	72-	116	15	146	49S	250	232	-1.2 1.3	140534.5	-162201	
19/02	46	41/R	PPM	228318	95	7.1	B9	71-	115	19	157	29N	352	334	0.0-1.0	140734.3	-161317	
20/04	15	12/RF	FK5	1391	67	6.0	K5	62-	103	15	168	82N	296	281	-0.8 .0	145749.8	-212641	

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.

Grazing Occultations, UK and Ireland, January-June 2006, Magnitude <= 7.0

[See accompanying graze track map in this LSC](#)

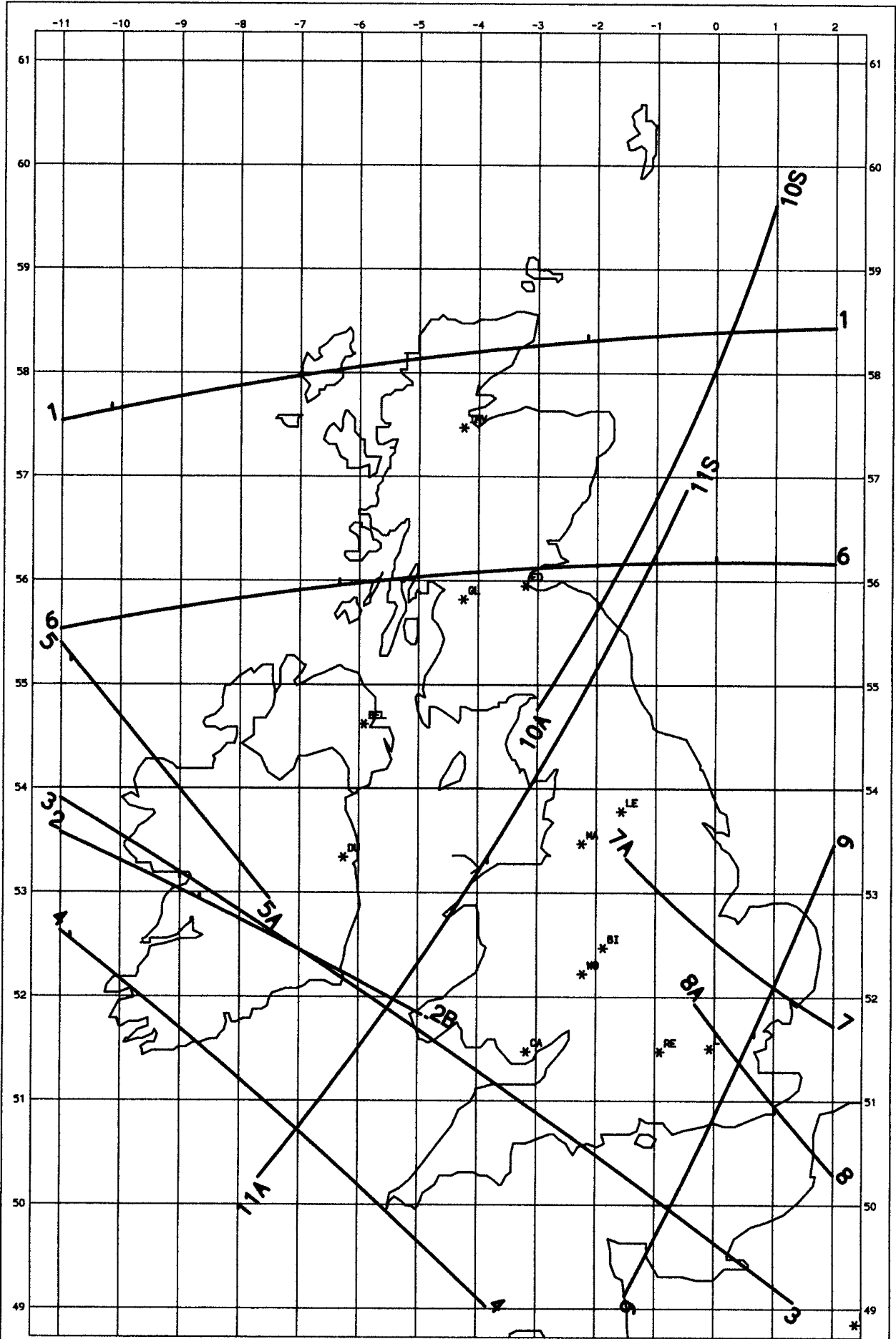
TRACK NO.	DATE (2005)	USNO REF:	SAO/PPM REF:	D	MAG	%SUN- LIT	L	W.U.T. HH	CUSP MM	T	STAR NAME	MAG1	MAG2	1
JAN 9	ZC 524	76043	6.7		81+	S	22	19.0	7.4	D	B			
2	JAN 10	X 4855	76156	H	6.9		81+	S	2	18.3	0.3	T	C	8.5 9.1
3	JAN 10	X 4897	76189		7.0		82+	N	3	9.1	0.7	T	C	V537 Tau
4	FEB 19	ZC 2018	158331		6.6		71-	S	1	30.6	12.6	D	C	214 G. Vir
5	MAR 7	ZC 773	76998	C	7.0		52+	N	2	40.1	4.7	D	C	7.1 8.7
6	MAR 7	ZC 885	77625	Y	5.6		60+	S	18	42.6	2.7	D	A	406 B. Tau
7	MAR 23	ZC 2701	187024		6.4		45-	S	5	23.1	2.0	D	C	80 G. Sgr
8	APR 19	ZC 2636	186531		6.8		71-	S	2	55.3	0.7	T	C	
9	JUN 19	ZC 35	109119		6.2		43-	N	2	54.1	10.7	D	A	98 B. Psc
10	JUN 23	X 4897	76189		7.0		7-	N	2	13.1	11.4	D	C	V537 Tau
11	JUN 23	ZC 559	76225	U	6.5		7-	N	2	47.5	12.4	D	C	26 Tau

'D' column after PPM indicates double star code. 'W.U.T.' = Start UT of west end of track

Letter in column after "CUSP ANGLE": - Column 'T' = Telescope size required: -
 'B' = Bright Limb 'A' = 4"
 'D' = Dark Limb 'B' = 6"
 'T' = Near Terminator 'C' = >6"

Predictions courtesy of the International Occultation Timing Association – European Section (IOTA/ES) – “OCCMOON” and “GRAZEREG” programs.

GRAZING OCCULTATIONS UK/IRELAND JANUARY-JUNE 2006
SEE ACCOMPANYING LIST IN THIS LSC (JAN 2006) FOR DETAILS



I would like to wish readers all the best for 2006. Observations for November have been received from: Jay Albert (Lakeworth, FL, USA), Michael Amato (West Haven, CT, USA), Clive Brook (Plymouth, UK), Marie Cook (Mundesley, UK), Tony Cook (Long Eaton, UK), Robin Gray (Winnemucca, NV, USA), Antonio Marino (Naples, Italy), Gerald North (Narborough, UK), Brendan Shaw (UK), and Glen Ward (Bridgeport, WV, USA). A provisional 910 min of coverage for November has been reported so far. Note that observing time quoted here, and in past articles, are provisional because often additional observations come to light after publication.

On 2005 Nov 13 at UT 04:50-04:57, Glen Ward (Bridgeport, WV, USA) was observing with a 4" refractor (2 element) and noticed that an area near Mersenius was looking quite blurred, *"as if in a greenish cloud (not pure green, but the colour of dead grass) and was shaped like an oval cloud"*. By 04:57 the effect had gone and the area concerned looked just like a peak and quite clear. He found a reference on an internet map that suggested that it might be an area to the SW of Mersenius C. To check for optical effects, two eyepieces were used and the telescope wiggled, but despite this the unusual area stayed co-registered to the Moon. No other parts of the Moon exhibited this effect. He comments that he was not sure when the effect had started but had been looking at the Moon previously for half an hour with a 90 mm Maksutov, but did not notice anything unusual, although he may not have been looking at the area closely before. Glen is an experienced observer with 10 years of lunar observing behind him and has not reported anything like this before. Fig 1 shows the location of the suspected area. Approximately 7 hours earlier I obtained some CCD video of this region, but the terminator was 3.5 deg further east at the time and nothing unusual was seen then. So the big question is was anybody else observing at this time and in particular do they have any images?

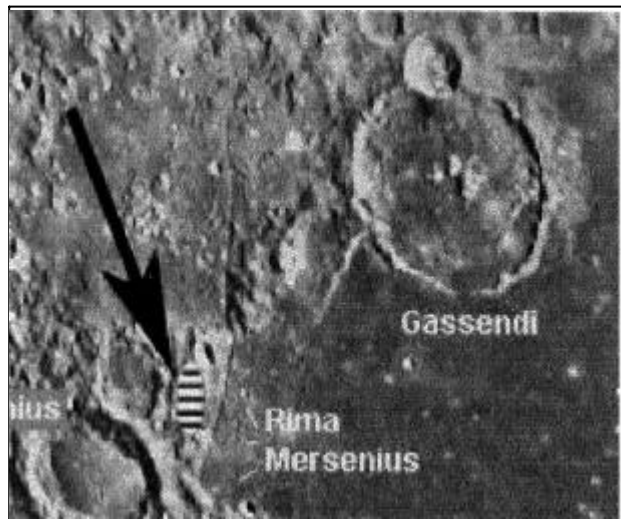


Fig 1 - Location of Glen Ward's suspect area - extent illustrated by the hatched lines.

On 2005 Nov 17th the illumination and libration conditions for the famous 1983 Jan 29th TLP re-occurred. I was able to observe from the UK, but like about three previous attempts there was no repeat of that famous TLP was seen. Once again this hints strongly that the original event was endogenic and a one-off event and possible theories concerning internal refraction from glass beads, or specular reflection of volcanic glass surfaces, are now unlikely.

Another repeat illumination and libration event predicted for November was on 2005 Nov 20 and concerned Patrick Moore's report for Messier A from 1951 Oct 20 as listed in the 1978 NASA LTP catalog. In the catalog it states that *"Messier A 1951 Oct 20 UT 00:00? - a brilliant white circular patch in it. Has seen it and Messier blurred several times. NASA catalog ID #545. NASA catalog weight=4"*. Unfortunately both myself and Marie Cook attempted to observe this but found that the crater was invisible, being on the night side of the terminator! This would infer that the date in the catalog may be wrong. For now this event has been removed from our active list of past TLP reports until this issue is resolved.

I would like to show an interesting image of Proclus obtained by Brendan Shaw on 2005 Nov this corresponded to the same illumination as Bartlett's 1976 Jun 10th TLP report. Many astronomers criticize Bartlett

for the sheer frequency of his TLP reports. However I have been finding out that, on the whole he was accurate in what he reported, and if any criticism is due it is that his interpretation of what was unusual was flawed. In the instance of his 1976 Jun 10th Proclus TLP the NASA catalog states: "*Proclus 1976 Jun 10 UTC 02:07 Observed by Bartlett (Baltimore, MD, USA, 4.5" reflector 40-225x, S=4-3, T=3 hazy) "C.p. invis. (=2 deg?), floor=2deg. Still invis. on 11th. (c.p. normally 5 deg)" NASA catalog weight=4, NASA catalog ID #1434*". Well it is clear from Brendan's image that indeed at this stage in the illumination, any central peak (or rather spot as there is no physical peak) is not very bright. I suspect that as Proclus is over towards the limb that libration and topographic shielding may have an effect on the visibility of features on the floor and could account for Bartlett seeing his "C.p." on some occasions and not on others. This theory can be proven if we observe close to the same libration when Bartlett did claim to see this feature on other occasions.

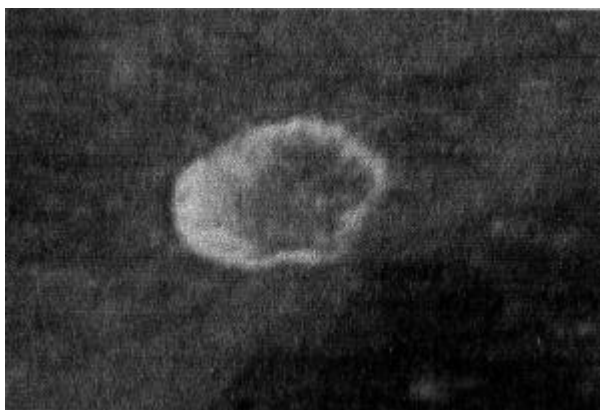


Fig 2 Proclus by Brendan Shaw 2005 Nov 14 UT 00:04 (Registax used). North is to the bottom left and west is on the bottom right. Note the ray bisecting the S rim - this is visible on Clementine images of the Moon!

Finally, there are plenty of repeat illumination/libration events for January, note that the illumination/libration for the famous 1983 Jan Torricelli B event occurs yet again (to within +/-1 deg of the original event)! The only reason I am including it this time is for the original observers who might like to remind themselves and see it under the normal appearance. Furthermore it is at a more social hour than previous attempts!

- Event: Messier (Klein, 1878 Nov 2) can be seen on/from (UTC): 2006 Jan 07 (16:05-16:14) – [Take detailed drawings or images]
- Event: Proclus (Bartlett, 1958 Sep 24) can be seen on/from (UTC): 2006 Jan 10 (16:09-17:20) – [Take detailed drawings or images]
- Event: Ross D area (Cross, 1964 Apr 23) can be seen on/from (UTC): 2006 Jan 10 (18:43-21:44) – [Any sign of obscuration in and around this area?]
- Event: Gassendi (Robinson, 1976 Oct 04) can be seen on/from (UTC): 2006 Jan 11 (03:22-05:29) – [Look for colour and/or obscuration]
- Event: Aristarchus (Prout, 1976 Sep 06) can be seen on/from (UTC): 2006 Jan 11 (17:59-21:45) – [Look for colour on the W and NW. Also do you think that the crater is dull?]
- Event: Proclus (Bartlett, 1976 Sep 06) can be seen on/from (UTC): 2006 Jan 11 (18:24-22:10) – [Can you see any detail on the crater floor?]
- Event: Madler (Haas, 1940 Aug 17) can be seen on/from (UTC): 2006 Jan 13 (16:14-17:34) – [How bright is the bright spot on the S. rim?]
- Event: Plato (Unkown observer, 1916 Oct 10) can be seen on/from (UTC): 2006 Jan 13 (17:53-21:49) – [Look for colour]
- Event: Aristarchus/Cobra Head (Taylor, 1969 Dec 23) can be seen on/from (UTC): 2006 Jan 13 (21:09-00:21) – [Look for colour]
- Event: Aristarchus, Censorinus and Proclus (Brook, 2002 Mar 29) can be seen on/from (UTC): 2006 Jan 14/15 (20:57-03:10) – [Compare the brightness of these craters over this observing period]
- Event: Torricelli B (Foley, 1983 Jan 30) can be seen on/from (UTC): 2006 Jan 15 (18:05-19:49) – [Monitor brightness and colour and obtain high resolution images and sketches]
- Event: Area close to 70E, 23N (Dawe, 1972 Oct 23) can be seen on/from (UTC): 2006 Jan 16 (02:19-06:15) – [Look for colour]
- Event: Aristarchus (Bartlett, 1955 Oct 4) can be seen on/from (UTC): 2006 Jan 17 (08:04-08:15) – [Look for colour]

Further predictions, including the more numerous illumination only events can be found on the following web site: <http://www.cs.nott.ac.uk/~acc/Lunar/tlp.htm> 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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OBITUARY

By now you will all have heard of the death of Harold Hill. Harold was one of the greats of Lunar Observation, we all admired him for his fantastic skill and dedication to the study of all things lunar. Like many of you I found him an inspiration, and the contribution he made to the Section was immeasurable. He remained in touch with the Section and received the LSC to enable him to see what we were doing in his favourite field of study. I shall greatly miss the privilege of sending him the LSC and the "New Moon"

Alan Wells

It is difficult to know of a suitable way of remembering and honouring a great man such as Harold Hill. He was, first and foremost, a practical observer with pencil and paper, so perhaps the most fitting way we can do justice to his memory is to try and carry on in his great tradition. It might be that someone out there has some of the skills possessed in abundance by Harold. You never know until you try, so perhaps this is the time to put eye to eyepiece and just see what develops. I like to think that Harold would rest content if another in the same mould as himself were to arise. This, I think, would be a good way of remembering him.

J.F.P.

*The Director tell me that they now have a much improved photocopying machine installed, and that we can now feel free to have ten pages in the LSC anytime we like. My first thought was **great**, but then reality kicked in and brought me back down to earth. Two extra pages means more material to fill them, but more material is what I have not got. (?) As it so happens, this month the content/length of the co-ordinators' articles meant that I needed nine pages, but I had nothing to fill a tenth page. Hence, these small pieces that would normally be fitted in elsewhere are being given a prime spot. So come on everyone, I, and I am sure there are many others, who would like to see new names, new ideas, new styles appearing in these pages. You may think that whatever you do won't matter, that it will all go into a large black hole. Not so, remember that this LSC goes to many places. The Royal Astronomical Society has requested, and receives, a copy every month. We can't get much more exalted than that. So I ask again, have a go, it is not quite as difficult as you think it might be.*

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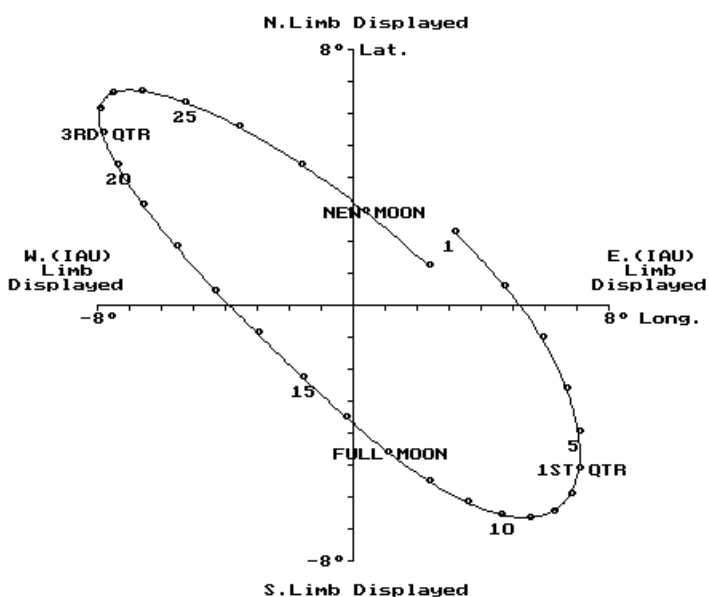
E-mail nick.atkinson@hmce.qsi.gov.uk

LIBRATION February 2006

Date	Libration amount \emptyset	PA \emptyset	Feature presented
1.0	3.8	318	Zeno
2.0	4.1	286	Goddard
3.0	5.1	264	Hirayama
4.0	6.2	250	Schorr
5.0	7.2	241	Barnard
6.0	7.9	234	Abel
7.0	8.3	228	Gum
8.0	8.3	224	Oken
9.0	8.1	219	Lyot
10.0	7.5	215	Brisbane
11.0	6.7	211	Hanno
12.0	5.6	205	Gill
13.0	4.3	197	Neumayer
14.0	3.0	181	Malapert
15.0	2.1	146	Pingre
16.0	2.5	99	Schluter
17.0	3.9	75	Vasco da Gama
18.0	5.5	64	Bartels
19.0	7.0	58	Rontgen
20.0	8.3	54	Ulugh Beigh
21.0	9.3	50	Lavoisier
22.0	9.9	47	Bunsen
23.0	10.0	44	Gerard
24.0	9.6	41	Galvani
25.0	8.6	36	Repsold
26.0	7.1	30	Oenopides*
27.0	5.3	20	Desargues*
28.0	3.5	359	Main*

LUNAR LIBRATIONS - February 2006

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



Program by Bob Roberts.

Observer at: Lat. 51.0 \emptyset N, Long. 1.0 \emptyset W

* indicates that the feature is not illuminated.

CLLOUDWATCH

Andrew Bytnar

Tabulated data for November 2005

<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)	15 (50%)	0 (0%)	10 (33%)	0 (0%)	5 (17%)
A.Bytnar (Mansfield)	14 (47%)	3 (17%)	10 (33%)	3 (17%)	-----
M.Cook (Cromer)	9 (30%)	7½ (25%)	12 (40%)	1½ (5%)	-----
K.Hall (Warrington)	7½ (25%)	11½ (38%)	11 (37%)	0 (0%)	-----
A.Heath (Nottingham)	12 (40%)	6 (20%)	11 (37%)	1 (3%)	-----
J.Wrigley (Reading)	9½ (32%)	10 (33%)	10½ (35%)	0 (0%)	-----

2006 FEB.	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	2.4	0.086	3.2	2.3	301.0	-1.23	23	11	-7.1	09	10	21	03	14	57	35
2.0	3.4	0.164	4.7	0.6	313.2	-1.22	00	03	-0.1	09	21	22	31	15	46	42
3.0	4.4	0.260	5.9	-1.1	325.3	-1.20	00	54	6.7	09	33	23	52	16	34	49
4.0	5.4	0.364	6.7	-2.6	337.5	-1.19	01	45	13.1	09	47	..	..	17	23	55
5.0	6.4	0.472	7.1	-4.0	349.7	-1.18	02	37	18.6	10	03	01	23	18	14	60
6.0	7.4	0.578	7.1	-5.1	1.8	-1.17	03	30	23.1	10	25	02	46	19	06	63
7.0	8.4	0.677	6.8	-6.0	14.0	-1.16	04	25	26.3	10	56	04	05	20	00	65
8.0	9.4	0.767	6.3	-6.5	26.2	-1.15	05	21	28.1	11	40	05	14	20	54	66
9.0	10.4	0.845	5.5	-6.7	38.3	-1.14	06	17	28.5	12	37	06	09	21	47	65
10.0	11.4	0.908	4.6	-6.6	50.4	-1.13	07	12	27.5	13	45	06	48	22	38	63
11.0	12.4	0.955	3.6	-6.2	62.6	-1.11	08	05	25.2	14	58	07	16	23	26	59
12.0	13.4	0.986	2.4	-5.5	74.7	-1.09	08	55	21.8	16	13	07	35	..	..	..
13.0	14.4	0.999	1.1	-4.6	86.9	-1.07	09	42	17.5	17	27	07	49	00	10	55
14.0	15.4	0.994	-0.3	-3.5	99.0	-1.05	10	27	12.6	18	38	08	01	00	51	50
15.0	16.4	0.971	-1.7	-2.3	111.1	-1.03	11	10	7.2	19	49	08	10	01	32	44
16.0	17.4	0.932	-3.0	-0.9	123.3	-1.00	11	52	1.6	20	59	08	19	02	11	39
17.0	18.4	0.877	-4.4	0.5	135.4	-0.97	12	34	-4.1	22	11	08	28	02	50	33
18.0	19.4	0.808	-5.6	1.9	147.6	-0.95	13	16	-9.7	23	26	08	38	03	30	27
19.0	20.4	0.726	-6.6	3.2	159.7	-0.92	14	01	-15.0	00	43	08	50	04	13	22
20.0	21.4	0.633	-7.4	4.4	171.9	-0.89	14	49	-19.9	00	44	09	06	04	59	17
21.0	22.4	0.533	-7.9	5.4	184.0	-0.86	15	41	-24.0	02	05	09	28	05	50	13
22.0	23.4	0.428	-8.0	6.2	196.2	-0.83	16	38	-26.9	03	25	10	03	06	46	10
23.0	24.4	0.323	-7.6	6.6	208.4	-0.80	17	38	-28.5	04	37	10	55	07	46	9
24.0	25.4	0.223	-6.7	6.7	220.6	-0.77	18	42	-28.3	05	34	12	09	08	49	10
25.0	26.4	0.134	-5.4	6.4	232.8	-0.75	19	46	-26.2	06	14	13	39	09	51	13
26.0	27.4	0.063	-3.7	5.6	245.0	-0.72	20	49	-22.3	06	40	15	16	10	51	17
27.0	28.4	0.017	-1.7	4.4	257.2	-0.69	21	49	-16.9	06	59	16	53	11	48	24
28.0	29.4	0.000	0.4	2.9	269.4	-0.66	22	46	-10.3	07	14	18	28	12	41	31
2006	Mar															
1.0	1.0	0.015	2.4	1.2	281.6	-0.64	23	40	-3.2	07	27	20	00	13	33	38
2.0	2.0	0.058	4.1	-0.5	293.8	-0.61	00	33	4.0	07	39	21	30	14	23	46
3.0	3.0	0.126	5.6	-2.2	306.0	-0.59	01	25	10.9	07	52	22	59	15	14	52
4.0	4.0	0.213	6.6	-3.8	318.2	-0.57	02	19	16.9	08	07	..	..	16	05	58
5.0	5.0	0.310	7.2	-5.0	330.4	-0.54	03	13	22.0	08	27	00	28	16	59	62
6.0	6.0	0.414	7.4	-5.9	342.6	-0.52	04	09	25.7	08	55	01	52	17	54	65
7.0	7.0	0.517	7.2	-6.5	354.7	-0.50	05	06	27.9	09	35	03	06	18	49	66
8.0	8.0	0.617	6.7	-6.8	6.9	-0.48	06	03	28.7	10	28	04	07	19	43	66
9.0	9.0	0.709	5.8	-6.7	19.1	-0.46	06	59	28.0	11	34	04	51	20	35	64
10.0	10.0	0.793	4.8	-6.4	31.3	-0.44	07	52	26.0	12	46	05	21	21	23	61
11.0	11.0	0.864	3.6	-5.8	43.4	-0.42	08	43	22.8	14	01	05	43	22	09	57
12.0	12.0	0.922	2.3	-4.9	55.6	-0.39	09	30	18.7	15	15	05	58	22	51	52
13.0	13.0	0.965	0.9	-3.8	67.7	-0.37	10	16	13.9	16	27	06	10	23	32	46
14.0	14.0	0.991	-0.5	-2.6	79.9	-0.34	10	59	8.6	17	38	06	20	..	..	..
15.0	15.0	1.000	-1.8	-1.2	92.0	-0.31	11	41	3.0	18	49	06	29	00	11	41
16.0	16.0	0.991	-3.1	0.2	104.2	-0.28	12	23	-2.7	20	01	06	37	00	49	35

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Items for the February 2006 circular should reach the Editor by the 10th Jan 2006