From just outside Elgin, Scotland, Alan Tough imaged the crescent Moon, Venus and Mars on 2015 February 20 at 18:38 UT with a Canon EOS 6D and L-series 24-105 mm lens, 1.6 second exposure @ f/5 and ISO-640.
From the Director

The lunar terminator, where the raking light of sunrise or sunset throws the surface features into dramatic relief, is one of the must-see sights for the amateur telescopist; so it is hardly surprising that regular lunar observers constantly revisit it, never tiring of its magnificent and ever-changing vistas. The great Harold Hill was particularly drawn to the drama of its stark light and shade, and would often wait years in order to catch a moment when the Sun’s low rays showed a formation to best advantage.

But the appeal is not just one of aesthetics. As we all know, the Sun’s low light can also be revelatory, showing up low-relief features such as domes and wrinkle ridges that disappear from view as the Sun rises in the lunar sky. For example, sunrise always shows to perfection the dramatic fields of ejecta surrounding the well-known craters Aristoteles and Eudoxus (Fig. 1, above, taken on January 26, 2015). It is also worthwhile examining craters still filled with shadow to try to detect the dim glow of inner terracing or central peaks that, although in shadow, are still catching the Sun’s rays or are indirectly illuminated by light back-scattered from sunlit rims. This would make an interesting observational programme for both visual observers and imagers. Our member Dietmar Büttner has been carrying out such work for some time, and this is what he has written:

‘The visibility of Tycho’s central peak in the shadow has been a topic of special interest during the last years. It seems useful to extend such observations to other craters in order to provide reference material for comparisons. This would allow a better understanding on how long craters’ central peaks are visible in a shadow environment. The observation is quite easy, as the observer only needs to record whether the peak is visible or not while the crater’s interior is still or already in shadow. Even more useful is to determine the time when a central peak becomes visible or invisible within a shadow environment. Observations made with telescopes of different size are desirable because the visibility of faint objects in the shadow depends on the telescope’s aperture. So, useful observations can be made even with small apertures.’

I suspect that such appearances may have given rise to spurious TLP sightings in the past, so Dietmar’s suggestion is well worth pursuing. I was looking for examples of such indirect illumination on the evening of January 26. I saw none, but the low lighting revealed other points of interest. For example, I was struck by the extreme roughness of the terrain surrounding the battered crater Maurolycus in the Moon’s ancient southern uplands (Fig. 2, overleaf). The entire region, including many crater rims, is pitted with tiny impact craters. This is in stark contrast to the area around the crater Sacrobosco (see Fig. 3, overleaf, taken the same evening), where similar highland terrain only some 20° to the north has been softened and smoothed by lava infills. An explanation for the difference may lie in the fact that Sacrobosco is adjacent to the Altai Scarp, which forms one of the rings of the Nectaris Basin, and indeed it has been suggested that the crater lies astride a barely discernible outer Nectaris ring, although I can never see that. So, keep patrolling the lunar terminator—you are bound to stumble across something new!

Bill Leatherbarrow
Director, BAA Lunar Section

Fig. 1.
Topographical notes

compiled by Peter Grego

Visual studies and observations
Visual topographic lunar observational drawings have been sent by Dietmar Büttner (Germany), Dale Holt (UK), Philip Jennings (UK), Graham Sparrow (SPA, UK) and Mike Wood (SPA, UK)

Observational drawings by Graham Sparrow

Gutenberg (lower left)
A sketch from 2015 January 24 is attached. It gave me a lot of trouble — three attempts and the proportions are still not quite right! It was done from an image thrown onto my laptop screen from my 200mm Celestron 8SE. The drawing was made between 16:50 and 17:35 UT. Plans to do a second study of the crater on that evening were thwarted by appalling transparency and a fast-advancing army of clouds!

Plato and northern Mare Imbrium (lower right)
The attached pencil drawing was made on 2015 January 28 using my 200mm SCT with attached camera throwing an image onto my laptop. I started just after 17h and spent about 25 to 30 minutes getting Plato and other features and their shadows on paper. I then stopped with the drawing incomplete and finished it later (mostly shading the mare and trying to depict the wrinkle ridges) from captured video.
**Atlas and Hercules** (left)
The observation was done on 2015 February 24 from 18:20-49 UT, using my Celestron 8SE with Huviron camera throwing an image onto my laptop.

**Mare Tranquilitatis** (below)
The attached observation was begun at the telescope (image on laptop screen) on 2015 February 24 and completed from captured video the following day, which still feels to me like cheating! However, this method does give me ample time to depict larger areas. This is of part of the Mare Tranquilitatis, close to the terminator. I drew the craters and mountains from the live view but did the bulk of the mare shading and wrinkle
Two views of Theophilus
I recently attempted some lunar sketching of the lunar crater Theophilus. Dale Holt suggested I send them to you. One sketch is using traditional pencil technique, the other is the same sketch but in the ink dot technique. They were made on the evening of the 2015 February 24. This is the first time I have seriously attempted lunar sketching. I feel I have now got to know Theophilis much better. I particularly enjoyed the change in the crater shadow during the hour of observing the crater. Happy to have feedback on how to improve the sketches.

Mike Wood

Southern Limb (south of the craters Casatus and Klaproth)
2014 January 12, 18:36 to 18:58 UT
Dietmar Büttner (Chemnitz, Germany)
100 mm refractor, 129x
Accessories: Amici prism
Seeing AIII, transparency good
Sun’s Selenographic Colongitude: 48.6° - 48.8°
Sun’s Selenographic Latitude: +1.6°
Longitude Libration: +4.3°
Latitude Libration: +4.9° (topocentric) at 18:36 UT
Lunation No.: 1126
Notes: Pencil drawing. North is up. The middle two quarters of the southern limb section drawn here belong to the region south of Casatus and Klaproth. The lower black areas represent shadow zones on the Moon respectively the sky background, while the upper large black area is the part of the lunar landscape not depicted here.
Observational drawings by Dale Holt

Montes Apenninus
2015 January 27 I used the 6” refractor to take a look at the Moon and make a lunar sketch. I went and produced a rather rusty and fussy sketch of the lunar Apennine mountain range, which my friend Frank McCabe kindly marked with a red dot to show site of the historic Apollo 15 landing site.

Atlas and Hercules
2015 February 23
18:30 UT
153 mm refractor
Observer: Dale Holt (Chipping, UK)

See also p5 for an observation of these craters a day later, by Graham Sparrow. Ed.
At long last, the clear skies of 2015 January 30 enabled me to get some lunar observing done. I had sawn a willow branch at sunset and had been stood in the snow whittling a spoon from it by moonlight, so I was already a bit chilly when I opened up my observatory. However, by way of reward for braving the cold I enjoyed the best seeing conditions I have had in a long time.

Above is my drawing of the (as far as I can ascertain) as yet unnamed dorsa that form a prominent crescent shape near the eastern perimeter of the Mare Humorum; I assume they are associated with a ring in the underlying structure of the basin. The two craters visible in the drawing are Gassendi O and Gassendi J. Subtle albedo variation across this region indicated gentle undulations in elevation, while the wrinkle ridges were noticeably gnarled in appearance. As I again found 3D imagery to be of limited use for exploring wrinkle ridges, I generated the attached contour map (Fig. 2) using Lunar Orbiter Laser Altimeter (LOLA) 1024ppd elevation data (lines are displayed in increments of ~35m). This indicates that the brighter portion of my drawing, on the ‘seaward’(!) side of the wrinkle ridge, is slightly elevated with a slope that suggests — to my admittedly very untrained eye — magmatic flow from the fault associated with the ridges.
The attached colour-stretched monochrome image of the region (Fig. 3) generated using the same LOLA data and limited to elevations of between -2600m (black) and -2000m (white), is somewhat clearer. South of Gassendi O (the right-hand crater) is a distinct depression with an almost graben-like shallow profile between two wrinkle ridges (indicated A). I was also pleased to note that the colour-stretch image also confirms the existence of a teeny ridge (B) of only a few tens of metres in height and a gradient of only 1.5 degrees or so at most; I had included it in my drawing but it was a slippery customer in Quickmap.

Another ridge however (indicated C) made for a very striking comparison. Casting a prominent shadow, this ridge was the most obvious of all at the time of observation. While I have become accustomed to even the most hulking wrinkle ridges having a gradient of only a few degrees or so, LOLA data shows this specimen is a relatively whopping 25 degrees steep in places. NAC imagery exists for a substantial portion of this ridge and I was very excited to explore it (Fig. 4). While many wrinkle ridges feature rocky outcrops and boulder fields near their crests, I had not expected the large swathes of exposed (anorthosite?) rubble; rocks several metres across may be seen. Was this thrust up by the formation of the wrinkle ridge, or simply the part of the ring associated with the underlying basin structure, which caused the fault to exist around it?

The ridge marks an elevation difference of some 180m (the exposed face visible in the NAC image slopes to the NE, or top-right) and so I expect that it appears much more prominent when it is visited by the evening terminator, when the steeper side is casting shadow. The region’s rockiness is also hinted at by relatively high night-time temperature measurements, these reach a maximum at a portion of the ridge that appears relatively free from loose surface rock. There are also lava flows and irregularly shaped pits in this region, with more bright rubble visible within them. See Fig. 5 for a peculiar landscape of dark lavas juxtaposed with bright rock, like a strange alien quarry. I am surprised by how lava seems to have sloshed and drained over the rubble in a manner reminiscent to the impact melt seen in craters. I wonder if the lava flows associated with these wrinkle ridges were especially runny, since they are generally low in silicates (as indicated by Standard Christiansen Feature Value data in Quickmap).
Lunar images

Lunar images (or links to images) have been received from Carl Bowron (UK), Mike Brown (UK), Maurice Collins (New Zealand), David Finnigan (UK), John Fletcher (UK), Clyde Foster (South Africa), Richard Hill (USA), Alex Houston (UK), Bill Leatherbarrow (UK), Mark Radice (UK) and Derrick Ward (UK). A selection of these images is featured below. My apologies to contributors whose hard-won work is not featured in this issue; limited space means that only a representative sample of material (with preference to BAA members) is included. Images intended as part of the Section’s investigations into lunar colours should be sent to director(at)baalunarsection.org.uk who will pass them on to Kevin Kilburn.
Hercules, Atlas, Endymion to Mare Humboldtianum
03 January 2015 @ 1941 to 1942UT
15cm OG @ F8 - NexImage 5 (2 x AVIs)
RegiStax 6 (Contrast stretched)
CF Bowron, Doncaster, UK
Aristarchus Region: 01 February 2015 @ 2127UT
15cm OG @ F8, NexImage 5, RegiStax 6
CF Bowron, Doncaster

Rumker, Mairan on to Sharp: 01 February 2015 @ 2129UT
15cm OG @ F8, NexImage 5, RegiStax 6
CF Bowron, Doncaster
CATHARINA, CYRILLUS, THEOPHILUS MADLER,
EUDORUS & CAPITAAE.
MUSES ASPERITATES GHOUL FEATURES
24 FEBRUARY 2015 @ 19:19UT
15cm OG @ F8, NEXIMAGE 5, REGISTAX 6
CF BOWRON, DONCASTER

PETAVIUS: 24 FEBRUARY 2015 @ 19:19UT
15cm OG @ F8, NEXIMAGE 5, REGISTAX 6
CF BOWRON, DONCASTER
THEOPHILUS COMPLEX 17.58 U.T. 26 January 2015
10 inch F9.4 Long Focus Newtonian, AE Apo. Barlow working at F14
ZWO ASI 120MM mono video camera, Hoya 830nm IR filter
24ms exposure, 20 fps, Gain 55%, 300 frames out of 1000
Altitude 47 degrees, Seeing 3/10, Transparency 10/10 processed in Registax 5
Mike Brown, Huntington, York U.K. 53.58.12 North, 1.03.20 West
TORRICELLI to KANT 18.06 U.T. 26 January 2015
10 inch F9.4 Long Focus Newtonian, AE Apo. Barlow working at F14
ZWO ASI 120MM mono video camera, Hoya 830nm IR filter
24ms exposure, 20 fps, Gain 55%, 150 frames out of 1000
Altitude 47 degrees, Seeing 3/10, Transparency 10/10 processed in Registax 5
Mike Brown, Huntington, York U.K. 53.59.12 North, 1.03.20 West
ARISTOTELES and EUDOXUS 18.10 U.T. 26 January 2015
10 inch F9.4 Long Focus Newtonian, AE Apo. Barlow working at F14
ZWO ASI 120MM mono video camera, Hoya 830nm IR filter
24ms exposure, 20 fps, Gain 55%, 150 frames out of 1000
Altitude 47 degrees, Seeing 3/10, Transparency 10/10 processed in Registax 5
Mike Brown, Huntington, York U.K. 53.59.12 North, 1.03.20 West
**Philolaus to Goldschmidt**  30.01.15, 20.25 - 27 UT, S Col. 38.2°, seeing 4/10, transparency v.good.

305mm Meade LX200 ACF, f 25, ZWO ASI 120MM camera, Baader IR pass filter

A composite of three images, 1920 frames processed in Registax 6, Paintshop Pro 8 and Microsoft ICE.

Dave Finnigan, Halesowen

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**Promontorium Laplace, Montes Recti**  30.01.15, 20.07 - 08 UT, S Col. 38.0°, seeing 4/10, transparency v.good.

305mm Meade LX200 ACF, f 25, ZWO ASI 120MM camera, Baader IR pass filter

A composite of two images, 1280 frames processed in Registax 6, Paintshop Pro 8 and Microsoft ICE.

Dave Finnigan, Halesowen
Scoresby to Peary, Goldschmidt to Euctemon  
30.01.15, 20.18 - 21 UT, S Col. 38.2°,
seeing 4/10, transparency v.good. Libration: Latitude +6°49', Longitude +5°31'
305mm Meade LX200 ACF, f25, ZWO ASI 120MM camera. Baader IR pass filter
A composite of two images, 1280 frames processed in Registax 6, Paintshop Pro 8 and Microsoft ICE.
Dave Finnigan, Halesowen

Anaximenes to Scoresby  
01.02.15, 20.19 - 30 UT, S Col. 61.9 – 62.0°, seeing 4/10,
transparency good. Libration: Latitude 07°04', Longitude 04°31-30'
305mm Meade LX200 ACF, f25, ZWO ASI 120MM camera. Baader IR pass filter
A composite of 9 images, each 640 frames, processed in Registax 6, Paintshop Pro 8 and Microsoft ICE.
Dave Finnigan, Halesowen
**Babbage, J.Herschel. Anaximander** 01.02.15, 20.34 - 38 UT, S Col. 62.1°, seeing 4/10, transparency good. Libration: Latitude 07°04', Longitude 04°29'-28'

305mm Meade LX200 ACF, f/25, ZWO ASI 120MM camera, Baader IR pass filter

A composite of 4 images, each 640 frames, processed in Registax 6, Paintshop Pro 8 and Microsoft ICE.

Dave Finnigan, Halesowen

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**Scoresby to Nansen** 01.02.15, 20.16 UT, S Col. 61.9°, seeing 4/10, transparency good.

Libration: Latitude 07°04', Longitude 04°32'

305mm Meade LX200 ACF, f/25, ZWO ASI 120MM camera, Baader IR pass filter

A composite of two images, 1280 frames processed in Registax 6, Paintshop Pro 8 and Microsoft ICE.

Dave Finnigan, Halesowen
Those selenographers who still enjoy investigating lunar features using the methodology set down by observers of the past will soon realise that the British weather seldom cooperates in terms of providing suitable observing opportunities at the appropriate time. Following an interesting line of enquiry can often mean waiting months, or sometimes years, for the right combination of illumination, libration and seeing conditions. Therefore finding myself at the eyepiece of my small telescope in the early evening of 2015 February 21, scanning the lunar terminator and making a surprise follow-up observation was somewhat unusual. The sky in the main had been cloudy for much of the day, with frequent wintry showers, but this began to break up as the sun was setting to reveal a sharp, aqua blue sky, suggestive that temperatures were on their way downwards!

The evening provided a close pairing of Venus and Mars, and earlier I was able to capture both planets in the field of my Celestron C90 at 41x. Venus shone with piercing brilliance whilst Mars, duller in tone, was a warm orange disc, too small for any surface feature to be revealed by the aperture used.

The slender crescent Moon was positioned above the two planets, earthshine was prominent exhibiting a greyish blue tint (never sure if this is an effect of the surrounding sky) but a warm coppery tone was also suspected, later confirmed by Richard Baum who had been observing with binoculars on the evening of the 20th.

Turning the telescope to the Moon as the sky darkened, contrast was increased, the terminator being positioned slightly west of centre of the Mare Crisium. Consequently the majestic formations along the southern terminator, Petavius, Langrenus and Vendelinus were beautifully illuminated, dominating the view at low powers. Seeing conditions prevented the use of high powers, however I was able to tease out a reasonable image at 100x, and began to scan the terminator, and came upon Geminus, the western wall of which was just catching the morning sun. I quickly realised that illumination might provide opportunity to investigate the Burckhardt rille mentioned in the February LSC.

During the fleeting moments when seeing steadied enough to afford a reasonable view of the lunar surface I was given the impression of a sharp, very straight, black line, to the south of Geminus. In his notes relating to the rille, reproduced in the last LSC, Isamu Hirabayashi suspected “… it unlikely that the valley can be
observed usefully on the narrow crescent Moon’. Considering the circumstances under which the rille might be visible at sunrise I thought Hirabayashi may have been right in his assertion. However it was clear on February 21, even given the small aperture used, that the rille under these conditions was quite an easy object. It was even clearly visible at x41, when its location had been pinpointed.

The attached illustration is a direct scan from my notebook of a sketch made at the eyepiece and ‘finished’ indoors after the session. It depicts the view as seen in the Maksutov using a star diagonal therefore north is uppermost and the western limb to the right of the drawing. On consulting Rukl’s atlas it would seem that I have drawn Geminus A a little too small, and perhaps shown the orientation of the Burckhardt rille a little too strongly in the east west direction. Those versed in depicting the lunar surface in a like manner will understand and hopefully forgive these little inaccuracies. I did however note that the rille was well seen as dark linear feature with its western bank illuminated by the rising sun, it reminded me of a smaller version of the Alpine Valley when the latter forms a striking shadow filled object at sunrise. The Burckhardt rille appeared to terminate in a rounded darker feature, which swam in and out of view as the seeing conditions varied. Lunar Orbiter photography indicates a small crater situated south of the eastern extremity of the rille, Rukl also shows this crater, and I wondered if this feature, unresolved in the small aperture I was using, gave rise to the effect of a ‘bulbous’ eastern end to the rille. The surface to the south of the rille, towards its middle, suggested a slightly elevated region, almost domelike, which was faintly shadowed on its western edge. Features at the southern end of Geminus, the ‘jumbled’ craterlike feature which was referred to in the last circular, were difficult to resolve given the aperture and seeing conditions.

Despite the assumptions made in the last LSC it might be that the Burckhardt rille is a relatively easy object for a small telescope, although the detail of its features perhaps warrants examination with larger apertures. Never the less one lesson is that nothing is perhaps what it might be assumed to be on the lunar surface, and suitable lighting can bring forth objects which might otherwise be considered out of reach. I would venture to say that the Burckhardt rille is an impressive feature, both under sunrise and sunset conditions, and it would be both instructive, and beneficial, if this little known feature were to receive further attention in the pages of the LSC.

Images by Mark Radice
Sinus Iridum
30 January 2015 2220Z
14" f11.6 Newtonian ASI120MM

Yew Tree Observatory
Mark Radice
Using a 110 mm refractor at f/22 Maurice Collins captured the Plato area on 2015 February 27 at 08:47 UT (right) and again on February 28 at 08:22 UT.
Observations from the following observers were received in January: Jay Albert (Lake Worth, FL, USA - ALPO) observed: Aristarchus, Herodotus, Janssen K, Langrenus, Mare Smythi, Proclus, and Vallis Schroteri. Aldo Tonon (Italy - UAI) imaged Aristarchus. Maurice Collins (New Zealand, RASNZ) observed Deslandres, Plato, and several features. Anthony Cook (Newtown & Mundesley, UK - BAA) imaged several features and observed Earthshine. Marie Cook (Mundesley, UK - BAA) observed Aristarchus, Maskelyne, and Proclus. Ralph Eikelenberg (Belgium - ALPO) imaged several features. Chris Garrison (near Granada, Spain) imaged the Moon. Brendan Shaw (UK - BAA) imaged Alpetragius, Aristarchus, Gassendi, Hercules, Maskelyne, Proclus, and Yerkes. Kevin Taylor (Leeds, UK) imaged the whole Moon.

News: Nothing much to report in the way of news over the last month - though we had a film crew from Japan, visit Aberystwyth, to film about the Moon. More about this next month. Also next month I will unleash changes to the TLP programme, to deal with the new findings about the Moon that have been deduced by analysis of recent spacecraft results.

TLP Reports: No TLP were reported in January, but on 2015 Feb 01 UT 22:41 Kevin Taylor of Leeds took a whole Moon colour image, using a Canon 1000D camera (with an Astronomic CLS clip filter) on a Skywatcher 6" f/5 telescope, with a and recorded a red region on the inner northern-rim/floor area of Plato (See Fig. 1). Although the red patch in Plato might be in the right place to be spectral dispersion colour, evidence for spectral dispersion type colour is not present so strongly on other obvious contrasty edges. The effect may instead be some sort of processing artifact, as Kevin fed images through Registax software, and the individual images are a lot more blurry and do not show any sign of red here. Whatever the cause, both Kevin, and myself, think that it probably was not a TLP, as there are some reddish patches on dark crater patches elsewhere, but just for now we will give this a weight of 1 as it would be good to have some repeat illumination images for comparison.

Fig. 1. 2015 Feb 01 UT 22:41 enlargements of Kevin Taylor’s whole Moon image, orientated with north towards the top. (Left) some apparent redness on the northern rim/floor area of Plato - probably an image processing artifact. (Right) a similarly enlarged region around Atlas and Hercules, also showing possible hints of dark red - likewise - probably image processing artifacts.
Routine Reports: Below is a selection of reports received for January that can help to re-assess past TLP observations.

Aristarchus region: On 2015 Jan 03 UT 01:05-02:00 Jay Albert (ALPO) observed both Aristarchus and Herodotus and the same illumination conditions to the following three TLP reports:

On 2002 Sep 19 at UT 06:31-07:22 R. Gray (Winnemucca, NV, USA) found that the bright areas of the crater floor, and the east facing part of the west rim, were brighter noticeably in red (Wratten 25) or white light, than in blue (Wratten 38A). The observer suspects that the apparent TLP was more to do with the relative densities of the filters and the contrast in Aristarchus than a real event. This was partly confirmed after checks on other craters, though it did not work everywhere. The ALPO/BAA weight=1.

Aristarchus 1963 Oct 30 UT 01:50-02:15 Observed by Greenacre and Barr (Flagstaff, AZ, USA, 24" Clark Refractor) observed 2 ruby red spots - one just to the SW of the cobra’s Head and the other on a highland area east of Vallis Schroteri. A pink colour formed covering the SW rim of Aristarchus. Effects present with or without Yellow Wratten 15 filter. Similar effects checked for elsewhere on other craters but not seen. So presumed not to have been due to chromatic aberration or atmospheric dispersion. Effect not seen in 12" refractor, but this may have been a resolution issue. The NASA catalog ID No. is #778. The NASA catalog weight is 5 (highly reliable). ALPO/BAA weight=4.

On 1898 Apr 07 at UT 22:30 Pickering (Cambridge, Mass, USA, 15" refractor?) observed in Vallis Schroteri and its vicinity "Variations in vapour col. Lge. gap in main column
near edge of C. Gap not previously seen, but fine lines crossing it had. E is still most conspic. (time est. fr. col. given)". The Cameron 1978 catalog ID=298 and weight=3. The ALPO/BAA weight=2.

Aristarchus 1969 May 03 UTC 07:00? Observed by Smith, Gallivan (Corralitos Observatory, Organ Pass, NM, 24" reflector, photos) "Bluing around crater. Visible on monitor, but immeasurable in photos" NASA catalog weight=5. NASA catalog ID #1125. ALPO/BAA weight=3.

On 1980 Sep 25 at UT 20:20-22:14 P.Moore (Selsey, UK, 15"? reflector, seeing = III) saw a red glow to the south west of Aristarchus, but this was also visible in some other carters, therefore probably spurious colour. Cameron 2006 catalog TLP ID=111 and weight=0. ALPO/BAA weight=1.

It is difficult to say from the images in Fig. 2, whether Aristarchus was incredibly bright, for the 1983 Geoff Amery TLP, because as we need a wider context area to compare against other bright carters such as Proclus, Censorinus, etc. However the images by Aldo Tonon suggest that the craters interior was not diffuse. The images by Brendan, in colour, appear to show more diffuseness, but that is because the focusing was off slightly in one or more of the filters - otherwise it was sharp. So it could be the atmospheric seeing conditions back in 1983 that made Geoff Amery think the interior was fuzzy, however this does not explain the brilliance of the crater32 years ago. So for now the weight of that TLP will remain the same, at 3.

Pickering’s 1898 ‘Vapor’ TLP, is one of many he has described for the Vallis Schroteri area, and the general consensus amongst the present day era astronomers is not to pay too much attention to his TLP reports, and that it is just the natural appearance of the Moon at this stage in illumination, perhaps compounded by seeing.
Aldo Tonon’s images confirm that there are lines going over this area, namely ray material from Aristarchus. Before lowering the ALPO/BAA weight from its present 2 though, I would be happier if I could find some articles by Pickering describing/showing what he had seen back in 1898 (and other occasions), so that we can do a direct comparison with modern day images that Thomas and Brendan took.

The 1969 Gallivan TLP seen in Aristarchus is an interesting report. The Corralitos Observatory group, led by Prof. Allen Hynek (of Project Blue Book fame) spent ~8000 hours imaging the Moon through different coloured filters, trying to verify TLP reports seen by amateur astronomers, or to find some TLP themselves. They did not publish much, unlike a rival Project Moon Blink team who did claim positive detection of TLP. The Corralitos team, despite using a 62cm reflector, claim not have found, or confirmed any TLP, though they did not observe always simultaneously when other amateurs found TLP, and the filter refresh rate was relatively slow - according to Cameron. However on a few occasions, the Corralitos team did detect some "bluing’s" over large areas of the Moon, principally over Aristarchus, but also to a lesser extent over Copernicus and Kepler. The effect could last several days, it would occur under similar lunar phase, and the blueness of Aristarchus could be up to 30% above the red and green channels. The Corralitos team checked for systematic errors and found none, but were not aware of confirmation of this effect being seen elsewhere in the world by other astronomers. There was apparently no correlation with solar activity, but it did seem to happen when the Moon was at its most northerly range of orbits, and consequently was often higher up in the sky and being seen through the least air-mass. Though they also followed the effect down to when the Moon was only 10° above the horizon on one occasion. Their final NASA CR-147888 technical report, brushes off the "bluing" effects as non-TLP, but does not give a satisfactory account of the physics involved which would cause this effect in our atmosphere. Again we would need large area context images covering Aristarchus, Copernicus, and Kepler, and in colour to check out the Corralitos Observatory team story. This TLP will remain at a weight of 3 for now. One wonders what happened to the 45 thousand photographs captured during the duration of the Corralitos observing programme? Are they at the University of New Mexico, or the home base of the Corralitos Observatory team at North Western University?

Lastly, concerning the 1980 Patrick Moore report of colour on the SW of Aristarchus, which he suspects as atmospheric spectral dispersion, well take a look at Brendan Shaw’s two colour images, and you can indeed just see a hint of red here - though I have not colour calibrated these especially well. Is this what Patrick Moore was seeing - just natural surface colour, or would it have been too faint for him to see? I will err on the side of caution and take the brave decision to reduce the weight of this TLP report from a 1, to a non-TLP status of 0, as Patrick Moore was very doubtful anyway about this being a TLP.

Proclus: On 2015 Jan 26 UT 19:40-20:00 Marie Cook observed Proclus under the same illumination conditions to a TLP report from Julio Lobo from 2008:

Proclus 2005 Jun 13 UT 16:00-17:10 Observed by Lobo (Sao Paulo, Brazil, 500mm telescope + finder scope) "Glow and reddishness (pink) seen on circular rim. Also crater was intensely bright all over. After 16:30 the brightness fades, returning to normal. The ALPO/BAA weight=3.

Marie saw no colour on the crater rim or anywhere. The crater was clear and sharp. Therefore this TLP will remain at a weight of 3.

Alphonsus: On 2015 Jan 28 UT 08:57 Maurice Collins imaged Alphonsus under the same illumination conditions to a TLP report from David Darling from 1990:

On 1990 May 03 at UT 02:03 D. Darling (Sun Prairie, WI, USA, seeing steady) observed a point of light inside Alphonsus just to the north of the central peak, along the "center ridge". It was seen again, half way between the central peak and the north west rim - along the ridge. All other features were normal. The Cameron 2006 catalog ID=403 and the weight=3. The ALPO/BAA weight=3.

Clearly on the image that Maurice has taken, within the limits of resolution of the image, there is no clear
'point of light'. The central ridge is clearly visible though, as one would expect. On the right of Fig 3, we can see a ray crater (it would better seen in this LROC mosaic if the Sun was more overhead) as indicated by the light blue/green in the colour ratio overlay. Now I am not saying that this feature is the same one that David Darling saw, but it is the closest craterlet that I can find to the TLP area. Clearly the David Darling 1990 Alphonsus TLP remains a mystery, and I shall keep the weight at 3.

Fig. 3. Alphonsus with north towards the top. (Left) A Maurice Collins image from 2015 Feb 29 UT. (Right) An LROC Quickmap product (http://target.lroc.asu.edu/q3/) with an LROC WAC shadowed mosaic - to highlight relief, overlaid with a Clementine UVVIS colour ratio mosaic - to highlight bright ray craters (blue-green cast.). The arrow indicates a possible candidate crater for the bright spot seen in 1990.

Suggested Features to observe in March-April: For those of you without access to the Internet (in the UK), below is a list of repeat conditions for when a feature will exhibit the same illumination and libration as was seen for a historical TLP observation from the past. By re-observing and submitting your observations, we will get a clear understanding of what the feature ought to have looked like at the time. Only this way can we really fully analyze past TLP reports. N.B. Warning - some of these may be at extremely low altitudes, but have been included because the chances of getting both repeat illumination and repeat libration are so very rare, that we must make the most of any opportunity that arises.

2015-Mar-01 UT 17:41-19:31 Ill=86% Archimedes - observed by Pasternak on 1973 Jun 11 - Any colour seen? Please use a refractor if you have one.
2015-Mar-01 UT 17:41-20:43 Ill=86% Gassendi - observed by Cook on 1979 Dec 29 - Any colour seen?
2015-Mar-01 UT 17:41-18:20 Ill=86% Plato - observed by Crick on 1979 Dec 29 - Is there a coloured spot on the NW wall? Can you see much detail on the northern half of the floor?
2015-Mar-01 UT 19:18-22:05 Ill=87% Alphonsus - observed by Harris on 1966 Aug 27 - Can you see any variations in the dark halo patches, especially the W one?
2015-Mar-01 UT 19:18-22:05 Ill=87% Ross D - observed by Harris on 1966 Aug 27 - How would you describe the E wall of this crater? Is there a bright area E of this crater?
2015-Mar-01/02 UT 22:14-03:42 Ill=87% Gassendi - observed by Moore on 1966 Sep 25 - Any colour visible?
2015-Mar-02 UT 17:53-19:21 Ill=92% Gassendi - observed by Baumeister on 1973 Jun 12 - Is there a bright point at the NNE slope of the central peak?
2015-Mar-02 UT 19:04-21:48 Ill=92% Picard - observed by Moore on 1948 Aug 16 - Can you see some cloud like (featureless) patches E. or Picard?
2015-Mar-02 UT 19:20-20:43 Ill=93% Alphonsus - observed by ASTRONET on 1966 Aug 28 - Do any of the dark halo patches appear to change in brightness?
2015-Mar-02 UT 20:33-22:45 Ill=93% Herodotus - observed by Lena on 2002 Sep 18 - Can you see 2 pseudo-peak like hills? One on the S floor, and one to the NW of the centre?
2015-Mar-02 UT 22:50-01:19 Ill=93% Aristarchus - observed by Ventzke on 1972 Apr 25 - Any brightening or colour on the inner N wall? Refractors welcome?

2015-Mar-22 UT 18:19-20:45 Ill=8% Promontorium Agarum - observed by Jackson on 1882 May 20 - Please image or sketch.

2015-Mar-27 UT 18:27-21:18 Ill=55% Torricelli - observed by Cook on 2003 Nov 01 - Please image or sketch this area, in particular noting the amount of shadow present in this shallow crater in comparison to other nearby craters.

2015-Mar-28 UT 18:29-20:41 Ill=64% Aristarchus - observed by Emmett on 1824 Jul 04 - Can you see any star-like points on the rim of this crater in Earthshine?

2015-Mar-28 UT 18:29-18:59 Ill=64% Mare Frigoris - observed by Pratt on 1871 Nov 20 - Please image or sketch, in particular can you see a haze like effect around the Mare Frigoris shoreline with Plato?

2015-Mar-29 UT 18:31-20:04 Ill=73% Proclus - observed by Blair on 1980 Jan 26 - Is there a bright spot on the north rim, and how does it appear through different coloured filters if observing visually - else please provide a colour image.

2015-Apr-02 UT 03:35-04:13 Ill=95% Aristarchus-Herodotus - observed by Yamada on 1963 Dec 28 - Can you see any colour or obscuration between these two craters?

2015-Apr-03 UT 02:22-03:04 Ill=98% Aristarchus - observed by Bartlett on 1964 Jul 23 - Is there any texture to the floor and does it have any colour?

2015-Apr-04 UT 10:15-13:44 Ill=100% Total Lunar Eclipse - please do time lapse imaging, or look for impact flashes. Mid-eclipse at 12:00. N.B. Not visible from the UK or most of Europe - best seen from the Pacific.

2015-Apr-08 UT 05:00-05:32 Ill=87% South Cusp - observed by an Unknown Observer (Lewis or Swift?) on 1895 Sep 07 - Is there any colour present?

2015-Apr-09 UT 00:00-02:11 Ill=81% Aristarchus - observed by Louderback on 1991 Jul 21 - Any colour present on the southern floor? A suitable observing session for small 3” telescopes, or refractors.

2015-Apr-09 UT 00:00-02:11 Ill=81% Mons Piton - observed by Louderback on 1991 Jul 21 - Would you say that the mountain looked dark? Compare the brightness in violet and red light. A suitable observing session for small 3” telescopes or refractors.

2015-Apr-21 UT 19:11-20:26 Ill=12% Aristarchus - observed by Piazzi Smyth on 1835 Dec 22 and Temple on 1866 Jun 15 - Please describe visually what you can see and how bright the crater looks in Earthshine. Can you see any colour? Also any images would be welcome.

2015-Apr-24 UT 20:33-22:38 Ill=39% Kant - observed by Trouvelot on 1873 Jan 04 - Can you see any colour? Would you describe anything in and around this crater as resembling "vapors"? Please observe with a refractor, if you have one, otherwise images or a visual description with a reflector would be helpful.

2015-Apr-26 UT 00:42-00:57 Ill=50% Cassini E - observed by Knott on 2002 Dec 11 - We need to know if there is a bright pin-point feature on the NW rim of this crater which might be visible only during fleeting moments of improved seeing conditions.

For repeat illumination (only) TLP predictions for the coming month, these can be found on the following web site: [http://users.aber.ac.uk/atc/tlp/tlp.htm](http://users.aber.ac.uk/atc/tlp/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, firstly read the TLP checklist on [http://users.aber.ac.uk/atc/alpo/ltp.htm](http://users.aber.ac.uk/atc/alpo/ltp.htm), and if this does not explain what you are seeing, 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! Twitter TLP alerts can be accessed on [http://twitter.com/lunarnaut](http://twitter.com/lunarnaut).

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Occultations, March-April 2015

Observer News:
Brian Mills copied to me his Excel report for May to December containing 23 disappearances at the dark limb, timed with stopwatch and time signal. Steve Ringwood sent further details of his graze team including a timing correction. An article has been written for the BAA Journal describing the graze results (Feb 2015).

Rhona Fraser (Inverness) requested details of BAAH #4 [HIP117151] which grazed the slender lunar crescent on 2015 Feb 20. The Highland Astronomical Society Observatory is inside the graze zone. Phil Denyer (Hornchurch) requested details of BAAH #8 [HIP30218] on 2015 Feb27. The path ran near an observing location which he has used on a previous occasion.

Rhona subsequently reports monitoring the HIP117151 graze event through her living room window (to her ‘utter surprise’ given how low it was). The Moon was at altitude 8° and Sun at -12° and the low elevation and poor seeing prevented seeing any disappearances. An interesting report — many thanks.

Sky view from latitude of Inverness:

Close up of the crescent Moon and HIP117151 as it was on Feb 20th (Sky Map Pro)

A series of occultations (and grazes) of Aldebaran are predicted in 2015 and 2016. Grazes occur over northern Scotland on 2015 Feb 16 and 2015 April 21 this year, and a DB/RD is expected on 2015 Sep 5 and 2015 Oct 29 at Greenwich. The 2015 Dec 23 event is a DD during the Evening.
Predictions for Birmingham (UK) using Occult 4.1.0.29

Predictions for other locations in the UK will differ from these by several minutes or may not be occulted in examples of grazing incidence. Please request predictions for your specific location from Tim Haymes, and include your Long / Lat and instrument aperture.

Occultation co-ordinator, Tim Haymes, Hill Rise, Knowl Hill Common, Knowl Hill, Reading, RG10 9YD
Email: occultation(at)baalunarsection.org.uk
http://tech.groups.yahoo.com/group/UKoccultations/
Lunar data for March 2015, lunations 1140/1141 (from a DOS program by Gareth Williams)

| Year | Age | Phase | Earth’s Selenographic Long° Lat° | Sun’s Selenographic Colong° Lat° | R.A. Dec. | Rises | Sets | Transit | Alt
|------|-----|-------|-------------------------------|---------------------------------|----------|-------|------|---------|------
| 2015 | MAR | 1.0   | 10.0 0.807 5.5 6.7            | 32.6 0.82 07 15 17.1 13 41 04 20 | 21 22 53 |
|      |     | 2.0   | 11.0 0.877 4.5 6.4            | 44.8 0.80 08 05 15.3 14 42 04 55 | 22 08 51 |
|      |     | 3.0   | 12.0 0.932 3.3 5.8            | 56.9 0.78 08 54 12.9 15 43 05 25 | 22 52 48 |
|      |     | 4.0   | 13.0 0.972 2.0 4.9            | 69.1 0.76 09 41 9.9 16 45 05 52 | 23 36 44 |
|      |     | 5.0   | 14.0 0.994 0.7 3.9            | 81.2 0.74 10 26 6.6 17 48 06 16 | 24 27 45 |
|      |     | 6.0   | 15.0 0.999 -0.7 2.6           | 93.4 0.71 11 12 3.0 18 50 06 39 | 00 18 41 |
|      |     | 7.0   | 16.0 0.986 -2.1 1.3           | 105.5 0.68 11 57 0.7 19 54 07 02 | 00 59 37 |
|      |     | 8.0   | 17.0 0.956 -3.4 -0.1          | 117.7 0.66 12 42 -4.4 20 57 07 25 | 01 43 33 |
|      |     | 9.0   | 18.0 0.908 -4.7 -1.5          | 129.8 0.63 13 28 -7.9 21 07 09 42 | 02 27 29 |
|      |     | 10.0  | 19.0 0.845 -5.8 -2.9          | 142.0 0.60 14 16 -11.2 23 04 08 17 | 03 12 26 |
|      |     | 11.0  | 20.0 0.768 -6.7 -4.1          | 154.2 0.56 15 05 -14.0 24 18 08 48 | 03 59 23 |
|      |     | 12.0  | 21.0 0.679 -7.4 -5.2          | 166.3 0.53 15 56 -16.2 25 55 09 25 | 04 21 21 |
|      |     | 13.0  | 22.0 0.579 -7.7 -6.0          | 178.5 0.50 16 49 -17.7 27 05 10 10 | 05 39 20 |
|      |     | 14.0  | 23.0 0.474 -7.7 -6.6          | 190.7 0.47 17 44 -18.3 29 05 11 03 | 06 33 19 |
|      |     | 15.0  | 24.0 0.366 -7.2 -6.8          | 202.9 0.44 18 41 -17.8 31 05 12 06 | 07 20 20 |
|      |     | 16.0  | 25.0 0.261 -6.4 -6.0          | 215.0 0.41 19 39 -16.3 33 15 13 06 | 08 25 22 |
|      |     | 17.0  | 26.0 0.166 -5.1 -6.0          | 227.2 0.38 20 38 -13.7 35 15 14 13 | 09 22 25 |
|      |     | 18.0  | 27.0 0.087 -3.4 -5.0          | 239.5 0.35 21 37 -10.2 37 15 13 10 | 10 19 29 |
|      |     | 19.0  | 28.0 0.030 -1.5 -3.6          | 251.7 0.32 22 35 -5.9 39 15 12 10 | 11 39 29 |
|      |     | 20.0  | 29.0 0.003 0.4 -2.0           | 262.9 0.29 23 33 -1.2 41 15 12 10 | 12 11 39 |
|      |     | 21.0  | 30.0 0.005 2.4 -0.2           | 276.1 0.26 24 31 3.5 43 15 12 10 | 13 47 43 |
|      |     | 22.0  | 31.0 0.038 4.1 1.6           | 288.3 0.24 25 29 5.5 45 15 12 10 | 14 30 48 |
|      |     | 23.0  | 32.0 0.096 5.5 3.2           | 300.5 0.21 26 27 11.8 47 15 12 10 | 15 53 54 |
|      |     | 24.0  | 33.0 0.175 6.5 4.6           | 312.7 0.19 27 25 14.9 49 15 12 10 | 16 47 55 |
|      |     | 25.0  | 34.0 0.267 7.1 5.7           | 324.9 0.16 28 20 17.0 51 15 12 10 | 17 39 56 |
|      |     | 26.0  | 35.0 0.367 7.3 6.4           | 337.1 0.14 29 15 18.1 53 15 12 10 | 18 39 56 |
|      |     | 27.0  | 36.0 0.469 7.0 6.8           | 349.3 0.11 30 09 19.2 55 15 12 10 | 19 39 56 |
|      |     | 28.0  | 37.0 0.569 6.4 6.8           | 361.5 0.07 31 03 20.3 57 15 12 10 | 20 39 56 |
|      |     | 29.0  | 38.0 0.664 5.5 6.6           | 373.7 0.03 32 57 21.4 59 15 12 10 | 21 39 56 |
|      |     | 30.0  | 39.0 0.751 4.4 6.0           | 385.9 0.00 33 51 22.5 60 15 12 10 | 22 39 56 |
|      |     | 31.0  | 40.0 0.828 3.2 5.2           | 398.1 0.02 34 45 23.6 61 15 12 10 | 23 39 56 |

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Observations and items related to a specific area of lunar study should be sent to the appropriate member of the BAA Lunar Section Committee, but please send any material of a more general nature intended to be published in the Circular to the Editor (address below).

Deadline for items for the April 2015 Circular: 15 March 2015

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