THE BRITISH ASTRONOMICAL ASSOCIATION

LUNAR SECTION CIRCULAR

Director Alan Wells

Assistant Director/Editor John Pedler

Volume 42 No. 4 Data on pages 7-8 are for May 2005 Lunations 1018-1019 Apr.. 2005

TOPOGRAPHICAL SUB-SECTION COLIN EBDON

It is always a great pleasure to greet new members to the section, in particular that all too rare commodity - an active observer. Roy Bridge is not new to lunar observing, but was recently able to return to it after an absence of some years. Roy recently contacted me and submitted some fine drawings which will help to grace these pages in the months ahead. A warm welcome to him and we look forward to seeing more of his work in due course.

I have included here a drawing Roy made in December 2004 of the region of Mons Piton and the secondary mountain block Gamma to the south west. This whole area looks splendid under low lighting conditions and the region abounds with wrinkle-ridges and other interesting features.

In the note to his drawing Roy remarks:

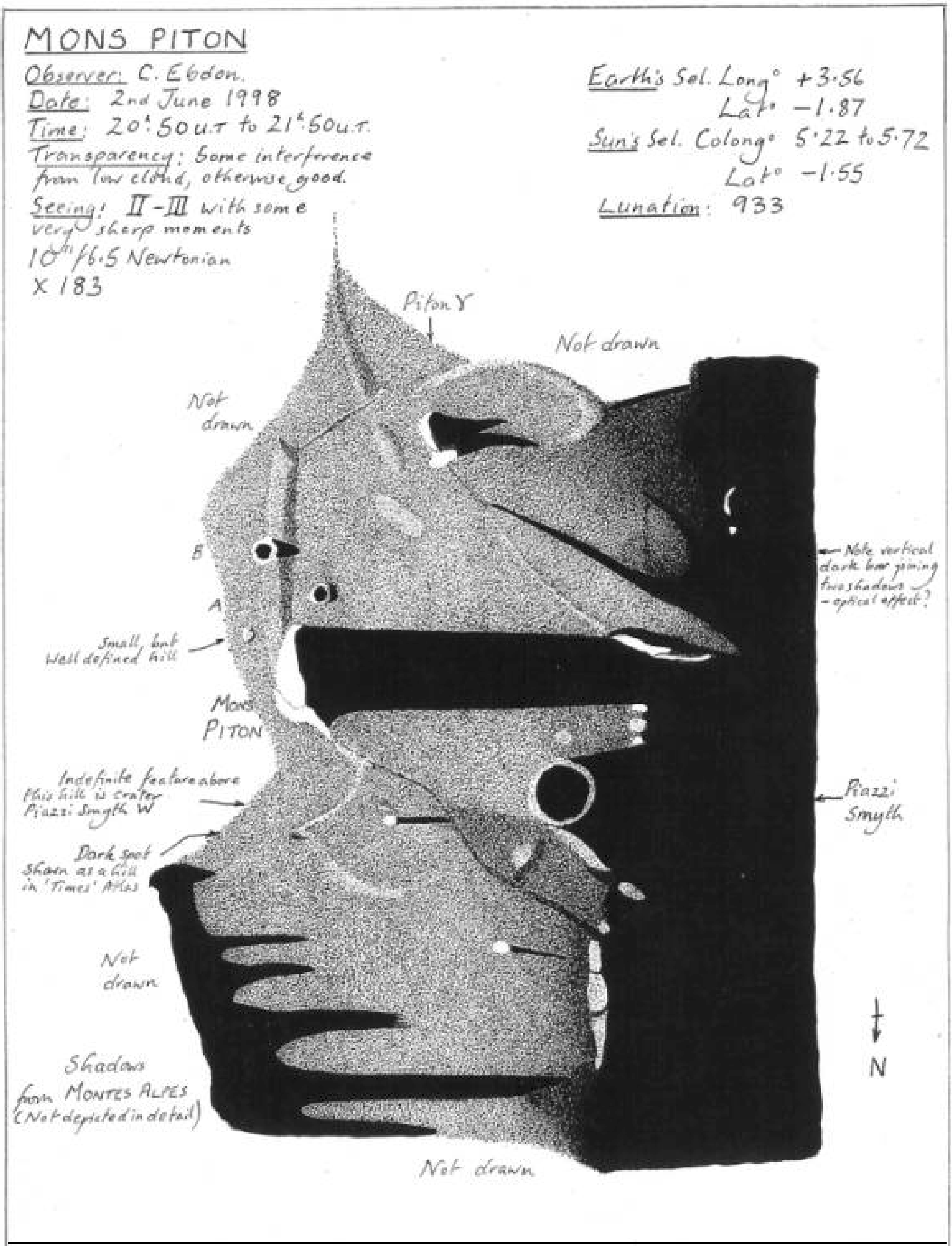
"At this stage of the illumination, the area South-west of Mons Piton gave the impression that it was an ancient lava-filed crater, with the isolated peak identified as Gamma being the central mountain. Its 'rim' was complete for approximately 300 degrees only being lost along its Northern edge. Is this the case, or is it just an illusion? To the East of Gamma were two elongated low relief dome-like features, the one in the South being the more prominent. This appearance can also be seen (but to a much lesser extent) in 'A New Photographic Atlas Of The Moon' by Zdenk Kopal, plates 17 & 19.

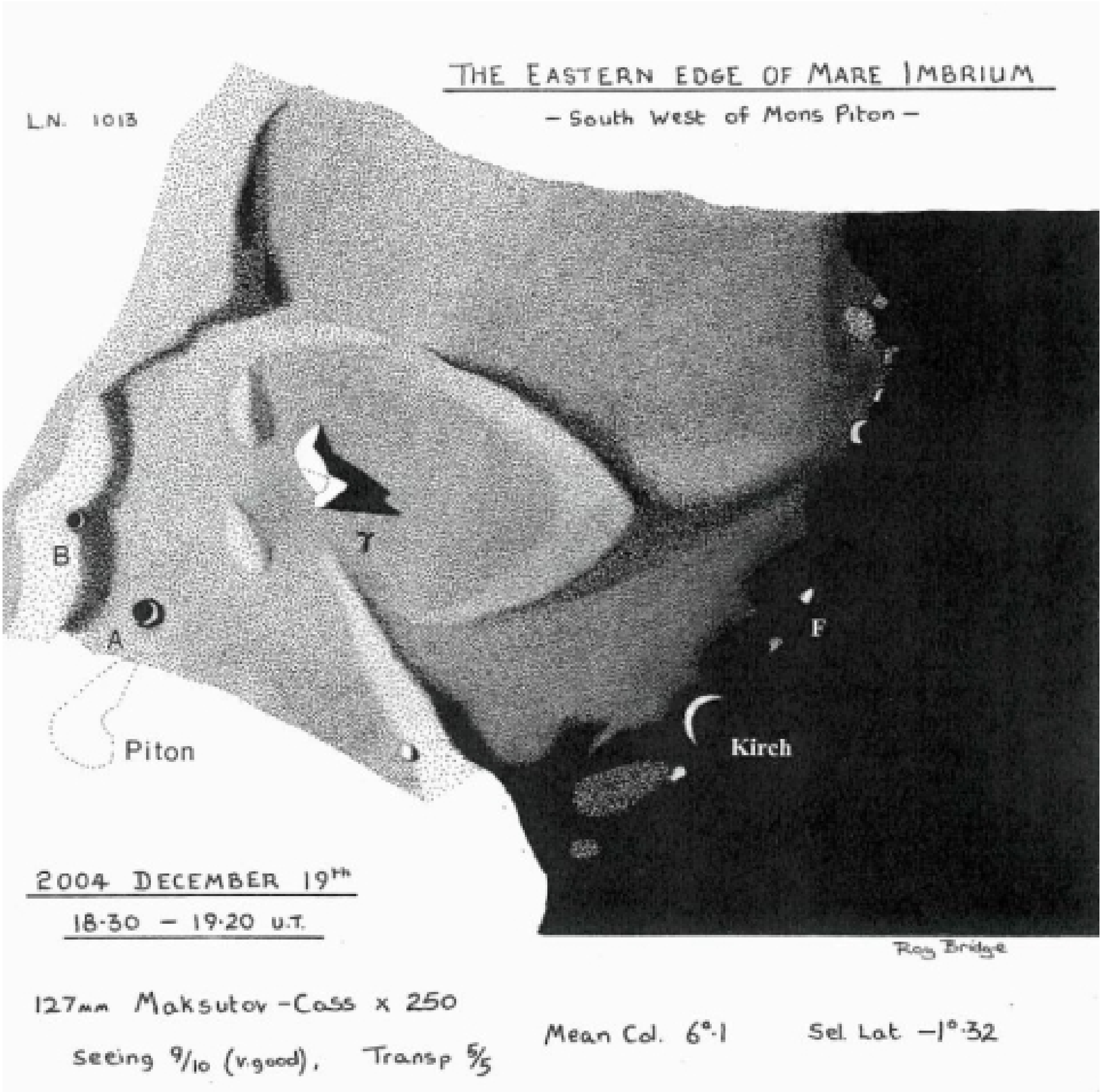
For comparison purposes, I have included a copy of a drawing of the region (albeit covering a much wider area) that I made in 1998 which appears to confirm Roy's appraisal of the area.

If any member has an image (drawing, photo or CCD) in their archive covering these features, I would be pleased to hear from them.

Members will appreciate by now that as well as previously undesignated features that seem to deserve naming in their own right, there also are many such features on the moon that we take for granted as having a certain origin, because they have always been named in a specific way as a certain type of feature. In some cases, however, their true nature is open to question. Members may recall my questioning the region known as 'Ancient Newton' in this way (see **'The New Moon'**, Vol. 11 No 1., Autumn 2001.) The area drawn by Roy similarly deserves closer scrutiny under a variety of lighting conditions in an to attempt to determine what is actually there, and further observations would be welcomed.

At the time of writing, 2005 has continued in the vein of the (for lunar observers) rather grim 2004, with a large number of cloudy nights each lunation. It will not be that long before the lighter evenings, with the Moon at a lower declination at a reasonable phase, will signal the start of what traditionally has become known as the summer recess. Please do therefore attempt to get to the eyepiece whenever conditions and time permit so that I can continue to fill these pages and those of 'The New Moon'. I know this is something of a standard plea for observations, but I really do rely on you, the membership, to keep your drawings, photos and CCD's coming through. No specific skills required; just get to know your Moon and take care over positioning of what you see. If you do not want to create images, remember that written descriptions can be just as helpful as is any background research through the literature on any of the items featured here.


MONS PITON
Observer: C. Ebdon.
Date: 2nd June 1998
Time: 20h 50u.T to 21h 50u.T.
Transparency: Some interference from low cloud, otherwise good.
Seeing: II – III with some very sharp moments
10" f6.5 Newtonian
X 183
Earth's Sel. Long° +3.56
Lat° –1.87
Sun's Sel. Colong° 5.22 to 5.72
Lat° –1.55
Lunation: 933
Piton γ
Not drawn
Not drawn
B
A
Small, but well defined hill
Mons Piton
Indefinite feature above this hill is crater Piazzi Smyth W
Dark spot shown as a hill in 'Times' Atlas
Note vertical dark bar joining two shadows – optical effect?
Piazzi Smyth
Not drawn
Shadows from Montes Alpes (Not depicted in detail)
N
Not drawn



THE EASTERN EDGE OF MARE IMBRIUM
– South West of Mons Piton –
L.N. 1013
B
A
Piton
F
Kirch
2004 DECEMBER 19th
18·30 – 19·20 U.T.
Roy Bridge
127mm Maksutov-Cass x 250
Seeing 9/10 (v.good). Transp 5/5
Mean Col. 6°·1
Sel. Lat –1°·32

Observations for the month of February have been received from Jay Albert (USA) Michael Amato (USA), David O. Darling (USA), Robin Gray (USA), Don Spain (USA). For this month fourteen days were covered giving us a 48.0% coverage for this lunation, these dates are 11, 13, 14, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, and 27 Feb 2005. During the observing period 27 lunar features were monitored this month. Those observed more than once are followed by the number of separate observations presented: Agrippa, Aristarchus = 2, Alphonsus, Arzachel, Baily, Bullialdus, Censorinus, Copernicus, Dionysius, Earthshine, Full Moon, Godin, Guericke, Herodotus, Kies, Konig, Mount Pico, Macrobius, Manilius, Mount Piton, Picard, Plato=2, Posidonius, Proclus = 2, Proclus D, and Tycho.

Passing of a fellow observer Len Ritchey

Len Ritchey passed away on peacefully at home with his family on February 11, 2005. He resided in Fort Myers, Florida, and was an active observer with the ALPO program. He participated in several alerts over the last year. His enthusiasm and zeal for the program will be sorely missed.

Earth Shine Studies

The Moon has many different aspects that it presents to the observer as it cycles through its phases. Most people are very familiar with the crescent Moon, first quarter and then the extremely enchanting Full Moon which has captivated the attention of man kinds through out their history. This can be seen in the naming of the different Full Moon's for each given month.

I find of all these different views of the Moon to be interesting to ponder and view but they do not captivate me like the shadow world of the Moon called the earthshine region. When one examines this region closely with a telescope you will find that your examining a world that is even more alien than what you experience with regular lunar observing. As you all know, the earthshine region of the Moon is illuminated not by direct sunlight but by light being reflected off the disk of the Earth.

I became interested in this region of the Moon on the evening of May 30,1979, when the most eventful 7 minutes of my astronomical career took place. This single event was the primary catalyst that got me started on my quest to learn more about lunar transient phenomena. I had set up my 12.5 f5 Cave Newtonian reflector to observe the 3 day old crescent Moon. About 25 minutes after I began observing, I noticed a bright glowing patch in the earthshine portion of the Moon. It was located on the western limb of the disk and I found it was the crater Aristarchus. I first noticed the glowing patch at 02:50 U.T. it appeared electric arc blue in color and began to get brighter and brighter. It got so bright that the eyepiece I was using, a 25mm, was glowing blue and I could see a blue glow radiating out of the eyepiece. At the brightest point of the event I looked at the Moon with my naked eye and could see the spot without any optical assistance. As the event continued, I called my wife Edna out to come quick and take a look, and by the time she got out to the telescope the event had diminished to only a fraction of what it was. The event only lasted 7 minutes and when it had disappeared, there was no hint that it had ever happened. Upon close examination of the earthshine region I could not find any hint of the glow or even find the crater Aristarchus.

Since this event I have spent many hours examining the earthshine region and documenting the intensity of the phenomena and the behavior of the bright craters such as Aristarchus, Tycho, Proclus, Menelaus, Manilius, and Copernicus. What I found was that many of these craters would shine brightly in the earthshine when the earthshine was bright. This was not the case with the crater Aristarchus which I witnessed on numerous occasions to shine brightly in the earthshine while the earthshine region was itself very opaque and low in intensity.

When I began my study of the Moon's earthshine it became apparent to me that I could give a standard value to its intensity of brightness, similar to what is used during the total eclipse of the Moon. I decided to establish a scale range from 0 to 5, with the darkest earthshine being 0 and the brightest being 5. My description for different levels of brightness was established after several years of reviewing my observing journals:

1. Earthshine region is very opaque with no features visible on the disk, even at the limb of the Moon. Nothing can be seen using binoculars or telescope.
2. Earthshine region is very opaque with no features visible on the disk, except along the limb of the Moon. Features such as Grimaldi and Mare Crisium can be detected but very little else can be seen.
3. Earthshine region is dusky in appearance and many of the darker Maria is visible. No bright craters, features, or rays are visible. The Moon disk stands out in the night sky and can be detected with the naked eye.
4. Earthshine region is bright with Maria plainly visible. Limb brightening may be visible. Bright craters like Aristarchus, Copernicus, and Kepler are visible.
5. Earthshine region intense with all lunar formations easily visible. The Maria is dark and defined on the lunar disk. The brighter craters stand out with great clarity. The ray structure is very evident. Earthshine can be easily observed with entire disk of Moon in eyepiece field of view. Glare from illuminated portion of Moon has no effect on the intensity of the earthshine. The earthshine stands out with great clarity to the night sky using the naked eye only.
6. Earthshine region extremely bright with craters like Aristarchus, Copernicus, and Tycho visible to the naked eye. Many small craters appear as star like points in the telescopic view. Low albedo features stand out with great clarity. There is no effort to seeing small details. Earthshine is very intense to the naked eye and no optical device is needed to see all formations.

When examining the earthshine region I also needed to establish what was happening with the crater Aristarchus and the earthshine region. Was the crater Aristarchus going up in brightness along with the earthshine or was it becoming bright independent of the earthshine intensity? The only way to determine what was going on was to document the earthshine region using CCD imaging and then taking brightness measurements of the earthshine and crater Aristarchus to see if both of these increased in brightness together. The other aspect of the program was to download from the web a satellite image of the side of the Earth that was directly under the sub-lunar point. This image would allow me to examine the cloud cover of this side of the earth and the sub-lunar point to determine if variation in cloud intensity had any relationship on the earthshine intensity. The next thing involved using the program called Earth and Moon Viewer at: http://www.fourmilab.ch/earthview/vplanet.html This gives us the view of the Earth from the Moon so as to determine where the sub-lunar point is located. The internet site to access for the latest photograph of the Earth is the Space & Science Engineering Center at: http://www.ssec.wisc.edu/ .From there you click on images and data and then go to real time images and data and then click on western hemisphere. It is important that when you make your earthshine observation that part of your documentation should be the image for that day. I have been working on this program for 7 years now and only have a fraction of what needed to begin a good analysis. I want to invite you to become involved and begin your adventure by studying this mysterious and alien world we call the earthshine and help by contributing the observations needed verify that bright crater phenomena is a true L.T.P. event or just a product of earthshine brightness variations.

The following repeat illumination and libration events for UK observers occur for April:

Event: Aristarchus and Herodotus area (Azeua, 1971 Sep 03) can be seen on/from (UT): 2005 Apr 22 (19:36-20:42) - *[Can you see any colour on ridges in this area?]*

Event: Plato (Schroter, 1788 Dec 11) can be seen on/from (UT): 2005 Apr 22/23 (21:17-01:13) - *[Can you see a bright area that resembles a" thin white cloud"?].*

Event: Mare Crisium (McCord, 1765 Oct 11) can be seen on/from (UT): 2005 Apr 25 (03:21-04:11) - *[Can you see colour in this area, or on features contained within?].*

Good Hunting! **David Darling, Tel. (USA) 608 837-7787, Email: DOD121252@aol.com**

Occultation subsection news — Andrew Elliott

There is only one grazing occultation this month on April 1st – graze track number 12 in the January LSC. The track crosses northern Ireland and the Isle of Man and involves a 4.7 magnitude star. (The track ends in the Irish Sea at the sunrise line.) However, the conditions are rather extreme with the moon at only 6° altitude just before sunrise. A telescope larger than 6" aperture is needed.

The most interesting total occultation, on 26th April, is of magnitude 0.9 Antares (alpha Scorpii). However, since the moon is only at 1° elevation from central England, this is largely academic!

If relevant, please note my new email address – ae@f2s.com (broadband) – and delete my 'Demon' address which will shortly be terminated.

Predictions for 52°27'41.4"N 1°44'44.0"W Birmingham

May 2005

Day	Time-UT H	M	S	P	D	Object Reference	O V	Max Mag	Sp	% Snlt	Elg	Sn Alt	Mn Alt	Mn Az	CA	PA	Watts Angle	a Min/°	b Min/°	Star's apparent RA	Dec
10	21	33	34	D	V	PPM 94169	97	6.8	G5	7+	30		9	303	14S	153	157	1.4	-3.0	51239.5	262745
11	21	42	12	D		PPM 95446	65	8.2	G0	12+	41		15	296	37S	138	137	.7	-2.0	60817.6	272547
12	20	52	43	D	K	SAO 78968	37	7.2	K2	19+	51	-8	29	278	67S	114	109	.0	-1.6	70116.7	270908
12	21	08	44	D		PPM 96902	45	8.2	A0	19+	51	-10	27	281	51N	53	47	-.5	-.5	70143.2	272231
12	22	05	53	D		PPM 96961	35	8.0	G0	19+	52		19	291	64S	118	112	.3	-1.6	70355.4	270001
12	22	29	33	D		PPM 96969	55	8.1	K0	19+	52		15	295	16S	167	160	1.5	-3.3	70407.4	264952
14	00	27	22	D	C	PPM 98236	26	6.2	A0	28+	64		5	305	54N	63	52	.3	-.8	80202.1	250439
14	21	50	55	D		PPM 99029	16	8.0	A2	36+	74		31	266	71S	123	108	-.1	-1.6	84646.9	222007
15	21	03	04	D		PPM 126567	16	7.8	K0	45+	85	-8	42	243	79N	97	80	-.6	-1.0	93356.1	184254
15	21	49	00	D		PPM 126582	15	8.4	K2	45+	85		35	253	56S	142	125	-.2	-1.9	93444.2	182303
29	02	56	17	R		PPM 272680	77	5.8	F5	65-	108	-7	12	147	65N	277	296	-.8	.6	213509.4	-200339
29	02	54	19	R		PPM 272685	75	7.0	F8	65-	108	-7	11	147	79S	242	260	-.7	.8	213513.3	-201346
30	03	10	17	R		PPM 240369	66	6.4	A0	54-	94	-5	13	136	74S	233	254	-.6	1.1	223034.5	-143332

N.B. Don't forget to add 1 hour to the above times when British Summer Time is in Force!

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 these predictions.

Dietmar Buettner (dietmar.buettner@web.de)

During each lunation about two days after the First Quarter a silent spectacle does happens on the Moon: The sunrise ray in the crater Hesiodus. It arises from the first sunlight shining through the gap in the walls of the crater Hesiodus and the immediately adjacent crater Pitatus.
The show begins when Pitatus is already fully sunlit while the rim of the Hesiodus wall is only partly illuminated and the floor of Hesiodus is still in darkness. At first a very thin needle pin emerges from a sunlit feature on Hesiodus' west wall, i.e. from the side opposite to the gap. Then this first short piece of the ray grows quickly, so that the beam runs across the dark floor of Hesiodus.
One can notice considerable changes already after about 10 minutes. The ray needs about 30 minutes to reach the center of Hesiodus and about two hours to spread through the crater's entire diameter. It has the shape of a tapering wedge with the top at the side towards the gap. During the growing of the ray there are two other typical things to notice: A frail sunlit peak becomes visible inside the dark Hesiodus just neighbouring the gap. Furthermore the initially incomplete illuminated ring of Hesiodus' rim becomes closed more and more.

I firstly read on this phenomenon in Sky & Telescope, July 1996, page 74-76.
Since then I've observed the spectacle three times. My observations revealed another interesting effect: The time table for the ray's appearance depends not only on the Sun's colongitude but correlates clearly with the seleno-graphic latitude of the Sun. The table gives some details:

Date	**1997 Jan 17**	**1998 April 5**	**2004 Dec 20**
Suns selenogr. Latitude	+1.4°	-0.9°	-1.3°
Colong. at the moment 'ray first seen'	18.6°		16.7°
Colong. at the moment 'ray in crater's center'	18.8°	17.5°	16.9°

I also calculated the Sun's altitude at the center of Hesiodus for the times of the constellations (co-longitudes?) given above in order to find out any possible correlation. This revealed that the values for the Sun's altitude vary in the same sense as for the colongitude, however within a somewhat smaller range.

The dependence on the latitude of the Sun is due to a slightly changing direction from where the Sun shines through the gap into Hesiodus. This can also be seen from little displacements of the ray relative to the crater's center from one observation to the other.
I made the first two observations with my 63 mm refractor and the third observation as well with the refractor as with my 8" Cassegrain reflector.
All the described features could be seen clearly just with the 63 mm refractor. Additionally, the 8" Cassegrain showed the small central crater in Hesiodus sunlit by the sunrise ray.

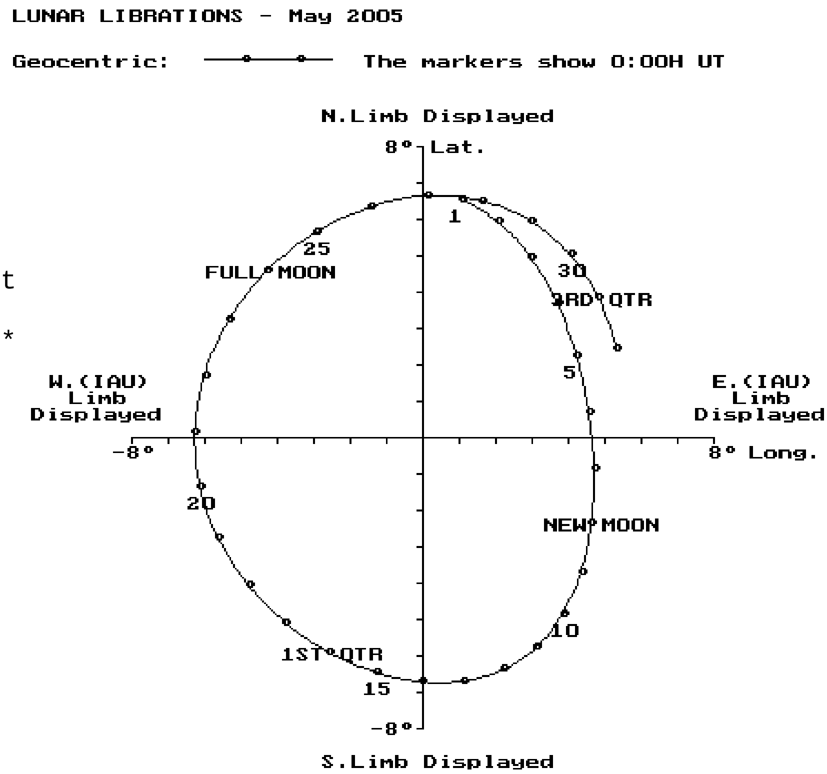
Of course, the Hesiodus sunrise ray is not important in any scientific way, but it provides a nice show to watch. Furthermore, it demonstrates that any illumination effects on the Moon are very sensitive already to the slightest changes in the numbers.

More informations and predictions can be found at:
www.lunar-occultations.com/rlo/rays/rays.htm

* * *

LIBRATION May 2005

Date	Libration amountø	PAø	Feature presented
1.0	7.5	349	Peters*
2.0	7.1	340	Thales*
3.0	6.6	331	Endymion*
4.0	5.9	319	Zeno*
5.0	5.3	305	Gauss*
6.0	4.8	288	Al-Biruni*
7.0	4.6	269	Runge*
8.0	4.7	250	Schorr*
9.0	5.0	234	Abel*
10.0	5.4	221	Peirescius*
11.0	5.7	209	Pontecoulant
12.0	5.9	198	Neumayer
13.0	6.0	187	Schomberger*
14.0	6.0	175	Newton*
15.0	5.9	163	Kircher*
16.0	5.9	150	Phocylides*
17.0	6.0	136	Catalan*
18.0	6.1	122	Wright*
19.0	6.2	109	Hohmann*
20.0	6.3	95	Schluter*
21.0	6.4	81	Olbers*
22.0	6.6	67	Bartels*
23.0	6.7	52	Lavoisier
24.0	6.9	37	Repsold
25.0	7.1	23	Pythagoras
26.0	7.4	9	Philolaus
27.0	7.6	356	Scoresby
28.0	7.7	345	Arnold*
29.0	7.6	334	De la Rue*
30.0	7.4	324	Mercurius*
31.0	7.0	313	Riemann*



Program by Bob Roberts.
Observer at: Lat. 51.0øN, Long. 1.5øW
* indicates that the feature is not illuminated.

CLOUDWATCH

Andrew Bytnar

Tabulated data for January 2005

Observer and location	Excellent days	Cloudy days	Overcast days	Hazy days	No watch days
P.Burt (Chatham)	6 (19%)	4 (13%)	21 (68%)	0 (0%)	-----
A.Bytnar (Mansfield)	1 (3%)	12 (39%)	17 (55%)	1 (3%)	-----
M.Cook (Cromer)	5½ (16%)	7½ (24%)	16½ (53%)	0½ (2%)	1 (3%)
K.Hall (Warrington)	5½ (18%)	11 (35%)	14½ (47%)	0 (0%)	2½ (8%)
A.Heath (Nottingham)	6 (19%)	8 (26%)	17 (55%)	0 (0%)	-----
J.Wrigley (Reading)	5½ (18%)	8 (26%)	17 (55%)	0½ (2%)	-----

Tabulated data for February 2005

Observer and location	Excellent days	Cloudy days	Overcast days	Hazy days	No watch days
P.Burt (Chatham)	1 (4%)	3 (11%)	24 (86%)	0 (0%)	-----
A.Bytnar (Mansfield)	1 (4%)	13 (46%)	14 (50%)	0 (0%)	-----
M.Cook (Cromer)	4½ (16%)	2½ (9%)	21 (75%)	0 (0%)	-----
K.Hall (Warrington)	4 (14%)	10½ (38%)	13½ (48%)	0 (0%)	-----
A.Heath (Nottingham)	3 (11%)	6 (21%)	19 (68%)	0 (0%)	-----
J.Wrigley (Reading)	3 (11%)	7½ (27%)	16½ (59%)	1 (4%)	-----

Apologies for the problems in receiving some e-mails and sending data. My computer system went somewhat awry during the month, and is still not really right. However, I will be upgrading to a new system in mid-March. Many thanks for your perseverance.

2005 MAY.	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	22.1	0.532	1.0	6.5	175.3	0.50	20 44	-23.4	02 26	10 29	06 22	15
2.0	23.1	0.418	2.1	5.9	187.5	0.53	21 41	-18.7	02 47	11 59	07 16	20
3.0	24.1	0.308	3.0	4.9	199.8	0.57	22 35	-13.1	03 03	13 26	08 06	26
4.0	25.1	0.210	3.7	3.7	212.0	0.60	23 25	-6.9	03 16	14 49	08 54	33
5.0	26.1	0.126	4.2	2.2	224.2	0.63	00 14	-0.4	03 27	16 11	09 40	40
6.0	27.1	0.063	4.6	0.7	236.4	0.65	01 02	6.0	03 38	17 33	10 25	46
7.0	28.1	0.021	4.7	-0.9	248.7	0.68	01 51	12.1	03 50	18 55	11 12	52
8.0	29.1	0.002	4.6	-2.4	260.9	0.71	02 40	17.5	04 05	20 16	12 00	57
9.0	0.6	0.005	4.4	-3.8	273.2	0.73	03 32	22.1	04 24	21 36	12 50	62
10.0	1.6	0.029	3.8	-4.9	285.4	0.75	04 25	25.5	04 50	22 48	13 42	64
11.0	2.6	0.072	3.1	-5.8	297.6	0.77	05 20	27.6	05 27	23 49	14 35	66
12.0	3.6	0.130	2.2	-6.4	309.9	0.79	06 15	28.3	06 16	.. ..	15 28	66
13.0	4.6	0.202	1.1	-6.7	322.1	0.80	07 10	27.7	07 17	00 35	16 19	64
14.0	5.6	0.283	-0.1	-6.8	334.3	0.82	08 02	25.8	08 27	01 08	17 08	61
15.0	6.6	0.372	-1.4	-6.5	346.5	0.83	08 52	22.7	09 41	01 31	17 54	57
16.0	7.6	0.466	-2.6	-5.9	358.8	0.85	09 40	18.8	10 55	01 49	18 37	53
17.0	8.6	0.561	-3.8	-5.1	11.0	0.86	10 26	14.0	12 08	02 02	19 19	47
18.0	9.6	0.656	-4.9	-4.1	23.2	0.88	11 11	8.7	13 22	02 13	20 01	41
19.0	10.6	0.747	-5.7	-2.8	35.4	0.90	11 55	2.9	14 37	02 23	20 42	35
20.0	11.6	0.830	-6.2	-1.4	47.6	0.91	12 40	-3.1	15 55	02 33	21 26	29
21.0	12.6	0.902	-6.3	0.1	59.8	0.93	13 27	-9.2	17 16	02 44	22 13	23
22.0	13.6	0.956	-6.0	1.7	72.0	0.96	14 16	-15.0	18 43	02 58	23 05	17
23.0	14.6	0.990	-5.4	3.2	84.1	0.98	15 11	-20.3	20 14	03 16	.. ..	..
24.0	15.6	0.999	-4.3	4.5	96.3	1.00	16 09	-24.6	21 42	03 43	00 02	13
25.0	16.6	0.980	-3.0	5.6	108.5	1.03	17 13	-27.3	22 57	04 23	01 02	10
26.0	17.6	0.935	-1.5	6.3	120.7	1.05	18 19	-28.3	23 52	05 23	02 09	9
27.0	18.6	0.864	0.1	6.6	132.9	1.07	19 25	-27.2	.. ..	06 43	03 14	11
28.0	19.6	0.774	1.6	6.5	145.1	1.10	20 29	-24.3	00 29	08 13	04 16	14
29.0	20.6	0.669	3.0	5.9	157.3	1.12	21 28	-19.8	00 53	09 45	05 12	19
30.0	21.6	0.557	4.0	5.0	169.5	1.14	22 23	-14.3	01 10	11 13	06 04	25
31.0	22.6	0.444	4.8	3.8	181.7	1.17	23 14	-8.2	01 24	12 38	06 52	31
JUNE												
1.0	23.6	0.336	5.3	2.4	193.9	1.19	00 03	-1.8	01 35	13 59	07 38	38
2.0	24.6	0.238	5.6	0.9	206.2	1.21	00 50	4.6	01 46	15 19	08 23	44
3.0	25.6	0.153	5.5	-0.6	218.4	1.23	01 38	10.6	01 58	16 39	09 08	50
4.0	26.6	0.086	5.3	-2.1	230.6	1.25	02 26	16.2	02 11	18 00	09 55	56
5.0	27.6	0.038	4.9	-3.5	242.9	1.27	03 17	20.9	02 29	19 19	10 44	60
6.0	28.6	0.009	4.3	-4.6	255.1	1.29	04 09	24.6	02 52	20 34	11 35	63
7.0	0.1	0.001	3.6	-5.5	267.4	1.31	05 03	27.0	03 24	21 39	12 27	65
8.0	1.1	0.013	2.7	-6.2	279.6	1.32	05 58	28.2	04 09	22 30	13 20	66
9.0	2.1	0.043	1.6	-6.6	291.9	1.33	06 53	27.9	05 06	23 08	14 12	65
10.0	3.1	0.090	0.5	-6.6	304.1	1.34	07 46	26.3	06 13	23 34	15 02	62
11.0	4.1	0.151	-0.8	-6.4	316.4	1.35	08 37	23.6	07 26	23 53	15 48	59
12.0	5.1	0.224	-2.1	-5.9	328.6	1.36	09 25	19.9	08 39	.. ..	16 32	54

To receive regular copies of this circular, please send stamped addressed envelopes to the Director. Envelopes at least 110mm by 220mm will ensure no damage in transit.

Members who have Internet access may care to receive their Circulars (colour version) by E mail. Please contact the Director for details.

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:

John Pedler, 25 Beverley Hills Park, Porton Road, Amesbury, Wilts. SP4 7LH.
Tel. No. 01980 622314 Email jhnpedler@aol.com

Items for the May 2005 circular should reach the Editor by the 10th April 2005