

THE BRITISH ASTRONOMICAL ASSOCIATION



*Merry
Christmas*

LUNAR SECTION
CIRCULAR



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Data on pages 7-8 are for Jan 2007

Lunations 1039/1040

Dec 2006

Musings on Messier and environs

Peter Grego

November's Lunar Section Circular featured a superb observational drawing by Phil Morgan of the craters Messier and Messier A, along with the so-called 'Goodacre's Ghost Rings' on the plain to the west of Messier A. May's LSC also features two of Phil's observational drawings of this interesting area in Mare Fecunditatis.

Walter Goodacre is considered to be the first to have brought attention to the pattern of low ridges to the west of Messier A, some of which appear to be arranged into buried crater-like features. I've dug out a couple of pre-Goodacre descriptions of the area in question. Please note that east and west are now reversed in accordance with IAU convention.

From 'The Moon' (1876) by Edmund Neison:

'South of Messier is a low plateau, perhaps 60 feet high and 3° bright, with beyond it a small crater *d*; whilst east, between some ridges, are two, if not three, small crater-pits.'

Comment: According to Lunar Astronautical Chart 79, more small craters can actually be found nearer Messier, rather than beyond the ridge to the west (IAU).

From 'The Moon' (1895) by Thomas Gwyn Elger:

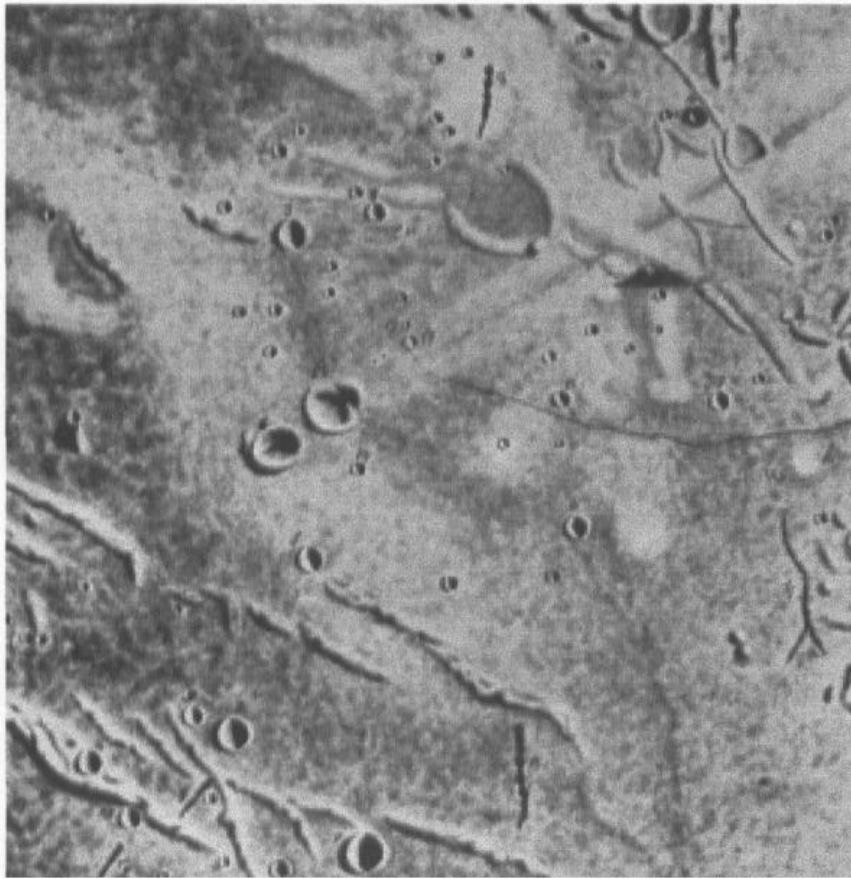
'Messier A is the origin of two slightly divergent light streaks, resembling a comet's tail, which extend over the Mare towards its E. border N. of Lubbock, and are crossed obliquely by a narrower streak. Messier and Messier A stand near the S. and narrowest end of a tapering curved light area. There is a number of craterlets and minute pits in the neighbourhood, and under a high light two round dusky spots are traceable in connection with the 'comet' marking, one just beyond its northern, and the other beyond its southern border, near its E. extremity.'

Comment: The 'round dusky spots' (if I have identified them correctly) do not appear to be connected with 'Goodacre's Ghost Rings', ie they are not areas of low albedo occupying the 'floors' of the 'ghost rings'.

From 'The Moon' (1931) by Walter Goodacre:

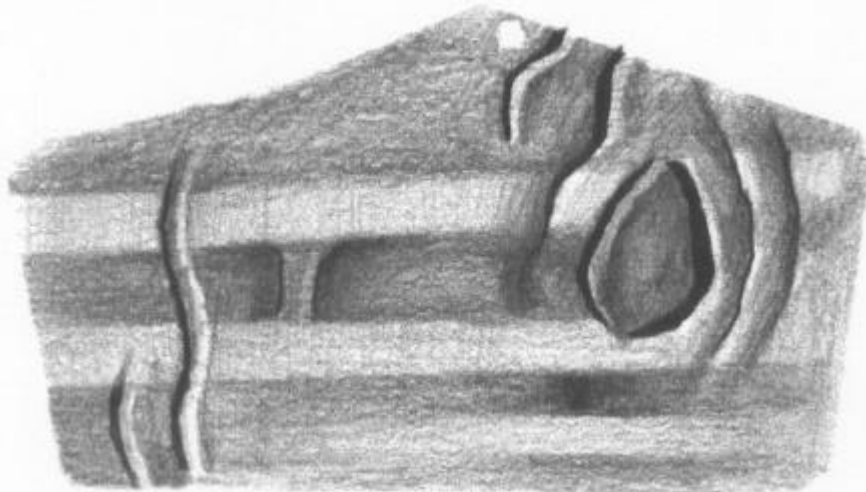
'On the plain around Messier there are a great many craterlets, some very minute. There are also two or three ridges crossing the 'comet tail' at right angles. These, when seen near the Terminator, seem to act as a barrier to the rays....Gruithuisen imagined the 'comet tails' to be artificial, and states that they are composed of a multitude of parallel lines. A. Stanley Williams is said to have seen both streaks doubled....About two diameters of A to the E., Krieger shows a cleft running at first N. and then curving to the E. in the direction of the highland between Secchi and Lubbock.'

Comment: The ridges hardly cross the rays at perfect right angles, and it would seem obvious that a relief feature casting a shadow onto an albedo feature, such as the ridges do to the rays, would appear as a 'barrier'. We may safely discount the 'inhabited Moon' theories of Gruithuisen, but as for his, and the noteworthy and reliable Williams' observations of the form of the rays, that is a more curious matter.



Above: Krieger's drawing of Messier and environs. From 'Mondatlas', dated 22 February 1894, 13h 30m (south at top, east at right).

The narrow 'cleft' observed by Krieger has been named Rima Messier. Is it possible that it has been misclassified, and that it is in fact a normal fault, of a similar nature to Rupes Recta in eastern Mare Nubium, with the scarp facing west? LAC 79 does seem to depict it as a narrow rille, more like a ditch, but the new Rukl 'Atlas of the Moon' shows it very boldly as a rille. The feature shows up as a dark line when illuminated from the east, but I have yet to see it as such when lit from the east – does anyone have an image or observation showing this feature illuminated by a low evening Sun? If it shows up as a bright line then it is more of an escarpment than a rille.



Observation of the western portion of the Messier rays to Lubbock H. By Peter Grego, 29 August 1999, 02:30-50 UT, 250mm Newtonian x250 (south at top, west at right).

More discussion to appear in the next issue of The New Moon.

Observations were received from the following observers for October: Jay Albert (FL, USA), Michael Amato (CT, USA), myself (Nottingham, UK), Marie Cook (Mundesley, UK), Dr Franck Gobet (France), Gerald North (Narborough, UK), and Marnix Praet (Belgium).

Dr Franck Gobet, CESTAS (France), took an image (2006 Oct 01, UT 19:21) of Copernicus to see if he could detect the blob between the central peak and the NE rim, that Geoff Burt draw in his sketch on 2006 Jun 5th. The illumination was very similar, within 0.05deg in solar altitude terms to Rony De Laet's sketch from Jun 5th, just before Geoff Burt's observation, but alas does not show the blob. Consequently Geoff's blob still remains a mystery. I would like to thank Jim Mosher for pointing out two typographical errors in the predictions for repeat illuminations for Copernicus in the coming months – these were in the Sep Newsletter and the 2006 Oct 31 UT 08:45 one should have read 08:54 and the 2007 May 26 UT 06:45 should have read 06:54.

Jay Albert attempted to check out the central peaks of Alphonsus on Oct 31st, as the illumination matched Clive Brook's TLP report from 2004 Feb 29th, but found everything normal this time around. He then checked Tycho to see if he could see "*luminous marks in shadow...*" as the 1978 NASA catalog describes Walter Haas reporting at 02:00(?) on 1940 Jul 14th, but Jay found the shadow to be totally black. Next he checked Copernicus to see if he could verify Firsoff's 1955 Jul 28th description of "*great brilliance of the terraces in E(IAU?) wall system...*", but Jay reports: "*Exterior of E wall well lit and very detailed. Interior of crater completely filled with shadow except for parts of top rim of W wall which were lit. Did not see "specular reflection" on E or W walls. A little more of the interior top rim of the W wall was lit when viewed again at 02:18. W wall rim now brighter than exterior of E wall...*". All of Jay's observations could not verify what the original TLP observers had seen and so may lend some support to these TLPs as being genuine although one has to be careful, for example what did Firsoff mean by "*great brilliance*" back in 1955? There lies one of the dilemmas of interpreting past TLP reports, some of the statements are not very quantitative – if one says "*great brilliance*", then in comparison to what? – hopefully modern day observers can do better.

Some of you may have read by now that Prof. Peter Shultz and two co-authors have published a letter to Nature citing the unusual Ina formation to be as a result of recent volcanic activity, potentially as young as 10 million years ago – this is practically "today" on a time scale of lunar geological history. He and his co-authors based this assertion (they discussed this idea also at a Lunar and Planetary Science Conference back in 2000) on it's geomorphology, and the fact that it has one of the lowest cumulative crater counts per km² anywhere on the Moon. Also a colour plot of Clementine UVVIS camera 1 micron / 750nm Vs 750nm reflectance shows a comparative blueness, that elsewhere on the Moon infers freshly disturbed soil. Ina is a D-shaped depression (18.6N, 5.3E) of chaotic terrain about 3 km across (some have interpreted as a lunar caldera) that sits on a 15 km diameter dome. The letter to Nature suggests that the Ina feature may still be forming, and so we should keep a watch on this and other Ina like features e.g. near Rima Hyginus, and near Arago for episodic gas releases. Indeed there are 6 interesting TLP reports associated with the Rima Hyginus area from 1877 up until 1966. So I would like to ask our observers to keep an eye on these areas, especially if they have the capability to take high resolution CCD imaging in different wavebands, or to attempt slit spectroscopy across these areas.

Next, readers will be very pleased to know that Winifred Cameron has provided ALPO a copy of her most recent analysis of TLP events from 557AD to 1994 (82 pages long), and also she has given us an extension to her 1978 NASA NSSDC/WDC-A-R&S Lunar Transient Phenomena Catalog. The extension covers additional TLP reports that she has found up until 1995. She was helped in the production of this catalog by Jerry Stuart, son of the famous Leon Stuart who photographed a flash on the Moon in 1953, and runs to some 153 pages. You can access PDF files of both the analysis paper, and the catalog extension, by going to the following web site: <http://www.lpl.arizona.edu/~rhill/alpo/lunarstuff/ltp.html>. I would like to thank Winifred Cameron, Jerry Stuart and David Darling for all the hard work and for helping to arrange this. I am sure that these will be very useful on-line resources in the years to come for both amateurs and lunar mission scientists.

Finally, please support Brian Cudnik of ALPO in looking out for Geminid impact flashes on the Moon during 2006 Dec 13-15 and ideally Dec 14 close to 05:34UT. You should look on the east limb to the center of the Earth-lit hemisphere. Suggested observing times for different geographical localities in the world are given in the web site at the bottom of this newsletter.

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

Event: Hyginus N (Wilkins, 1944 Apr 04) can be seen on/from (UT): 2006 Dec 01 (17:13-20:28) - [*How dark is this crater compared with previous or subsequent nights? Please provide sketches or CCD images of the crater and it's surrounds*]

Event: Torricelli B (North, 2005 Jan 21) can be seen on/from (UT): 2006 Dec 01 (21:49-16:20) - [*Monitor the brightness and colour of this crater over time*]

Event: Manilius (Haas, 1939 Jul 30) can be seen on/from (UT): 2006 Dec 04 (03:10-06:52) - [*How dark is the area in the south of the crater compared to adjacent nights or similar colongitudes?*]

Event: Proclus (Bartlett, 1976 Sep 08) can be seen on/from (UT): 2006 Dec 04 (15:49-15:54) - [*Please sketch or CCD image the crater, taking note of the brightness of spots*]

Event: Eratosthenes (Bartlett, 1976 Sep 08) can be seen on/from (UT): 2006 Dec 04 (15:49-18:18) - [*Can you see any pseudo shadows or gray shadings that resemble shadows?*]

Event: Aristarchus (Bartlett, 1964 Mar 28) can be seen on/from (UT): 2006 Dec 04/05 (21:44-02:18) - [*Can you see any colour on the E and N walls or elsewhere?*]

Event: Proclus (Bartlett, 1958 Jul 02) can be seen on/from (UT): 2006 Dec 05/06 (21:14-01:31) - [*Please note the relative brightness of spots inside the crater including the pseudo peak/central white floor spot*]

Event: Aristarchus (Bartlett, 1958 Jul 02) can be seen on/from (UT): 2006 Dec 05/06 (22:08-02:22) - [*Look for colour, especially on the E wall*]

Event: Kastner (Azeau, 1971 Nov 03) can be seen on/from (UT): 2006 Dec 06 (02:43-06:02) - [*Can you see any hint of colour?*]

Event: Aristarchus (Bartlett, 1976 Aug 11) can be seen on/from (UT): 2006 Dec 06 (04:27-08:08) - [*Can you see any colour in or around the crater and do you consider the W wall to appear hazy in appearance?*]

Event: Proclus (Bartlett, 1958 Jul 03) can be seen on/from (UT): 2006 Dec 06 (23:13-03:07) - [*Monitor the brightness of spots within and around Proclus over time*]

Event: Aristarchus (Bartlett, 1958 Jul 03) can be seen on/from (UT): 2006 Dec 06 (23:55-03:04) - [*Look for colour*]

Event: Plato (Gledhill, 1870 Apr 17) can be seen on/from (UT): 2006 Dec 07 (07:37-08:10) - [*Please sketch or image*]

Event: Herodotus (Bartlett, 1957 Sep 06) can be seen on/from (UT): 2006 Dec 31 (19:52-23:59) - [*Can you see a pseudo peak on the floor?*]

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

CLLOUDWATCH

Andrew Bytnar

Tabulated data for October 2006

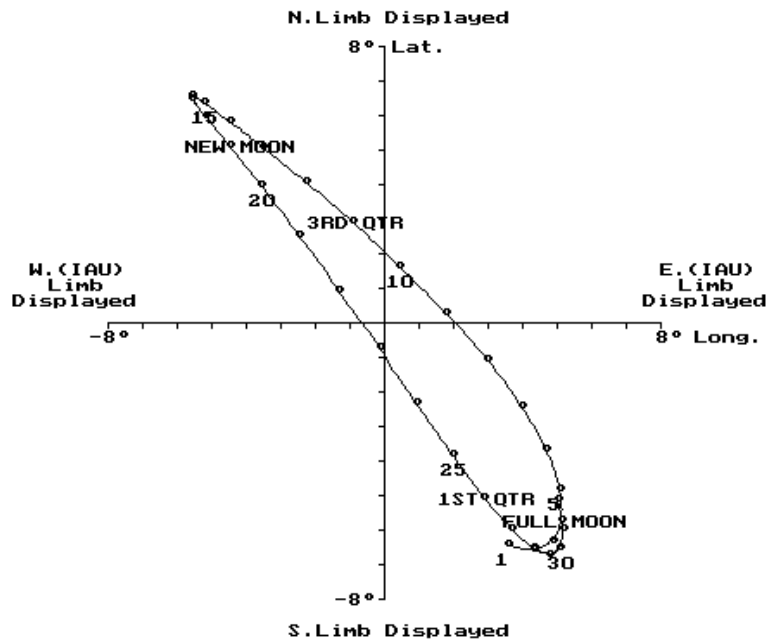
<u>Observer and location</u>	<u>Excellent</u> <i>days</i>	<u>Cloudy</u> <i>days</i>	<u>Overcast</u> <i>days</i>	<u>Hazy</u> <i>days</i>	<u>No watch</u> <i>days</i>
P.Burt (Chatham)	9 (29%)	3 (10%)	15 (48%)	2 (6%)	2 (6%)
A.Bytnar (Mansfield)	7 (23%)	3 (10%)	21 (68%)	0 (0%)	-----
M.Cook (Cromer)	5½ (18%)	8 (26%)	16½ (53%)	1 (3%)	-----
K.Hall (Warrington)	5½ (18%)	11 (35%)	14½ (47%)	0 (0%)	-----
A.Heath (Nottingham)	6 (19%)	6 (19%)	19 (61%)	0 (0%)	-----
J.Wrigley (Reading)	5 (16%)	8½ (27%)	17½ (56%)	0 (0%)	-----

LIBRATION Jan 2007

Date	Libration amount	PA	Feature presented
1.0	6.8	208	Pontecoulant
2.0	7.4	214	Brisbane
3.0	7.6	219	Lyot
4.0	7.5	225	Oken
5.0	7.0	231	Gum*
6.0	6.1	238	Abel*
7.0	5.0	247	Curie*
8.0	3.7	261	Houtermans*
9.0	2.6	287	Goddard*
10.0	2.5	331	Endymion*
11.0	3.4	3	Anaxagoras
12.0	4.8	19	Desargues
13.0	6.2	27	Cleostratus
14.0	7.4	32	Xenophanes
15.0	8.3	35	Volta
16.0	8.7	36	Repsold
17.0	8.7	38	Repsold
18.0	8.2	39	Galvani
19.0	7.3	40	Galvani*
20.0	5.9	41	Galvani*
21.0	4.3	45	Gerard*
22.0	2.5	54	Lavoisier*
23.0	1.0	102	Rocca*
24.0	1.8	183	Simpelius*
25.0	3.5	199	Neumayer
26.0	5.0	204	Gill
27.0	6.2	208	Pontecoulant
28.0	7.1	211	Hanno
29.0	7.6	214	Brisbane
30.0	7.7	218	Lyot
31.0	7.4	222	Oken

LUNAR LIBRATIONS - January 2007

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



Program by Bob Roberts.

Observer at: Lat. 51.00N, Long. 1.80W

* indicates that the feature is not illuminated.

Occultation subsection news

Andrew Elliott

Unfortunately January's total occultation predictions do not appear this month. Following a change of "ownership" of the program, the 2007 occultation data has not yet been received from IOTA/ES. At the time of writing, I am chasing the matter up and hopefully will be able to continue 'normal service' next month. December's predictions are in last month's Circular.

Both of this month's grazing occultations occur in northern Scotland. The first, in the morning of December 08, passes over the Island of Hoy, clips the tip of Duncansby Head (John 'o Groats) and the north east tip of Aberdeenshire near Fraserburgh and Peterhead. The graze occurs in strong twilight so is not very favourable.

The second, on December 13 crosses the outer Hebrides, and travels south east across the Highland region, leaving the east coast near Dundee. There are probably not many observers on this path, but the graze takes place against the moon's dark, rugged, southern limb. It should be quite easy to observe with the possibility of multiple events, which could make it quite spectacular..

2007 JAN.	Age d	Phase	Earth's		Sun's		R.A. h m	Dec. ø	Rises		Sets		Transit		Alt ø
			Selenographic Longø	Latø	Selenographic Colongø	Latø			h	m	h	m	h	m	
1.0	11.4	0.919	3.6	-6.4	53.7	-1.43	04 19	26.4	13 23	06 36	22 31	66			
2.0	12.4	0.968	4.3	-6.6	65.8	-1.42	05 21	28.2	14 16	07 48	23 32	66			
3.0	13.4	0.994	4.9	-6.3	77.9	-1.42	06 22	28.2	15 26	08 42			
4.0	14.4	0.997	5.1	-5.7	90.1	-1.41	07 22	26.5	16 45	09 19	00 29	64			
5.0	15.4	0.977	5.1	-4.8	102.2	-1.40	08 18	23.4	18 06	09 44	01 24	61			
6.0	16.4	0.937	4.7	-3.7	114.3	-1.38	09 10	19.2	19 24	10 01	02 13	56			
7.0	17.4	0.881	4.0	-2.4	126.5	-1.37	09 59	14.3	20 39	10 14	02 58	51			
8.0	18.4	0.811	3.0	-1.1	138.6	-1.36	10 43	8.9	21 51	10 25	03 40	46			
9.0	19.4	0.731	1.8	0.3	150.7	-1.35	11 26	3.3	23 02	10 34	04 20	40			
10.0	20.4	0.643	0.4	1.7	162.9	-1.33	12 08	-2.3	10 43	04 59	34			
11.0	21.4	0.551	-1.0	3.0	175.0	-1.32	12 50	-7.9	00 12	10 53	05 38	28			
12.0	22.4	0.457	-2.3	4.1	187.2	-1.30	13 33	-13.2	01 23	11 04	06 19	23			
13.0	23.4	0.364	-3.6	5.1	199.4	-1.29	14 19	-18.1	02 38	11 18	07 03	18			
14.0	24.4	0.274	-4.6	5.9	211.5	-1.28	15 07	-22.3	03 54	11 38	07 50	14			
15.0	25.4	0.190	-5.3	6.4	223.7	-1.26	16 00	-25.6	05 12	12 07	08 41	11			
16.0	26.4	0.117	-5.6	6.7	235.9	-1.24	16 56	-27.8	06 24	12 49	09 37	9			
17.0	27.4	0.058	-5.6	6.5	248.1	-1.22	17 55	-28.4	07 24	13 50	10 36	9			
18.0	28.4	0.019	-5.2	6.0	260.3	-1.21	18 56	-27.5	08 09	15 08	11 35	11			
19.0	29.4	0.002	-4.6	5.2	272.5	-1.19	19 57	-24.8	08 41	16 37	12 33	15			
20.0	0.8	0.010	-3.6	4.0	284.6	-1.16	20 55	-20.6	09 02	18 08	13 28	20			
21.0	1.8	0.044	-2.5	2.6	296.8	-1.14	21 51	-15.1	09 19	19 38	14 20	26			
22.0	2.8	0.104	-1.4	1.0	309.0	-1.12	22 44	-8.8	09 32	21 06	15 10	33			
23.0	3.8	0.185	-0.2	-0.7	321.2	-1.10	23 35	-2.0	09 43	22 33	15 58	40			
24.0	4.8	0.284	0.9	-2.3	333.4	-1.08	00 26	4.8	09 55	16 46	47			
25.0	5.8	0.393	2.0	-3.8	345.5	-1.06	01 17	11.4	10 09	00 00	17 36	53			
26.0	6.8	0.506	2.9	-5.0	357.7	-1.03	02 10	17.3	10 25	01 28	18 29	59			
27.0	7.8	0.617	3.7	-6.0	9.9	-1.01	03 05	22.2	10 48	02 57	19 25	63			
28.0	8.8	0.721	4.3	-6.5	22.0	-0.99	04 03	25.9	11 20	04 22	20 23	65			
29.0	9.8	0.813	4.8	-6.7	34.2	-0.97	05 04	28.0	12 07	05 38	21 22	66			
30.0	10.8	0.889	5.1	-6.5	46.3	-0.95	06 04	28.5	13 09	06 37	22 20	65			
31.0	11.8	0.946	5.2	-6.0	58.4	-0.92	07 04	27.3	14 24	07 19	23 15	62			

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1.0	12.8	0.983	5.0	-5.1	70.6	-0.90	08 00	24.6	15 45	07 47
2.0	13.8	0.999	4.6	-4.0	82.7	-0.88	08 53	20.7	17 04	08 07	00 05	58
3.0	14.8	0.994	3.9	-2.8	94.8	-0.85	09 42	16.0	18 21	08 21	00 51	54
4.0	15.8	0.970	3.1	-1.4	107.0	-0.83	10 28	10.7	19 34	08 32	01 35	48
5.0	16.8	0.928	2.0	0.0	119.1	-0.81	11 12	5.1	20 46	08 42	02 16	42
6.0	17.8	0.872	0.7	1.5	131.2	-0.78	11 54	-0.6	21 56	08 51	02 55	36
7.0	18.8	0.802	-0.7	2.8	143.4	-0.76	12 36	-6.2	23 07	09 00	03 34	30
8.0	19.8	0.722	-2.0	4.0	155.5	-0.73	13 19	-11.6	09 10	04 14	25
9.0	20.8	0.634	-3.4	5.0	167.7	-0.71	14 03	-16.6	00 20	09 23	04 56	20
10.0	21.8	0.541	-4.6	5.9	179.8	-0.69	14 50	-21.1	01 35	09 39	05 41	15
11.0	22.8	0.444	-5.6	6.5	192.0	-0.67	15 40	-24.7	02 51	10 03	06 30	12

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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 Jan 2007 circular should reach the Editor by December 3rd 2006