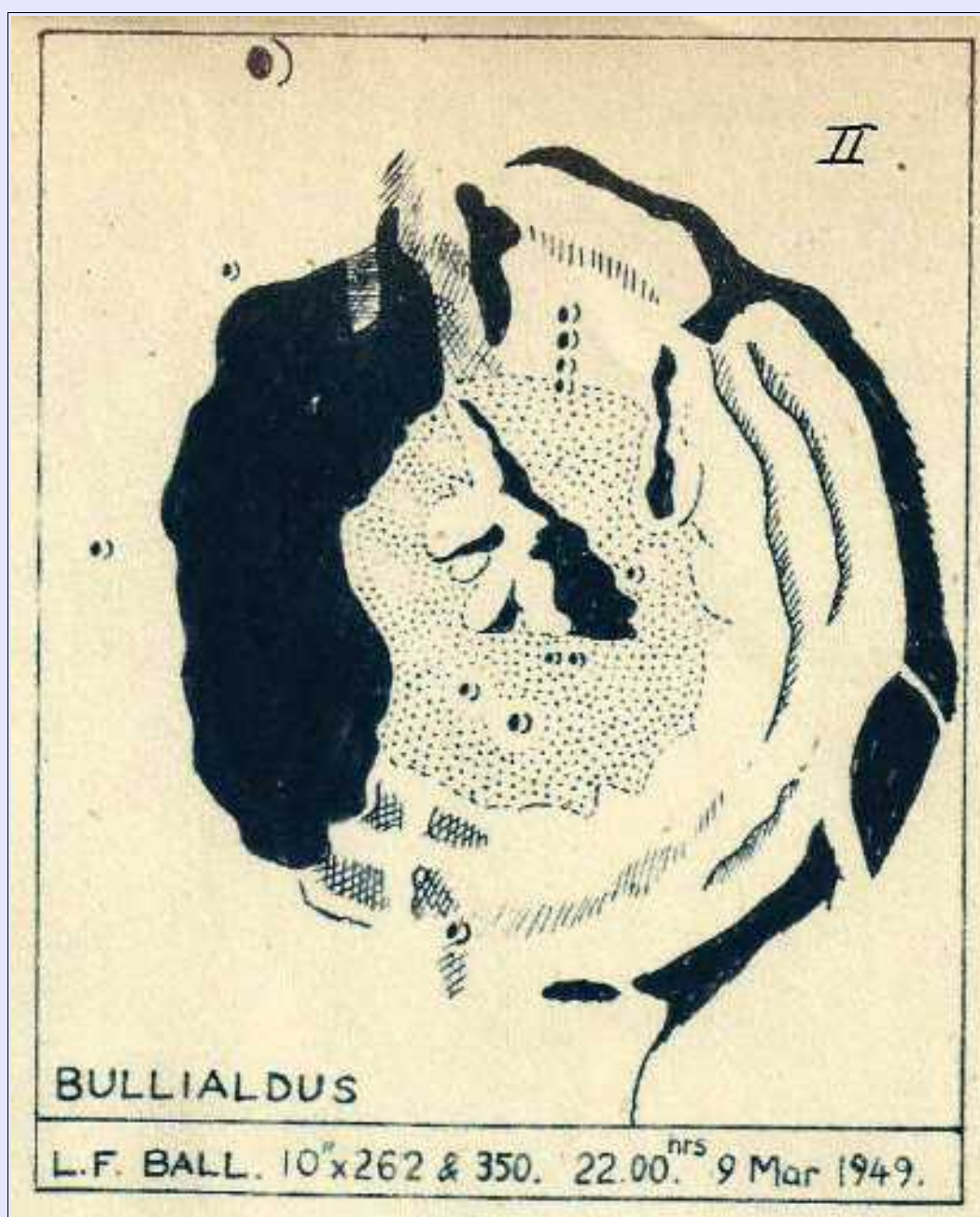
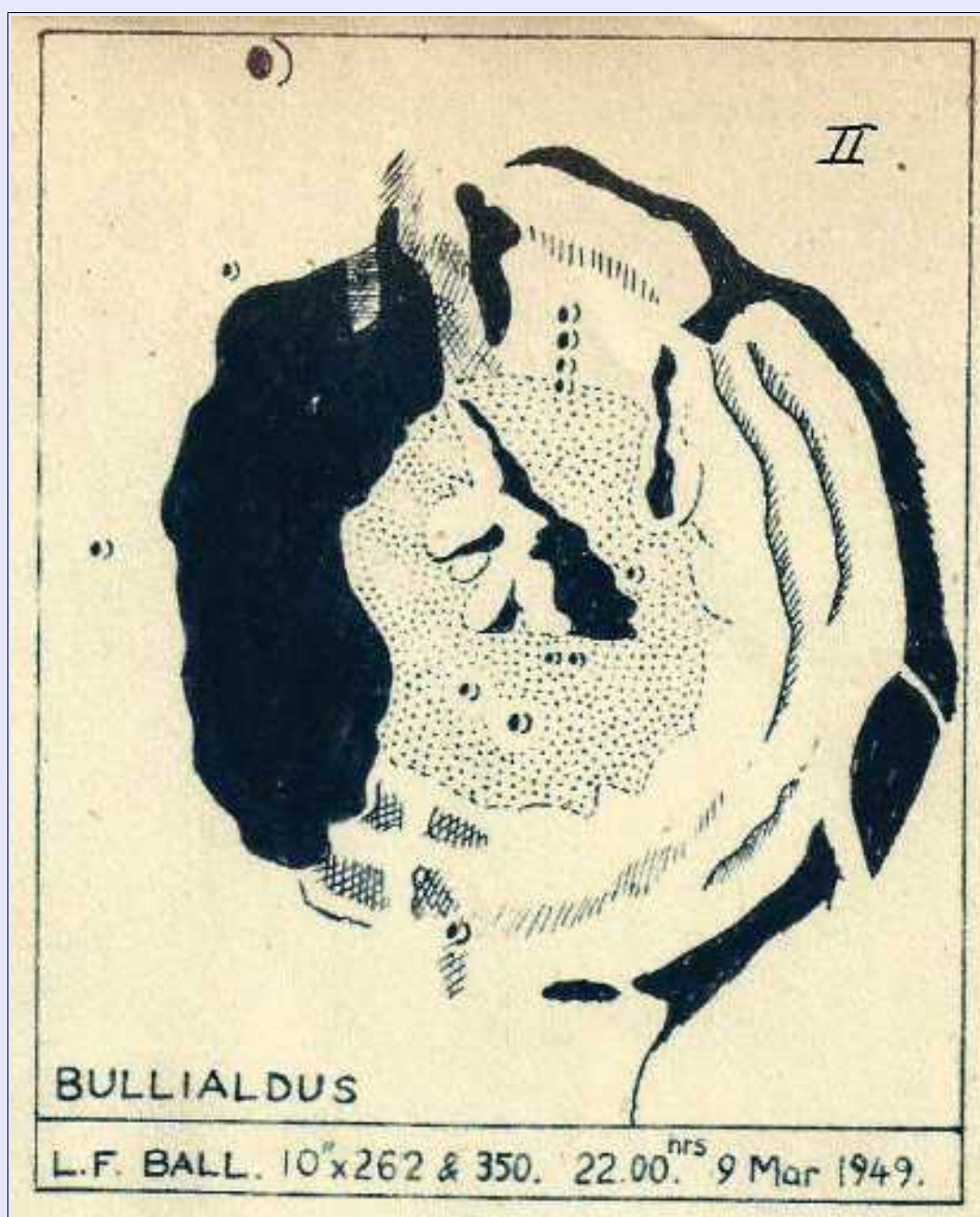


# BAA

British Astronomical Association  
Lunar Section

Director: Dr. Anthony Cook.  
Editor: Barry Fitz-Gerald.

LUNAR SECTION CIRCULAR  
Vol. 62 No. 10 October 2025



From The Moon, Vol.1 No.1 June 1952.

**LUNAR SECTION CIRCULAR**  
**Vol. 62 No.9 September 2025.**

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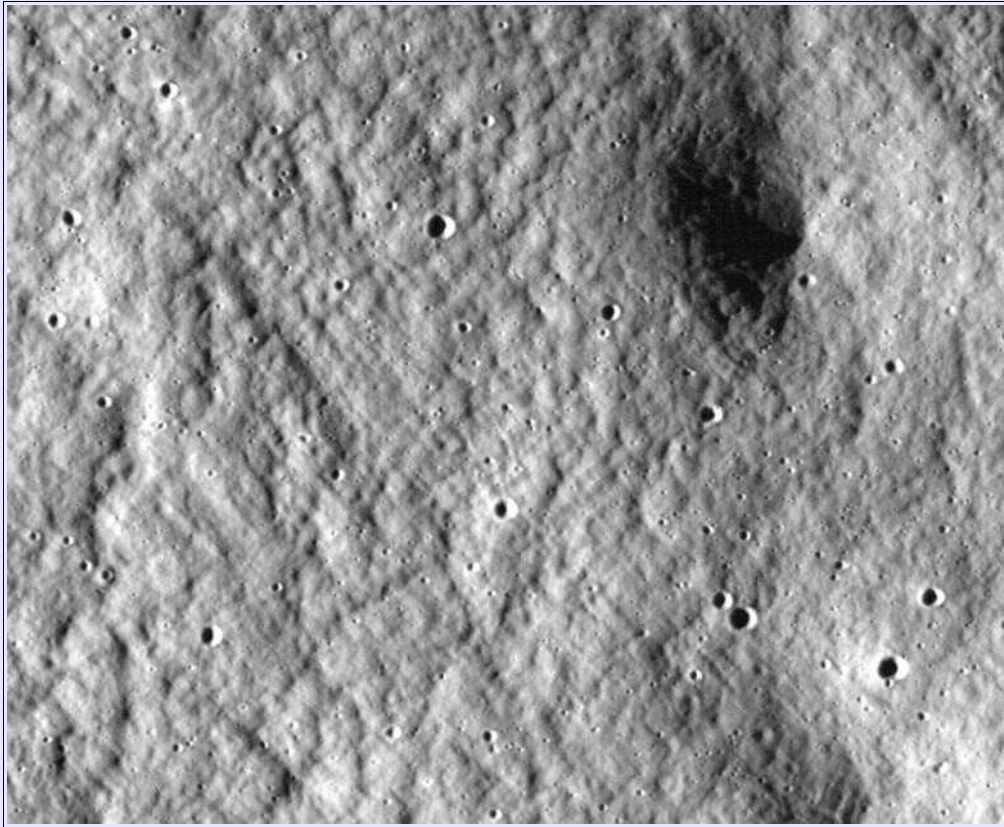
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## From the Director.



“Elephant Skin” texture on the lunar highlands north east of Clavius crater – see: <https://lroc.im-ldi.com/images/130>

It's been announced that the Artemis II mission, will launch as early as February next year. This is very much analogous to the Apollo 8 mission, namely to fly around the Moon, not land, and return to Earth. This will of course depend upon whether NASA still has sufficient engineers and scientists after the lay-offs and also assuming no technical difficulties.

Apollo 8 flew in 1968, so this new Moon mission will be similar but 58 years later on, and instead of 10 orbits around the Moon using 60's technology, Artemis II's crew of four people will hang around in high earth orbit, above geostationary orbit, and then swing by the Moon at a distance of just under 9 thousand km above the surface of the Moon. By comparison Apollo 8 came within 113km of the lunar surface. Anyway, Artemis II's main purpose is to check out the system and new heat shield before Artemis III attempts a landing a year and a half later. It's doubtful that much useful lunar science can be done from Artemis II some 9 thousand km away, through the spacecraft window, that hasn't already been done from unmanned spacecraft in orbit closer to the Moon. However, they may be able to check out radiation effects on the astronauts and perhaps look for lunar impact flashes providing they get to see the night side of the Moon. As the spacecraft is separated from the Moon by some distance – the Moon's radius is just 1737 km, there maybe a chance for amateurs to photograph the spacecraft without glare from the Moon and maybe detect sun glint from the solar panels or the heat from rocket burns?

On September 10<sup>th</sup> I attended an on-line NASA Lunar Surface Science Workshop (LSSW) for the Artemis IV mission. These workshops are basically brain storming for ideas on what to do for science, potential hazards, where to visit etc. One of the most interesting findings was presented by Prof Jim Head who talked about the elephant skin texture on the lunar surface, which is often present in the lunar highlands. I think he said that astronauts on one of the later Apollo missions had walked on a shallow slope and found the effort very strenuous and it subsequently transpired that the highland material was part of this elephant skin texture. The implication was walking across this meter scale texture is tricky and needs a lot of effort due to poor traction. This was something that Artemis III and IV astronauts will probably have to make an allowance for, but should

certainly investigate and bring samples back in order to try and understand its formation. It was also commented upon that that with the tall high centre of gravity Space X Starship lander, it should probably avoid landing on even the slightest slopes and definitely keep away from this poor traction elephant texture soil in case the lander topples over. There was also concern about the blast effect of the Raptor engines and how this might affect material collected in the vicinity of the landing site. Another interesting point was that the astronauts on these first two lander missions won't have a rover, so at most they will be confined to within about a km of the landing site.

Tony.

-----§-----

## **Lunar Occultations October 2025 by Tim Haymes**

**Time capsule: 50 years ago: in Vol 10 No.10**

[With thanks to *Stuart Morris* for the [LSC](#) archives.]

- \* R J Livesey: The Effect of Shimmer on Lunar Observation; Stats and a 10 point scale, interesting!
- \*G.W Amery: Double star notes in the Occultation News
- \*An Occultation by Mars. Mr Taylor confirms this. Would anything useful be observed?

### **Reports:**

Pleiades passage on evening of September 12<sup>th</sup>

There are some superb images and accounts on the BAA Observation forum from:

Alan C.Tough, Mazin Younis, Andy Wilson, Steve Brown, Nick Hewitt and Nick James.

Many thanks to all the observers.

Alan Tough wrote:

*"Here the 3 day old Moon is about to cover the bright Pleiad Alcyone, having just 'liberated' Electra".*



## Venus occulted on morning of September 19<sup>th</sup>

Massimo Giuntoli (Montecatini Terme, Northern Tuscany, Italy) wrote:

*"In the early afternoon of today I have observed the occultation of Venus by the Moon; Sky very clear, transparency excellent but seeing very poor. I found Venus by offsetting from the Sun and both the Planet and the Moon were easily visible in the 6x30 finder of my 147mm F/8.2 newtonian reflector I used for this observation; magnification employed was x240. The lunar limb was a little difficult to see with this magnification at the beginning of the observation, but then was held steadily. From my observing site (43°52'49" N - 10°46'17" E) Venus completely disappear behind the lunar limb at 12h 21min 30sec (?? - seconds a little uncertain)".*

## Accounts and images on the BAA Forum

Richard Severn wrote:

*"Venus was occulted by a 5.5% moon under very milky skies. Left Panel Sequence - Venus being occulted by the illuminated crescent of the moon 11:51 UTC. Right Panel Sequence - Re-emergence on the night side of the moon 13:09 UTC. Gain boosted to try and show the moon against bright white thin cloud. Venus not visible visually through the telescope".*

[https://britastro.org/observations/observation.php?id=20250920\\_141501\\_77ff6b82d498a0b1](https://britastro.org/observations/observation.php?id=20250920_141501_77ff6b82d498a0b1)

Steve Knight wrote:

*"The Mount for C9.25 let me down so had to make do with my Seestar."*

This video is real time:

[https://britastro.org/observations/observation.php?id=20250919\\_124801\\_3dad26cb0182e629](https://britastro.org/observations/observation.php?id=20250919_124801_3dad26cb0182e629)

[ LunOcc editor: Amazing for the Seestar ]

## **Graze Occultation of SAO 76345 on Sep 13 (BAAH #8)**

Details for this graze was sent to Mr. C. Willits near Newcastle upon Tyne. He reports no observation was possible on this occasion, and thanks to the Section for the information provided.

We hope for success with future predictions. The Sep13 event was a tricky one.

## **Lunar Meteor impacts.**

Detection of impacts by video is an on-going interest in the Section (Lunar Change) and international observatories have monitoring stations.

Chance detection during routine occultation observations is possible and during coordinated campaigns when meteor activity is expected to be greater (meteor showers). Future manned exploration of the Moon will probably call for greater effort in obtaining hit rates, as this is still quite uncertain at the moment without more information. So occultation monitoring can play a part in helping in confirming impacts on the dark limb.

## **Occultations this month:**

Active Galaxy OJ 287 (BL Lac object) is occulted on Oct 15, RD phase is at 0620UT just before dawn in the UK and unobservable at visual wavelengths. It was detected by radio in the Ohio Sky Survey at 1415, 2650, and 612 MHz, where "O" refers Ohio, and "J" a declination band.

## **Occultation predictions for 2025 September (UK)**

(Times at other locations will +/- a few minutes)

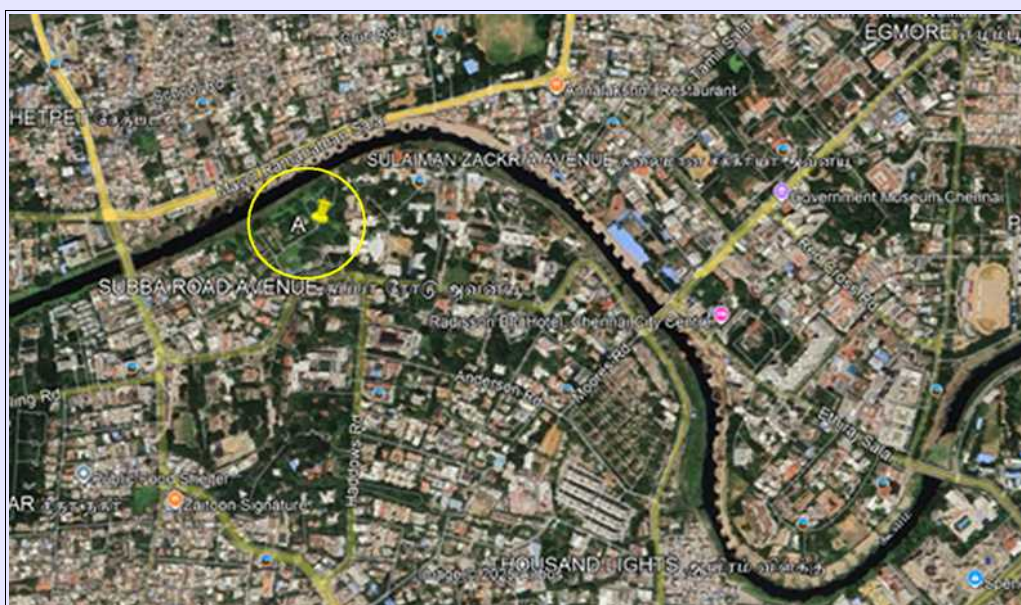
Oxford: E. Longitude -001 18 47, Latitude 51 55 40

| day    | Time         | Ph | Star  | Sp | Mag | Mag | % Elon | Sun | Moon   | CA  |               |
|--------|--------------|----|-------|----|-----|-----|--------|-----|--------|-----|---------------|
| yy mmm | d h m s      |    | No    | D* | v   | r   | ill    | Alt | Alt Az | o   | Notes         |
| 25 Oct | 2 22 19 37.6 | D  | 3090  | K0 | 6.7 | 6.2 | 78+    | 124 | 14 207 | 83N | 26 Cap        |
| 25 Oct | 3 20 33 32.8 | D  | 3217  | A2 | 7.4 | 7.3 | 86+    | 136 | 23 170 | 18N |               |
| 25 Oct | 4 1 31 12.8  | D  | 3237  | B8 | 4.3 | 4.3 | 87+    | 138 | 5 240  | 55N | iota Aqr Dbl* |
| 25 Oct | 8 0 58 14.3  | R  | 230   | A3 | 7.3 | 7.2 | 99-    | 168 | 51 189 | 40S | 100 Psc       |
| 25 Oct | 8 4 56 10.1  | R  | 92574 | K0 | 7.6 | 7.0 | 98-    | 166 | 27 258 | 67N |               |
| 25 Oct | 8 20 22 17.0 | R  | 92911 | A2 | 7.5 | 7.4 | 96-    | 156 | 24 91  | 85N |               |
| 25 Oct | 9 0 7 44.4   | R  | 92977 | K0 | 8.2 | 7.7 | 95-    | 154 | 54 148 | 75N |               |

|        |    |    |    |      |   |        |    |     |     |     |     |    |     |      |              |
|--------|----|----|----|------|---|--------|----|-----|-----|-----|-----|----|-----|------|--------------|
| 25 Oct | 9  | 1  | 39 | 42.3 | R | 375    | A5 | 6.8 | 6.7 | 95- | 153 | 57 | 185 | 70S  | Db1*         |
| 25 Oct | 9  | 4  | 30 | 35.4 | R | 93033  | K0 | 7.2 | 6.4 | 94- | 152 | 43 | 244 | 52N  | Db1*         |
| 25 Oct | 9  | 21 | 54 | 53.9 | R | 501    | K0 | 6.2 |     | 89- | 141 | 32 | 93  | 22S  | 66 Ari Db1*  |
| 25 Oct | 9  | 23 | 51 | 59.2 | R | 512    | F5 | 8.1 | 7.8 | 88- | 140 | 50 | 120 | 43N  | Db1*         |
| 25 Oct | 10 | 0  | 3  | 8.4  | R | 513    | K0 | 7.3 | 6.7 | 88- | 140 | 51 | 123 | 52N  | Db1*         |
| 25 Oct | 10 | 0  | 23 | 42.9 | R | 75987  | A3 | 7.2 | 7.1 | 88- | 140 | 53 | 129 | 41S  |              |
| 25 Oct | 10 | 0  | 26 | 46.4 | R | 75988  | G5 | 7.6 | 7.0 | 88- | 140 | 54 | 130 | 44S  |              |
| 25 Oct | 10 | 0  | 58 | 23.1 | R | 75990  | K0 | 7.5 | 6.9 | 88- | 139 | 58 | 141 | 53N  | Db1*         |
| 25 Oct | 10 | 2  | 49 | 38.6 | R | 522    | G5 | 7.8 | 7.1 | 87- | 138 | 62 | 190 | 28N  |              |
| 25 Oct | 10 | 5  | 30 | 41.4 | D | 539    | B6 | 4.3 | 4.4 | 87- | 137 | -9 | 47  | 248  | -82S 19 Tau  |
| 25 Oct | 12 | 3  | 7  | 16.3 | D | 885    | G7 | 5.6 | 5.1 | 68- | 111 | 61 | 137 | -51S |              |
| 25 Oct | 12 | 4  | 5  | 12.0 | R | 885    | G7 | 5.6 | 5.1 | 67- | 110 | 66 | 164 | 52S  |              |
| 25 Oct | 14 | 2  | 13 | 33.3 | R | 79753  | K1 | 7.8 | 7.2 | 46- | 85  | 35 | 94  | 65N  |              |
| 25 Oct | 14 | 4  | 9  | 20.1 | R | 79798  | A2 | 8.6 |     | 45- | 84  | 52 | 122 | 50S  | Db1*         |
| 25 Oct | 14 | 4  | 18 | 19.1 | R | 1194   | K0 | 7.8 | 7.2 | 45- | 84  | 53 | 124 | 55N  |              |
| 25 Oct | 15 | 0  | 46 | 55.9 | R | 80388  | K0 | 8.1 | 7.5 | 36- | 73  | 12 | 71  | 57S  |              |
| 25 Oct | 15 | 5  | 15 | 1    | R | 80497  | K0 | 8.3 | 7.8 | 34- | 71  | 50 | 129 | 6N   | Db1*         |
| 25 Oct | 16 | 3  | 44 | 24.1 | R | 1430   | K0 | 8.0 | 7.4 | 25- | 60  | 27 | 99  | 88N  |              |
| 25 Oct | 17 | 3  | 41 | 17.9 | R | 99153  | F8 | 7.2 | 6.9 | 17- | 48  | 15 | 93  | 63S  | STT 220 Db1* |
| 25 Oct | 17 | 4  | 53 | 5.2  | R | 99166  | K2 | 8.3 | 7.7 | 16- | 48  | 26 | 108 | 82N  |              |
| 25 Oct | 18 | 5  | 0  | 36.6 | R | 118765 | G5 | 8.1 | 7.6 | 10- | 36  | 16 | 104 | 14N  |              |
| 25 Oct | 29 | 18 | 38 | 34.2 | D | 189613 | K0 | 7.2 | 6.7 | 51+ | 91  | 16 | 185 | 80S  |              |
| 25 Oct | 30 | 20 | 47 | 51.6 | D | 164534 | K3 | 7.3 | 6.6 | 62+ | 104 | 18 | 205 | 85N  |              |
| 25 Oct | 31 | 23 | 5  | 23.2 | D | 3310   | A8 | 6.4 | 6.2 | 73+ | 117 | 15 | 229 | 87N  |              |

## Madras Observatory in 1876

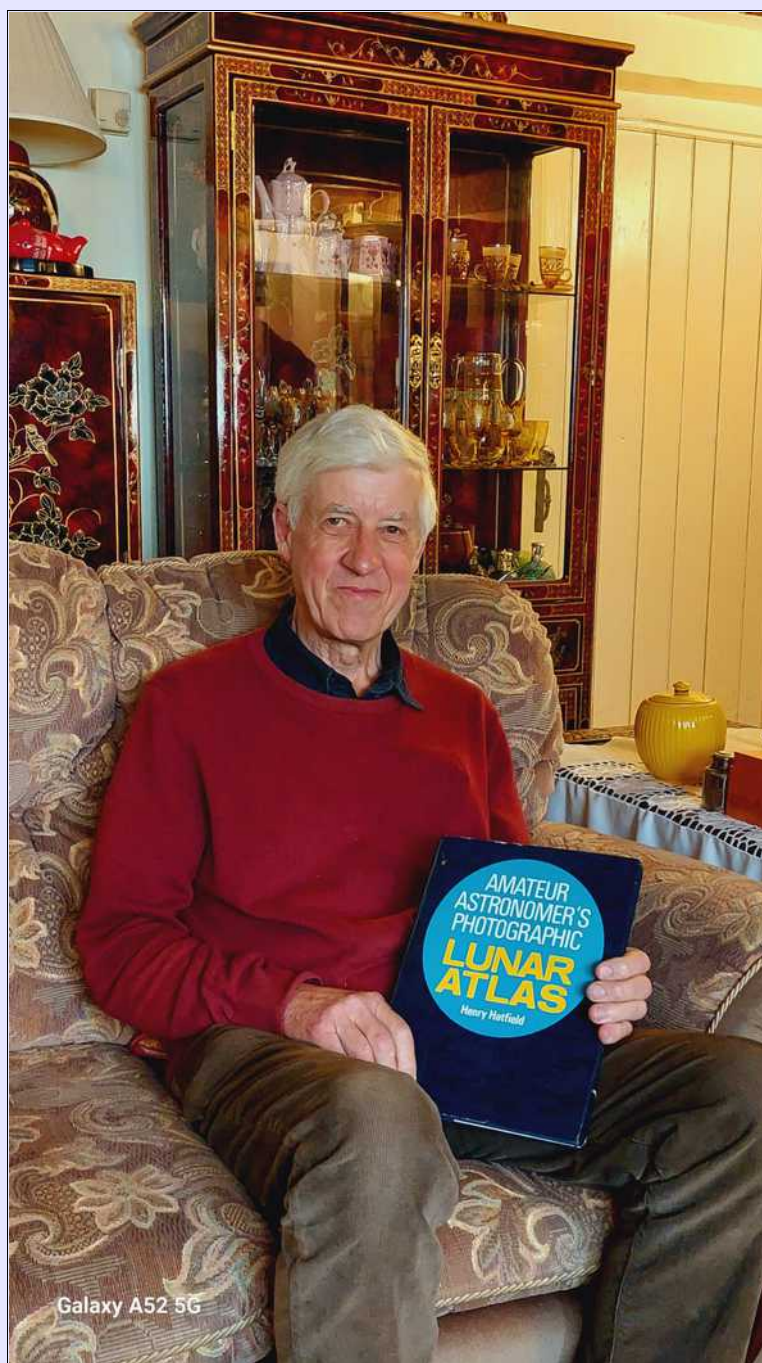
An account of a recent visit to Madras (BAA Historical Section News), queried where the exact location of the observatory might be. There are lunar occultation observations from 1876 in the Occult Database. The position of that observatory is given, is this the “Madras Observatory”. We assume so at E long: 80d 14’ 48”, Lat: 13d 04’ 08”. It appears from the notes in Occult Help that all observations in the database are converted to the current Google Earth Datum WGS84. The original Datum was Indian Everest. Here is the GE map where the Regional Meteorological Centre is now based.



## Members letters and notes.

### **A visit from Bill Hatfield by Rickard McKim.**

Bill Hatfield is Henry Hatfield's son, and he inherited his father's astronomical papers. Earlier in the year Bill got in touch with the BAA to see if we would like to have the original glass negatives that Henry had taken in preparation for his classic *Amateur Astronomer's Photographic Lunar Atlas* (Lutterworth, 1968). Its publication occurred just one year before Man walked upon the Moon. We thought that these documents should be saved for posterity, and that the best plan would be for Bill to deliver them in person to Northamptonshire. And so Bill handed over the negatives to me on September 2, and over a cup of tea we had a long talk about his father's life and work. Later, he sent me some photographs of Henry that I hadn't previously seen.



**Bill Hatfield holding a copy of Henry's atlas.**

Readers will recall that the 1960s atlas was very popular for the quality of its illustrations and for the clarity of its outline maps (Henry was a hydrographer for the Royal Navy, and so mapping would have been second nature to him). When I was first interested in astronomy in the 1970s, the atlas was already unobtainable, and

only in recent years did I acquire an excellent second hand copy. Later the IAU made some changes to lunar nomenclature, and in the definition of east and west upon the Moon, and so Jeremy Cook (who had formerly directed our Lunar Section) prepared a new edition of the Atlas (Springer, 1999). Fortunately all of Henry's original prints were still available for this new publication, so it turned out that the quality of their reproduction in the first and second editions was equally high. During Bill's visit we compared some of the actual prints with their reproductions in the first and second editions.



**Henry Hatfield at Sevenoaks in 1985.**

I thought that readers might like to have a photo of Bill holding the first edition of the atlas and another of Henry inside his iconic 'beehive' observatory (with its 30 cm/12-inch reflector) in Sevenoaks taken in 1985. That was the year in which I had visited him myself, taking along two of my Sixth Form pupils who had wanted to build a radio telescope, to have the lucky chance of seeing Henry's, and to ask him for advice.

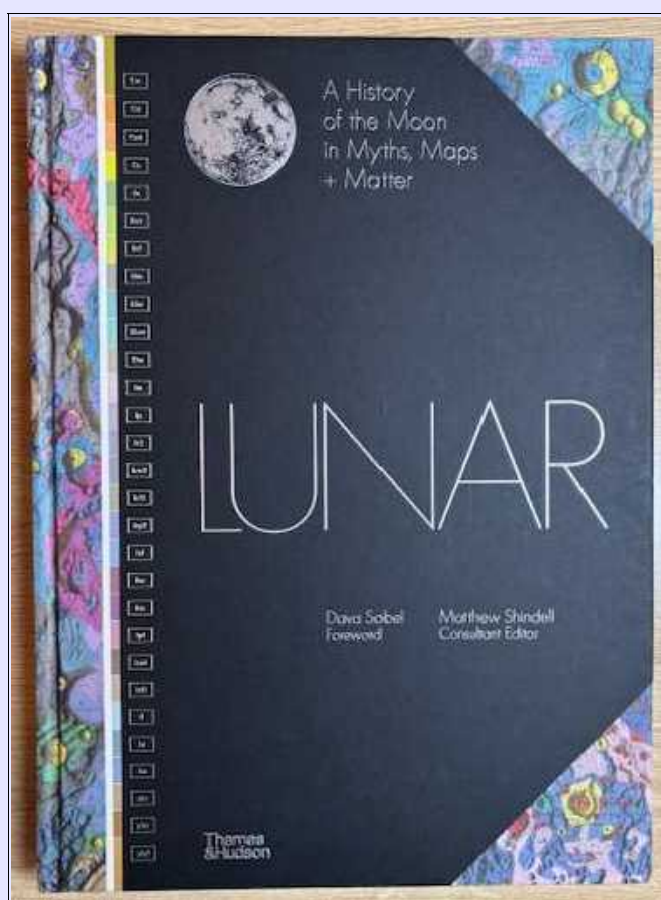
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**Book Review by James Dawson (Nottingham Astronomical Society, Librarian, Society for the History of Astronomy).**

**Lunar: a history of the moon in myths, maps and matter. Matthew Shindell.  
ISBN 9780500027141. £42. October 2024.**

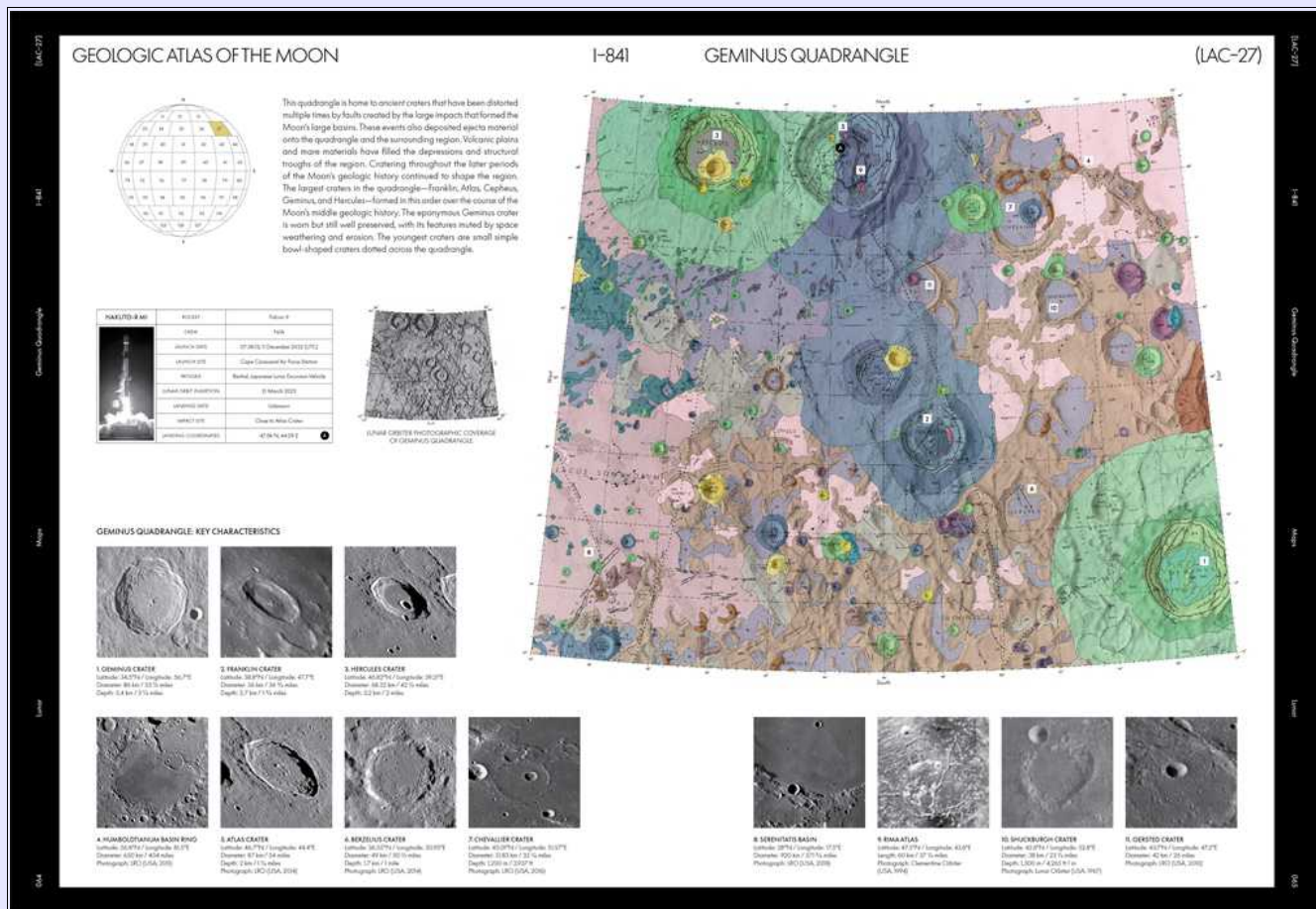
The term ‘coffee table book’ is often interpreted as a slightly derogatory term, but I suspect few people have bookshelves big enough for this book to stand upright. This is a big volume, about 10” x 14” and 260 pages. The initial impressions are that this is a quality production, with decorative boards lined with marbled pastedowns and flyleaves, thick quality paper inside and a stitched spine, lavishly illustrated in full colour throughout.

The book combines lunar science with content about the Moon from the arts, literature, astrology, social history and wider fields. Matthew Shindell is a historian of science and curator at the Smithsonian National Air and Space Museum, Washington DC, who has authored and edited several space-related books.



On flicking through the book, the most prominent features are the coloured geological lunar maps drawn by the US Geological Survey (USGS), with the whole near side of the Moon covered in over 40 sections, each about 15 degrees by 20 degrees of the lunar surface. Each of the maps are accompanied by a number of photographs of prominent features within the region either from Earth-based telescopes or from lunar orbiting or landing craft. A short narrative describes the terrain and geological processes which shaped the features and information about man-made probes which have visited or orbited the region. As an aside, the Astrogeology Science Centre of the USGS is based in Flagstaff, Arizona, and we went on a tour around the facility when we were in America for the total eclipse of 2024; if you are in Flagstaff, you must arrange a tour and also spend several days (and nights) at the Lowell Observatory.

Interspaced between the geological material are pages dedicated to an array of topics relating to the Moon in human history, including in literature, folk lore, astrology, art, space exploration to name just a few. These pages are equally as visually appealing with large illustrations and blocks of short, punchy text.



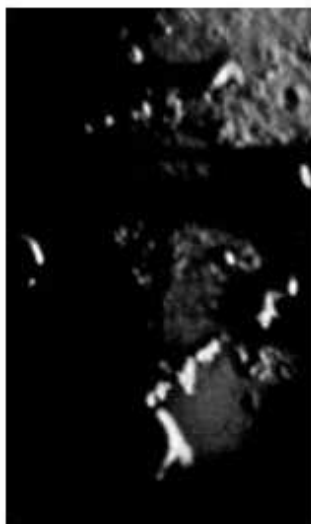
I think this would be a great book to flick through with someone new to the Moon to reveal the diverse range of features found on the surface and to summarise how influential the Moon has been in past and present culture here on Earth.

Although it was published a year ago, I've only just learnt about this book, but so pleased I have and it has earned its place amongst the other lunar books at home. I have also ordered a copy for the Society for the History of Astronomy Library.

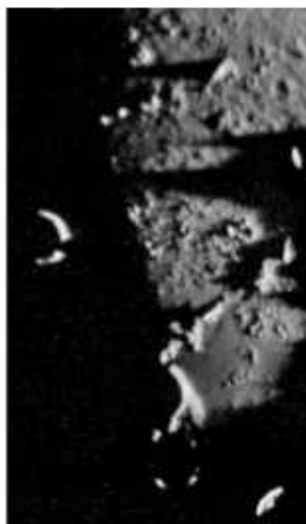
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## The fascinating process of the "beetle" formation of Birt and Birt A by K.C.Pau.

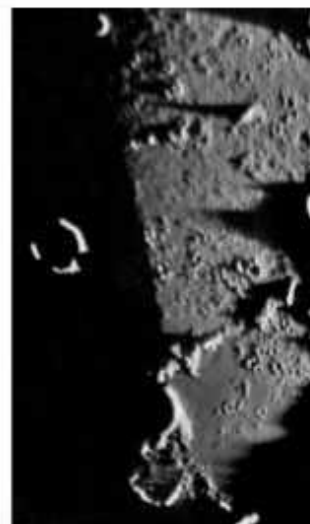
Birt and Birt A are both small impact craters, not particularly noteworthy for most moon observers. However, these two craters are closely linked together, so that they look like a tiny beetle when under appropriate morning sunlight. It is interesting to find that the beetle seems crawling slowly towards the Straight Wall. What a wonderful moment that you can watch by yourself. If you can spend time to observe around the 8th lunar day, you will see the beetle gradually emerging from the darkness. This is quite a fascinating scene, and perhaps many observers may have missed it.



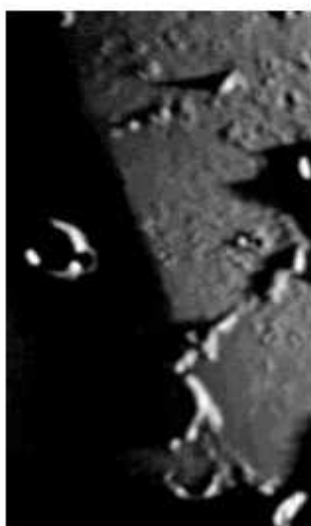
3Dec2011, 11h44m



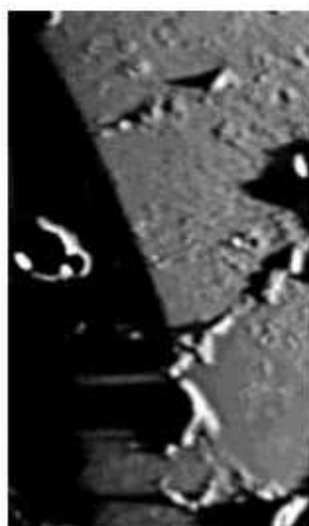
3Dec2011, 12h17m



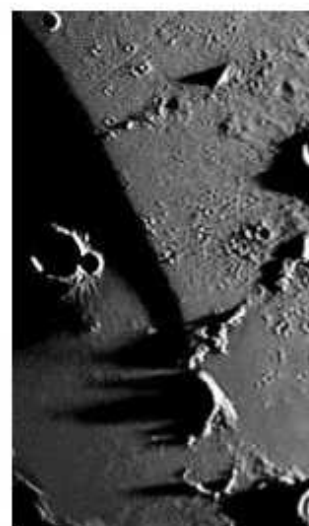
3Dec2011, 12h33m



6Feb2006, 12h14m

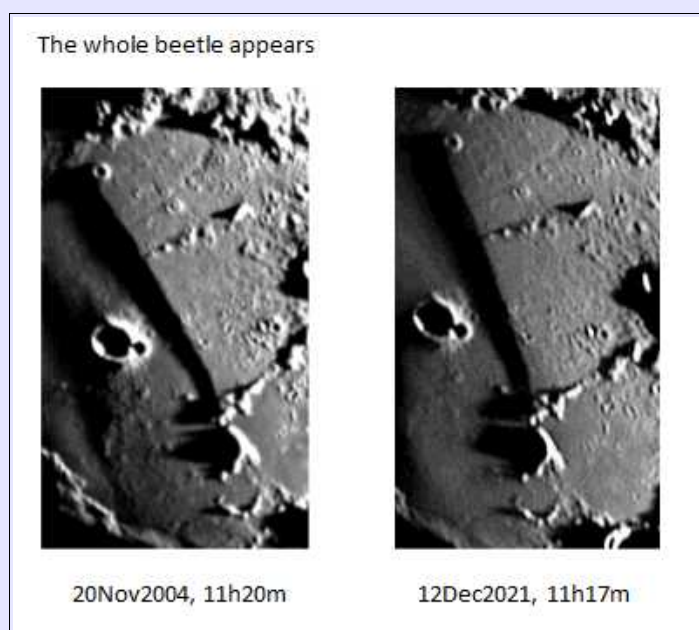


6Feb2006, 13h13m



28Feb2023, 13h19m

At dusk, illuminated by the low setting sun, the beetle undergoes a transformation, revealing itself to the observers in a different form. The author will keep the transformation detail in secret and let the readers to discover by themselves. When is the best time to watch this sunset scene? It is around the 21st or 22nd lunar day. Observers in Asia may miss the scene as it will happen after mid night. Most people are then still in sleeping mode.



The beetle begins to emerge from darkness!

-----§-----

## September 7<sup>th</sup> Lunar Eclipse Photographs from around the World.

**Alan Tough, Elgin.**



Image taken with a Canon EOS 5D Mark III DSLR, Sigma EX-DG 150-500 mm lens, Manfrotto tripod.  
Exposure: 1/200th second @ f/6.3, ISO-400.

**Alex Vincent, Worthing.**



Images taken with a 300mm lens at f5.6 and 400 ISO.

**Geoffrey White, Malta.**



Mobile phone image taken between 20:15 and 20:30 September 07<sup>th</sup> 2025

**Peter Mulligan, Sheffield.**



Taken on September 07<sup>th</sup> 2025 at 20:08 with a Canon 600D fixed tripod EF-S55-250 lens 1/160sec ISO 100 FL 250mm



Paul wrote:

*"We had a brief clear spell here last night and I was able to see part of the lunar eclipse. The eastern horizon is obstructed from my observatory so I went to a nearby hill. We had a lot of cloud and it was rather windy but the clouds to the east cleared away long enough for me to make the attached drawing. The observation was a challenging one as the moon was already in eclipse at the time it was rising. By the time I observed it, the umbral shadow was already some way off the lunar disk. I had the impression this eclipse was quite dark, probably  $L = 1$  on the Danjon scale. Some slight reddish colour could be made out. Not long after this observation, clouds came up once more. Still, I'm pleased to have seen it".*

**Honor Wheeler, Hextable, Kent**



Image taken on 7th September 2025 at 20:51 using a Canon M6II, 18-400mm Tamron lens, ISO1000, F6.3, 1/500s

**Graham Winstanley, Bassingham, Lincolnshire.**

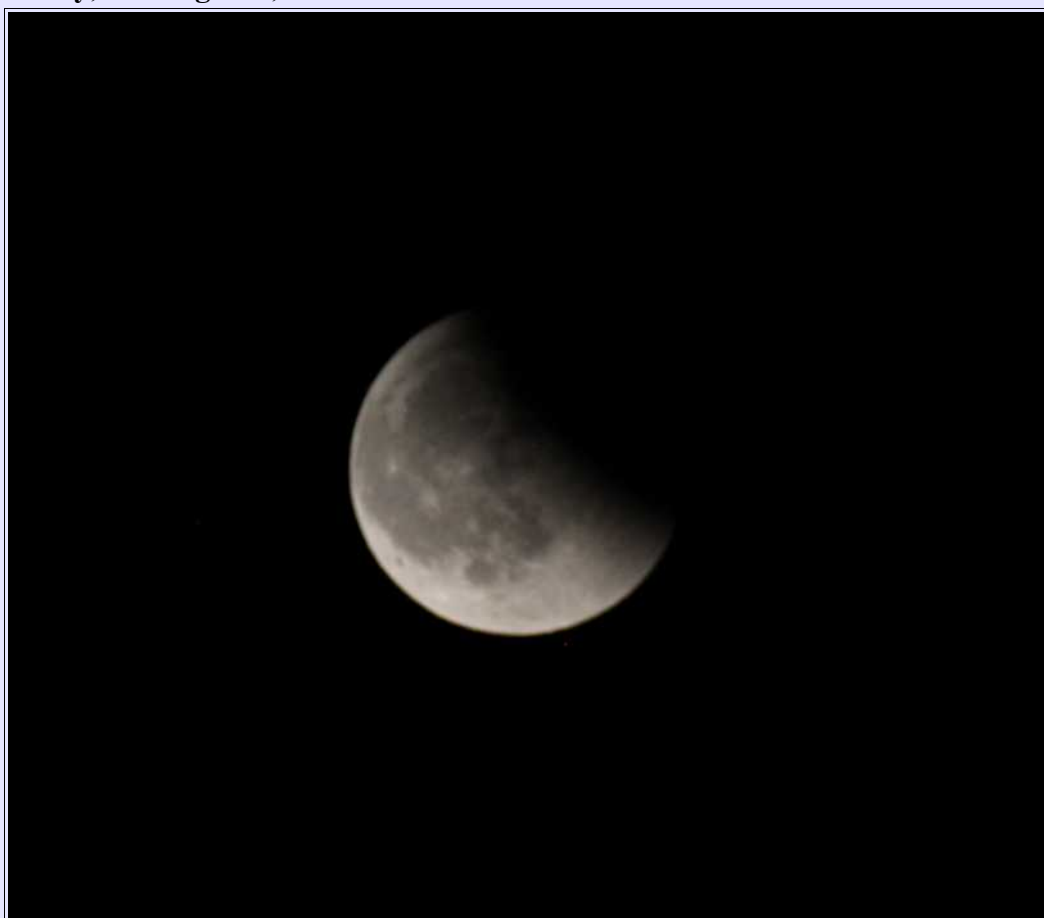


Image taken on 7th September 2025 at 19:50 using a 70mm ED and Canon 1100D

**Mike Foulkes – Bedfordshire.**



Image taken on 7<sup>th</sup> September 2025 at 19:39 using a 70 mm f6.8 Refractor. Nikon DSLR . ISO 800.

**James Dawson – Nottingham.**

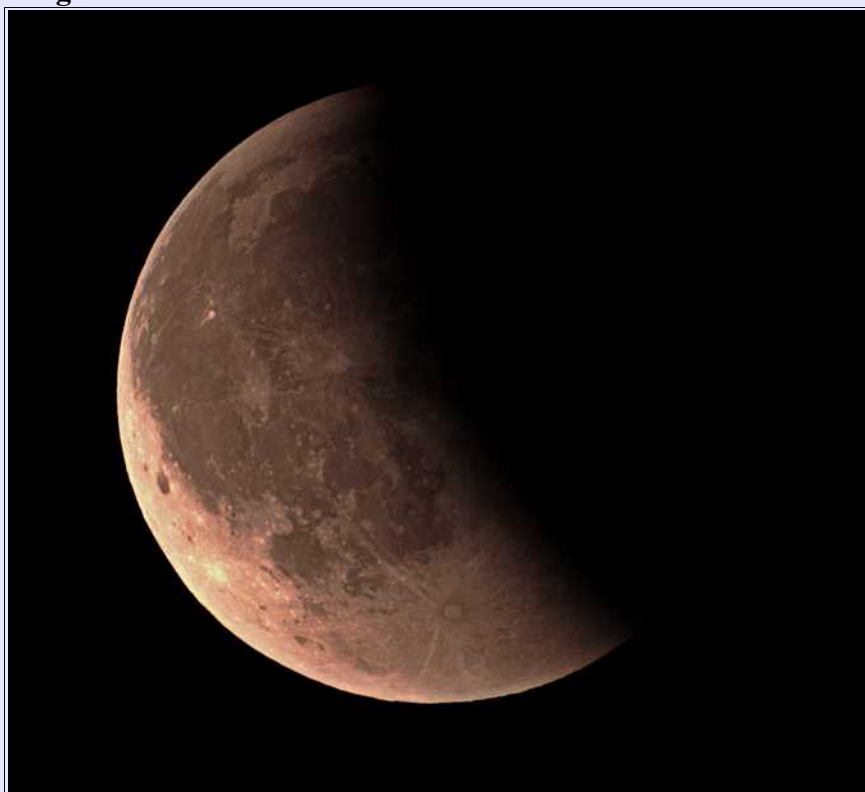


Image taken on 7<sup>th</sup> September 2025 at 19:39 using a Skywatcher ED80. 0.85x focal reducer and ASI ZWO 585MC

**Peter Anderson, Brisbane (with notes by Peter).**

Below images at prime focus of 150mm F8 Skywatcher ED refractor. Canon 90D DSLR at 400 ISO



*“The initial partial umbral stage commenced at 16:27UT and this image was taken at 16:51UT as the umbral shadow was moving across the lunar surface. At 1/500th second it is exposed for those areas still sunlit.”*



*“8 second exposure at 18:16UT. By this stage the altitude had decreased to some 22 degrees. On the left which is the trailing side, you will see a star that has just emerged from occultation behind the Moon. This was a good ‘catch’. It is 7.4 magnitude SAO 146457”.*

**Images and Drawings.**

**Copernicus.**

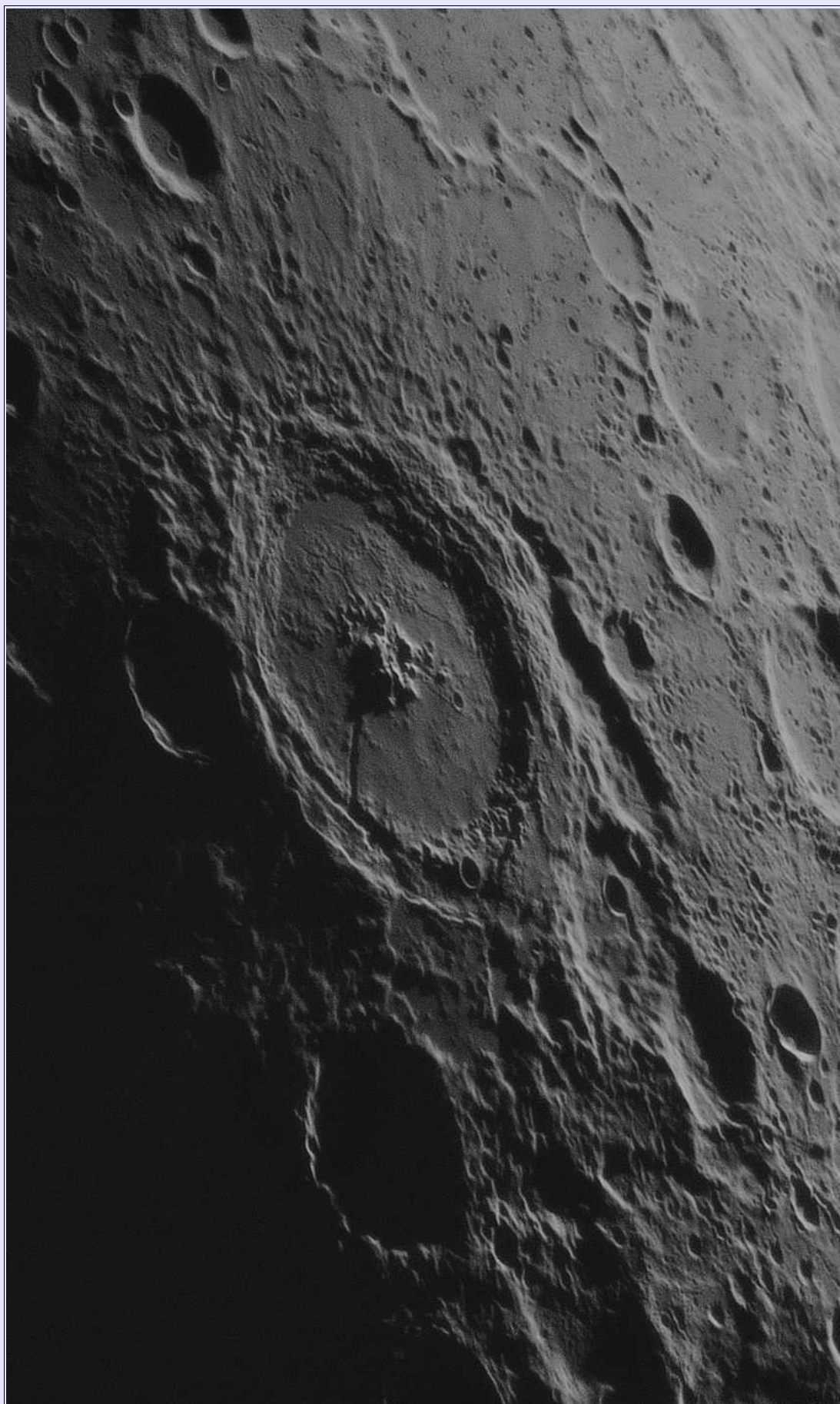


**Image by Maurice Collins and taken on 7<sup>th</sup> April 2025 at 09:00UT.**



*W.Bond* 2025.04.06 19:47 UT, S Col. 13.6°, seeing 6/10, transparency fair.  
Libration: latitude -04°45', longitude +07°19'  
305mm Meade LX200 ACF, f 25, ZWO ASI 120MMS camera, Baader IR pass filter: 685nm.  
800 frames processed in Registax 6 and Paintshop Pro 8.  
*Dave Finnigan, Halesowen*

**Image by David Finnigan with details as shown.**

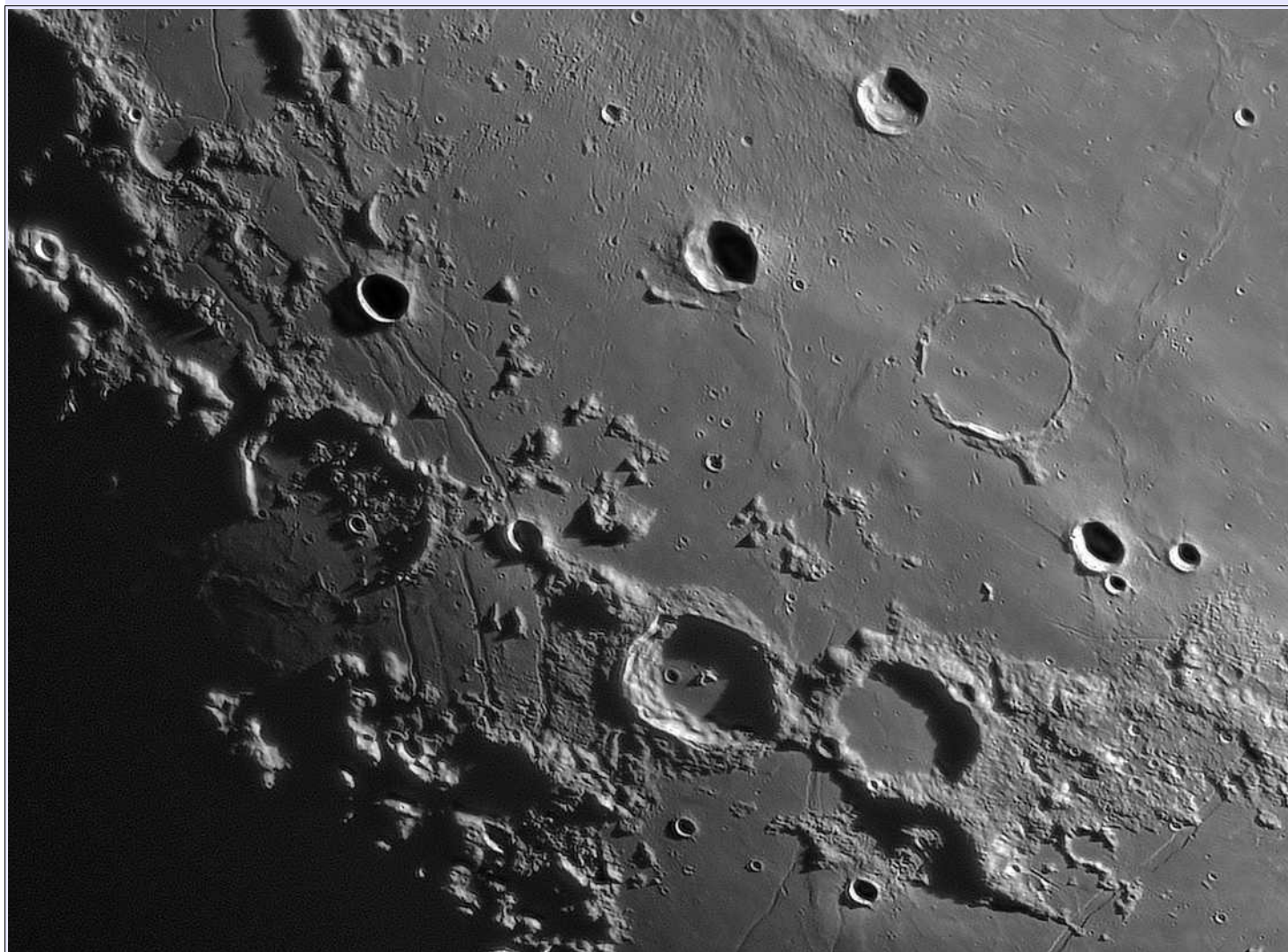


**Image by James Dawson and taken on 30<sup>th</sup> April 2025 at 18:07hrs using a Celestron C14, ASI 585MC, ProPlanet 742nm IR pass filter and 2x Powermate.**



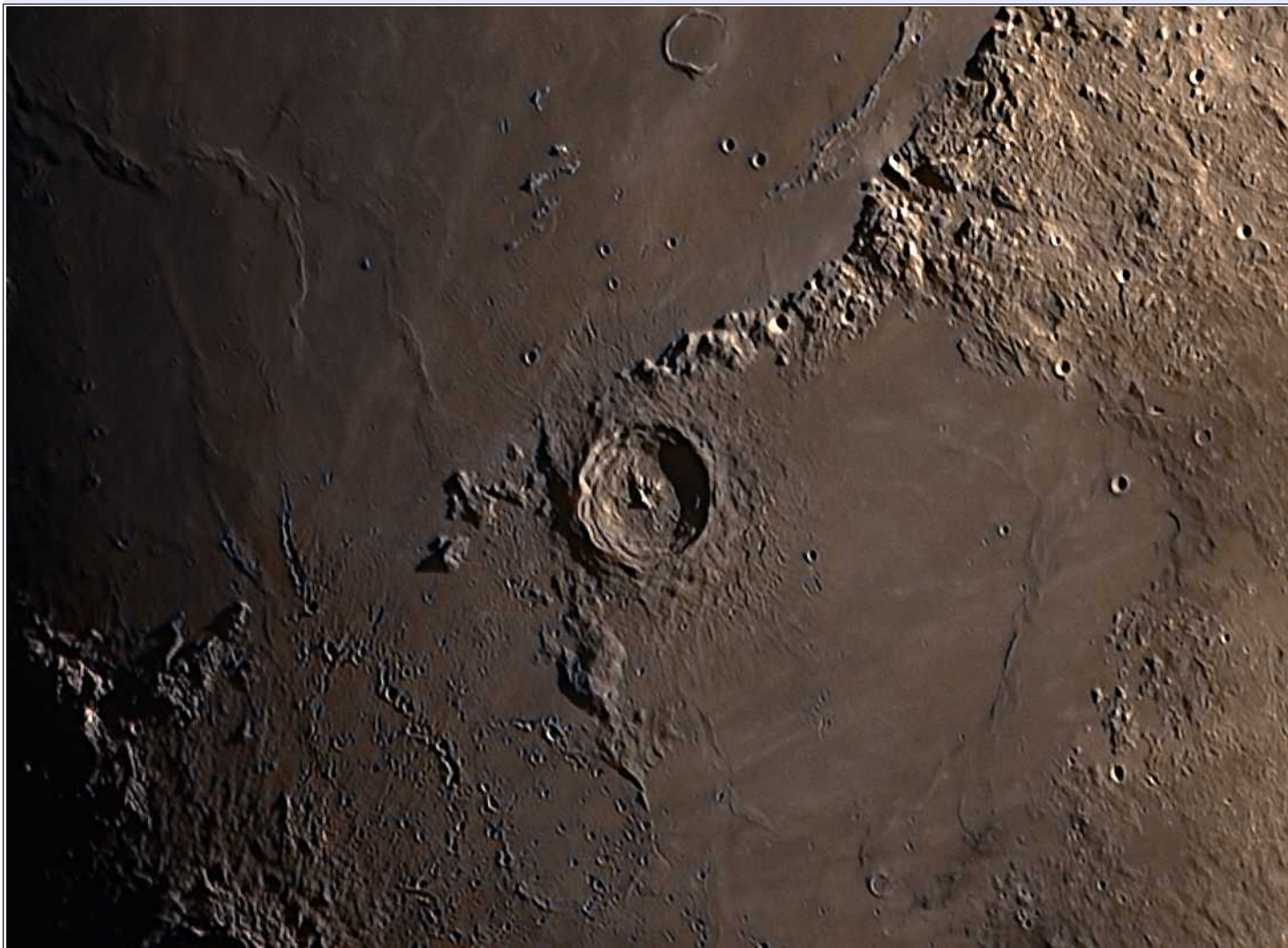
**Image by Bill Leatherbarrow and taken on 9<sup>th</sup> March 2025 at 23:02hrs.**

**Campanus, Mercator and Rimae Hippalus.**



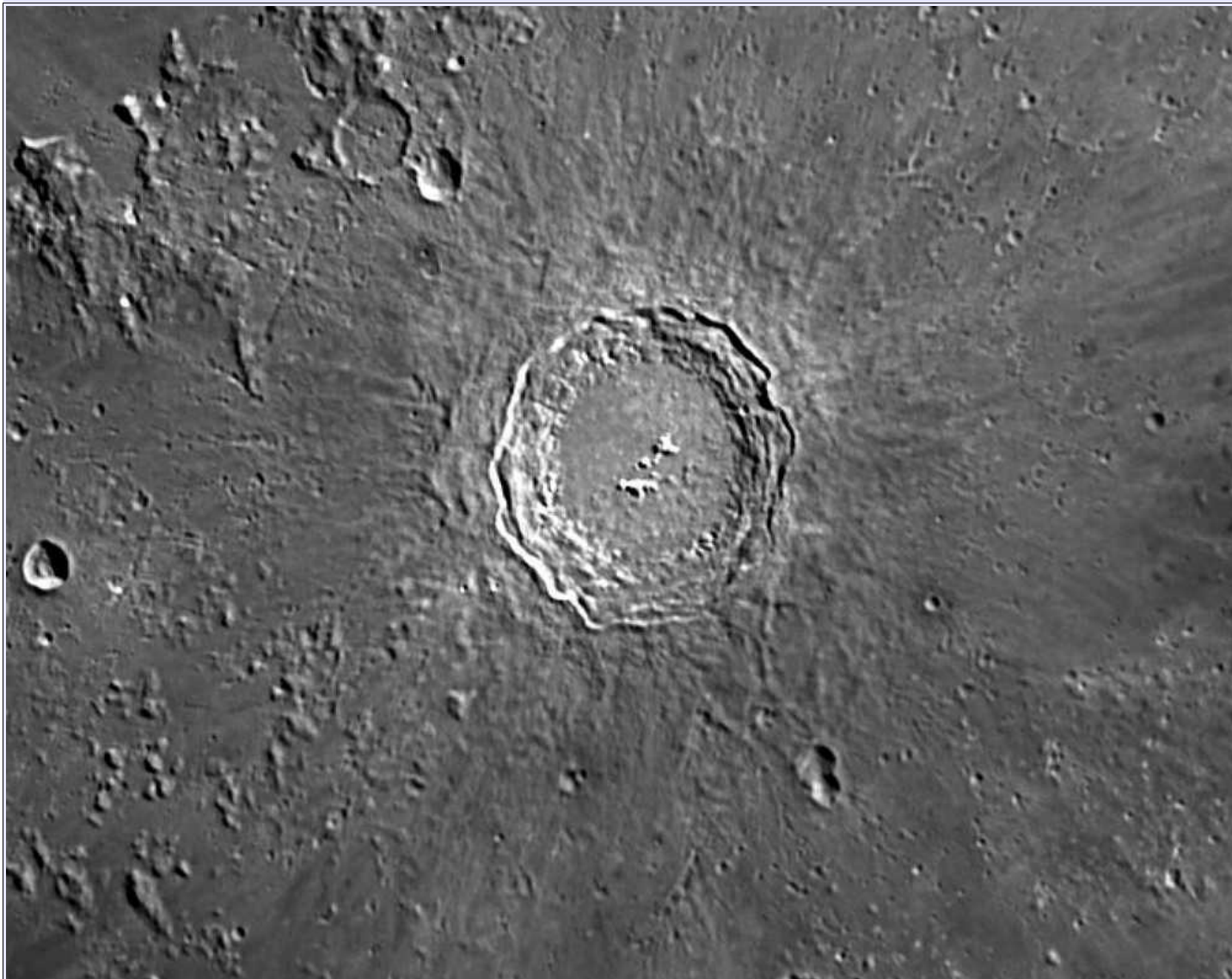
**Image by Leo Aerts and taken on March 9<sup>th</sup> 2025 using a Celestron C14.**

## **Eratosthenes.**



**Image by Chris Longthorn taken on 6<sup>th</sup> May 2052 at 21:02hrs using a 200mm StellaLyra Classical RC Cassegrain with a ZWO ASI224MC colour camera.**

## Copernicus.



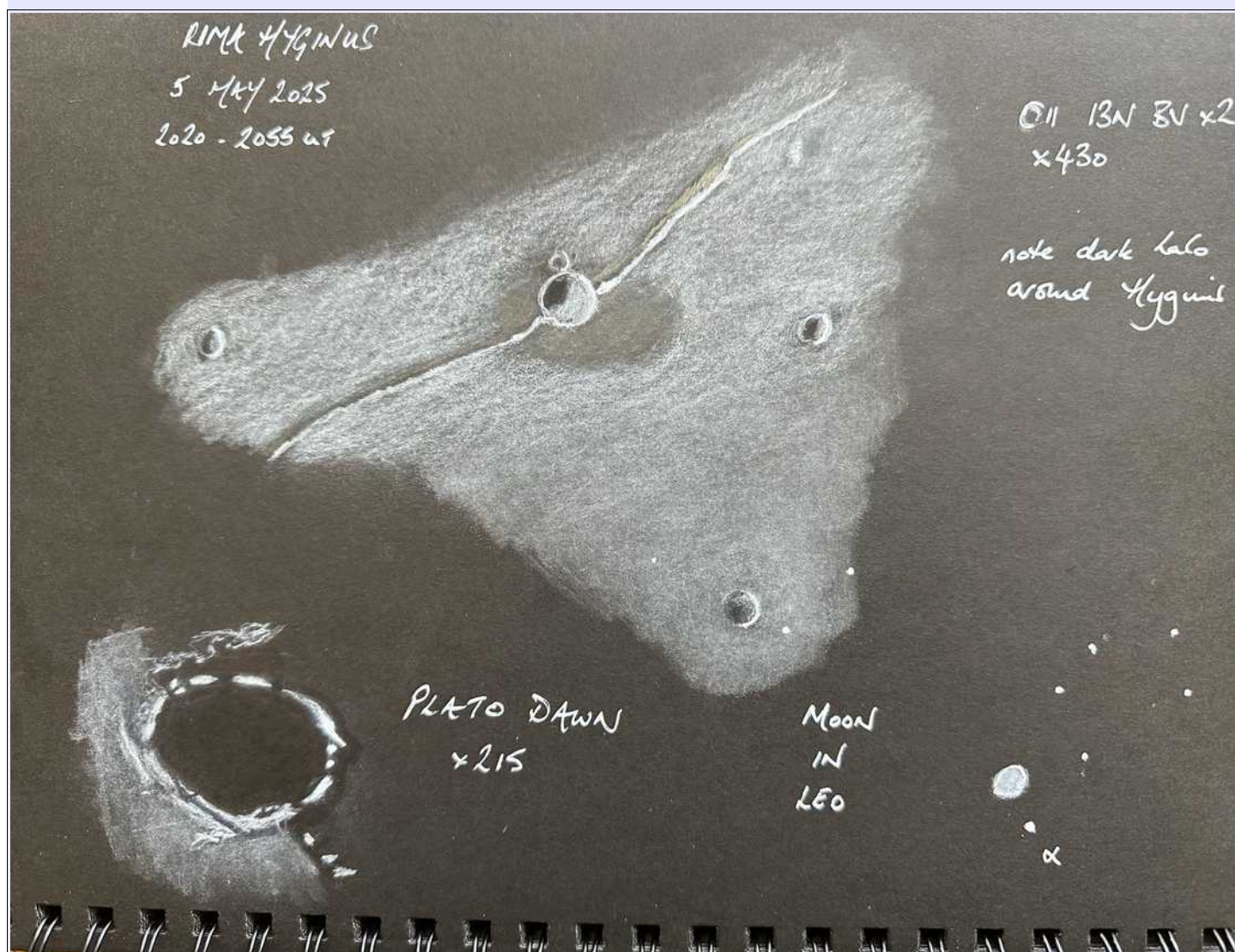
### **Copernicus 2023.05.01 - 19.09 UT**

300mm Neade LX90, ASI 224MC Camera with Pro Planet 742nm I-R Pass Filter.  
900/3,000 Frames. Seeing: 7/10, with high fine cloud.

Rod Lyon

**Image by Rod Lyon with details as shown.**

## Rima Hyginus.



### Drawing by Mark Radice with the following notes:

*"The area around Hyginus and Triesnecker is always fascinating. There are so many rilles and faults that it looks a railway map. Rima Hyginus was tonight's target. What makes this feature so fascinating is that it is a 220km long collapsed lava tube. Amazing to see such fascinating geology first hand. Note also Hyginus itself is not a crater but an 11km caldera. It is set in dark halo and interestingly does not cast a shadow so clearly does not have a rim.*

*I also had a quick look at Plato. The crater rim was completely lit by the rising sun while the floor was in shadow. Note the sun was also just catching the peaks of Montes Tenerife to the south".*



**Image by Paul Whitmarsh and taken with a SeeStar S50 at 01:21 ON 14th September 2025. Image image stacked in AutoStakkert and processed in Pixinsight.**

## Alphonsus under high Sun.



**Image and text by Rik Hill.**

*This image is centered on the great crater Alphonsus (diameter 121km) south of the center of the visible disk, with the even bigger “walled plain” crater Ptolemaeus (158km) above and a strongly terraced crater Arzachel (100km) below. Between Alphonsus and Arzachel is the crater Alpetragius (41km) well known for its unusual central peak, often compared to an egg in a basket. Compare it to the central peak in the two aforementioned craters. This rounded central peak takes up nearly a quarter of the crater diameter and rises to 2km above the floor of the crater compared to 1.5km height of the central peak of Alphonsus. Notice the three large dark patches on the floor of Alphonsus up against the inside of the crater wall. These have been the subject of much study ever since Kozyrev reported spectral evidence of gas emissions seen in Alphonsus, and since Ranger 7 crashed into this crater sending back over 4,000 images many of these dark spots. Today with 60 years of lunar satellite imaging culminating with Lunar Reconnaissance Orbiter (LRO) we have seen that each of these spots contain what appear to be volcanic vents connected by rilles so undoubtedly they are linked to volcanic process.*

*To the left or west of Alpetragius is a shallow ring crater, Lassell (24km). Farther west is a cluster of craters, another smaller ring crater and what looks to be an isolated mountain. The smaller ring is Lassell C (9km) the smaller craters are Lassell G (6km) to the north and Lassell K to the south which consists of at least 2 merged craters each about 3km diameter. The mountain is called the Lassell Massif. These craters have been the subject of intense scrutiny and are now hypothesized to be collapsed calderas based on the observations from LRO! Before leaving this area look just to the west of Ptolemaeus at the small bright elongated crater. Notice a string of tiny craters that stretch to the west across the smooth crater floor of Davy Y (70km). This is a string of small craterlets called Catena Davy formed from the impact of a disintegrating comet or asteroid. These features are small. The largest two craters on the left end are 2.7 and 1.9km and the one in the middle is 2.4km and the one on the right end is 3.2km. All the rest are 1km and under. They are better seen at low sun angle as in my image in my article “At the Catena” on the Vatican Observatory website on 24 Sep. 2019:*

*(<https://www.vaticanobservatory.org/sacred-space-astronomy/at-the-catena/>)*

*This was made from a single AVI from my Skyris 236M camera stacked with AviStack2 and further processed with Gimp and IrfanView.*



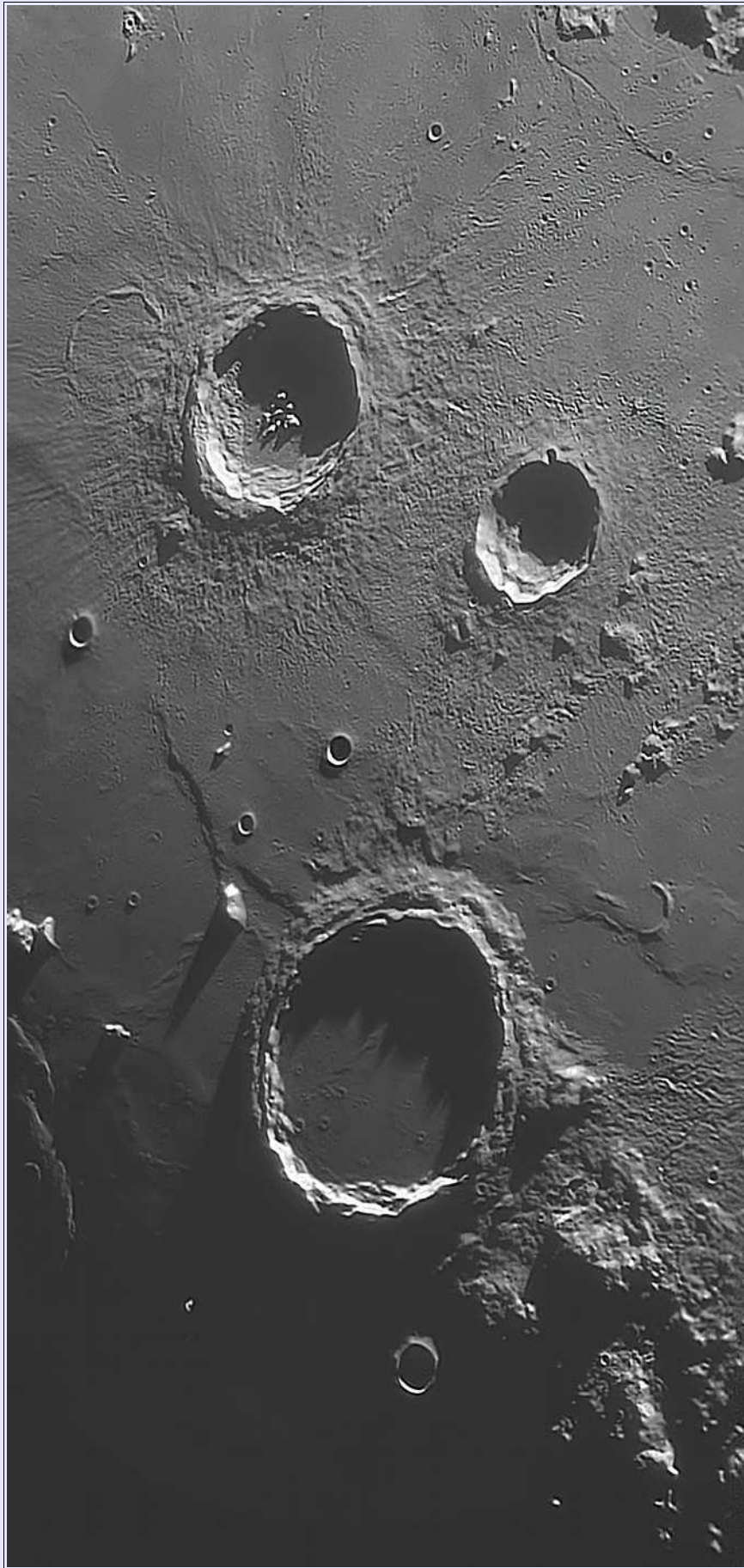
 04/03/2025, 17u45 UT - C8 F10 SCT, 1.5x barlow, roodfilter, ASI290MM

Image by Alexander Vandenbohede with details as shown.

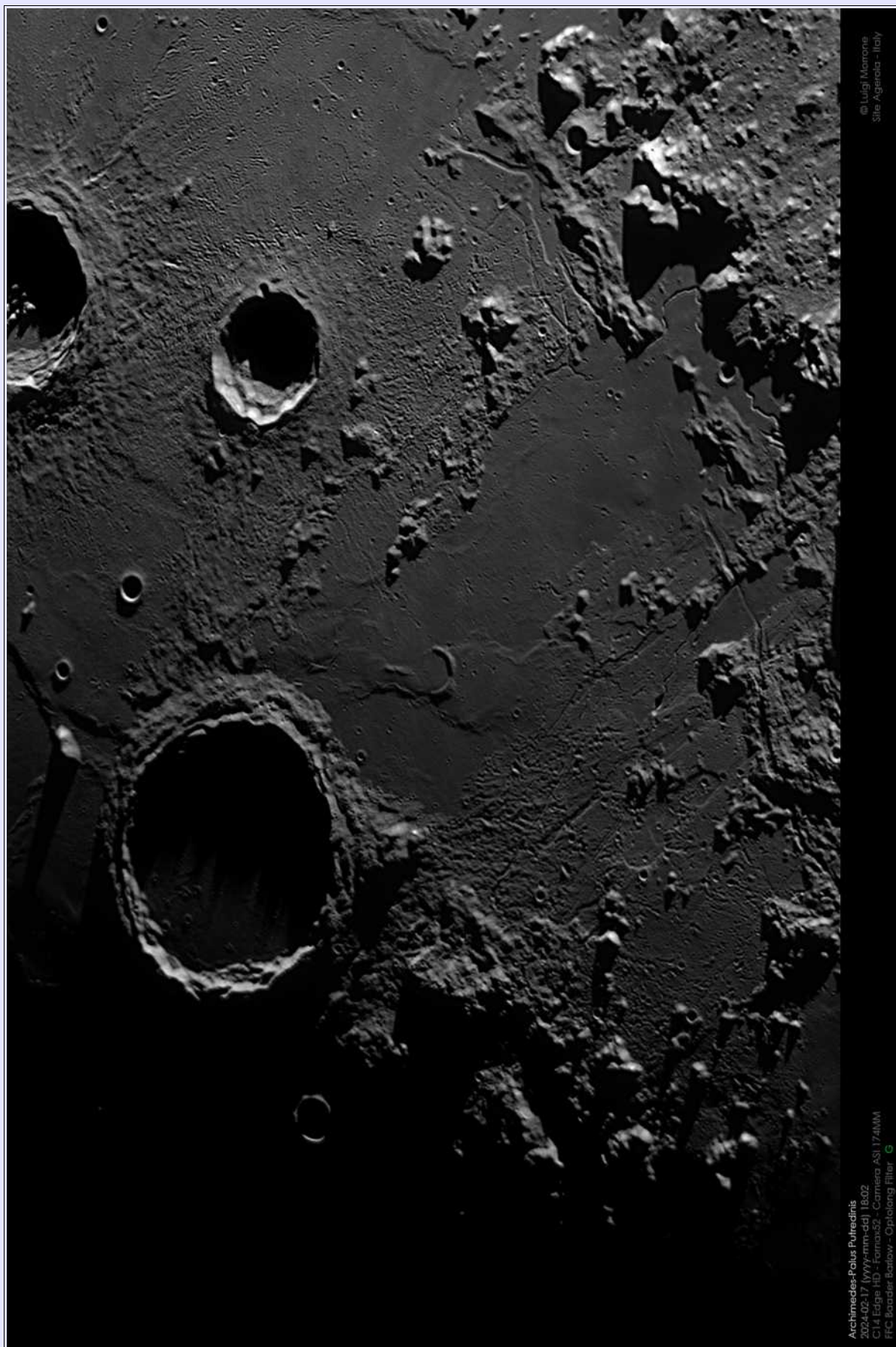
**Deslandres Region.**



**Image by David Franz taken on May 5<sup>th</sup> 2025 at 19:16 using a BRESSER 127 MC MAK f15 and ZWO ASI662MC**



**Image by Mike Greenhill-Hooper and taken on February 17th 2024 19:12 using a 20" f/4 Obsession Dobsonian; 3x TeleVue barlow and ASI224MC with Astronomik Proplanet filter**



**Image by Luigi Morrone and taken on February 17<sup>th</sup> 2024 at 18:02 using a C14 Edge HD, Fornax52 mount, ASI 174 camera, Barlow FFC Baader, Optolong G filter**

## **Lunar Domes (Part XCIII): Domes of trachydacitic and rhyolitic volcanism lunar highland domes. By Raffaello Lena.**

Stromboli and Vesuvius are two steep stratovolcanoes of explosive origin. These terrestrial volcanoes have higher proportion of silica minerals and more gas in their magma. In comparison the lunar mare domes have moderate or gentle slopes caused by fluid lava flows of basaltic composition. On the other hand the highland lunar domes (e.g. Gruithuisen domes) originated from highly silicic more viscous non-mare lavas, likely dacitic or rhyolitic in composition.

Some candidates for localities where the lunar silicic rocks occur have been identified from remote sensing data sets that combine infrared spectroscopy, gamma-ray spectroscopy, and topography. Gruithuisen highland domes have infrared spectra indicating silica-rich compositions (as described below) and thus originated from dacitic to rhyolitic volcanism.

### **Lava flows and chemical composition**

Basaltic lava flows easily because of its low viscosity. This low viscosity is due to its low silica content. Andesitic magma erupts explosively because it tends to have higher gas content. Higher viscosity is related to higher silica content. The table below describes the average composition in SiO<sub>2</sub> for different types of lavas.

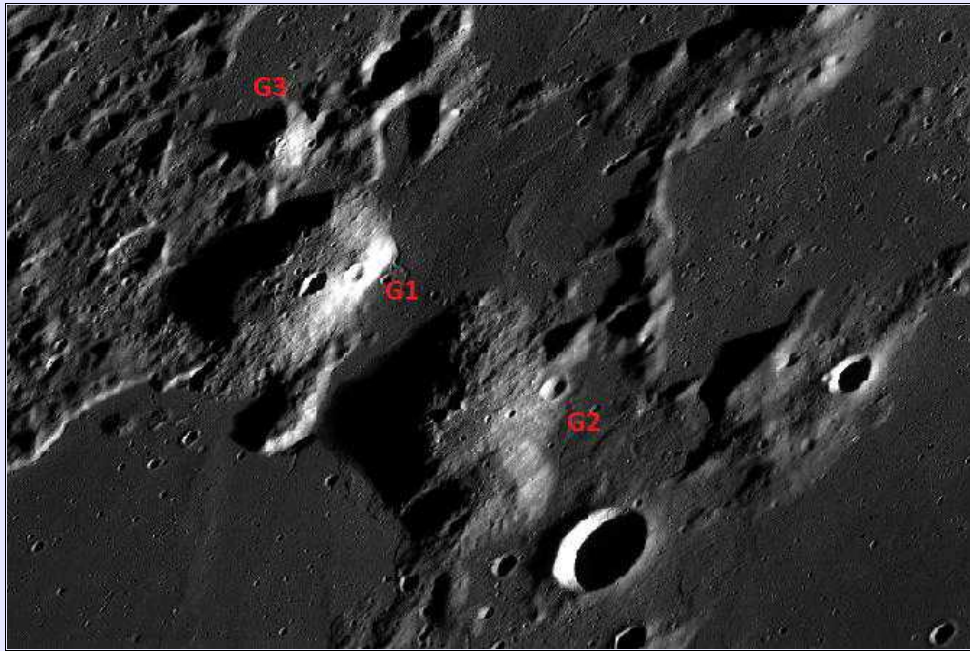
|                    | Basalt | Andesite | Trachyte | Dacite | Rhyolite |
|--------------------|--------|----------|----------|--------|----------|
| % SiO <sub>2</sub> | 49.20  | 57.94    | 61.21    | 65.01  | 72.82    |

Trachyte contains 60 to 65% silica content, thus less SiO<sub>2</sub> than rhyolite and more Na<sub>2</sub>O and K<sub>2</sub>O than dacite. These chemical differences account for the feldspar-rich mineralogy of the rock type. The mineralogical composition of rhyolite is defined as containing mostly quartz and feldspar with a total silica content of more than 69%. Quartz in rhyolite may be usually present in amounts of 25% to 30%. Feldspars often comprise 50% to 70% of rhyolites. Rhyolitic magma erupts catastrophically because rhyolitic lava has high gas content. It is viscous and therefore traps gas, builds pressure and erupts explosively. High viscosity is related to highest silica content.

### **Lunar highland domes**

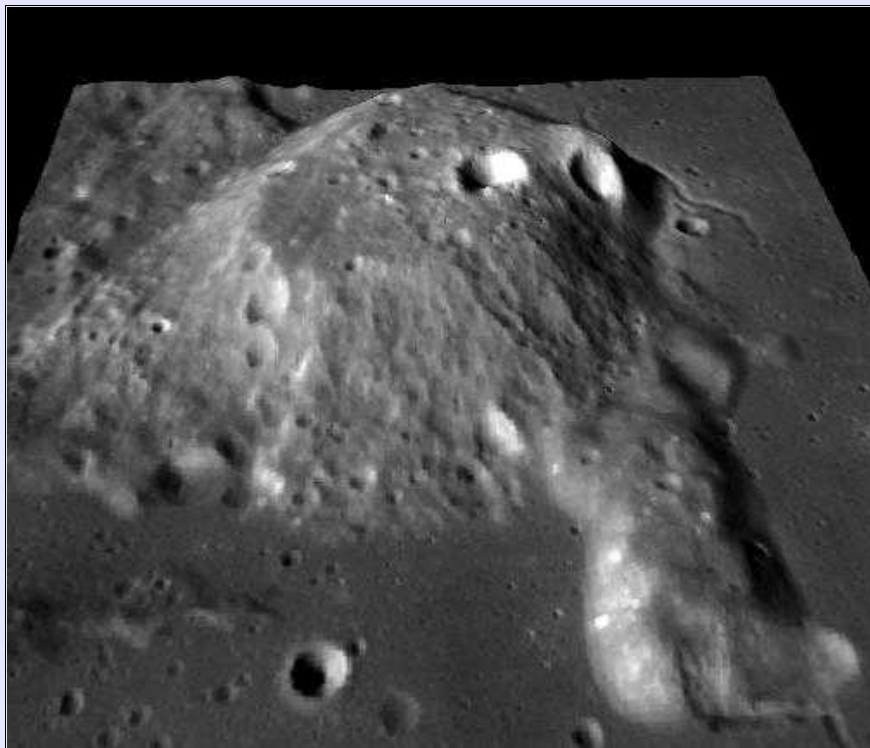
Gruithuisen highland domes are known to have large diameters of up to 20 km, heights of more than 1000 m, steep flank slopes between 7° and 10°, and very high edifice volumes of several hundred km<sup>3</sup> (Lena et al., 2013). Wilson and Head (2003) show that while the eruption processes that formed Gruithuisen δ (termed G2) and the Northwest Dome (termed G3) occurred over more than 20 years at low effusion rates, between 6 and 50 m<sup>3</sup>s<sup>-1</sup>, the effusion rate was 119 m<sup>3</sup>s<sup>-1</sup> for Gruithuisen γ (termed G1) over a period of 38 years.

The lava that formed the Gruithuisen highland domes had high viscosities (between 10<sup>8</sup> and 10<sup>9</sup> Pa s), so these highland domes tend to be steeper as a result – a similar phenomenon is seen in terrestrial lava domes composed of silica rich lava. The assumed source region is the lower lunar crust. These domes for their steep slope angles display a long shadow if imaged under oblique solar illumination (Fig. 1).

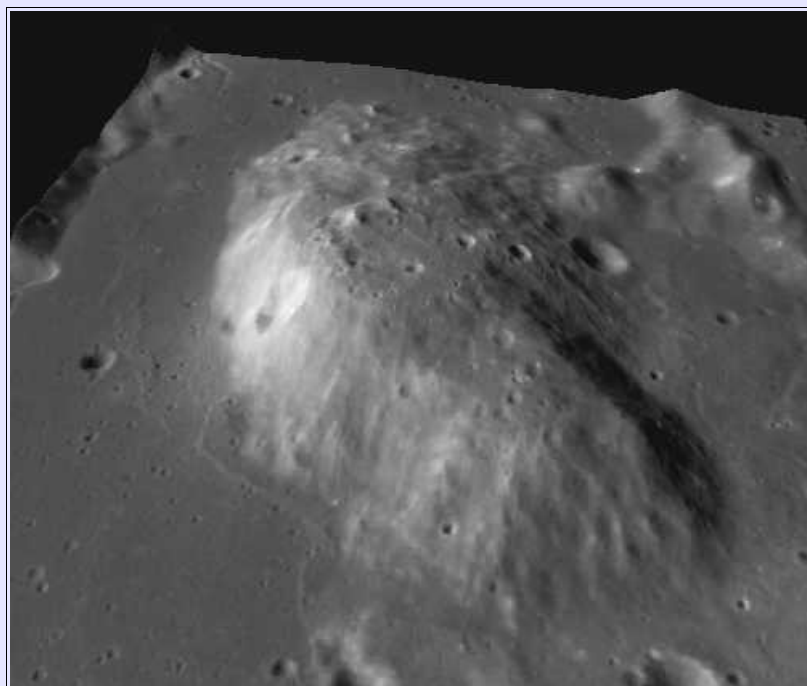


*Figure 1: WAC imagery of the Gruithuisen domes G1-G3.*

The height of Gruithuisen  $\gamma$  (G1) is of 1740 m, the diameter amounts to 19 km, resulting in an average slope of  $8.3^\circ$ . The height of Gruithuisen  $\delta$  and the Northwest Dome (G2 and G3) amounts to 1960 m and 1117 m respectively, with diameters of 27 km and 7.5 km, resulting in average slopes of  $6.9^\circ$  (G2) and  $9.1^\circ$  (G3). The edifice volumes assuming a parabolic shape of the domes is determined to  $247 \text{ km}^3$ ,  $544 \text{ km}^3$  and  $43 \text{ km}^3$ , respectively. The 3D reconstruction (Figs. 2-3) is obtained using WAC mosaic draped on top of the global WAC-derived elevation model (GLD100).



*Figure 2: 3D reconstruction obtained with GLD 100 dataset. Highland dome termed G1. Evident complex textures and prominences on the summits.*

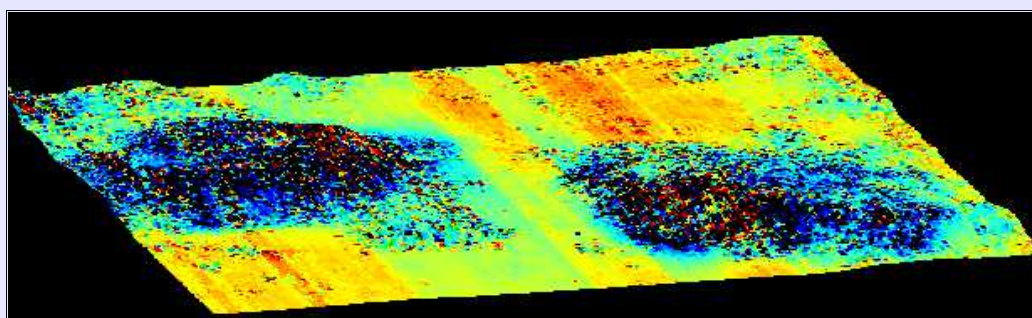


*Figure 3: 3D reconstruction obtained with GLD 100 dataset. Highland dome termed G2. Evident complex textures and prominences on the summits.*

The Gruithuisen highland domes form a separate spectral and morphometric group (class G) in the lunar domes classification scheme (Lena et al., 2013), due to their steep flank slopes, high volumes, and red spectral signatures, giving rise to the assumption that they have been formed by lava of significantly different composition than basaltic domes and erupted over a long period of time (Lena et al., 2013).

#### **Highland lunar domes spectral data**

The rheologic modeling analysis by Wilson & Head (2003) yields high viscosities of the lava that formed the lunar highland domes. Diviner dataset produces thermal emissivity data, and can provide compositional information from three wavelengths centered around 8  $\mu\text{m}$  which can be used to characterize the Christiansen Feature (CF), which is directly sensitive to silicate mineralogy and the bulk  $\text{SiO}_2$  content. CF value indicates a high Si content of the material that makes up the highland domes Gruithuisen G1-G3, thus supporting their formation by highly viscous lavas. The average calculated CF position for these highland domes is 7.87  $\mu\text{m}$  indicating high plagioclase feldspar composition (Fig. 4).



*Figure 4: 3D reconstruction of G1 and G2 obtained with GLD 100 dataset overlaid with CF values. Blue color indicates high feldspar composition. The average calculated CF position for these highland domes is 7.87  $\mu\text{m}$ .*

Recently abundance maps in wt% of Plagioclase, Olivine, Clinopyroxene and Orthopyroxene created from topographically-corrected Mineral Mapper reflectance data acquired by the JAXA SELENE/Kaguya have been released (Fig. 5). The plagioclase feldspars form a solid solution series between the end members of pure Albite ( $\text{NaAlSi}_3\text{O}_8$ ) and pure Anorthite ( $\text{CaAl}_2\text{Si}_2\text{O}_8$ ). The alkali feldspars form a solid solution series between pure

Albite and Potassium Sanidine ( $\text{KAlSi}_3\text{O}_8$ ). Astronauts visiting the Moon during the Apollo missions brought back many samples of rock that were rich in feldspar.

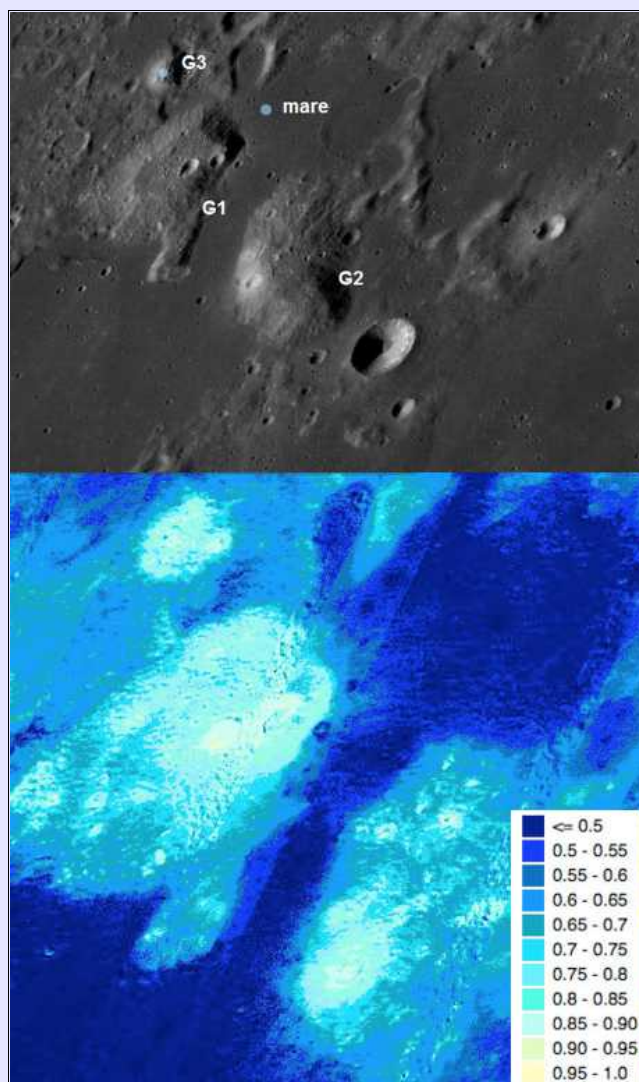
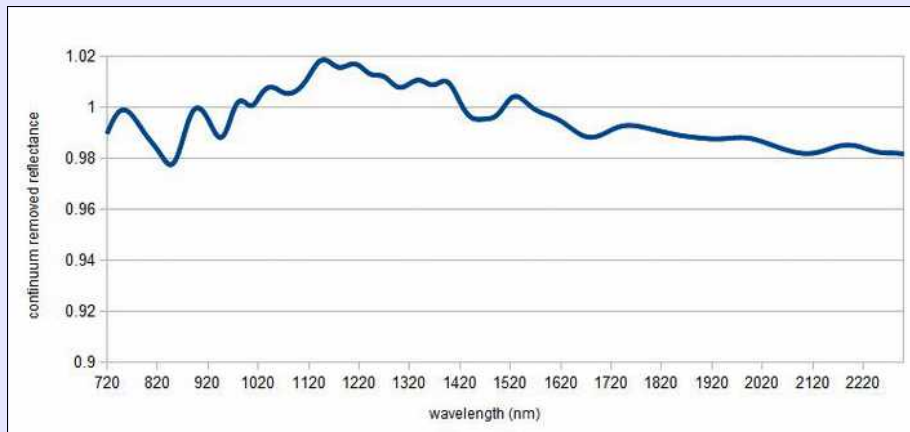


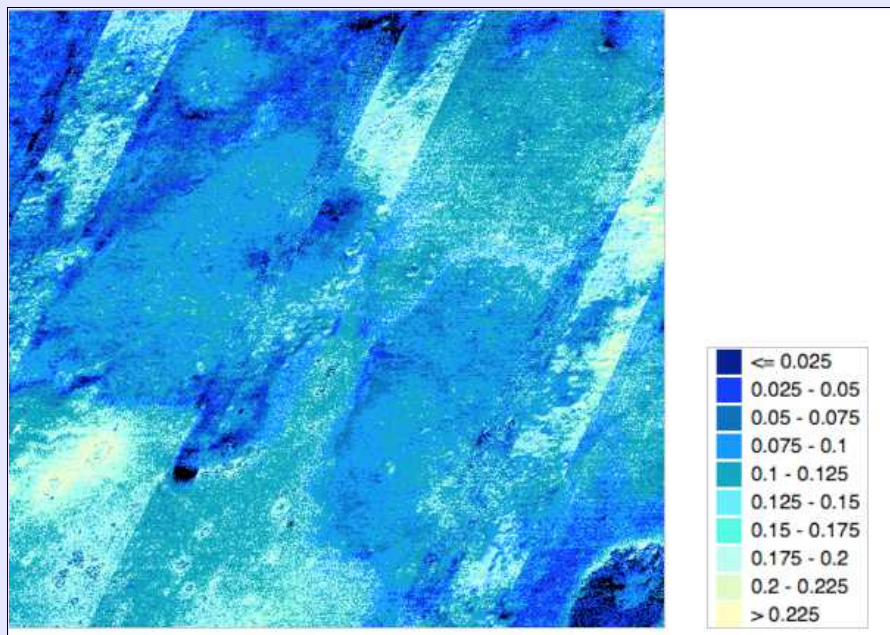
Figure 5: Abundance map in wt% of Plagioclase from Mineral Mapper reflectance data. Note the absence of the plagioclase in the mare and high abundance in the Gruithuisen domes.

Accordingly, the spectral data using Chandrayaan-1 Moon Mineralogy Mapper ( $M^3$ ) displays a spectrum of the plagioclase which lack any observable mafic absorption feature (Fig. 6) in the range between 1,000 and 2,300 nm. Fig. 6 shows the spectrum of G3 Northwest Dome.

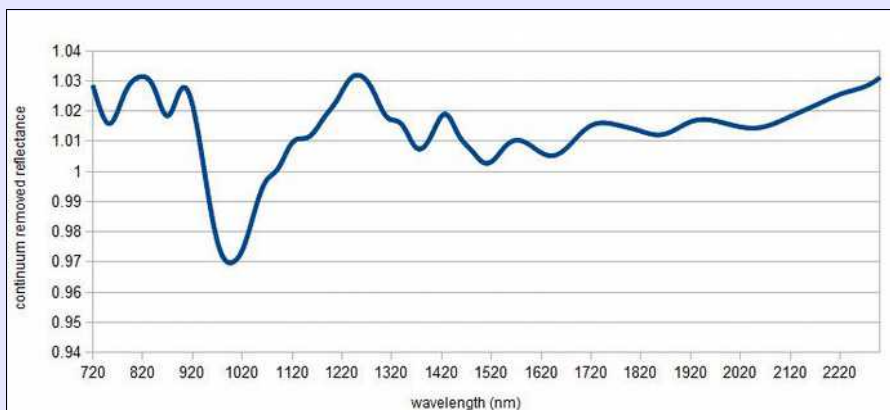
The spectral properties of major lunar minerals exhibit absorption bands that differ by their shape and position along the spectral domain. Pyroxenes (orthopyroxenes and clinopyroxenes) have two absorption bands, one centered near 1,000 nm and another near 2,000 nm. Olivine has a complex absorption centered over 1,000 nm, with no absorption at 2,000 nm. Therefore, olivine-rich lunar deposits are characterized by a broad 1,000 nm absorption band which is enhanced relative to the weak or absent 2,000 nm band. Figure 7 displays an olivine component in the mare location marked with a circle in the WAC image of Fig. 5.



*Figure 6: Moon Mineralogy Mapper ( $M^3$ ) spectrum of G3 Northwest Dome.*



*Figure 7: Abundance map in wt% of Olivine from Mineral Mapper reflectance data.*



*Figure 8: Moon Mineralogy Mapper ( $M^3$ ) spectrum of the mare near the Gruithuisen highland domes.*

Accordingly, the spectral data using Chandrayaan-1 Moon Mineralogy Mapper ( $M^3$ ) displays a spectral signature of the olivine (Fig. 8).

As a note of interest, recent detection of water and/or hydroxyl anomaly ( $\text{OH}/\text{H}_2\text{O}$ ) of endogenic magmatic origin is reported at some highland domes: prominent hydration features have been observed in both Hansteen  $\alpha$  and Gruithuisen Domes (Pathak et al., 2015). In Gruithuisen domes, the spectra lack any observable mafic

absorption feature, except the absorption OH/H<sub>2</sub>O feature near 2,800 nm having band strengths varying from ~5-8%. According to Pathak et al. (2015), I have effectively identified the presence of the hydroxyl group in some areas of Gruithuisen  $\delta$  (G2) as demonstrated by the spectral signature, characterized by the 2,800 nm spectral absorption very diagnostic (Fig. 9).

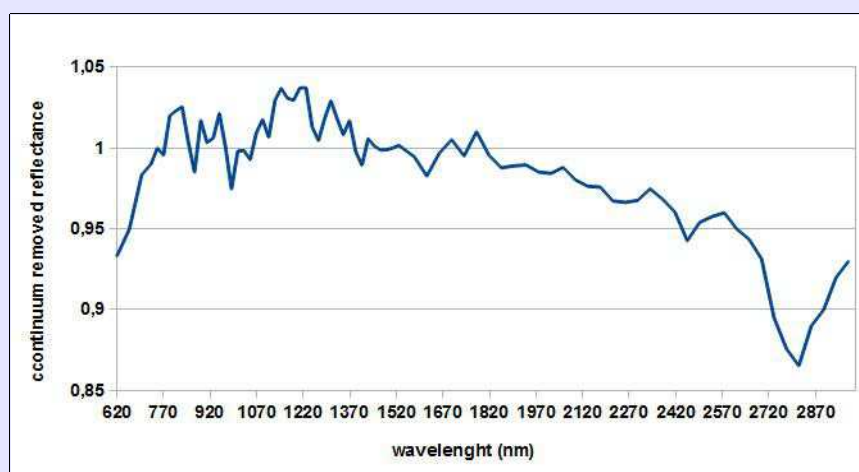


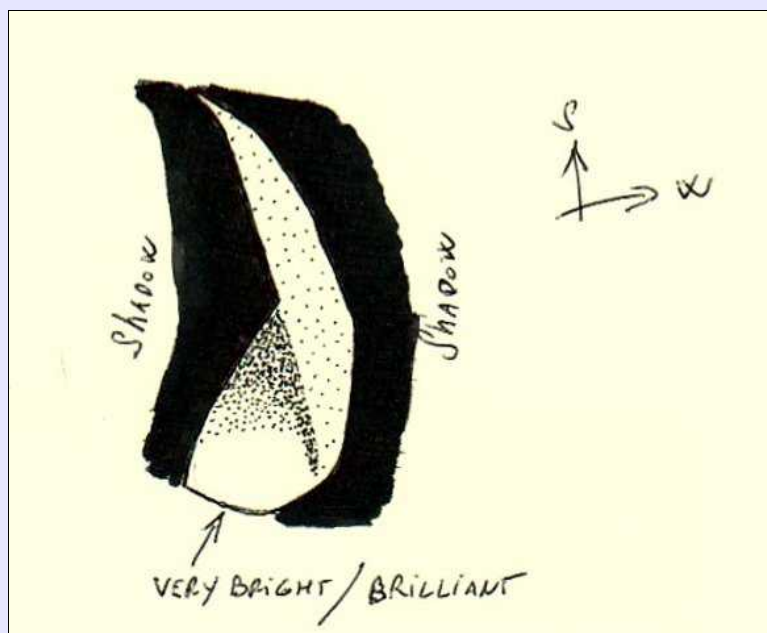
Figure 9:  $M^3$  spectral analysis of the dome Gruithuisen  $\delta$  (G2).

The observed hydroxyl (OH/H<sub>2</sub>O) feature at this non-mare silicic lithology indicates the presence of endogenic magmatic water. The dissolved water in silicates changes their physical and chemical properties as they can alter their structure, and thus plays a crucial role in volcanic eruptions and affects the evolution of magma.

#### References:

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[https://arpi.unipi.it/retrieve/handle/11568/897286/332502/BIAGIONI\\_897286.pdf](https://arpi.unipi.it/retrieve/handle/11568/897286/332502/BIAGIONI_897286.pdf)
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## Lunar Geological Change Detection Programme by Tony Cook.



**Figure 1.** Cavendish E as sketched by Massimo Giuntoli (BAA) on 2025 Sep 04 UT 20:10, Seeing IV-III, 147mm f/8.2 Newtonian, x240. Selenographic colongitude =  $59.7^\circ$ , sub-solar latitude =  $+0.2^\circ$ .

**TLP Reports:** On 2025 September 04 UT 20:10 Massimo Giuntoli observed this crater and found that the illuminated northern wall was brighter than Aristarchus, and there was a dark band running N-S on that bright wall. Massimo does not regard this as a TLP, as they suspect it to be just a sunward facing slope, but nevertheless it was very spectacular and bright. We shall add this to the Lunar Schedule web site and try to get a repeated observation at a similar colongitude range.

During the lunar eclipse on 2025 Sep 7, I received information (via Alexandre Amorim in Brazil) of a report of a double flash on the Moon at 18:49:47UT from India. This was captured from the IERCOO observatory of the Indian Centre for Space Physics. However, the two closely spaced flashes, with a hint of a streak in between, look very sharp compared to the resolution elsewhere in the images. So, I suspect that this was probably a cosmic ray air shower event that was detected in the camera, which often appear as two or more bright points. But if you are curious and have a video of the eclipse please check the Moon at that UT and let me know what you find.

**News:** I am grateful to Martyn Kinder for pointing out an interesting Icarus journal paper by Vijayan *et al.* ([Volume 438, 15 September 2025, 116627](#)). In this paper they study the global distribution of recent boulder falls, on slopes, on the Moon and then evaluate the cause of these, namely from: thermal fatigue, impact ejecta, etc, and also being in close proximity to seismically active scarps. Another paper, published a few months earlier, "[Paleoseismic activity in the moon's Taurus-Littrow valley inferred from boulder falls and landslides](#)" by Waters and Schmerr, states that although the lower limit of the probability of a shallow, but violent moon quake, during the Apollo 17 mission was just 1 in 20 million on any given day, it could be up to 10x more frequent. With future space missions expected to spend longer on the surface, and the Space X Starship lander having a much higher centre of gravity than the Apollo Lunar Module, it makes sense to avoid landing in areas close to scarps that could trigger shallow quakes, and also to land in a flat area away from signs of recent boulder trails.

**Routine reports received for August included:** Leo Aerts (Belgium – BAA) imaged: Aristarchus, Bailly, Copernicus, Flamsteed, Hausen, Kepler, Mare Imbrium, Marius and Sinus Iridum, Masimo Bianchi (Italy – UAI) observed: Aristarchus. Steve Brown (North Yorkshire, UK – BAA) imaged: the Moon. Maurice Collins (New Zealand - ALPO/BAA/RASNZ) imaged: Alphonsus, Archimedes, Aristarchus, Copernicus, Deslandres, earthshine, Gassendi, Grimaldi, J Herschel, Mare Imbrium, Plato, Pythagoras, Schickard, Triesnecker and several features. Alun Halsey (Reading, UK – BAA) imaged: several features. Francesco Mondello (Italy –

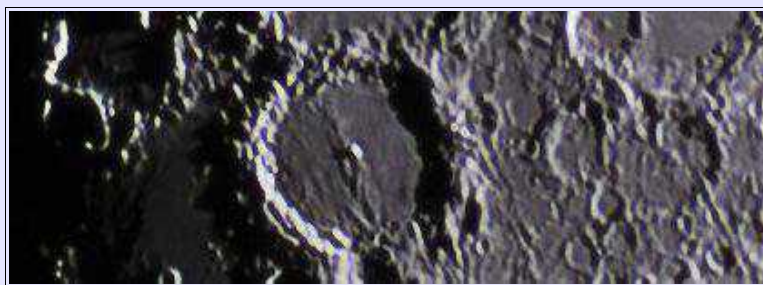
UAI) imaged: Eratosthenes. Andrew Paterson (Malta – BAA) imaged: the Moon. Tony Cook (Newtown, UK – ALPO/BAA) imaged: the Moon in the Short-Wave infrared. Bob Stuart (Rhayder, Wales, UK – BAA) imaged: Alphonsus, Birmingham, Birt, Blancanus, Clavius, Copernicus, Deslandres, Drygalski, Eratosthenes, Herschel, Plato, Rupes Recta, Turner and Tycho. Aldo Tonon (Italy – UAI) imaged: Aristarchus and Eratosthenes. Barrow. Alexander Vandenbohede (Belgium – BAA) imaged: Copernicus, Littrow, Piccolomini, Theophilus and Tycho. Luigi Zanatta (Italy – UAI) imaged: Aristarchus.

**Analysis of Reports Received (August):** - Note that due to an increase in teaching load at my University, I only have time for very scant analysis this month. So please feel free to do your own interpretation if you wish.

**Alphonsus:** On 2025 Aug 02 UT 06:10 Maurice Collins (ALPO/BAA/RASNZ) imaged this crater under similar illumination to the following two reports:

*Alphonsus 1967 Aug 13 UT 18:40-18:55 Observed by Horowitz (Haifa, Israel, 8" reflector?) "Glow or hazy patch seen while using filters. Brighter than background. Not seen after 2055 or next nite" NASA catalog weight=3. NASA catalog ID #1041. ALPO/BAA weight=2.*

*Alphonsus 1968 May 05 UT 20:00 Observed by Farrant (Cambridge, England, 8" reflector, x220, Seeing: Good). "Did not see gray patch SE (ast. ?) of c.p. Noted W. (ast. ?) dark patch was invis. while S. one was seen easily, emerging from shadow. On 7th all seen easily, emerging from shadow. On 7th all 3 clearly vis. with the darkest one the invis. one on 5th." NASA catalog weight=3. NASA catalog ID #1071. ALPO/BAA weight=1.*

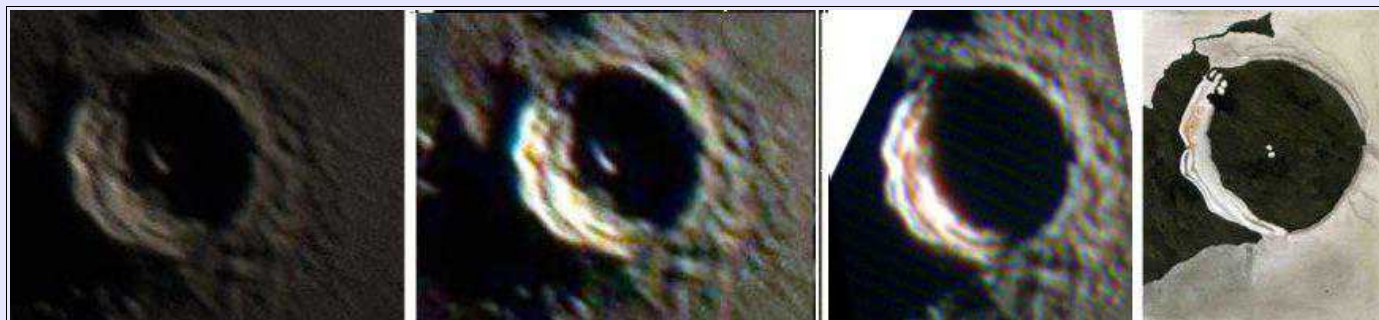


**Figure 2.** Alphonsus as imaged on 2025 Aug 02 UT 06:10 Maurice Collins (ALPO/BAA/RASNZ) and orientated with north towards the top.

Concerning the 1967 report, no sign can be seen of a glow or hazy bright patch in Fig 2, so we shall leave the ALPO/BAA weight at 2 for now. In the 1968 Cambridge report, the “ast.” mentioned in the Cameron catalog description above refers to the old “astronomical coordinate system” used up until the early 1970’s by some amateur astronomers. Like the current IAU system north and south are the same but East Astronomical is West IAU and West Astronomical is East IAU. I will leave it up to the reader to compare the description in Farrant’s observation with the modern-day image in Fig 2.

**Eratosthenes:** On 2025 Aug 02 UT 20:02 and 20:05 Francesco Mondello (UAI) imaged this crater in colour for the following lunar schedule request:

*ALPO Request: This request comes about because of two observations. Firstly, on 2009 Nov 25 Paul Abel and others detected some colour on the inner west illuminated slopes of this crater. No similar colour existed elsewhere. On 2012 Aug 25 Charles Galdies imaged this crater and detected a similar colour, approximately in the same location, though he also imaged colour elsewhere. It is important to replicate this observation to see if it was natural surface colour, atmospheric spectral dispersion, or some effect in the camera that Charles was using, namely a Philips SPC 900NC camera. The minimum sized telescope to be used would ideally be an 8" reflector. Please send any high-resolution images, detailed sketches, or visual descriptions to: a t c @ a b e r . a c . u k .*



**Figure 3.** Eratosthenes with north towards the top left. **(Far Left)** Original image by taken Francesco Mondello (UAI) On 2025 Aug 01 UT 20:02. **(Left)** Same image but with colour normalization and colour saturation increased. **(Right)** Image by Charles Galdies taken on 2012 Aug 25 UT 19:44-19:52 with colour normalization and colour saturation increased. **(Far Right)** A sketch by Dr Paul Abel from 2009 Nov 25 completed by 20:18 UT.

Aldo Tonon also took some colour imagery (not shown here) but Francesco's imager (Fig 3 – Far Left) shows more detail. The enhanced version (Fig 3 – Left) shows some orange or brown colour in parts of the shaded terraces on the inner western wall, but not in all the same locations as Paul Abel (and others) saw visually in 2009 (Fig 3 – Far Right), however the illumination is different as there is slightly more floor shadow in Paul's sketch. There is even more floor shadow in Charles Galdie's image, but a greater extent of orange-brown colouration. Both the Galdies and Mondello images exhibit some colour outside the crater too. Fig 3 left has some indication of atmospheric spectral dispersion or chromatic aberration as there are some tints of blue and red, though the blue is missing in Fig 3 (Right). These two artificial colour production optical phenomena, on this side of the Earth's atmosphere should be especially prominent on bright/dark boundaries. This is evident in some places, but not everywhere we see a contrasty boundary and also colours are present on non-contrasty areas. Another way to generate false colour is from contrasty edges falling on the Bayer RGB pixel arrangement on colour cameras – this would be especially affected by the orientation of the edge. Perhaps there is some natural surface coloured soil in the terraced areas which is only visible under certain Sun angles? What do you think? False colour effects, as described may explain some, but not all, of the colour present.

**Aristarchus Area:** On 2025 Aug 05 UAI observers: Masimo Bianchi, Aldo Tonon and Luigi Zanatta took images of this region for the following:

Lunar Schedule Request running from approximately 18:36-00:00 UT:

*BAA Request: Aristarchus area - We are trying to explain an observation from Meudon Observatory in France made in 1881 of a bright rope-like effect seen in the vicinity of this crater. Please send any images to: a t c @ a b e r . a c . u k .*

Repeat illumination and libration (to within  $\pm 1^\circ$ ) running from approximately 18:19-20:17 UT

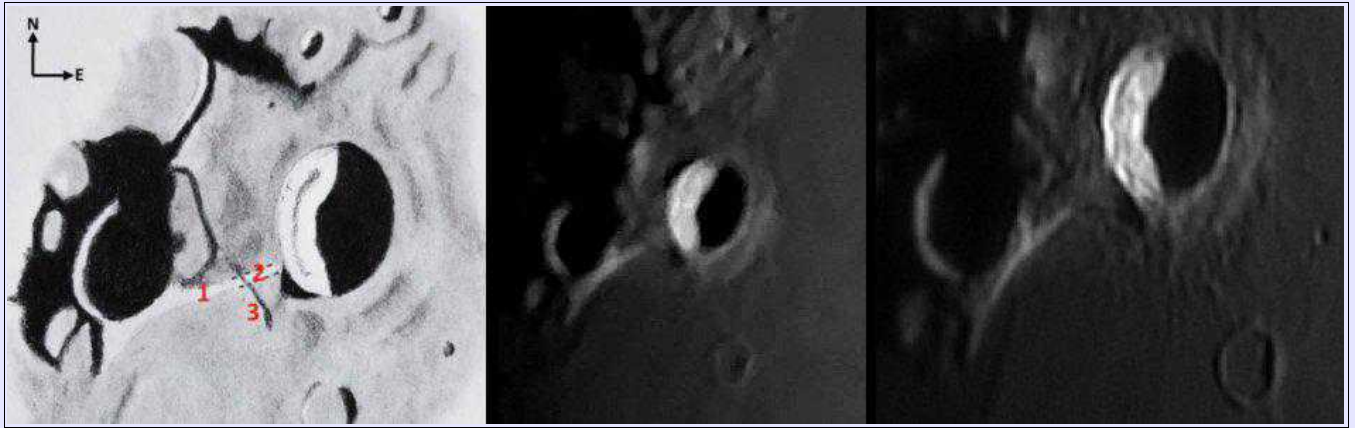
*Aristarchus 1969 Jul 26 UT 02:15-03:00 Observed by Jose L. da Silva (Rio de Janeiro, Brazil, 13" refractor) "Unusual brightness whole time in center of W. inner slope; rest of crater & Herodotus appeared normal. SW to NW inner slope had pronounced brightness. Aris. still in dark! Apollo 11 watch)." NASA catalog weight=3. NASA catalog ID=1186. ALPO/BAA weight=1.*

Repeat illumination and libration (to within  $\pm 1^\circ$ ) running from approximately 19:01-22:56 UT

*On 1963 Nov 28 at UT 00:30-01:45 Barr, Greenacre, Hall and Dungan (Flagstaff, AZ, USA, 24" refractor, and 69" reflector) observed pink on the outer SW rim and a red spot towards the S of this. A red spot was seen on the eastern side of Vallis Schroteri but only by Barr and Dungan. Other features checked for atmospheric spectral dispersion and chromatic aberration - but the colours in Aristarchus were not due to these. Smaller 12" scope checked but no effects seen - presumably due to resolution and image contrast issues? Pink on the SW rim may have been seen in a 69" scope by Boyce and Ford. ALPO/BAA weight=4.*

Repeat illumination and libration (to within  $\pm 1^\circ$ ) running from approximately 19:19-20:32 UT

*Aristarchus 1969 Jul 26 UT 02:30-03:00 Observed by Mauro Migon (19" refractor), Julio Nogueira (10" refractor), Wairy Cardoso (13" refractor) all from Rio de Janeiro, Brazil "Crater was gray-bluish, different from any other region & unusually bright. Cardoso saw brightening, used blue, red, green & neutral filters. Apollo 11 watch, Jose da Silva says obs. no good, obs. was inexperienced. However, it is similar to many other obs. With much experience)." NASA catalog weight=2. NASA catalog ID . No. 1187. ALPO/BAA weight=1.*



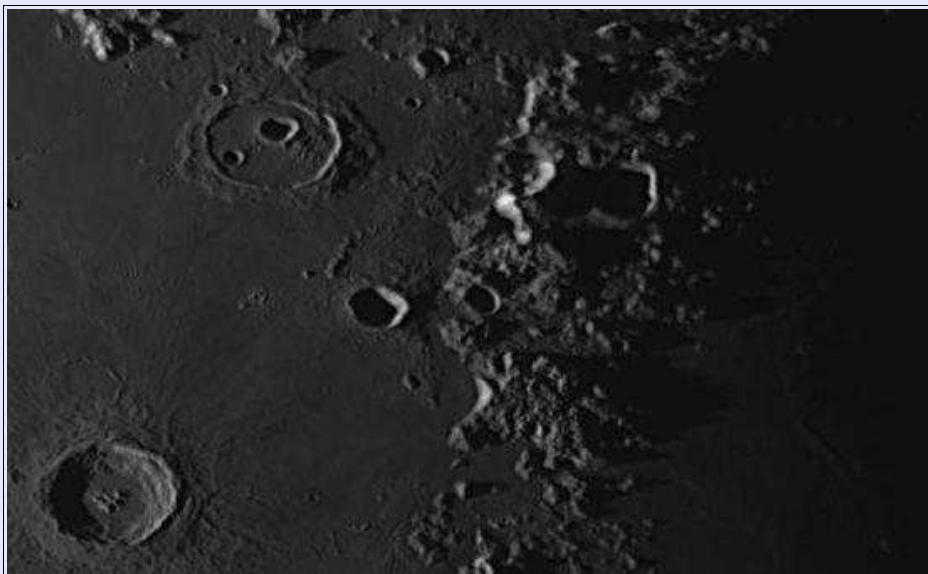
**Figure 4.** Aristarchus with north towards the top as observed/imaged by UAI members. **(Left)** A sketch by Massimo Alessandro Bianchi made between 19:28 and 20:04UT. **(Centre)** A monochrome image taken at 20:00 UT by Aldo Tonon. **(Right)** A monochrome image taken by Luigi Zanatta at 20:27UT.

The 1963 Nov and 1969 Jul TLP reports are both colour related, but at least the monochrome images in Fig 4 (Centre) and Fig 4 (Right) show what the crater illumination appearance would have looked like on these respective nights. For the 1969 Brazilian report, yes we can safely say that the SW-NW inner slope of the crater is bright, but whether “Unusual brightness whole time in center of W. inner slope” applies to Fig 4 (Centre and Right) is difficult to judge – what do they mean by “Unusual brightness”? I am also confused by: “Aris. Still in dark!” – it has a shadow on part of the floor but the rim is evidently sun lit.

For the 1881 rope like effect, this should actually read: 1880 Jan 23 . We have covered this before in the Nov 2024 newsletter and I have had discussions with the BAA’s Nigel Longshaw over this. The observer concerned was Trouvelot. Was he being confused by the edge of the ray between Herodotus and Aristarchus or the dark line, almost at right angles to this (“2”), as depicted by Massimo in Fig 4 (Left).

**Calippus:** On 2025 Aug 15 UT 03:59 Alun Halsey (BAA) imaged the whole Moon, but part of the image contained a view of this crater at similar illumination to the following report:

*Near Calippus 1973 Jan 25 UT 19:20-19:30 Observed by Frank (E.Pepperell, Massachusetts, USA, 6" reflector, x100, S=G) "Bright spot nr. Calippus. Sketch (Calippus alpha, or unnamed peak N. of it?). Est. albedo=8.5 & surroundings at 0.5 at 1015h. Obj. not noticeable at all during 1st 1/2 cycle thru FM in Dec. & Jan. (ALPO-LTP prog.)" NASA catalog weight=0. NASA catalog ID #1360. ALPO/BAA weight=1.*

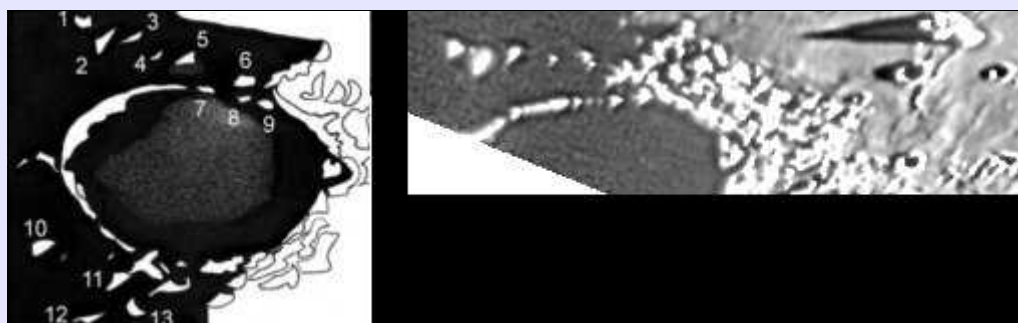


**Figure 5.** Calippus, located at the centre of the image, as captured by Alun Halsey (BAA) on 2025 Aug 15 UT 03:59 and orientated with north towards the top.

There is definitely a bright spot, or rather sunward facing slope, north of Calippus (Fig 5). This is almost certainly what Frank saw in 1973, so we shall lower the weight to 0 and remove it from the ALPO/BAA TLP database.

**Plato:** On 2025 Aug 17 UT 03:20 Leo Aerts (BAA) imaged the Mare Imbrium region under similar illumination (according to the Lunar Schedule web page) to the following report of an ashen light sighting in the shadow filled floor of Plato:

*On 2009 Jun 16 at UT 03:20-03:40 P. Morgan (UK, 30.5cm reflector, x400, seeing=6/10 and transparency=5/5) observed a large diffuse ashen-like effect over the shadow filled floor of Plato. The effect was lighter towards the south. Observer checked the effect with both left and right eyes and it remained the same. Unusually no shadow spires from rim mountain peaks were seen. A check for colour in the region effected revealed none. As time progressed, terrestrial twilight encroached. A sketch was made. The ALPO/BAA weight=1.*



**Figure 6.** Plato with north towards the bottom. **(Left)** a sketch by Phil Morgan (BAA) made on 2009 Jun 16 UT 03:20-03:40. **(Right)** A section of an image by Leo Aerts (BAA) made on 2025 Sep 17 UT 03:20.

Fig 6 (Left) shows the ashen light area on the floor of data, before sunlight reached the floor, however in Leo's image (Fig 6) right, despite being heavily contrast stretched by me, no sign of the ashen light like effect on the floor can be seen. Several astronomers I have talked to think that its possibly scattered light off of the illuminated rim falling onto the floor and giving it an ashen light appearance. However, so far this has not been replicated in images yet. Leo's image has a slightly higher amount of illumination on the rim than Phil's 2009 report. We shall leave the ALPO/BAA weight at 1 for now.

**General Information:** For repeat illumination (and a few repeat libration) observations for the coming month - these can be found on the following web site: [http://users.aber.ac.uk/atc/lunar\\_schedule.htm](http://users.aber.ac.uk/atc/lunar_schedule.htm) . By re-observing and submitting your observations, only this way can we fully resolve past observational puzzles. If in the unlikely event you do ever see a TLP, firstly read the TLP checklist on <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 <https://twitter.com/lunarnaut> .

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## Lunar Calendar for October 2025 by Tony Cook.

This is an experimental calendar format that we are exploring. I am grateful to David Teske, the ALPO Lunar Section director, for supplying much of the data. The calendar is intended mostly for UK observers. Note that for the bit about stars and planets – always check if the Moon is visible above the horizon. We will try to produce one calendar each month (only if time permits), but would really appreciate if one of our kind readers would like to take on the job of doing this – please email me on: [atc@aber.ac.uk](mailto:atc@aber.ac.uk) if you are interested in taking this on?

| Date | UT            | Event (mostly seen from UK)                                                   |
|------|---------------|-------------------------------------------------------------------------------|
| 3    |               | West limb most exposed -6.7°                                                  |
| 3    | 22:00-23:00   | Herodotus at sunrise (UK)                                                     |
| 4    | approx. 01:32 | 4th mag $\iota$ Aqr occulted (UK)                                             |
| 5    | 09:20         | Moon at ascending node                                                        |
| 6    | 03:00         | Saturn 4° south of Moon                                                       |
| 6    | 19:27-19:51   | Lichtenberg hi-res colour images needed                                       |
| 7    | 03:48         | Full Moon                                                                     |
| 8    | 13:00         | Moon at perigee 35981910 km                                                   |
| 9    | 21:30-23:20   | Messier hi-res images/sketches needed                                         |
| 10   | approx. 05:29 | 4th mag 19 Tau occulted (UK)                                                  |
| 10   | approx. 05:46 | 4th mag 20 Tau occulted (UK)                                                  |
| 10   | 06:00         | Moon 0.9° north of Pleiades                                                   |
| 10   | approx. 06:34 | 4th mag 19 Tau reappears (UK)                                                 |
| 10   | approx. 06:44 | 4th mag 20 Tau reappears (UK)                                                 |
| 10   | 22:00-00:00   | Ross D hi-res images/sketches needed                                          |
| 11   |               | South limb most exposed 6.7°                                                  |
| 11   | 01:20-02:00   | Alphonsus - hi res colour images needed                                       |
| 12   |               | Greatest northern declination +28.5°                                          |
| 13   | 07:40         | Max libration 8.9° towards SW limb                                            |
| 13   | 18:13         | Last Quarter Moon                                                             |
| 13   | 22:00         | Jupiter 4° south of Moon                                                      |
| 14   | 00:30-06:00   | Look for sporadic impact flashes in earthshine                                |
| 14   | 02:00-03:45   | Alphonsus UV and IR images needed                                             |
| 15   | 00:00         | Moon 1.9° north of M35                                                        |
| 15   | 01:45-05:30   | Tycho whats the earliest you can see/image the c.p.?                          |
| 15   | 01:50-06:00   | Look for sporadic impact flashes in earthshine                                |
| 15   |               | East limb most exposed +7.2°                                                  |
| 16   | 03:00-06:00   | Look for sporadic impact flashes in earthshine                                |
| 16   | 04:10-06:00   | Riccioli hi-res colour images needed                                          |
| 16   | 18:00         | Regulus 1.2° south of Moon, occultation in Canada                             |
| 17   | 04:20-06:00   | Look for $\epsilon$ Geminid impact flashes in earthshine (ZHR=3, vel=70 km/s) |
| 18   | 05:30-06:00   | Look for $\epsilon$ Geminid impact flashes in earthshine (ZHR=3, vel=70 km/s) |
| 19   | 22:00         | Venus 4° south of Moon                                                        |
| 21   | 12:25         | New Moon                                                                      |
| 23   | 13:00         | Mars 5° north of Moon                                                         |
| 23   | 16:00         | Mercury 2° north of Moon                                                      |
| 24   | 00:00         | Moon at apogee 406444 km                                                      |
| 25   | 01:00         | Antares 0.5° north of Moon                                                    |
| 26   | 01:00         | British Summer Time ends                                                      |
| 26   |               | North limb most exposed +6.7°                                                 |
| 27   | 16:21         | First quarter Moon                                                            |
| 30   | approx. 22:31 | 4th mag $\gamma$ Cap occulted by Moon                                         |
| 29   | 00:30         | Max libration 8.3° towards NW limb                                            |
| 31   |               | West limb most exposed 7.5°                                                   |
| 31   | 17:45-18:20   | Ross D hi-res images/sketches needed                                          |
| 31   | 18:25-20:50   | Alphonsus hi-res colour images needed                                         |