

## BAA/ALPO TRANSIENT LUNAR PHENOMENA

2004 Aug

June has been a poor month for observing, presumably due to the Moon's low altitude in the evening sky for many northern hemisphere observers. Despite this, routine observations have been received from: Jay Albert (Florida, USA), Clive Brook (Plymouth, UK), and Marie Cook (Mundesley, UK). There were also attempts to look for meteor impact flashes in the Earthlit part of the Moon for the June Bootid meteor shower by Colin Ebdon and Brendan Shaw in the UK and by Raffello Lena of GLR in Italy. However attempts at observing impact flashes between June 21-24 were largely clouded out although Colin Ebdon did manage one hour of observing on June 21<sup>st</sup> and some observing on June 22<sup>nd</sup> until cloud rolled in - but saw no impact flashes.

Now one of the great things about participating in the TLP program, whatever you think about many of the past TLP reports, the programme is an excellent way to learn your way around the Moon and to see many craters under spectacular appearances. Also the observations you provide are of great use to other researchers in the BAA and ALPO. For example the following Proclus observation (top left) was received from Jay Albert *"The only thing I noticed that looked unusual was the shadow on the east wall of Proclus. The east wall was divided by a bright vertical feature. To the south of this feature, the shadow on the crater wall was black (as would be expected). To the north of the bright vertical feature, however, the shadow started black, but gradually lightened until it ended where the crater wall was brightly sunlit. I'm used to seeing lunar shadows as black with sharp boundaries, so this struck me as odd. Since I've never looked closely at Proclus before, it's possible that what I saw was normal for this solar angle and the intensity difference is due to the color of the feature"*. Note all the sketches below are with north at the top.



2004 Jun 24 UT 01:15-03:15- Jay Albert  
Sub-solar point 103.2E, 1.2N  
Sub-observer point 7.5W, 5.0S  
Solar Altitude +32.5deg  
279mm Celestron x311  
Seeing 8-10 (excellent)  
Transparency magnitude 3



1978 Feb 13 UT 18:58-19:08- Tony Cook  
Sub-solar point 108.1E, 1.1N  
Sub-observer point 5.1E, 4.4N  
Solar Altitude +27.8 deg  
300mm reflector x240  
Seeing Antoniadi III (moderate)



2003 Feb 08 UT 02:09-03:07- Robin Gray  
Sub-solar point 103.5E, 1.5S  
Sub-observer point 1.3W, 3.8N  
Solar Altitude +31.3 deg  
152mm refractor x305  
Seeing 6-7 (good)  
Transparency 6



2003 Apr 08 UT 03:49-04:50- Robin Gray  
Sub-solar point 104.1E, 1.1S  
Sub-observer point 6.9W, 2.7S  
Solar Altitude +30.8 deg  
152mm refractor x305  
Seeing 5-6 (poor-good)  
Transparency 5-6

Upon receiving this sketch I checked up a few past observations (not many of these are in my database yet, so apologize to observers whom I have missed out) and found the following additional three sketches. My own crude sketch (top right) from 1978 confirms a less dark area to the north of the bisecting line. Robin Gray (Winnemucca, USA) also has a couple of sketches from 2003, his Feb 8<sup>th</sup> observation (bottom left) description is as follows: *"The black shadow covering the east 40% of Proclus last night (Feb 7<sup>th</sup>) had broken up into three patches separated from each other by lighter bands. These were confined to the east crater wall. Only the central patch was black, the other two were considerably lighter. Running along the southwest edge of the crater floor was what appeared to be a ridge and on the east side of the crater floor appeared to be a hill to the north of which was a less elevated plateau. As the observing period progressed part of the brilliantly illuminated north crater wall developed a darker area which gradually became more prominent. As the sun is getting higher I would expect shadows and dark areas to diminish- what was happening here is unknown. However, this is not an unusual event for this part of Proclus."* In his Apr 8<sup>th</sup> observation (bottom right) Robin makes no mention about the shadow densities.

So what does this tell us? Well Jay's original suspicion of the bright bisecting line turns out to be a normal appearance, possibly caused by a notch in the rim, or some other topographic effect. What is interesting is that he has not drawn in the 2<sup>nd</sup> bisecting line or a 3<sup>rd</sup> shadow. I doubt if this is a TLP, but perhaps more due to the Sun being at a sufficiently high altitude that any remaining shadow vanishes. Why are some shadows black and others grey in Proclus? This could be due to whether shadow is contiguous and un-interrupted, or whether there are lots of unresolved topography and surface roughness protruding out of the shadow. Also all four sketches are at different libration angles (sub-observer lon/lats), so undoubtedly this may have an effect on appearance. Another point to note about Proclus is that it is only 30km in diameter and subtends a relatively small diameter of less than 15 sec of arc (or smaller than the disk of Saturn), so it is not surprising that the sketches differ slightly in what can be resolved and their internal geometric accuracy as seeing conditions will have a drastic effect on what you can and cannot see. So what are the guidelines if you see something strange? Firstly make a brief sketch, notes and if you can please take some CCD images. Next, does the feature change over time? If it is a simple illumination related effect then it will change gradually. Please also check out the appearance of other similar sized nearby craters in order to judge whether the effect is seeing related - if so it will affect others. You should also be looking for colour and brightness variations. I cannot give advice on when it is appropriate to telephone/email myself or David Darling to initiate a TLP alert - this depends upon individual cases, but we will definitely ask you if nearby features are exhibiting similar effects, so please be prepared to answer any questions about these.

Further predictions, including the more numerous illumination only events can be found on the following web site: <http://www.lpl.arizona.edu/~rhill/alpo/lunarstuff/ltp.html>. For members who do not have access to the internet, please drop me a line and I will post predictions to you. If you would like to join the TLP telephone alert team, please let me know your phone No. and how late you wish to be contacted. If in the unlikely event you see a TLP, please give me a call on my cell phone: +44 (0)798 505 5681 and I will alert other observers. Note when telephoning from outside the UK you must not use the (0). When phoning from within the UK please do not use the +44!

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