THE BRITISH ASTRONOMICAL ASSOCIATION

LUNAR SECTION CIRCULAR

Director Alan Wells
Assistant Director/Editor John Pedler

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TOPOGRAPHICAL SUB-SECTION — COLIN EBDON

October, weather permitting, should be peak viewing time for lunar observers, and I look forward to receiving members' material in due course. This means, as always, that I am living in the hope that there will be members other than the standard half-dozen core enthusiasts, who will be contributing to these pages and those of 'The New Moon'in the coming months. I am ahead with drawings and articles for the moment, but it will not be long before I am again finding it difficult to put together articles for publication, so please **do** send me whatever you can.

If some members feel that they lack experience, I would remind them that when I took over the post of topographical coordinator my knowledge of the Moon was pretty dire as I had always concentrated on other areas of astronomy, in particular the planets. Even now, a number of years later, I am constantly learning and it is thanks to the information passed on to me by vastly more experienced members -whose depth of knowledge on the subject is astonishing- that I am slowly becoming better acquainted with the lunar surface and the history of its exploration. So please do not feel that you need any particular expertise in drawing, geology, imaging or anything else - a bit of enthusiasm is all you need to make a start.

For this edition of the circular I have included a recent observation of mine covering **Pallas and Murchison**; a pair of old and ruined lunar formations variously described as 'walled plains', 'degraded craters' or as one of each. They lie in a region of outstanding topographical interest formed by the quadrilateral marked off by Triesnecker, Chladni, Bode and Ukert, where fragments of lava-lake intermingle with wrinkle-ridges, mountains, rilles and ridges. The whole area is very distinct at low powers, sitting as it does between the flooded plains of the Mare Vaporum, Sinus Medii and Sinus Aestum and looking very rough in comparison.

Pallas is the smaller of the pair at 50km and the more obviously craterform, with a distinct central mountain mass. The remnants of its East wall are indistinguishable from what is left of the West wall of Murchison. The continuation of the wall of Pallas into the rim of the partially buried crater E to the South, and a counterpart ridge extending northwards from Pallas on the opposite side, give the impression that Pallas and Murchison are separated by a single ridge cutting through them, as shown in the drawing.

The Eastern rim of the larger formation Murchison (58km) abuts a ridge which continues to the sharply defined and very deep crater Chladni - previously known as Murchison A. Immediately to the South East, the wall disappears almost completely, forming an entrance to the Sinus Medii.

Rukl's atlas tells us that Pallas was a German naturalist and explorer (1741 to 1811) and Murchison a Scottish soldier, Geologist and Geographer (1792 to 1871).

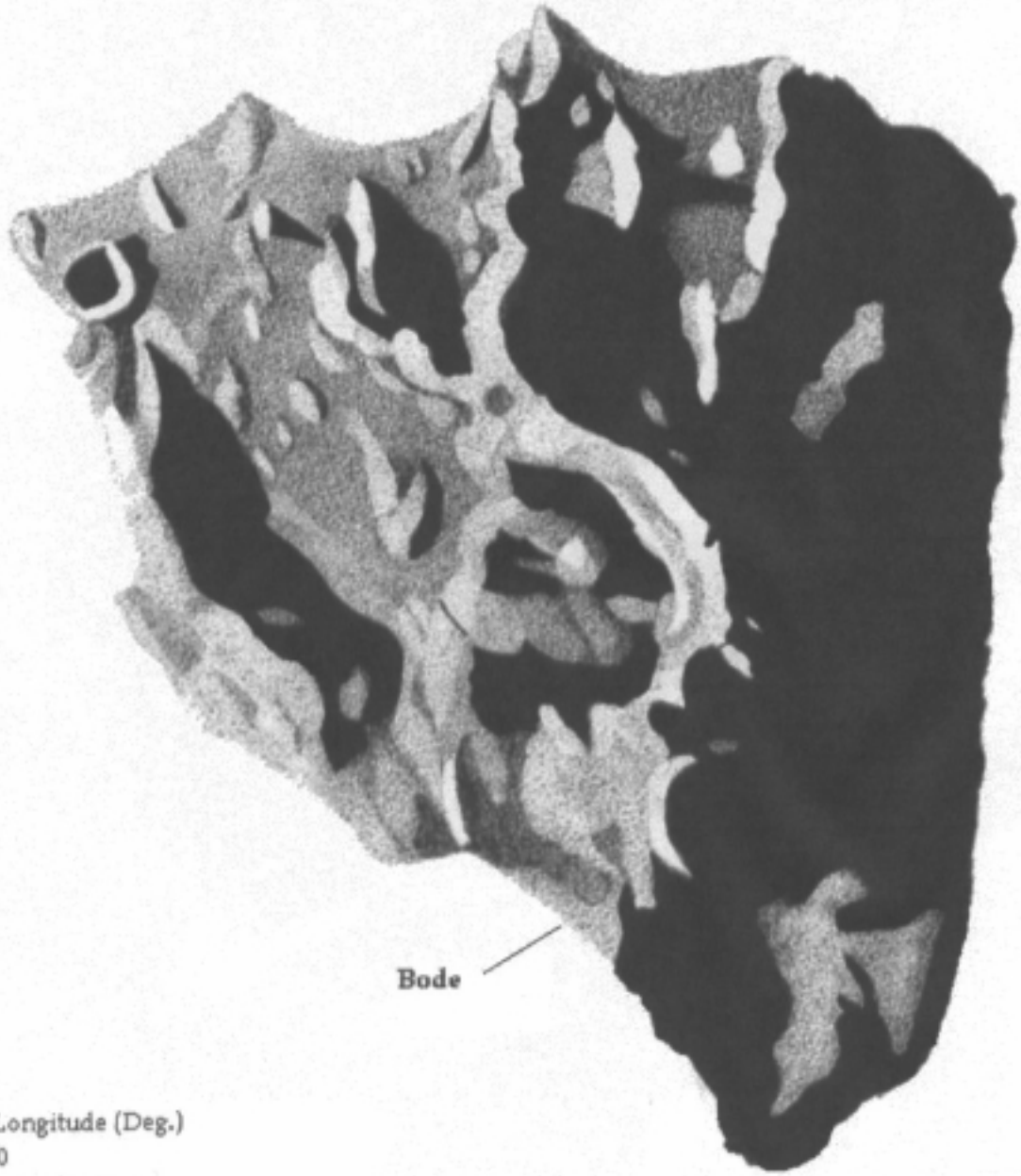
The area is recommended to observers as one of many well worth looking over in detail. and hopefully some of you will make a start on a few of them this year. If so, please let us hear of your efforts!

Can I draw your attention to the two observations from Dietmar Buettner (Germany) included in this issue. Plain, straightforward observations, yet conveying information of interest. Dietmar is not yet a BAA member, yet still sends me items of interest. Otherwise, some of this LSC would have been blank. Can we not do as much ? Unfortunately I can no longer observe, as I am 73 and a bit unsteady carrying heavy tripods about in the dark. But I am sure that many of you (perhaps all of you) are somewhat younger and can make an observation or two. How about it ??

Ed.

PALLAS & MURCHISON

Observer: C.Ebdon
Date: 2005, June 14
Time: 20.45 to 21.45 UT
Seeing: AIII
Transparency: Very Good
7" f15 Maksutov-Cassegrain x225.



Earth's Sel. Longitude (Deg.)
-5.55 to -5.60
Earth's Sel. Latitude (Deg.)
-3.16 to -3.11
Sun's Sel. Colongitude (Deg.)
3.65 to 4.16
Sun's Sel. Latitude (Deg.)
+1.38 (0hrs 15/6/05)
Lunation: 1019

The convex Floor of the Crater Mersenius

Dietmar Buettner, Germany (dietmar.buettner@web.de)

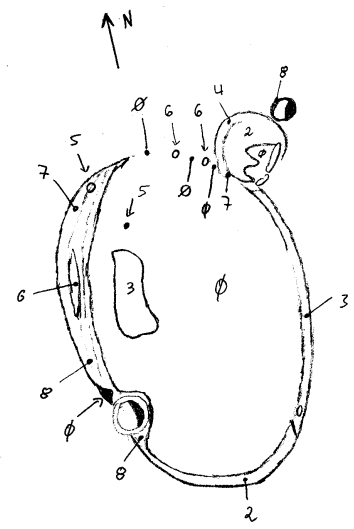


Figure 1

Mersenius

2005 April 20

19:32 – 20:12 UT

200 mm Cassegrain

200 x

Neodymium filter

Stab. 3/5

Transp. 2/5

Dietmar Büttner

Sun's Colong. 51.°2 at 19:32 UT

Lat. + 0.°18

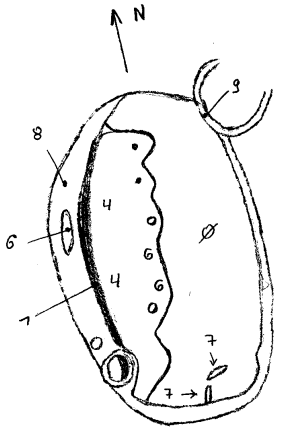


Figure 2

Mersenius

2005 April 20

21:13 – 21:41 UT

200 mm Cassegrain

200 x

Neodymium filter

Stab. 3/5

Transp. 1/5

Dietmar Büttner

Sun's Colong. 52.°1 at 21:13 UT

Lat. + 0.°18

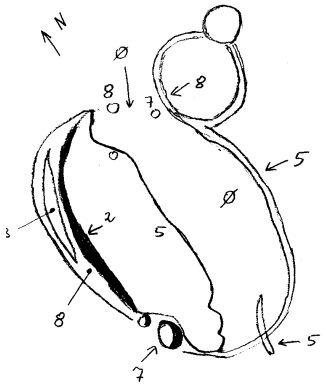


Figure 3

Mersenius

2005 June 18

21:35 – 22:05 UT

63 mm Refractor

140 x

Stab. 2/5

Transp. 1/5

Dietmar Büttner

Sun's Colong. 52.°9 at 21:40 UT

Lat +1.°40

When I started to observe the Moon in the evening of 2005 April 20 an unusual appearance inside the crater Mersenius catched my attention (figure 1). As the crater was just on the Moon's day side the crater's floor was still in shadow. However, I could see a sunlit 'island' in the western half of the dark crater's internal. To a first rough approximation it had the shape of a nort-south oriented rectangle with smoothed corners. This region appeared dark gray with an intensity of about 3. During the time span of the first drawing this region became considerably brighter. Additionally, there was a sunlit peak north of that region within the dark crater's internal.

One hour later the situation had changed considerably (figure 2). The sunlit area on the shadowed floor of the crater had grown as well in the north-south as in the east-west direction. A remarkable intensity gradient of the region was obvious (brighter in the east, fainter in the west). To the west the illumination nearly had riched the crater's inside west wall leaving only a narrow strip of shadow, which however was not quite black.

From this shadow and from the intensity gradient it can be deduced that this illuminated region of the crater's floor must be convex. It seems that the highest elevation of the floor is eventually not exactly in the centre but slightly west of it.

Besides two craterlets were seen in the middle and in the southern half of the floor. Furthermore, two small peaks in it's northern part could be seen. The southern one of these peaks is identical with the sunlit peak on the dark floor in the first drawing.

Finally, two sunlit ridges had appeared in the crater's shadow in the south.

My simple line drawings show the main contours and give the intensity values (0 = black, 10 = white). The entries ∅ denote intensity values of zero, while small circles without a slash mark craterlets or sunlit peaks in dark areas. The small peaks on the sunlit floor are drawn as dots.

Another observation of Mersenius was possible two lunations later in the evening of 2005 June 18 (figure 3). It provided a very similar situation as during the second observation on 2005 April 20 (figure 2). Again the floor was sunlit a bit less than half with an intensity gradient of 2 to 5 from the western edge towards the centre. This nearly duplicates the second observation of 2005 April 20. The comparison of figures 2 and 3 confirms some more details shown in both drawings. Please note that the drawing in figure 2 contains not all details because it was mainly intended to show the bright area under discussion. The three Mersenius observations were made using an Amici prism at the telescope; thus north is at top and lunar (IAU) west is at the left hand side.

The crater Mersenius is known to have a convex floor contrary to the most other craters which have plain or concave floors. Observations of Mersenius under different illuminations can reveal more on the size and shape of this unusual crater floor. Therefore, I suggest to follow the changes during sun rise / sun set at Mersenius within small time intervals of say 30 minutes or evene shorter. Another interesting task should be the comparison of the appearances during sun set with those during sun rise in order to investigate a possible asymmetry of the floor's convex shape.

Some more photos can be seen at the following sources. The photo on Charles Wood's internet site 'Lunar Photo of the Day' (www.lpod.org, see archive) for 2004 April 3 may be compared with my second drawing from 2005 April 20 (figure 2) as it seems to have been taken under a similar illumination. Please note that the date 2004 April 3 is the publication date of Charles Wood's internet page, not the date when the photo was taken.

Another very similar illumination situation can be seen at plate F21 of the Consolidated Lunar Atlas CLA (www.lpi.usra.edu/research/cla/) with the sun's colongitude being 52.6°. Yet another good view is shown at plate F25 of CLA, this time made during sun set.

Regrettably, I accidentally included graze information for October, not September, in last month's LSC. There were three grazes in September, two of which would have crossed reasonably well populated areas. Please accept my apologies for that omission. I have repeated this month's graze details below for convenience.

Only one suitable grazing occultation is predicted for this month – track 20 in last month's Circular (track 10 in the BAA Handbook). It occurs on the night of October 22/23, starting in the west at about 03.10 UT (04.10 BST). The star is magnitude 6 and the moon is at an elevation of 60 degrees in the south east. The graze occurs against the dark limb at the western end of the track although it encroaches on the terminator area eastwards of 2 degrees west. The track hits the south Wales coast near Milford Haven, travels east across south Wales, through Hereford and Worcester, Warwicks, Northants, Cambs, and along the Norfolk/Suffolk border. (Of the other two grazes this month, the first barely touches land in the Hebrides, and the other occurs entirely against the bright limb.)

Predictions for 52°27'41.4"N 1°44'44.0"W (Birmingham) – November 2005

Day	Time-UT H M S	D	Object Reference	O V	Max Mag	Sp	% Snlt	Elg Alt	Sn	Mn Alt	Mn Az	CA	PA Angle	Watts	a Min/°	b	Star's apparent RA	Dec
9/17	47 50	D	PPM 239654	25	7.8	A5	58+ 99	19		164	59S	100	119	-.9	.3		220038.2	-172136
9/19	07 29	DE	PPM 239702	26	7.4	A2	59+ 100	21		184	83S	76	96	-.8	.1		220245.7	-165616
9/19	07 34	DM	SAO 164830	27	6.4	A2	59+ 100	21		184	83S	76	96	-.8	.1		220245.8	-165616
ABOVE STAR IS A VARIABLE STAR -- MINIMUM MAGNITUDE = 6.8.																		
12/20	21 07	D	FK5EXT 2040	66	6.6	K0	88+ 140	39		162	40N	17	38	-.4	1.5		3749.3	31008
12/21	01 22	D	SAO 109348	55	7.4	G0	88+ 140	41		174	81S	75	97	-.9	.3		3932.3	31004
ABOVE STAR IS A VARIABLE STAR																		
12/22	09 35	DX	PPM 143751	75	7.3	G5	88+ 140	40		197	21N	357	19	.1	2.7		4005.7	34111
15/00	55 50	D	PPM 118240	95	7.3	F0	99+ 167	47		224	67N	59	76	-.7	.1		22752.4	164021
16/18	48 52	RT	PPM 93212	97	5.7	F5	99- 170	22		79	58N	267	278	-.1	1.2		40443.8	240729
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																		
17/04	23 05	RY	PPM 93459	96	5.4	B9	99- 166	41		258	22N	311	320	-.3	-2.3		42257.5	253844
ABOVE OCCULTATION CLOSE TO SMOOTH-MOON TERMINATOR																		
17/18	57 46	RO	PPM 93982	95	6.9	F5	96- 158	18		69	76N	267	272	.1	1.2		50207.2	264054
18/19	34 14	RT	PPM 95226	96	6.1	B8	92- 146	16		65	53S	225	225	.6	1.8		60123.6	273428
19/04	26 31	R	PPM 95731	85	7.4	A0	90- 143	58		232	89S	264	262	-.8	-.4		61823.1	280022
19/06	53 13	R	PPM 95863	85	7.5	K2	89- 142	-6	37	269	61N	295	293	-.2	-1.5		62311.0	275907
19/21	10 11	RK	SAO 78968	75	7.2	K2	85- 134	21		72	67S	248	242	.2	1.6		70120.9	270900
20/03	27 49	RZ	PPM 97203	77	6.4	F5	83- 131	65		182	70N	292	285	-.9	-.6		71311.8	271258
ABOVE STAR IS A VARIABLE STAR -- MINIMUM MAGNITUDE = 6.5.																		
20/06	00 51	R	PPM 97322	95	7.5	K0	83- 131	52		243	11N	352	345	.6	-5.5		71822.1	270757
20/07	19 39	RV	PPM 97371	77	6.9	K0	82- 130	-3	40	262	72N	292	284	-.3	-1.4		71953.4	264848
20/23	46 59	R	PPM 98213	85	8.0	A0	76- 122	35		93	55S	243	233	-.2	1.8		80048.1	250107
20/23	40 46	R	FK5 1211	98	5.9	K0	76- 121	34		91	24N	345	333	-1.0	-1.6		80117.8	252239
21/00	32 36	RC	PPM 98236	78	6.2	A0	76- 121	41		103	79S	268	256	-.5	1.0		80205.6	250427
21/05	08 31	R	PPM 98405	65	8.0	G5	75- 119	61		205	55N	314	303	-.7	-1.4		80946.6	244835
22/01	40 50	R	PPM 99144	65	8.3	K0	67- 110	42		110	75N	299	284	-.7	.2		85453.0	214755
22/02	36 53	RX	PPM 99162	65	8.3	A2	67- 109	49		125	79N	295	280	-.8	.1		85619.6	214014
22/04	34 35	R	PPM 99203	76	7.5	G5	66- 109	58		168	41S	236	220	-1.1	1.3		85916.3	210839
23/06	45 35	RC	PPM 126835	85	7.8	K2	56- 97	-8	53	203	34N	345	327	-.3	-2.4		95012.3	164841
25/07	09 58	R	PPM 157707	66	8.7	K2	37- 75	-5	44	181	70S	274	252	-1.0	-.1		111822.5	60212
26/04	49 50	R	PPM 158375	66	7.7	K0	29- 65		27	129	72S	276	254	-.7	.8		115830.3	5015

N.B. Don't forget to add 1 hour to the October occultation times (in last month's Circular) until October 30, the end of British Summer Time!

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.

Observations for August have been received from: Jay Albert (Lake Worth, FL, USA), Marie Cook (Mundesley, UK), Clive Brook (Plymouth, UK) Robin Gray (Winnemucca, NV, USA), Antonio Marino (Naples, Italy), and Daniel del Valle Hernandez (Puerto Rico). These totalled ~500 minutes.

One of the observations received for August, although probably not TLP, did spark the observers interest, and is probably worthwhile observing again when the illumination is right. On 2005 Aug 13 at UT 00:07-00:29, Daniel del Valle Hernandez, in Puerto Rico, noticed an interesting configuration of umbra and penumbra shadows in Herschel. So if anybody else was observing this area at this date/time, please get in contact with me. It was also pleasing to see so many observers attempting repeat illumination observations now - this really makes a big difference at helping us eliminate many dubious past TLP reports. Antonio Marinio sent in some excellent CCD colour images of Aristarchus.

This Month I thought that I would show a new view of the flash that Leon Stuart photographed near the crater Pallas in 1953 Nov 15 UT 02:00 from Tulsa, OK, USA. There have been many papers about this flash, especially as the observer saw the flash both visually and recorded it on a developed photographic plate. As part of a poster presentation to the Division of Planetary Sciences meeting at Cambridge, UK at the start of September, I illustrated how one can take a CCD image under the same illumination as the original photograph, register the two images together, calibrate one to the other in terms of brightness (even though one was a photograph and the other a CCD image) and subtract them to leave just a difference image of the flash. Fig 1 shows this process and although the subtraction was not perfect due to seeing effects causing distortions in the CCD image, it tells us a little more about the flash. Firstly the diameter of the flash was ~25km (in fair agreement with previous values), secondly the halo diameter was larger at ~50km diameter, though whether this is due to photographic halation or the true extent of the flash is uncertain. No obvious illumination of adjacent topography is visible within the limits imposed by seeing distortion. Also no evidence of diffraction spikes can be seen so this is consistent with the flash being from a diffuse source. I will do further analysis later, but for now just thought I would show you the result.

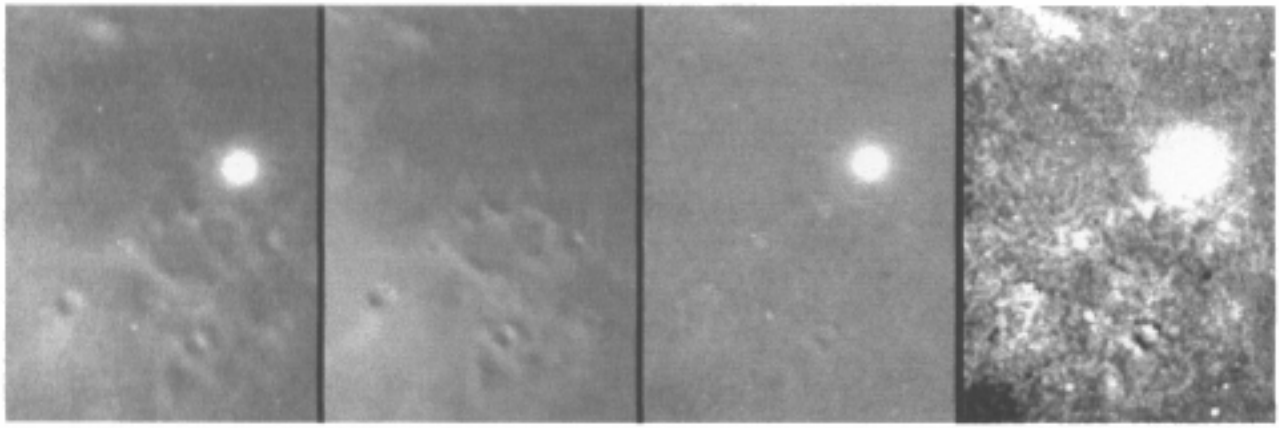


Fig. 1 From left to right: 1) Photograph of the 1953 flash, 2) Registered CCD image under identical illumination (2003 Mar 13 UT 00:03) and calibrated to previous image, 3) Difference image showing some differences due to seeing distortions. 4) Contrast enhanced difference image showing extent of the halo area around the flash.

Only two repeat illumination and libration events for this month (see below), but a lot more repeat illumination only events are listed on the web site at the bottom of the page for those who are interested:

Event: Aristarchus (Bartlett, 1955 Jan 08) can be seen on/from (UTC): 2005 Oct 16/17 (23:58-01:46) – *[Look for colour on E. rim]*

Event: Aristarchus (Maley, 1969 Sep 30) can be seen on/from (UTC): 2005 Oct 21 (19:30-22:39) – *[Look for colour on SE wall]*

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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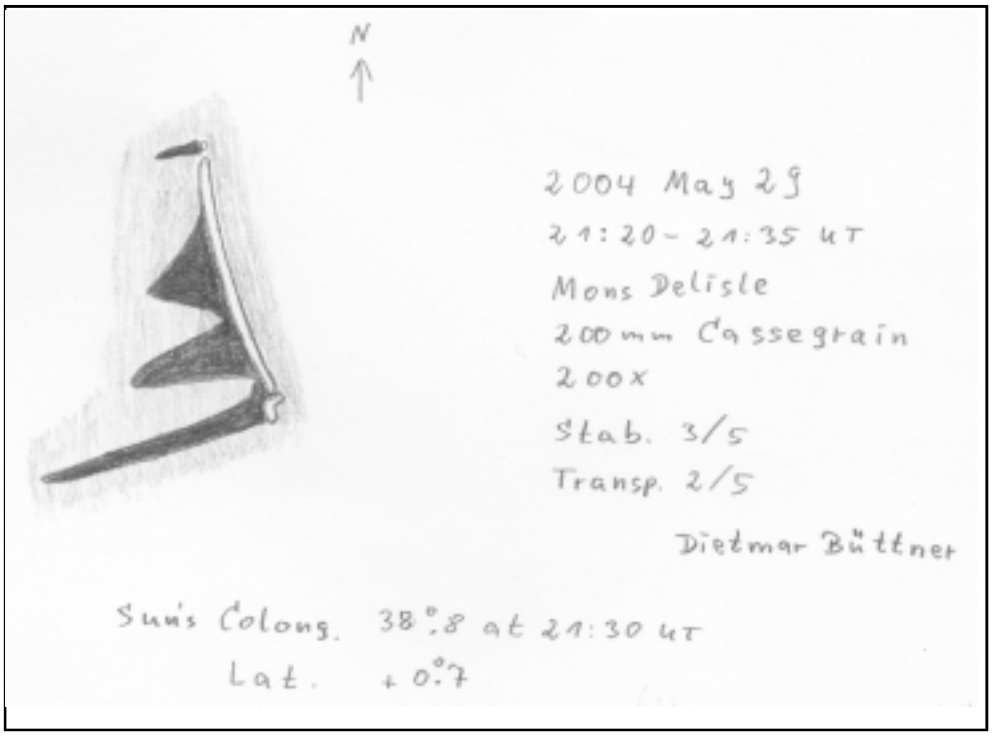
Mons Delisle

Dietmar Buettner, Germany (dietmar.buettner@web.de)

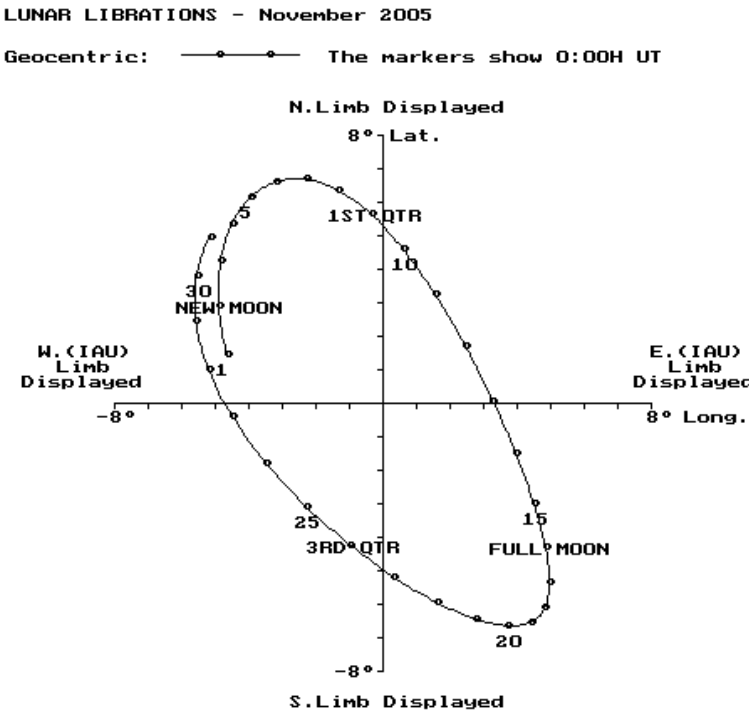
Herewith I want to draw your attention to the mountain Mons Delisle in the south west of the crater Delisle. The mountain has a very narrow long ridge which lies approximately in the north-south direction.
I observerd that object on 2004 May 29 from 21:20 to 21:35 UT. During my observation I could see four striking shadow peaks; the northern most and the southern most of them looked like pins.
I've never seen such a view of that object on photos or at the telescope. Probably, these delicate shadow peaks are visible only for a rather short time span during each lunation.
According to the NASA's Lunar Chart LAC 39 (Aristarchus) the heights of the mountain's peaks relative to the surrounding terrain are 840 m in the north and 900 m in the south.

As this observation was made using a simple diagonal zenith prism at the telescope, I've re-drawn the drawing from the original in order to correct the inverted west-east direction.



LIBRATION November 2005

Date	Libration amountø	PAø	Feature presented
1.0	4.7	65	Bartels
2.0	5.8	54	Ulugh Beigh*
3.0	6.7	46	Bunsen*
4.0	7.4	39	Galvani*
5.0	7.9	33	Xenophanes*
6.0	8.0	28	Cleostratus*
7.0	7.7	22	Pythagoras*
8.0	7.2	17	Anaximander*
9.0	6.3	11	Anaximenes*
10.0	5.1	2	Anaxagoras*
11.0	3.9	348	Peters
12.0	2.8	322	Mercurius
13.0	2.7	283	Ibn Yunus
14.0	3.7	253	Behaim
15.0	4.9	238	Barnard
16.0	6.2	230	Gum
17.0	7.1	225	Hamilton
18.0	7.7	221	Peirescius
19.0	7.8	218	Lyot*
20.0	7.6	214	Brisbane*
21.0	7.0	209	Hanno*
22.0	6.0	203	Helmholtz*
23.0	4.9	193	Boussingault*
24.0	3.8	177	Cabeus
25.0	3.1	150	Phocylides
26.0	3.1	116	Nicholson
27.0	3.8	89	Riccioli
28.0	4.8	72	Einstein
29.0	5.9	60	Voskresenskiy
30.0	6.7	51	Lavoisier
31.0	7.3	43	Gerard*



Program by Bob Roberts.
Observer at: Lat. 51.0øN, Long. 1.0øW
* indicates that the feature is not illuminated.

CLOUDWATCH

Andrew Bytnar

Tabulated data for August 2005

Observer and location	Excellent *days*	Cloudy *days*	Overcast *days*	Hazy *days*	No watch *days*
P.Burt (Chatham)	3 (10%)	10 (32%)	14 (45%)	0 (0%)	4 (13%)
A.Bytnar (Mansfield)	9 (29%)	6 (19%)	14 (45%)	2 (6%)	-----
M.Cook (Cromer)	7½ (24%)	7½ (24%)	11 (35%)	3 (10%)	2 (6%)
K.Hall (Warrington)	6½ (21%)	9 (29%)	8½ (27%)	0 (0%)	7 (23%)
A.Heath (Nottingham)	9 (29%)	10 (32%)	12 (39%)	0 (0%)	-----
J.Wrigley (Reading)	7½ (24%)	7½ (24%)	9½ (31%)	1½ (5%)	-----

Physical Data for Lunations: 1024 — Computed by Gareth Williams

2005 NOV.	Age d	Phase	Earth's Selenographic Longø	Earth's Selenographic Latø	Sun's Selenographic Colongø	Sun's Selenographic Latø	R.A. h m	Dec. ø	Rises h m	Sets h m	Transit h m	Alt ø
1.0	28.6	0.012	-4.7	1.5	261.9	-0.65	13 35	-11.1	06 11	16 02	11 13	24
2.0	29.6	0.000	-4.9	2.9	274.1	-0.67	14 23	-16.6	07 33	16 18	12 01	18
3.0	0.9	0.011	-4.9	4.2	286.3	-0.69	15 15	-21.5	08 58	16 40	12 53	14
4.0	1.9	0.045	-4.5	5.3	298.6	-0.72	16 12	-25.3	10 23	17 13	13 50	11
5.0	2.9	0.101	-4.0	6.1	310.8	-0.74	17 12	-27.8	11 40	18 01	14 51	9
6.0	3.9	0.178	-3.2	6.6	323.0	-0.76	18 15	-28.5	12 40	19 10	15 53	9
7.0	4.9	0.272	-2.3	6.7	335.1	-0.79	19 18	-27.5	13 22	20 33	16 53	12
8.0	5.9	0.379	-1.3	6.4	347.3	-0.82	20 20	-24.7	13 50	22 03	17 51	16
9.0	6.9	0.492	-0.3	5.6	359.5	-0.85	21 18	-20.4	14 10	.. ..	18 44	21
10.0	7.9	0.606	0.7	4.6	11.7	-0.88	22 13	-14.9	14 25	.. ..	19 35	28
11.0	8.9	0.714	1.6	3.2	23.8	-0.91	23 05	-8.7	14 37	01 01	20 23	34
12.0	9.9	0.811	2.5	1.7	36.0	-0.95	23 55	-2.0	14 48	02 27	21 10	41
13.0	10.9	0.891	3.3	0.1	48.1	-0.98	00 44	4.7	15 00	03 51	21 57	48
14.0	11.9	0.950	4.0	-1.6	60.3	-1.01	01 35	11.1	15 13	05 17	22 46	54
15.0	12.9	0.987	4.5	-3.1	72.4	-1.04	02 26	16.9	15 30	06 43	23 38	59
16.0	13.9	0.999	4.9	-4.4	84.6	-1.07	03 20	21.8	15 52	08 08	.. ..	..
17.0	14.9	0.988	5.0	-5.4	96.7	-1.10	04 15	25.5	16 24	09 30	00 30	63
18.0	15.9	0.956	4.9	-6.2	108.8	-1.12	05 13	27.7	17 08	10 41	01 27	65
19.0	16.9	0.906	4.4	-6.6	121.0	-1.14	06 10	28.5	18 06	11 36	02 22	66
20.0	17.9	0.841	3.7	-6.7	133.1	-1.16	07 06	27.7	19 15	12 16	03 16	65
21.0	18.9	0.764	2.8	-6.5	145.3	-1.18	08 00	25.7	20 29	12 44	04 07	63
22.0	19.9	0.679	1.7	-6.0	157.4	-1.19	08 51	22.5	21 43	13 03	04 55	59
23.0	20.9	0.588	0.4	-5.2	169.6	-1.20	09 38	18.4	22 56	13 17	05 39	55
24.0	21.9	0.494	-1.0	-4.3	181.7	-1.21	10 23	13.6	.. ..	13 29	06 21	50
25.0	22.9	0.400	-2.3	-3.1	193.9	-1.22	11 07	8.3	.. ..	13 38	07 01	44
26.0	23.9	0.309	-3.5	-1.8	206.1	-1.23	11 49	2.7	01 20	13 48	07 41	38
27.0	24.9	0.222	-4.5	-0.4	218.3	-1.23	12 32	-3.1	02 33	13 57	08 22	32
28.0	25.9	0.145	-5.2	1.0	230.4	-1.24	13 17	-9.0	03 48	14 08	09 05	26
29.0	26.9	0.081	-5.6	2.5	242.6	-1.25	14 04	-14.6	05 08	14 22	09 51	21
30.0	27.9	0.033	-5.6	3.8	254.8	-1.26	14 56	-19.8	06 32	14 41	10 42	16
DEC.												
1.0	28.9	0.006	-5.2	5.0	267.0	-1.27	15 51	-24.1	07 59	15 10	11 38	12
2.0	0.4	0.003	-4.4	5.9	279.2	-1.28	16 52	-27.1	09 22	15 53	12 39	10
3.0	1.4	0.027	-3.3	6.4	291.4	-1.29	17 55	-28.4	10 31	16 56	13 42	9
4.0	2.4	0.075	-2.1	6.6	303.6	-1.31	19 00	-27.8	11 20	18 18	14 45	11
5.0	3.4	0.148	-0.7	6.3	315.8	-1.32	20 04	-25.4	11 53	19 48	15 45	15
6.0	4.4	0.239	0.5	5.6	328.0	-1.34	21 04	-21.3	12 16	21 20	16 41	20
7.0	5.4	0.344	1.7	4.6	340.2	-1.35	22 00	-16.0	12 32	22 49	17 32	26
8.0	6.4	0.456	2.7	3.3	352.3	-1.37	22 53	-9.9	12 45	.. ..	18 20	33
9.0	7.4	0.569	3.5	1.8	4.5	-1.39	23 43	-3.4	12 56	.. ..	19 07	39
10.0	8.4	0.677	4.1	0.3	16.6	-1.41	00 32	3.2	13 07	01 37	19 53	46
11.0	9.4	0.775	4.5	-1.3	28.8	-1.43	01 21	9.5	13 20	03 00	20 41	52
12.0	10.4	0.858	4.8	-2.8	40.9	-1.45	02 11	15.4	13 35	04 24	21 30	57
13.0	11.4	0.924	4.9	-4.1	53.1	-1.47	03 03	20.5	13 54	05 48	22 22	62
14.0	12.4	0.969	4.9	-5.2	65.2	-1.49	03 57	24.4	14 22	07 10	23 16	65

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Items for the Nov. 2005 circular should reach the Editor by the 10th Oct. 2005