

A full moon is visible through the dark, silhouetted branches of trees against a deep blue twilight sky. The moon is positioned in the center of the frame, partially obscured by the intricate patterns of the tree branches. The overall mood is serene and atmospheric.

OBSERVING THE MOON

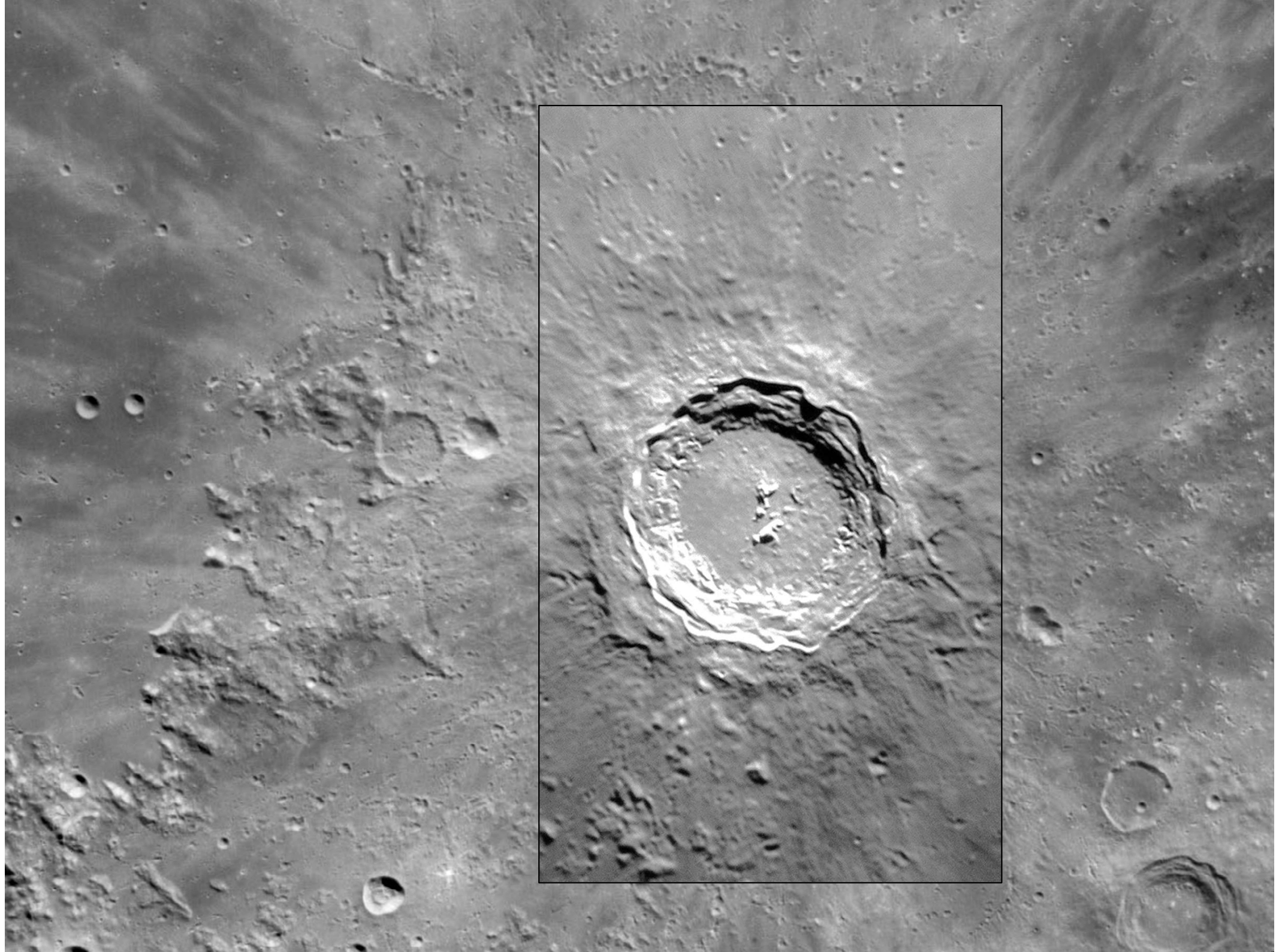
by Philip Jennings, BAA Lunar Section

OBSERVING THE MOON



by Philip Jennings, BAA Lunar Section





OBSERVING THE MOON

1. Equipment & resources

2. A month in the life of the Moon

3. Observing...

... craters

... mountains, valleys & other features

... with spacecraft data

4. Sketching the Moon

WHY OBSERVE THE MOON?

Always
something
new to see

It's easy

Something
for everyone

You can help
contribute
to science



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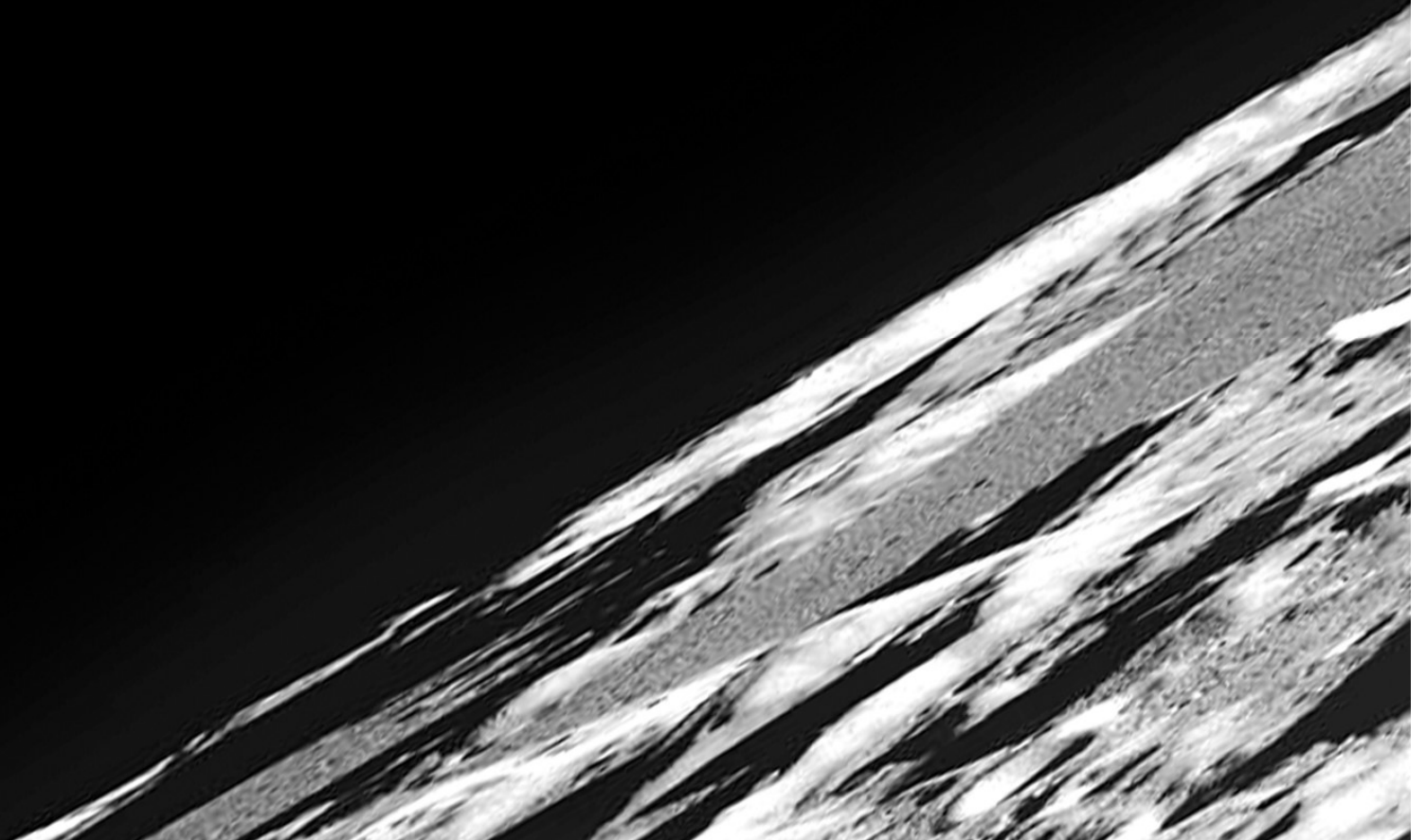
It's easy

Something
for everyone

You can help
contribute
to science



Equipment & resources



Any telescope can be used to observe the Moon





Any telescope can be used to observe the Moon

**Larger apertures yield better resolution, but
plenty to see in binoculars or a small telescope**

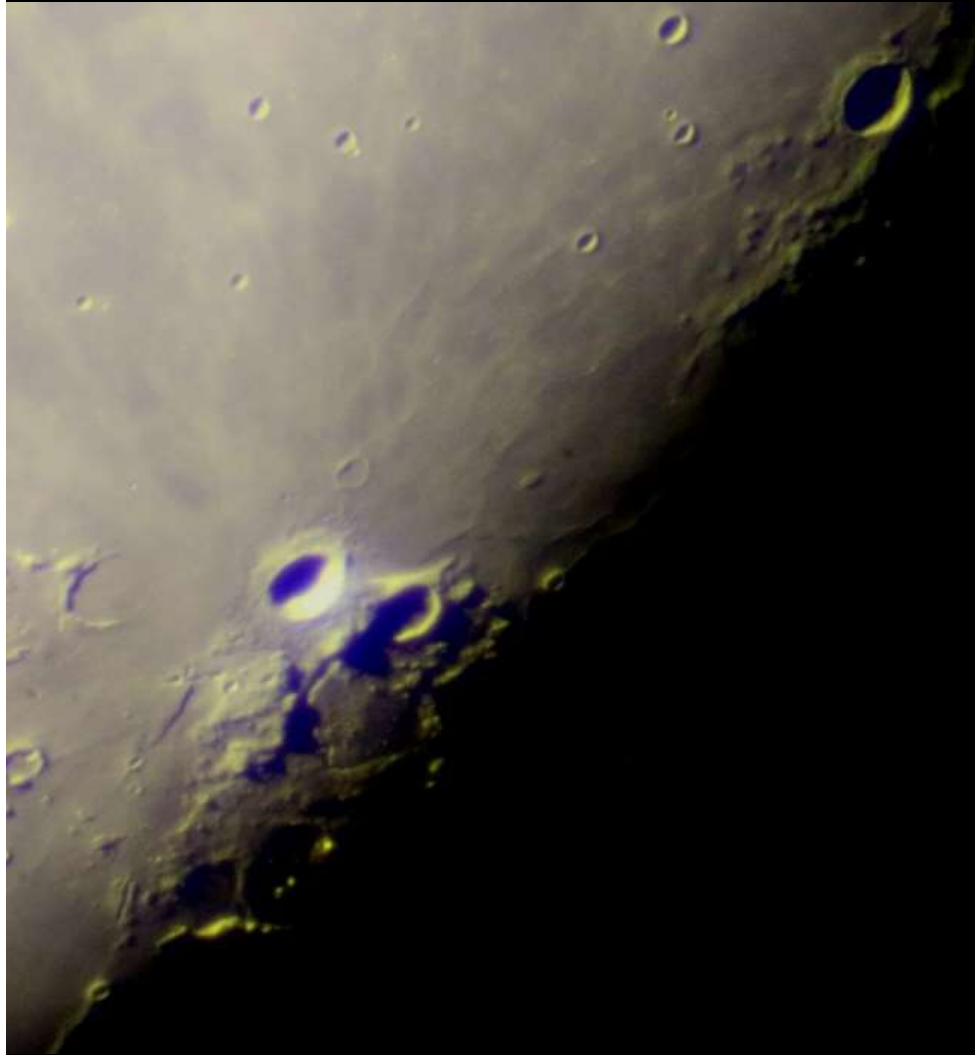


Any telescope can be used to observe the Moon

**Larger apertures yield better resolution, but
plenty to see in binoculars or a small telescope**

Avoid pushing the magnification too high





Peter Anderson



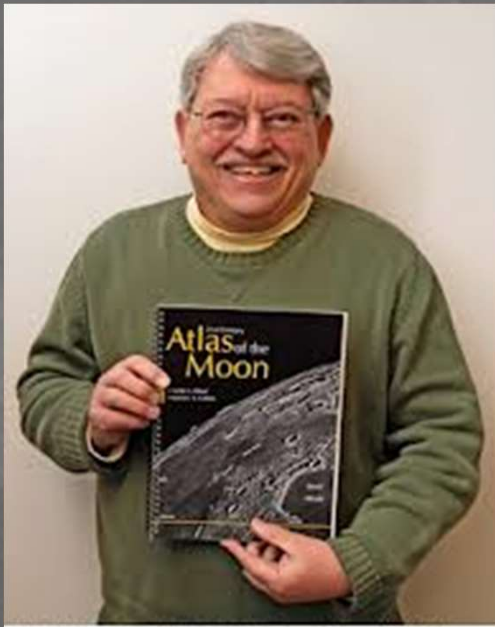
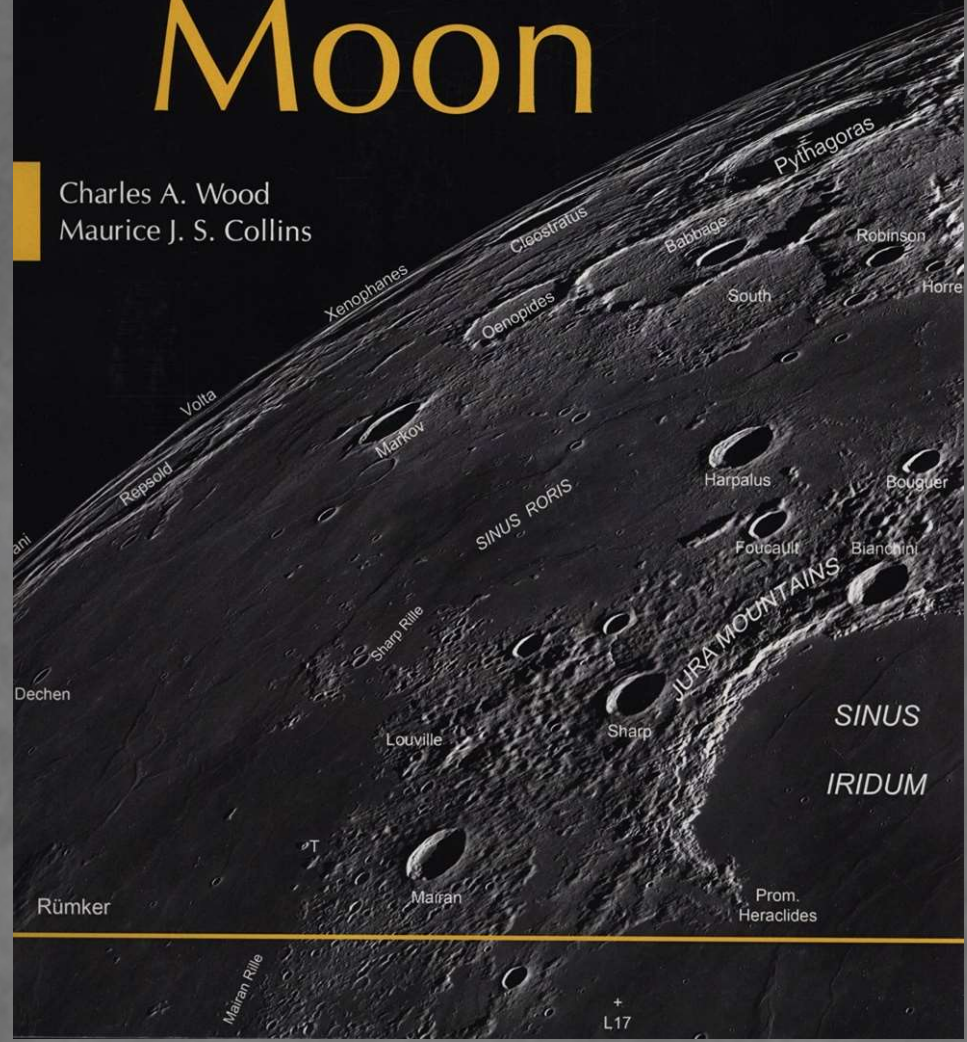






21st Century Atlas of the Moon

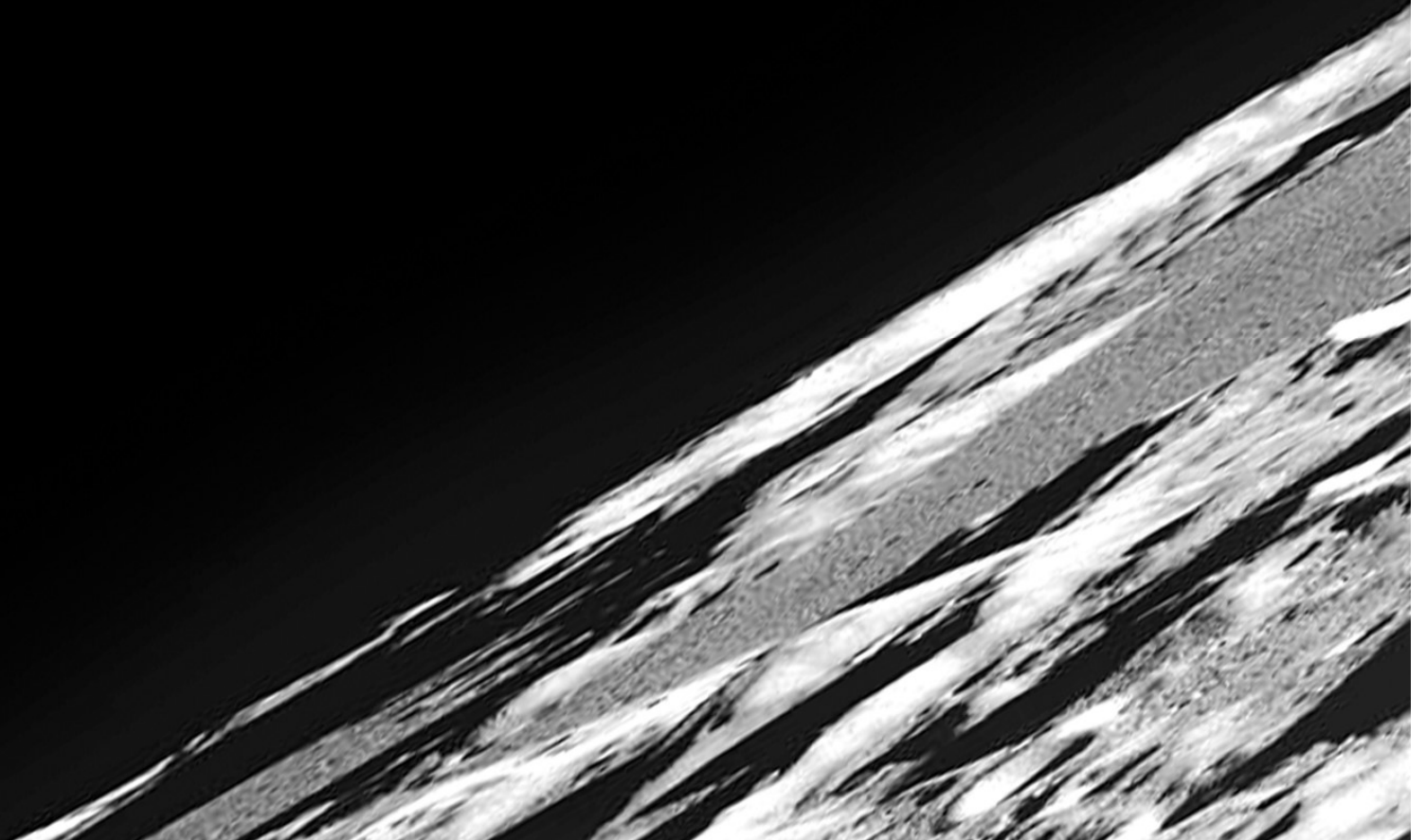
Charles A. Wood
Maurice J. S. Collins



Chuck Wood and his 21st Century Atlas of the Moon



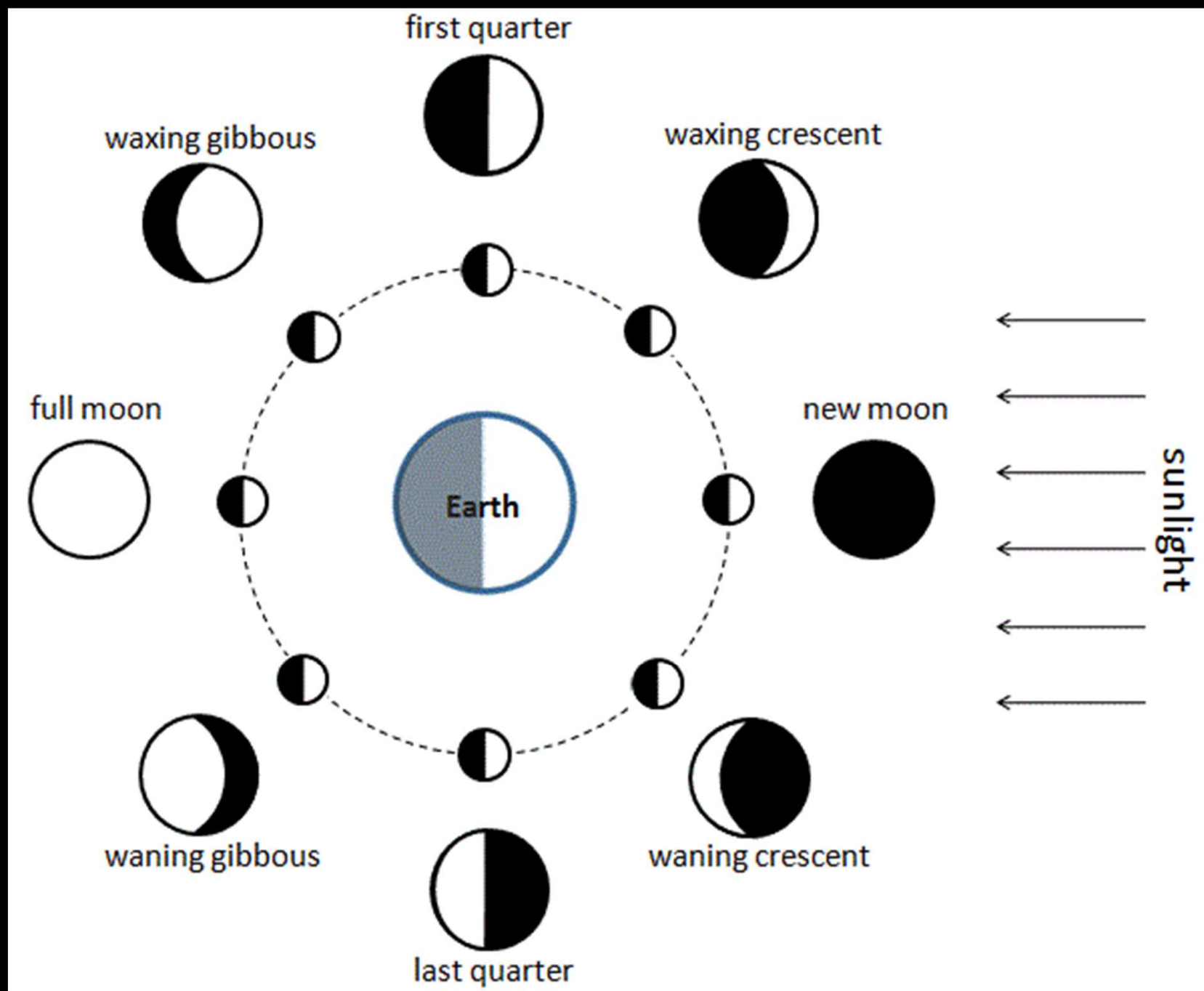
A month in the life





NASA

esa







Mazin Younis

A week of evening Moons

7 consecutive days: 24th — 30th May

Emma Alexander
Manchester, UK
Sony DSC-HX60V
Unedited single frames



24

25

26

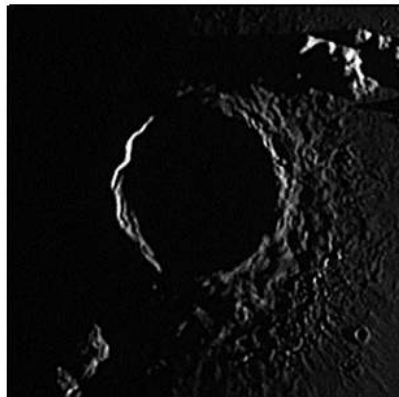
27

28

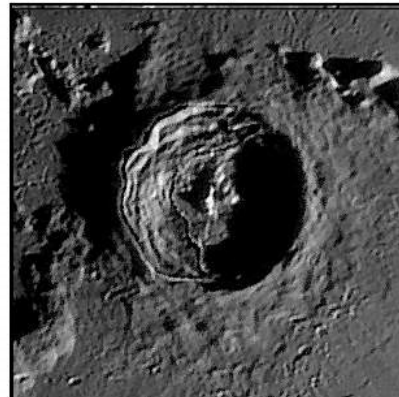
29

30

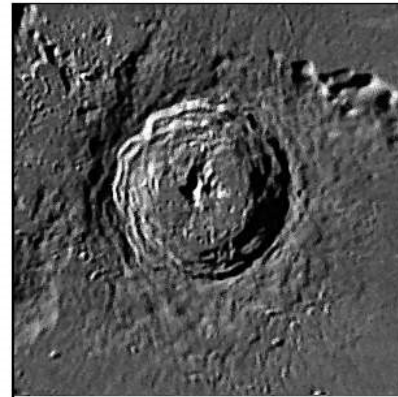
ERATOSTHENES 2007 - 2011



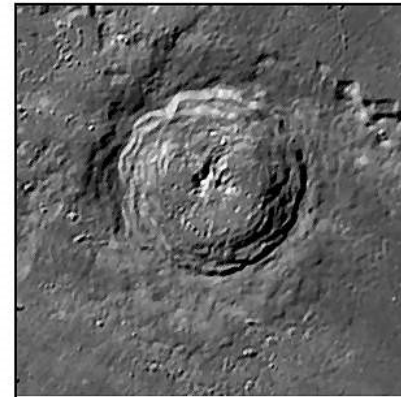
18.58 U.T.
11 April 2011



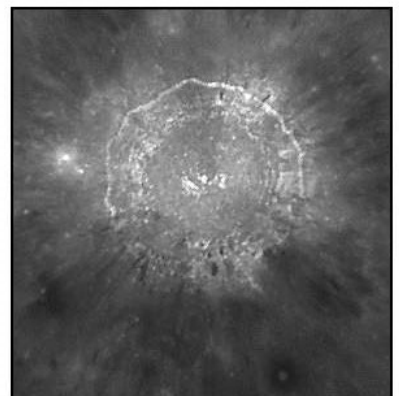
18.57 U.T.
13 March 2011



19.49 U.T.
12 February 2011



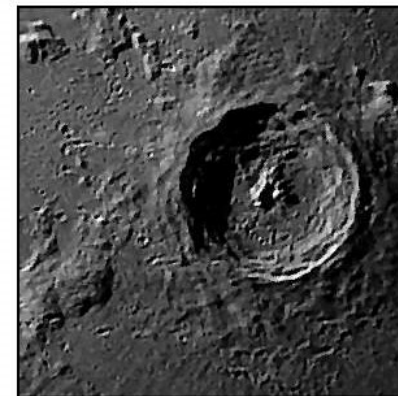
19.44 U.T.
19 December 2007



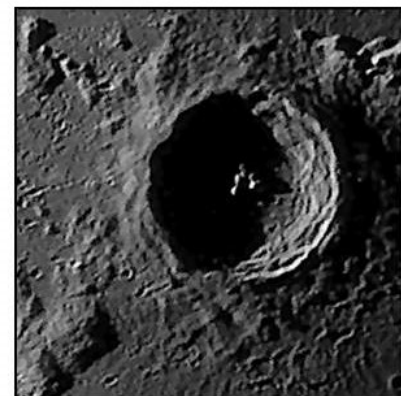
22.32 U.T.
9 January 2012



04.39 U.T.
21 September 2008



05.27 U.T.
13 August 2009



04.32 U.T.
12 September 2009

25cm F9.4 Long Focus Newtonian, 1.5x Apochromatic Barlow working at F14
Mike Brown





“

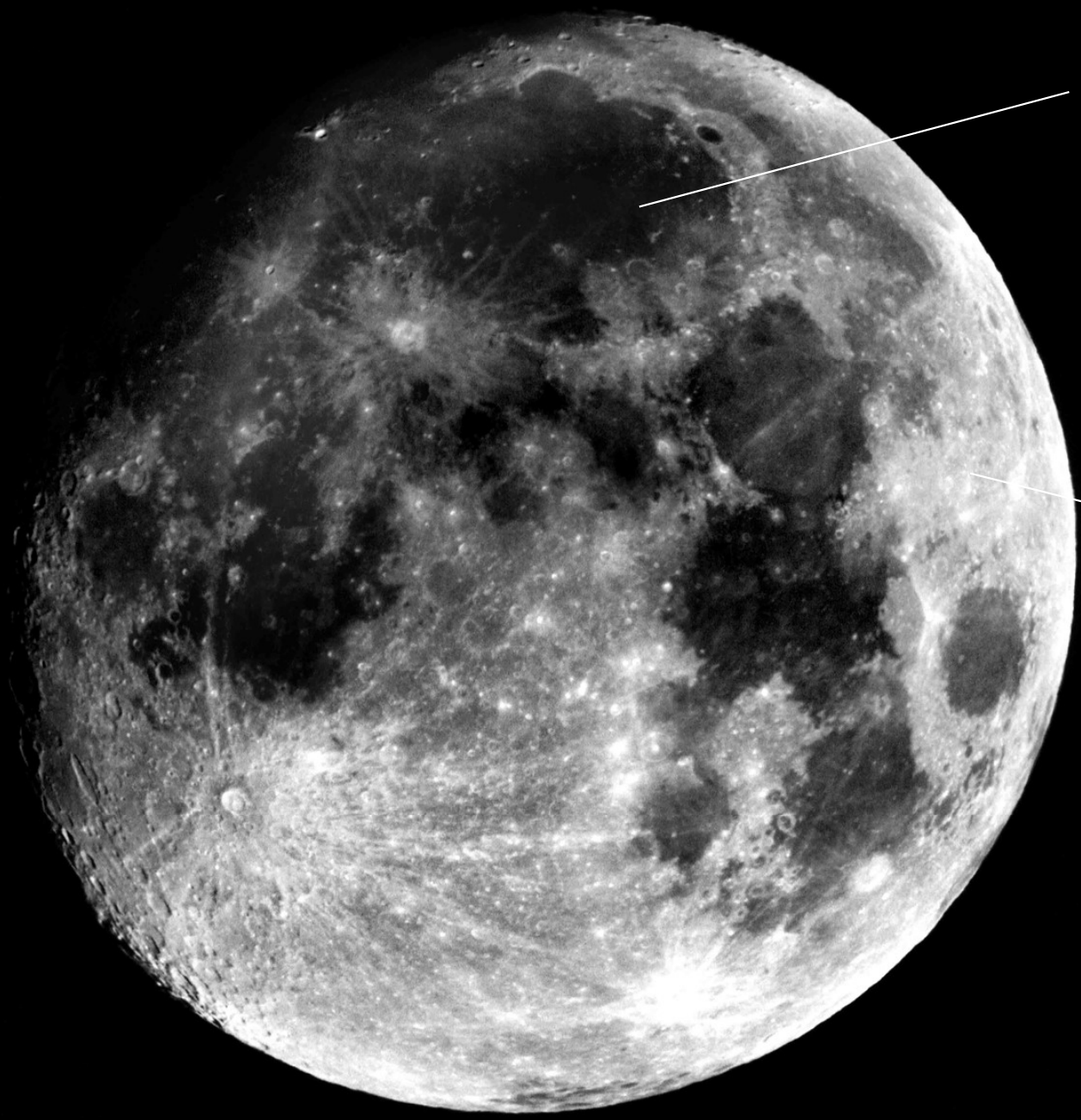
*Like a tart that my cooke
made me last weeke...*

Here some bright stufte,
there some dark,
and so confusedlie
all over ”

- *Sir William Lower, 1607*



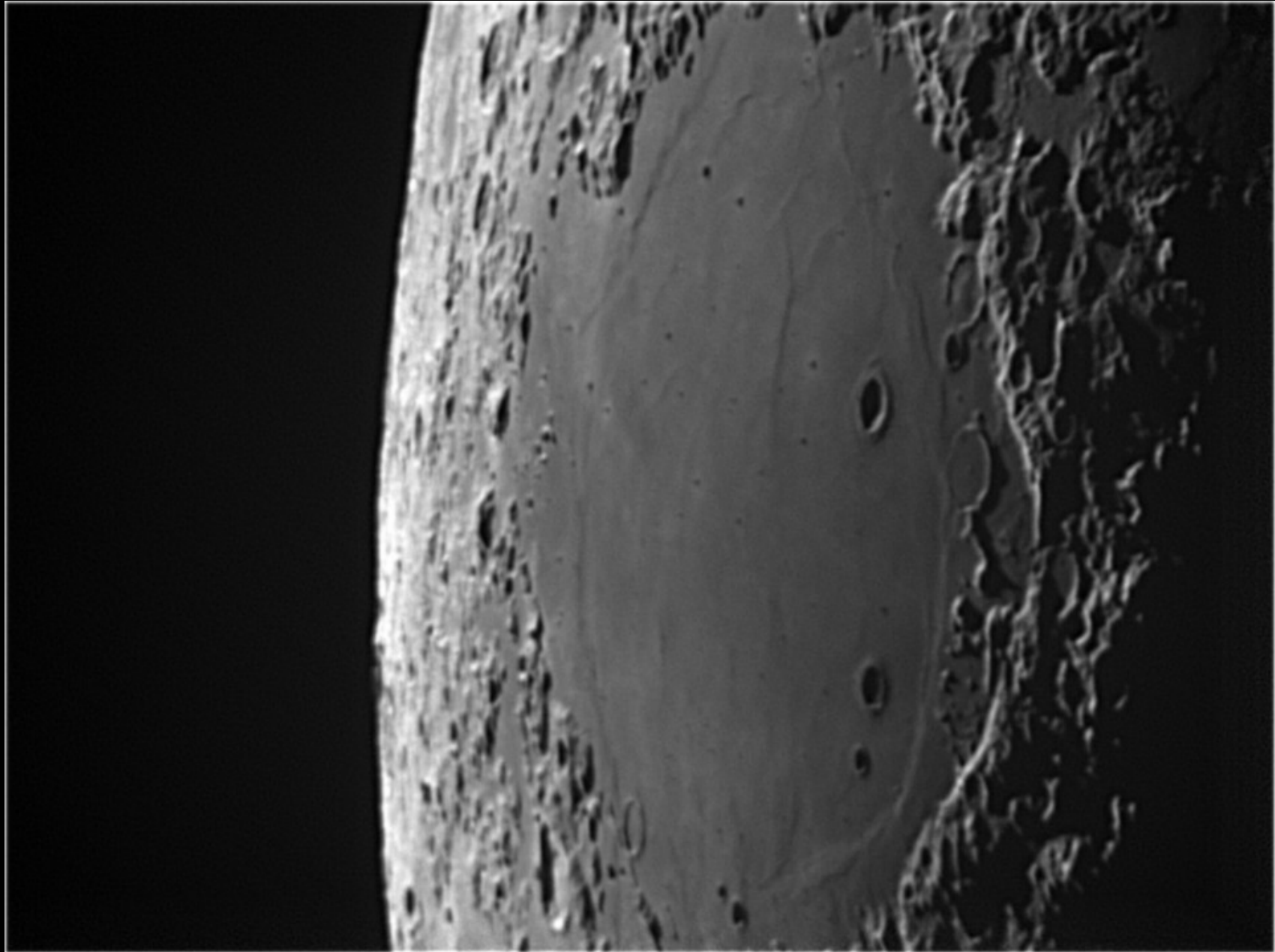




Seas
(maria)

Highlands
(terrae)

Mare Crisium

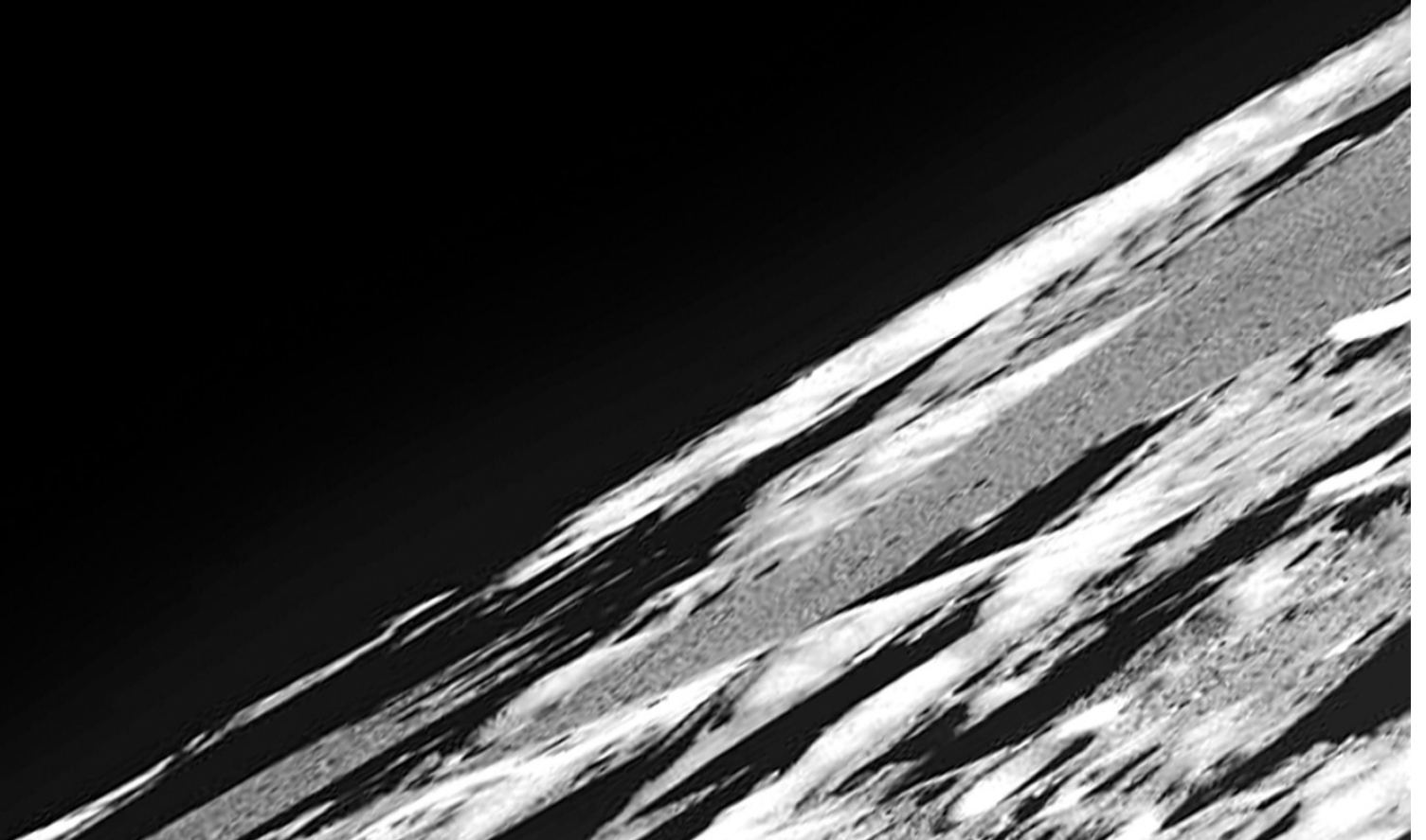


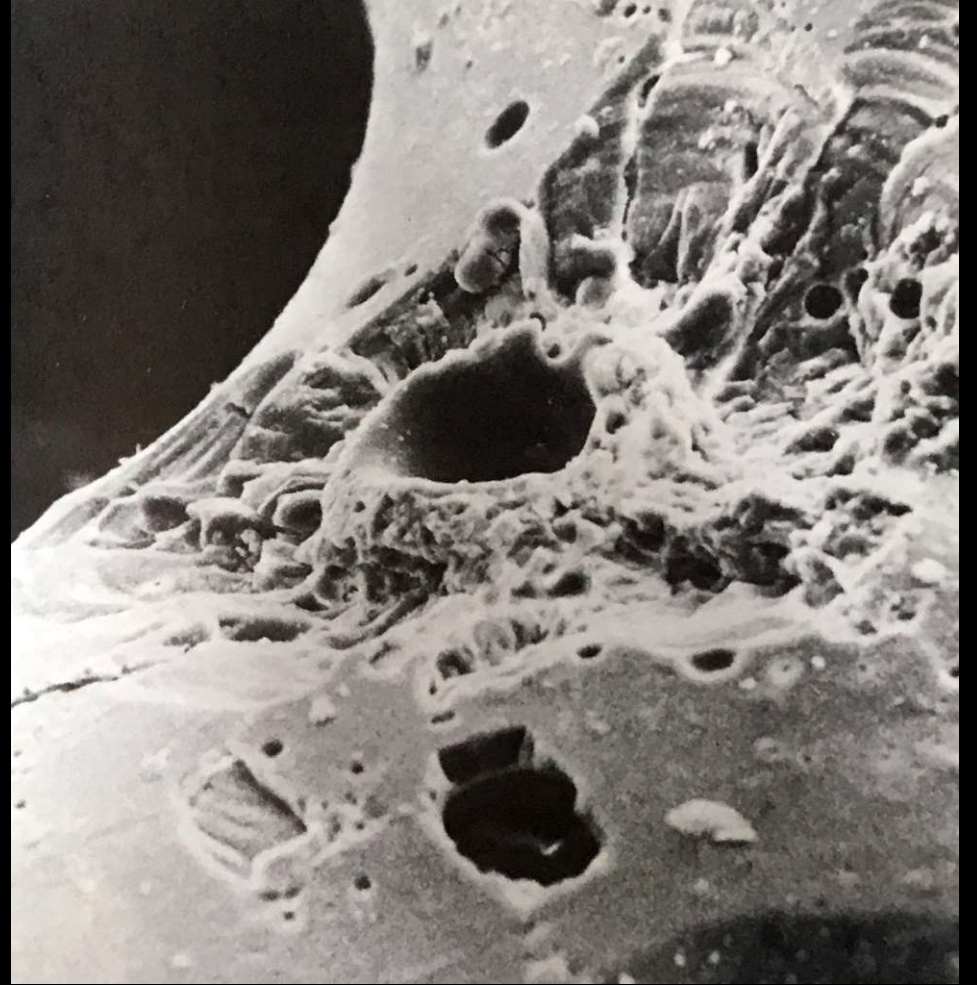


A colourless world?



A world of craters





What *are* the craters?



What *are* the craters?



17th Century, Hevelius: Valleys

What *are* the craters?



17th Century, Hevelius: Valleys

19th Century: Fire Fountains

What *are* the craters?



17th Century, Hevelius: Valleys

19th Century: Fire Fountains

D.P. Beard, 1920: Reefs

What *are* the craters?



17th Century, Hevelius: Valleys

19th Century: Fire Fountains

D.P. Beard, 1920: Reefs

Sixto Ocampo, 1950s: Bombsites

What *are* the craters?



17th Century, Hevelius: Valleys

19th Century: Fire Fountains

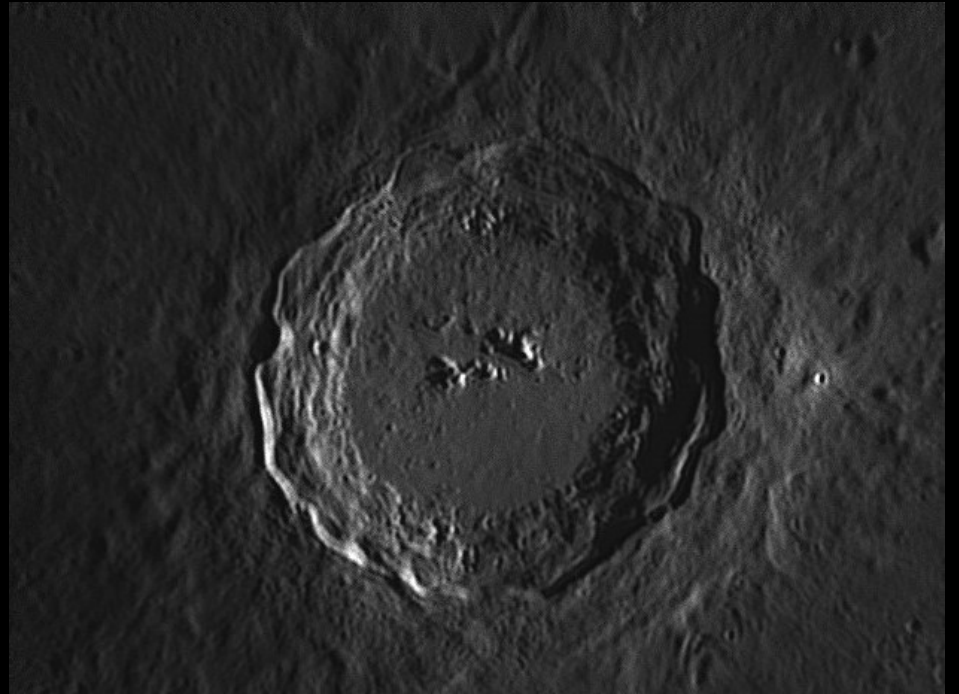
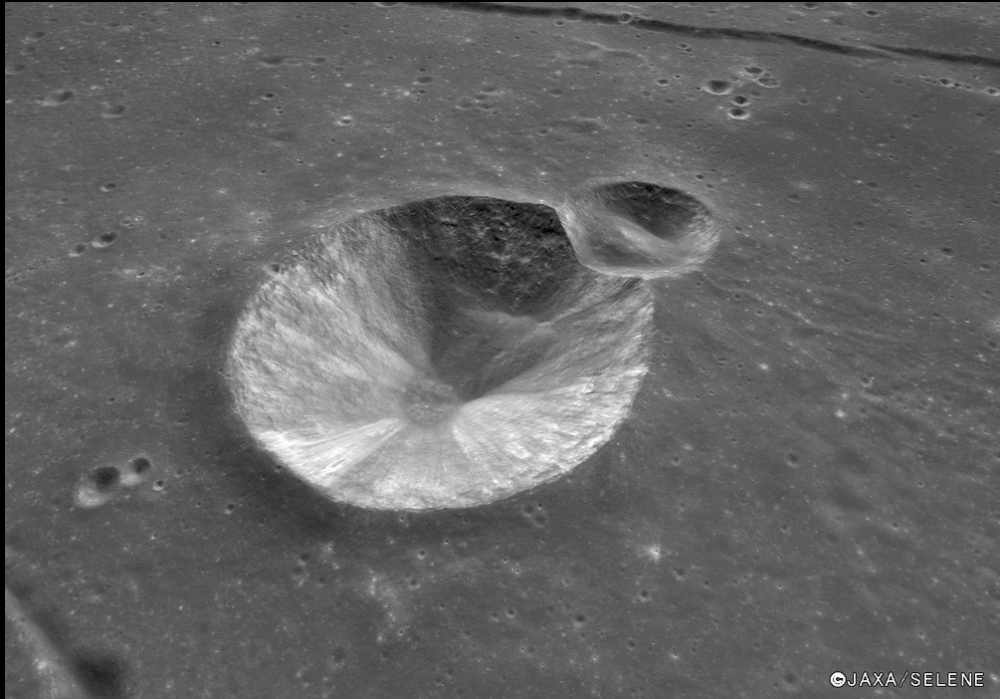
D.P. Beard, 1920: Reefs

Sixto Ocampo, 1950s: Bombsites

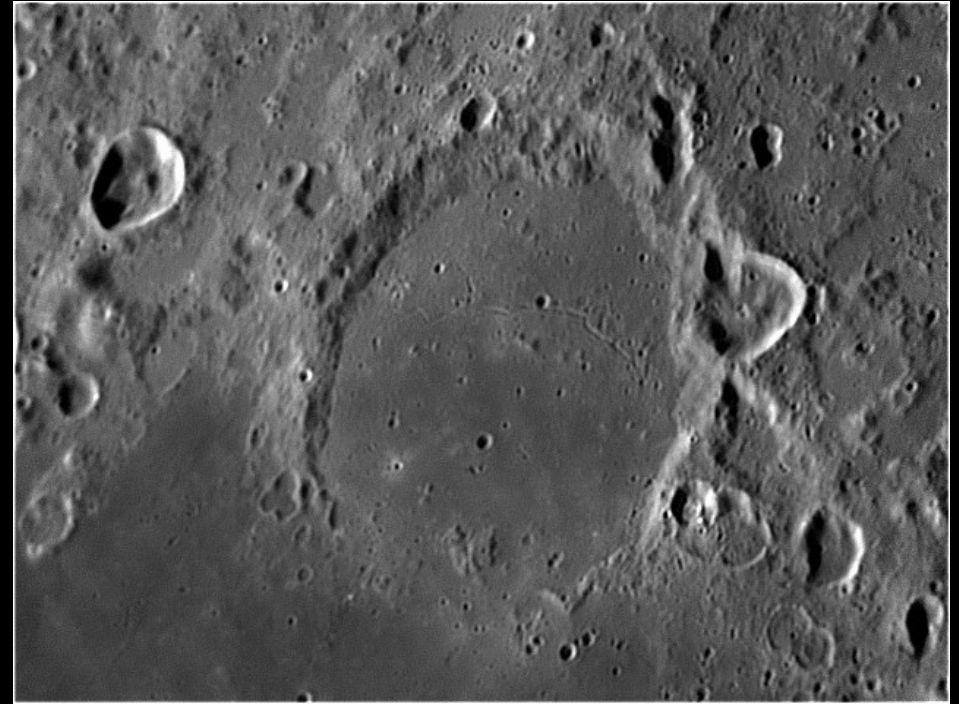


20th Century:
volcanism vs meteoritic impact debate

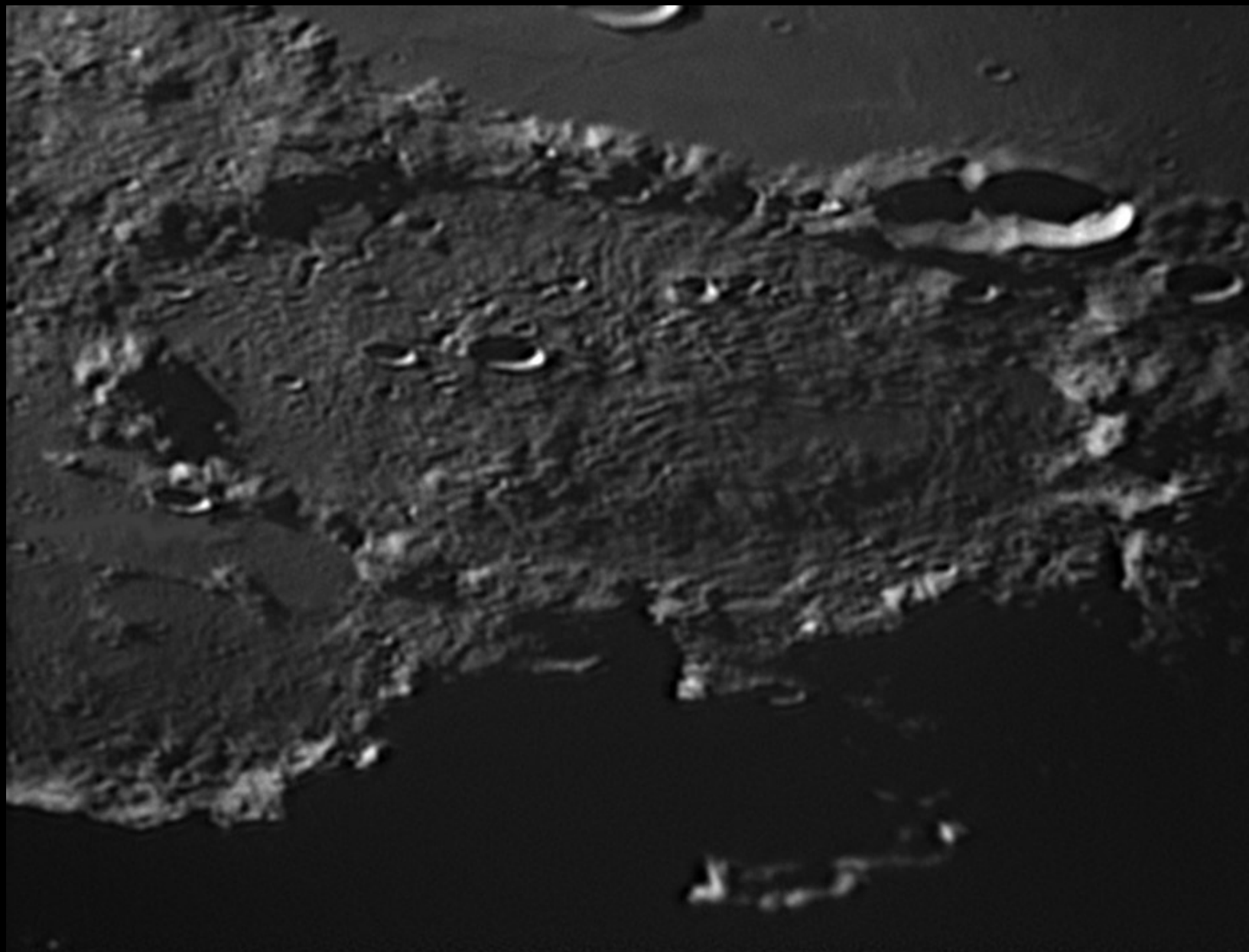
The Shoemakers: impact craters



Flooded/breached craters



Craters modified by subsequent ejecta deposits



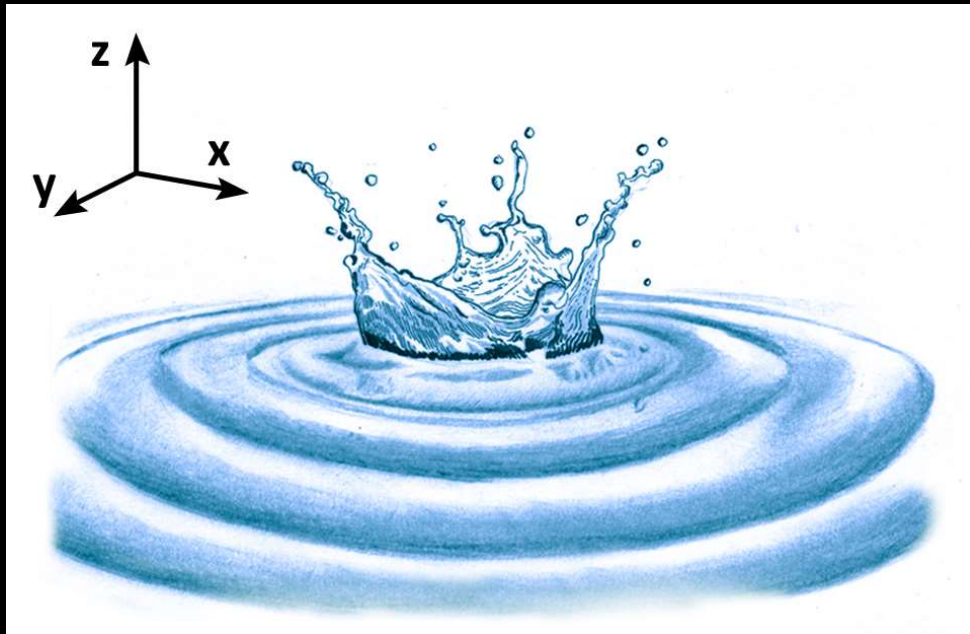


Tycho: a beautifully preserved example of an impact crater





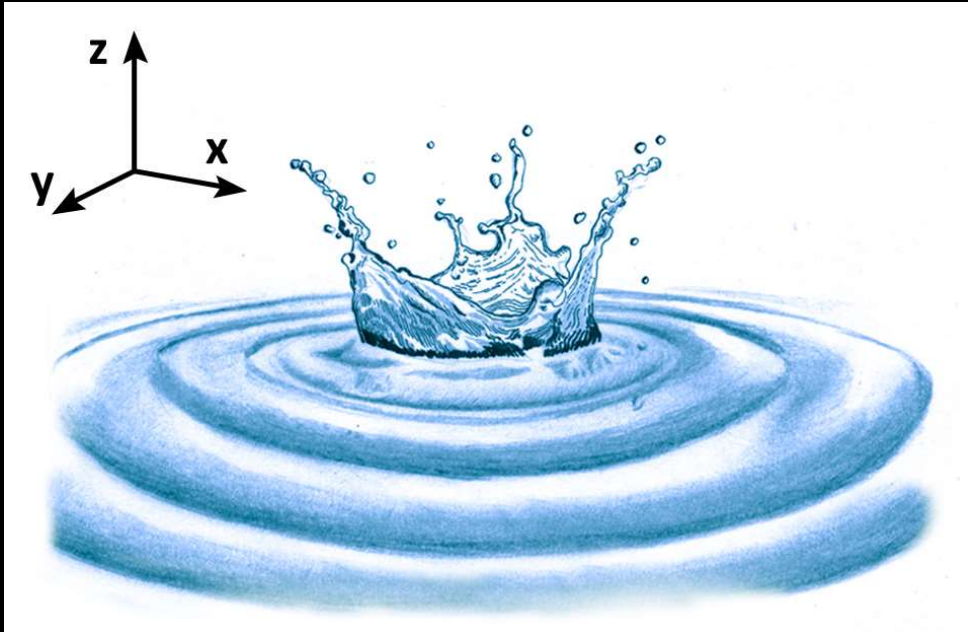
The story of Tycho



- Projectile was large and from the west



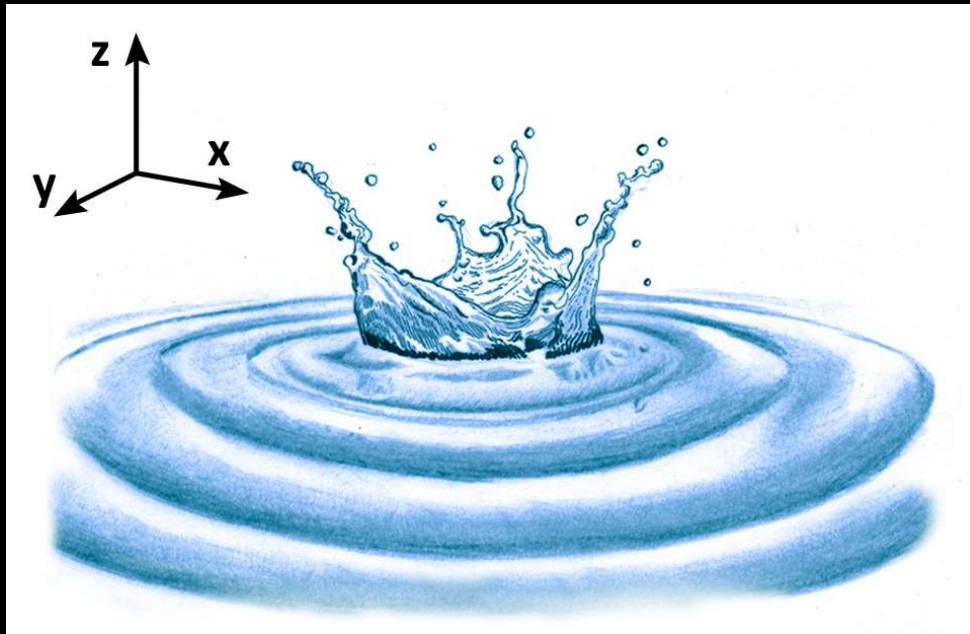
The story of Tycho



- Projectile was large and from the west
- Vaporised in an enormous explosion! Gigantic pressures liquefied the surrounding rock, producing impact melt



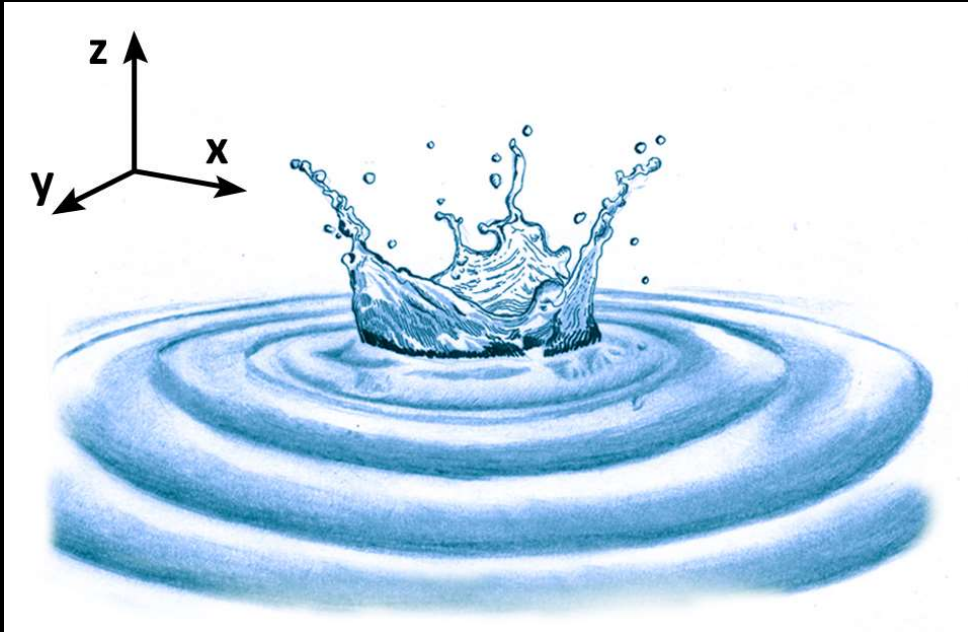
The story of Tycho



- Projectile was large and from the west
- Vaporised in an enormous explosion! Gigantic pressures liquefied the surrounding rock, producing impact melt
- Due to crater size, a central peak formed as ejecta settled



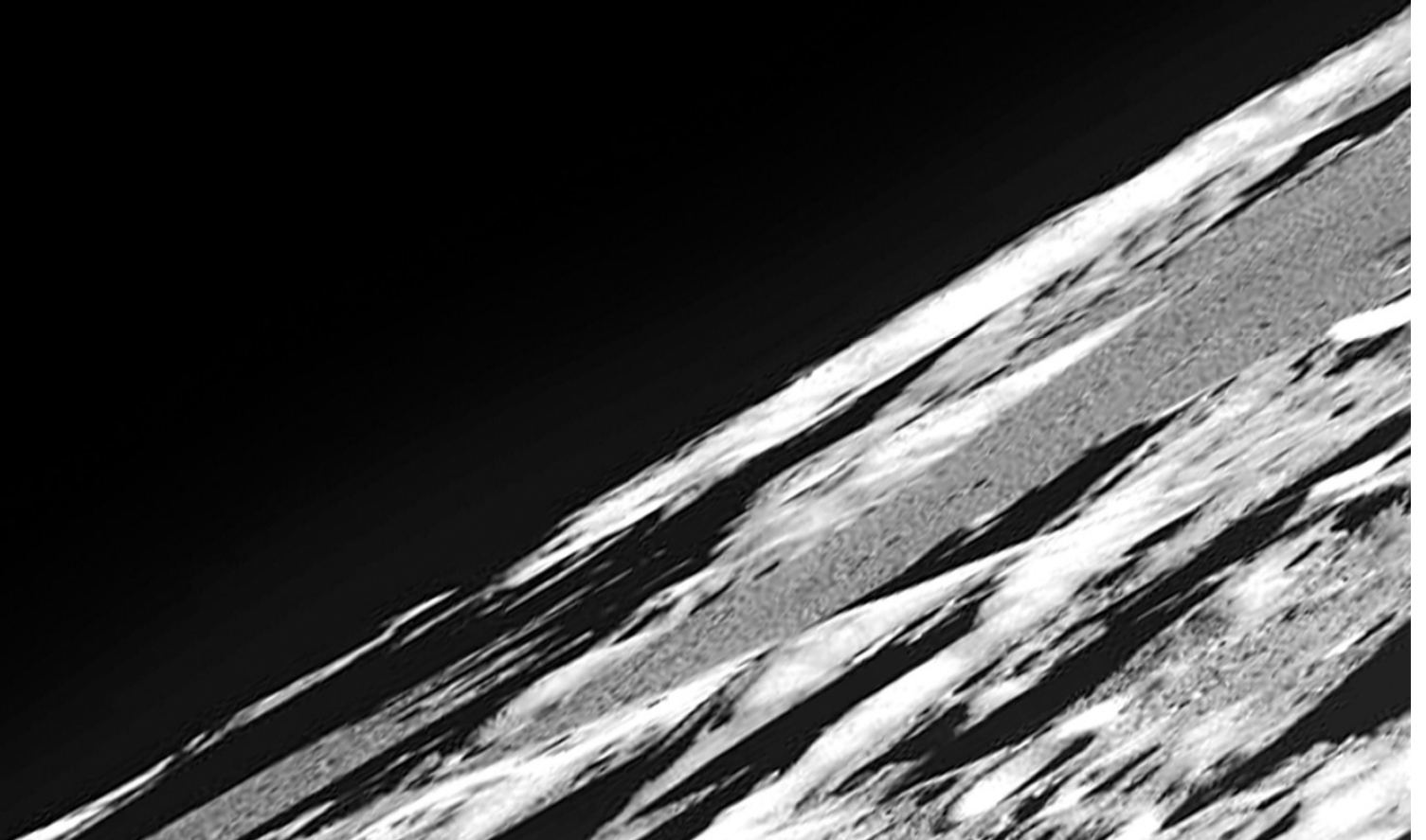
The story of Tycho



- Projectile was large and from the west
- Vaporised in an enormous explosion! Gigantic pressures liquefied the surrounding rock, producing impact melt
- Due to crater size, a central peak formed as ejecta settled
- Quite a sight from Earth!

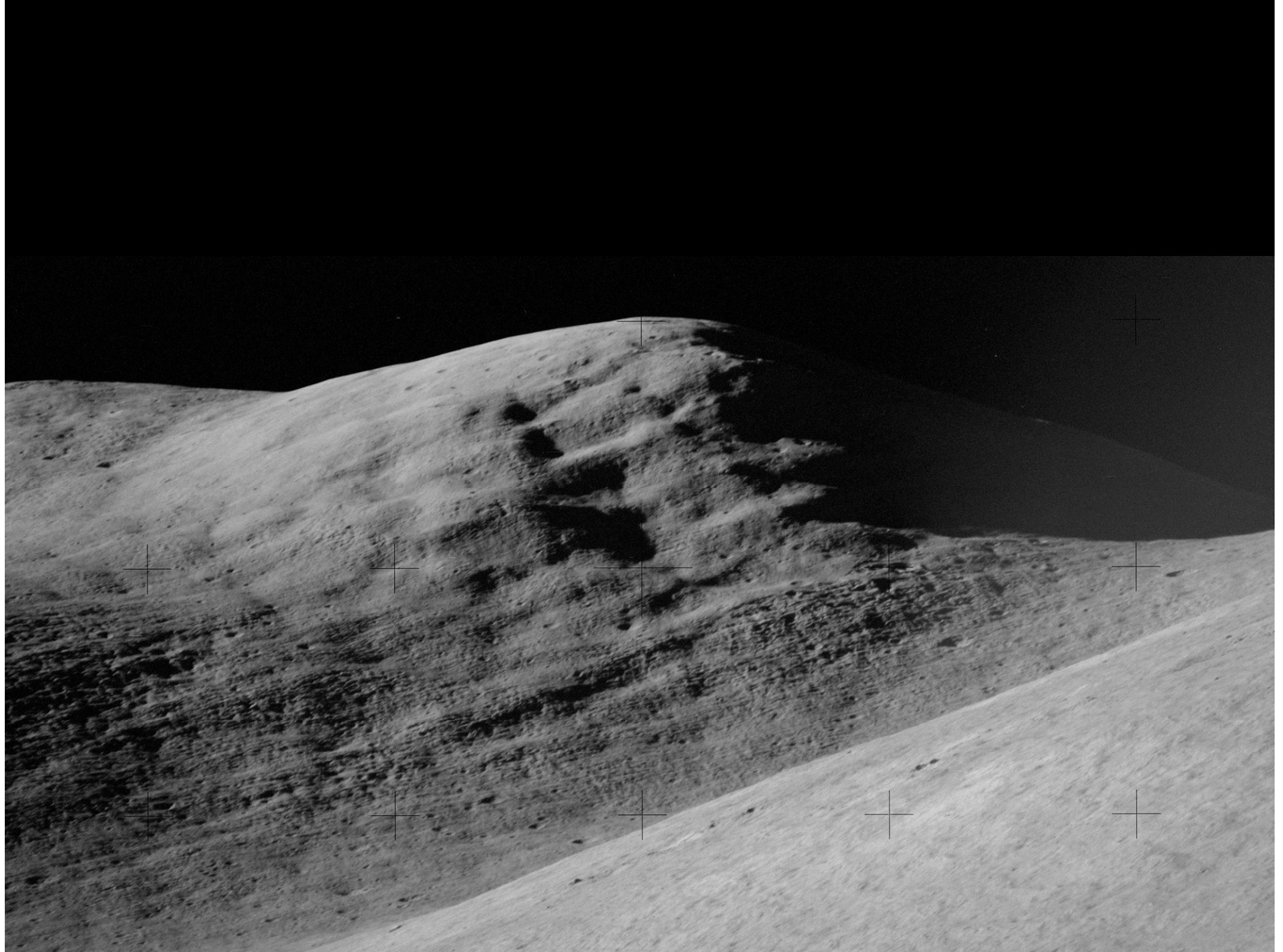


Mountains, valleys & other features



The Apennines and Mare Imbrium





Sinuuous rilles – Hadley Rille





Palus
Putredinus



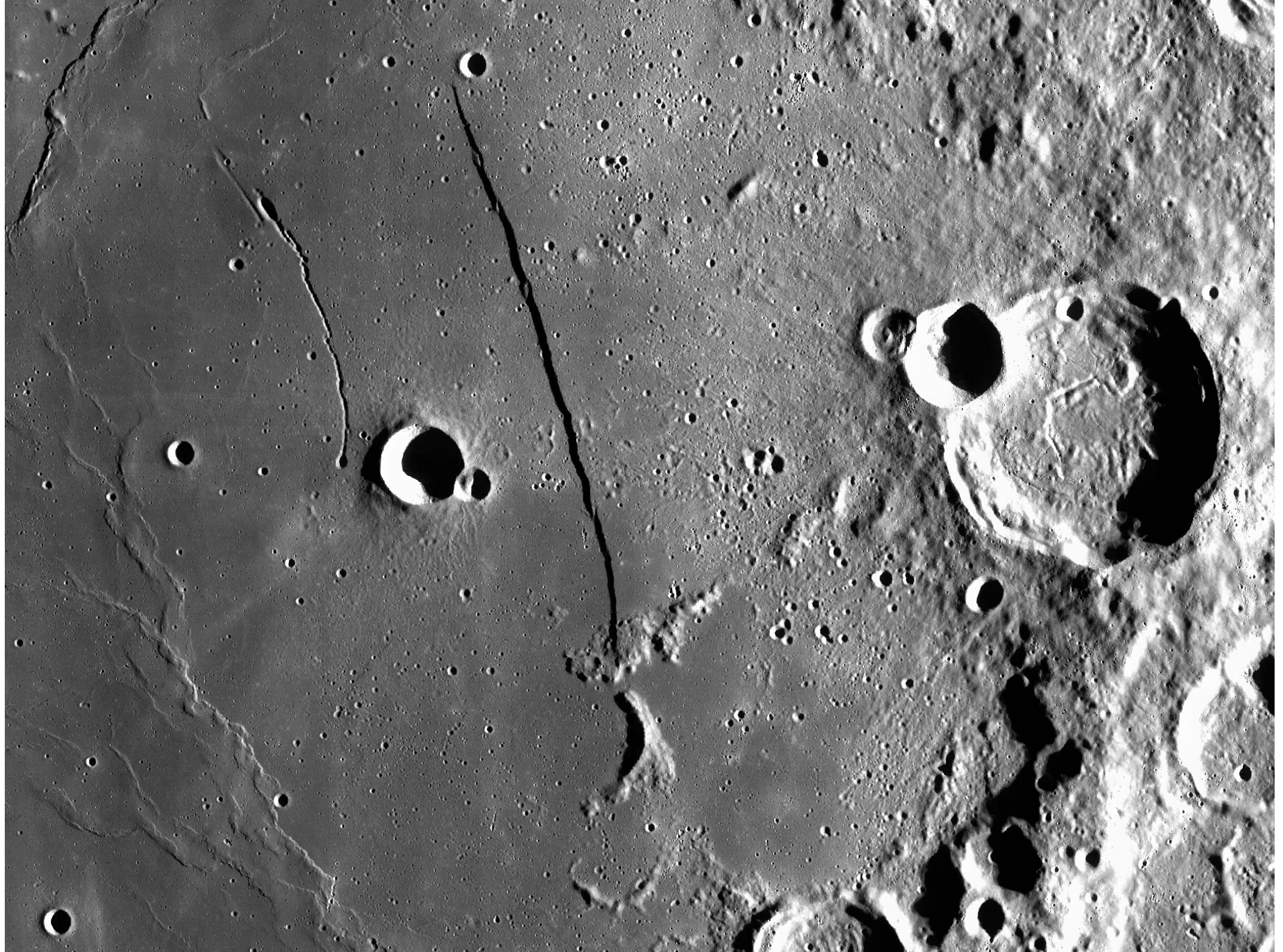


Arcuate rilles – the Hippalus system

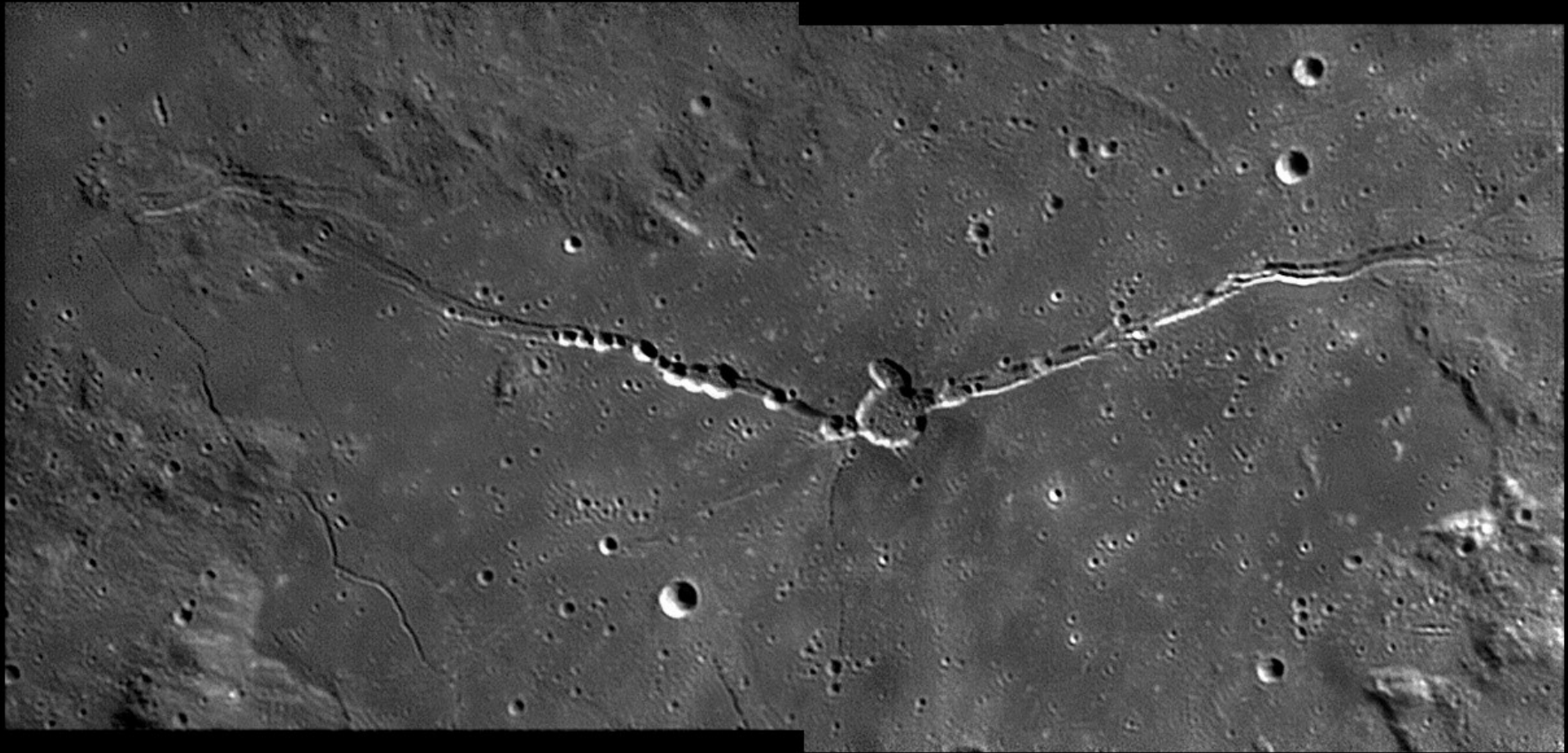


Linear rilles – Goclenius





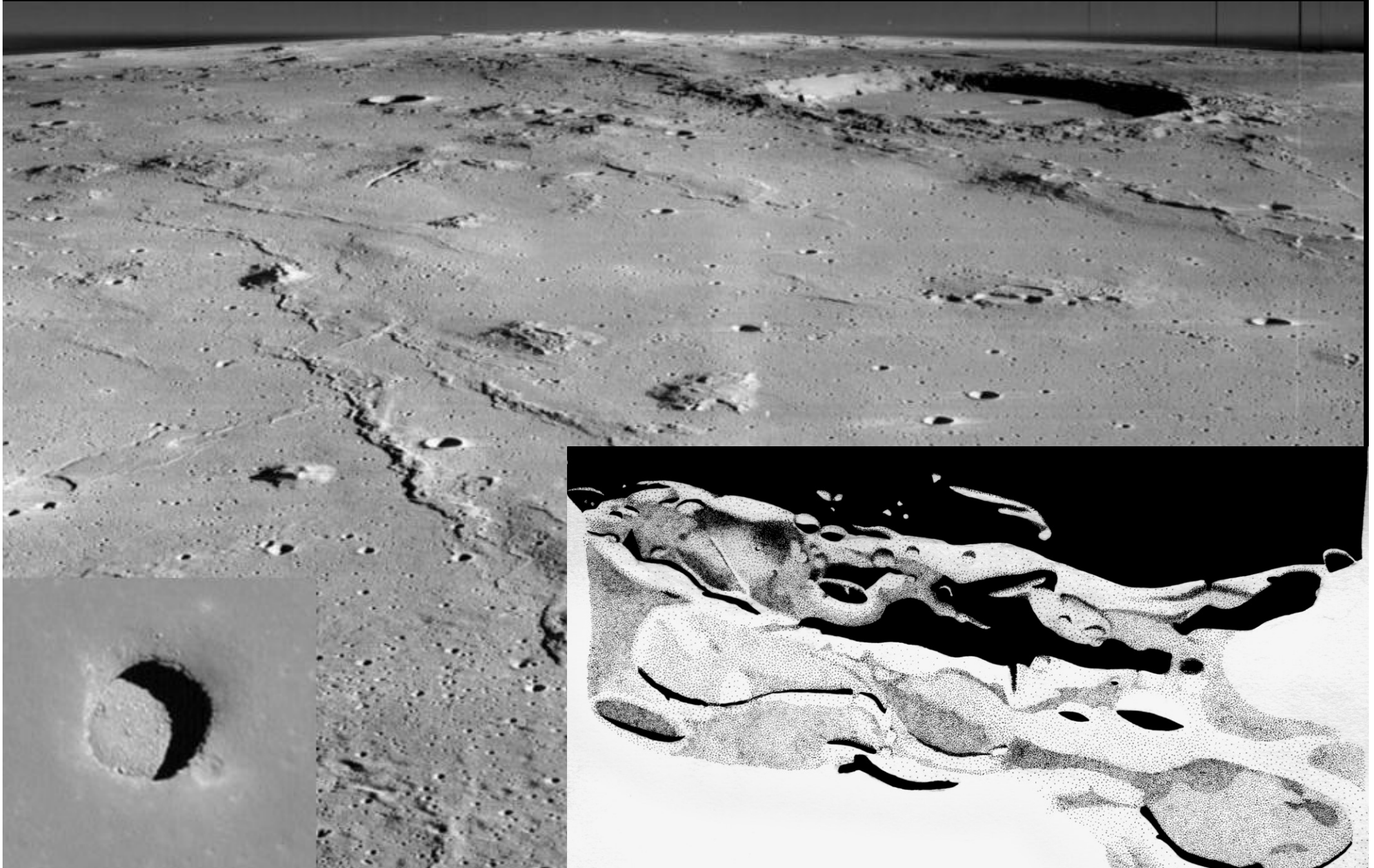
Crateriform rilles – Hyginus rille



Highland rilles - Janssen

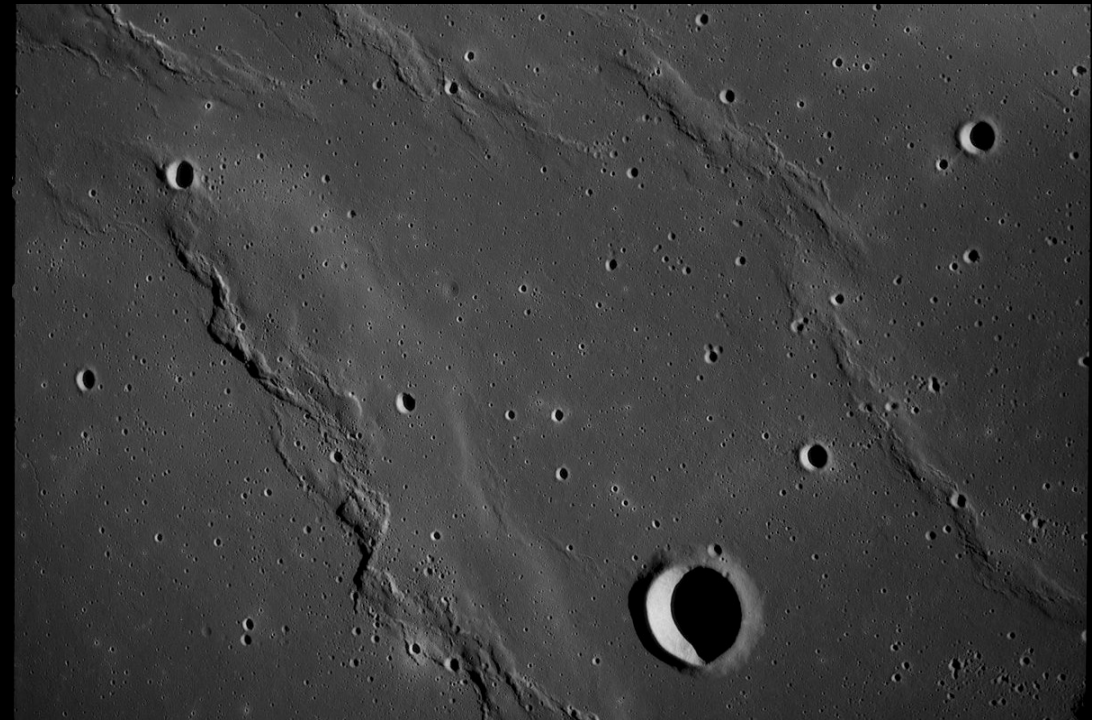


Domes

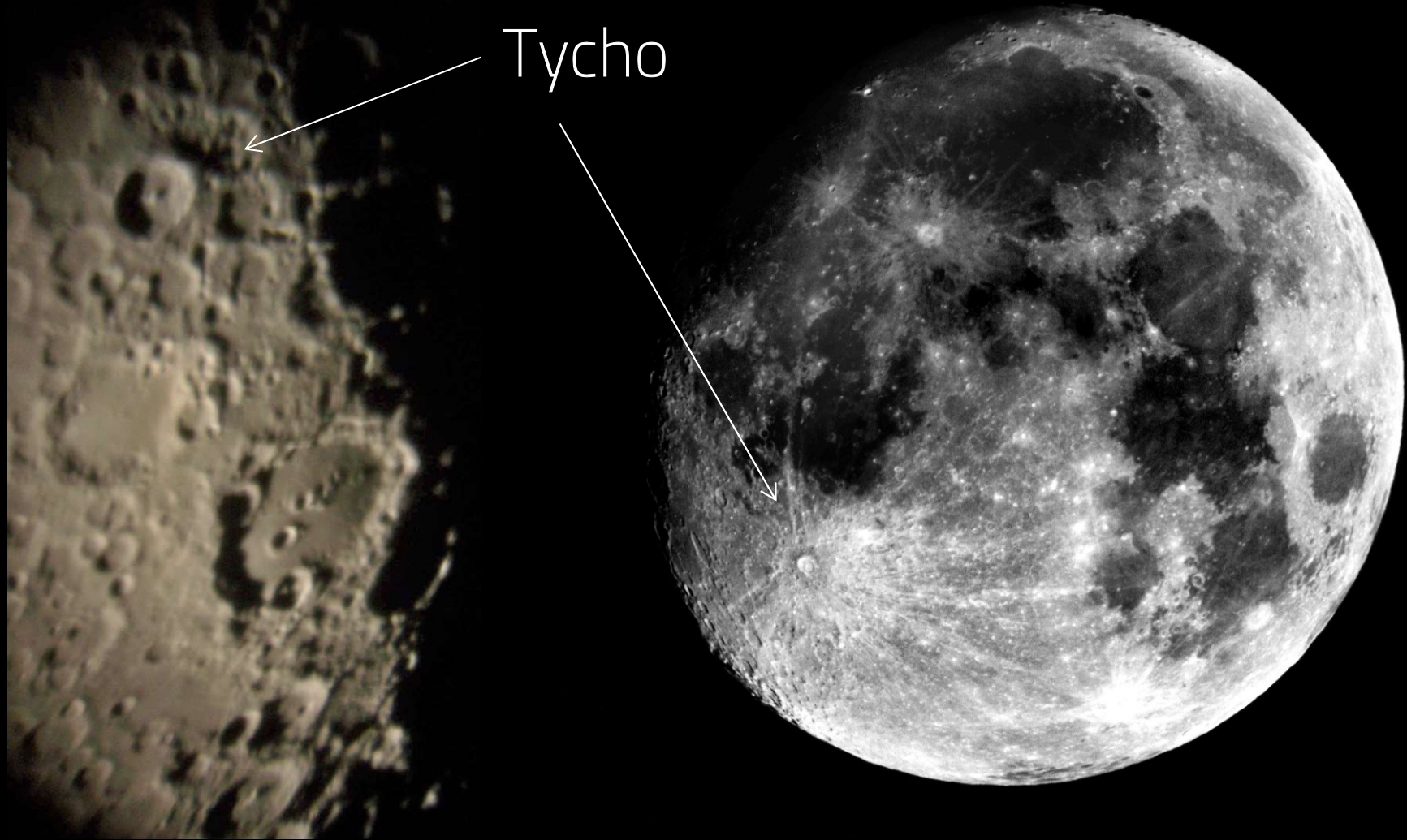


Wrinkle ridges

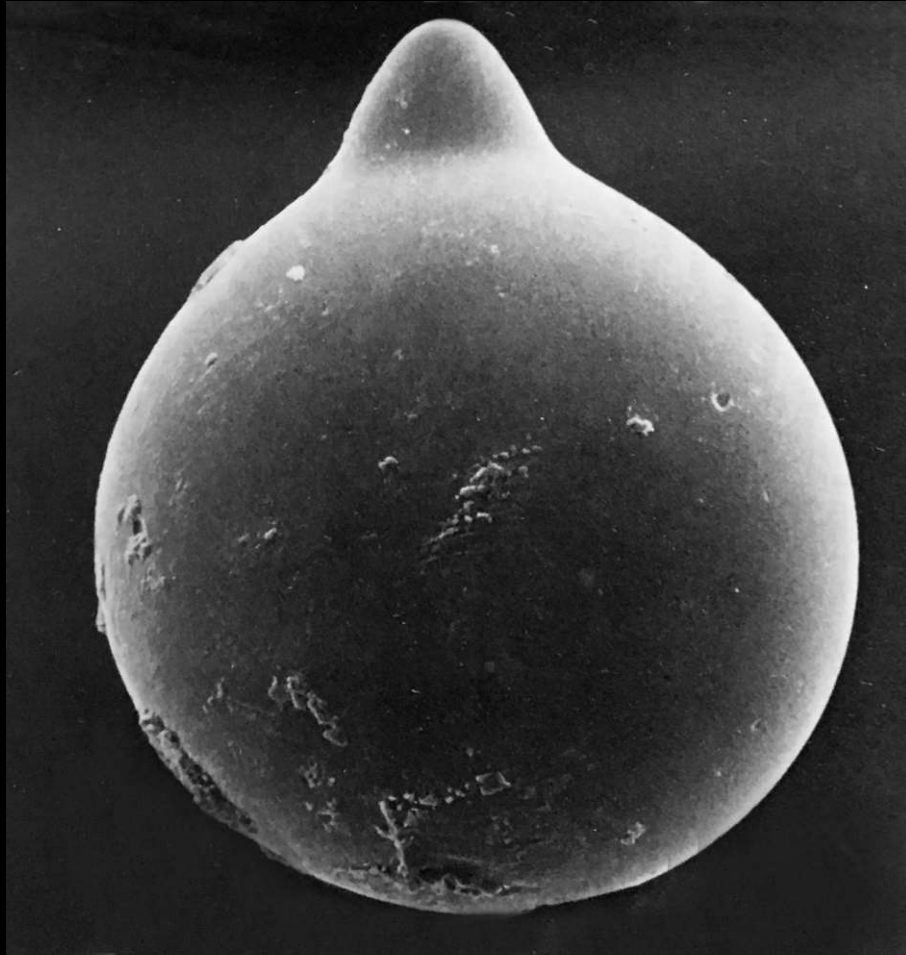
- Lava flows, ghost features and thrust faults
- Never properly catalogued



Ray craters



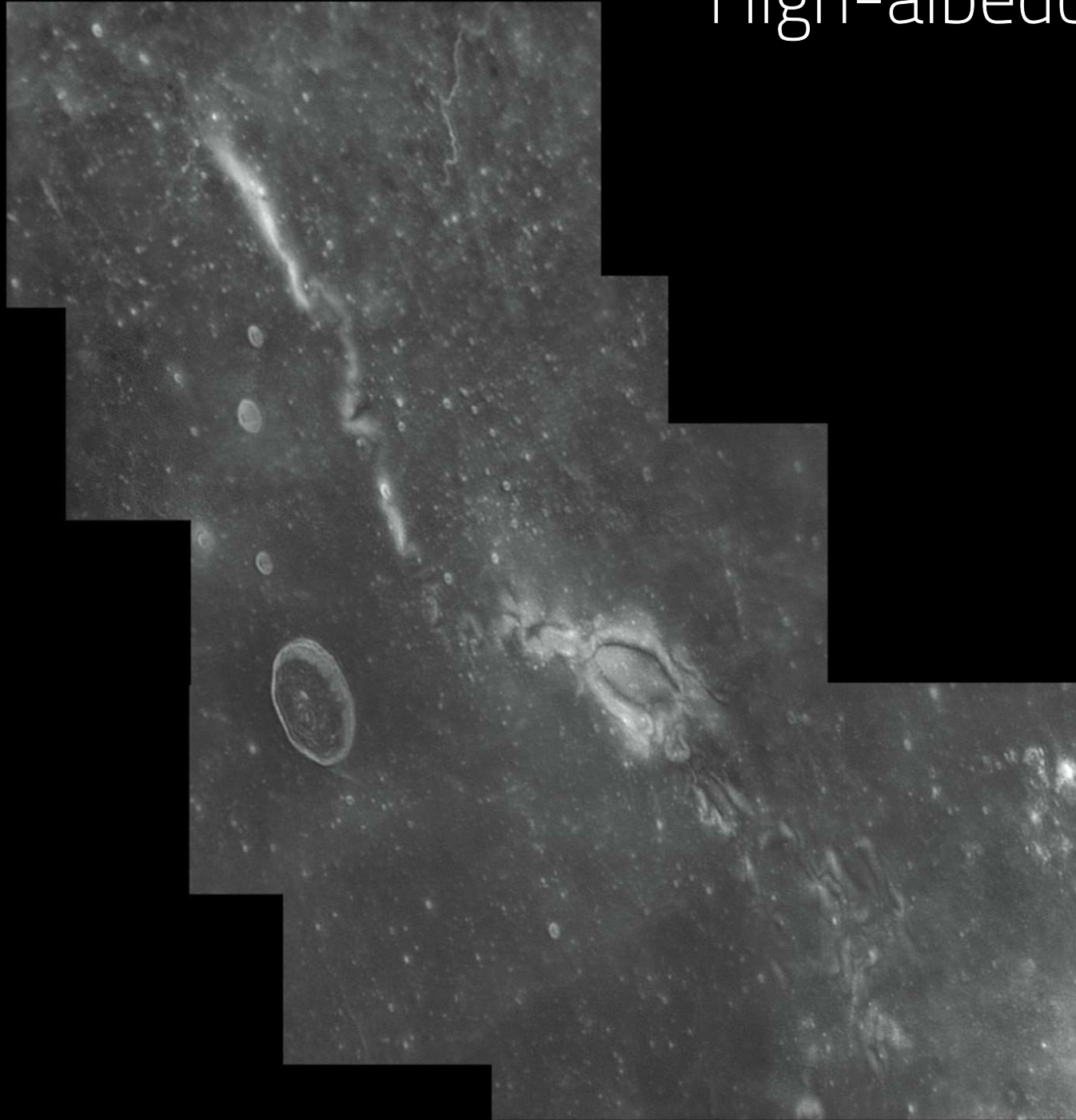
Ray craters



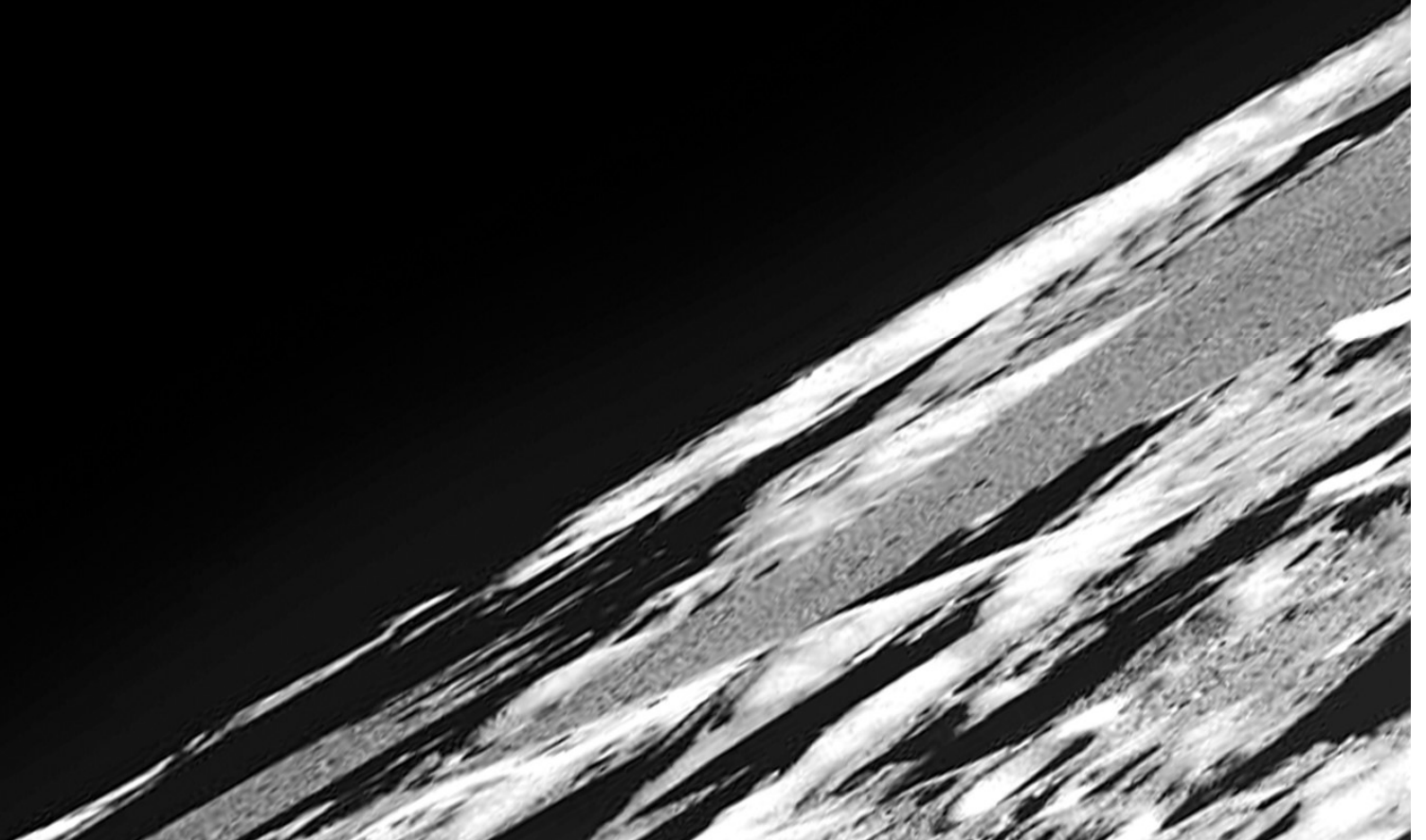
Ray craters



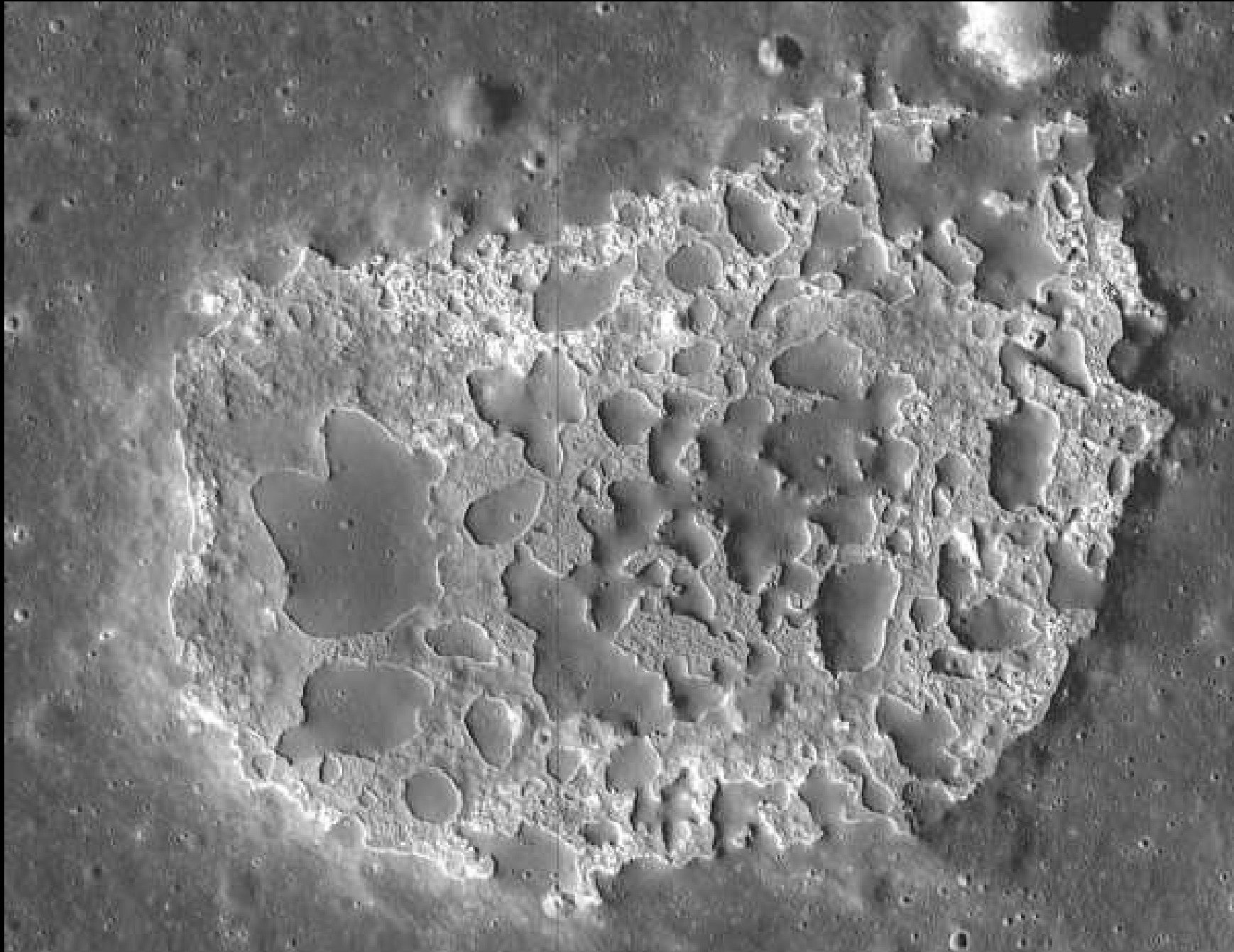
High-albedo swirls



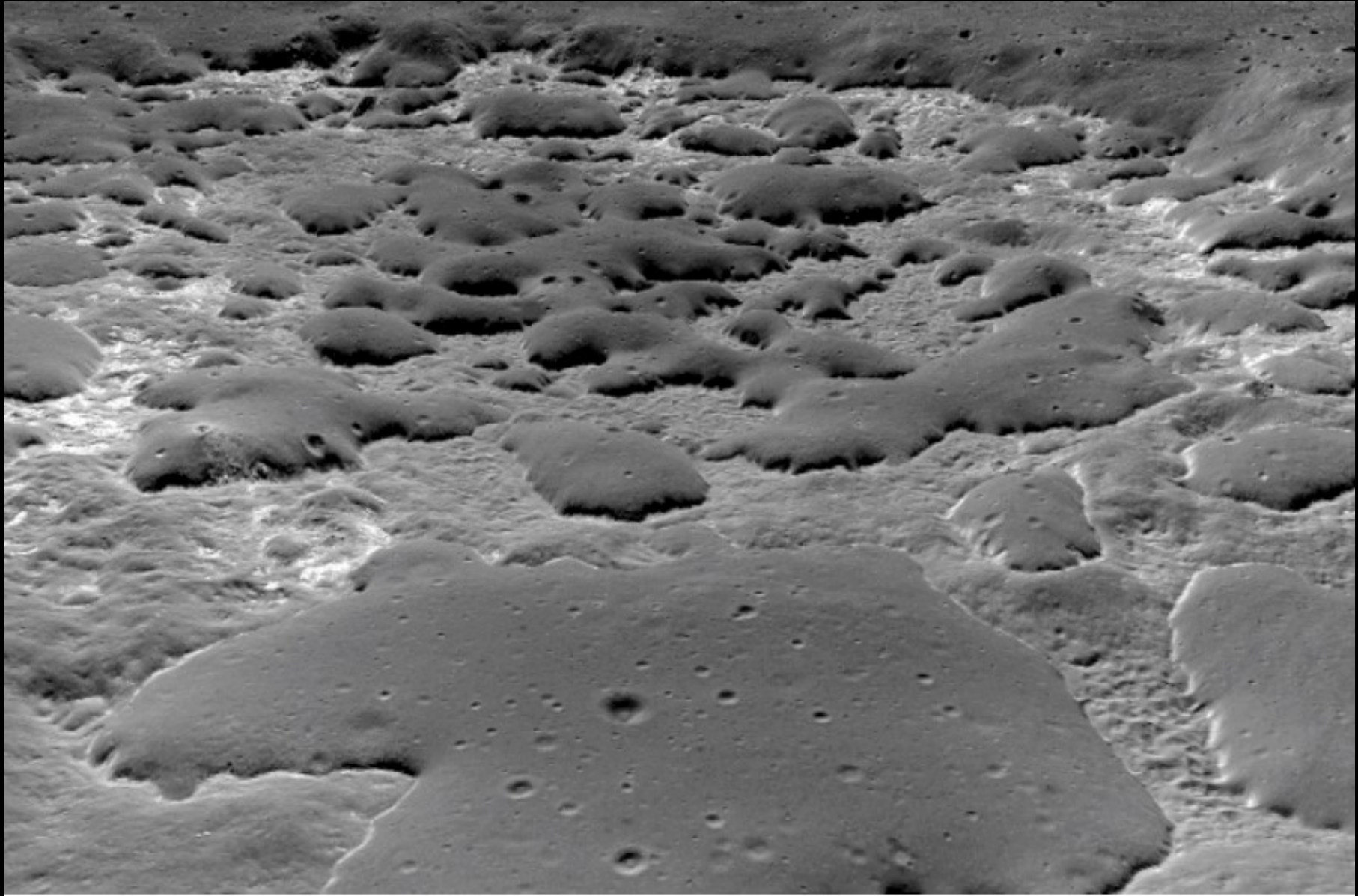
Spacecraft data



Irregular Mare Patches



Irregular Mare Patches



Return to Tycho

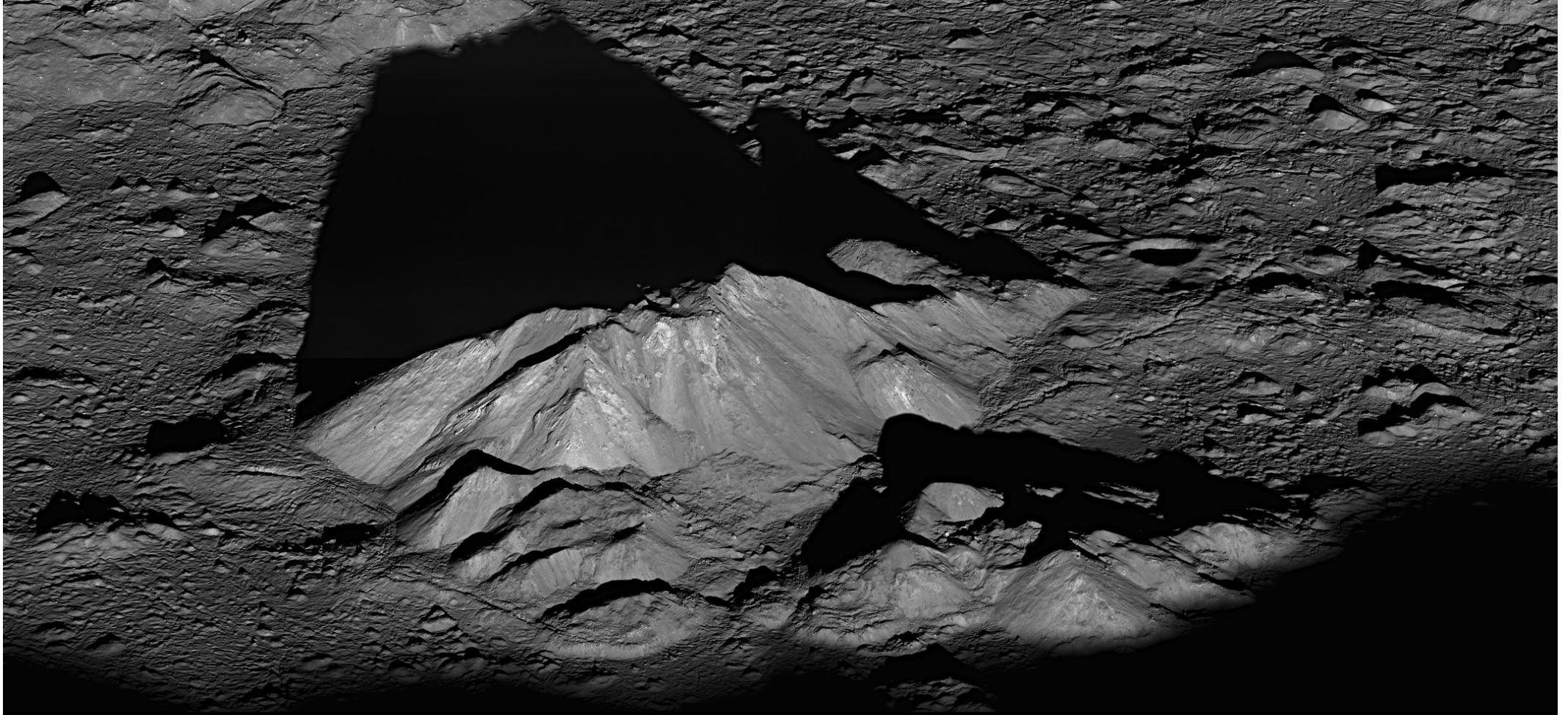


19.2°W 43.3°S
200 km

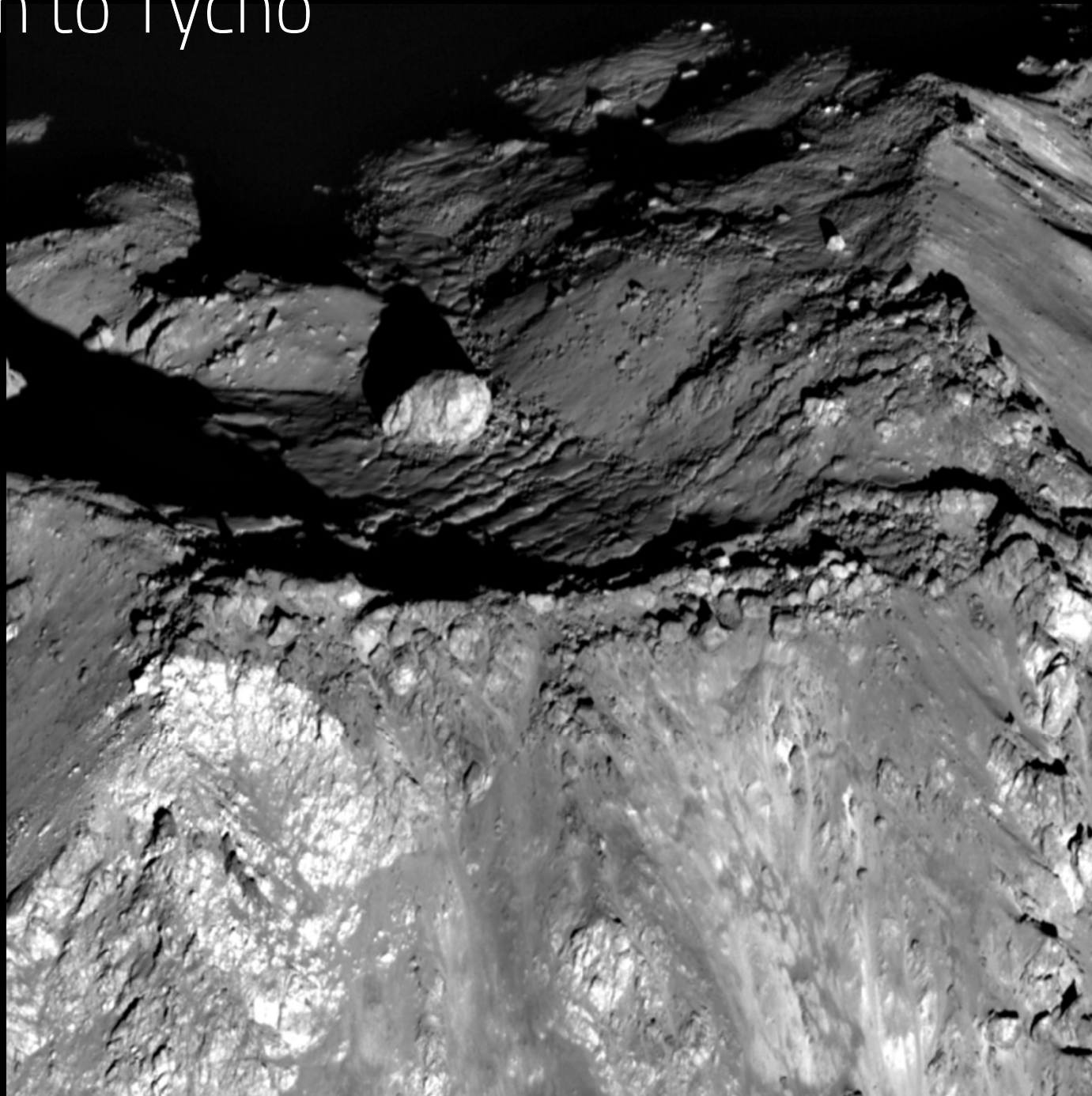
Return to Tycho



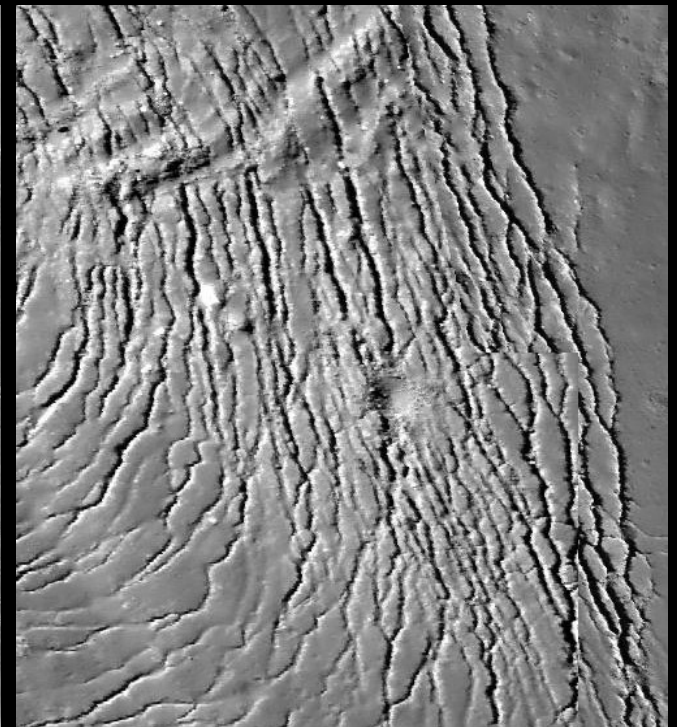
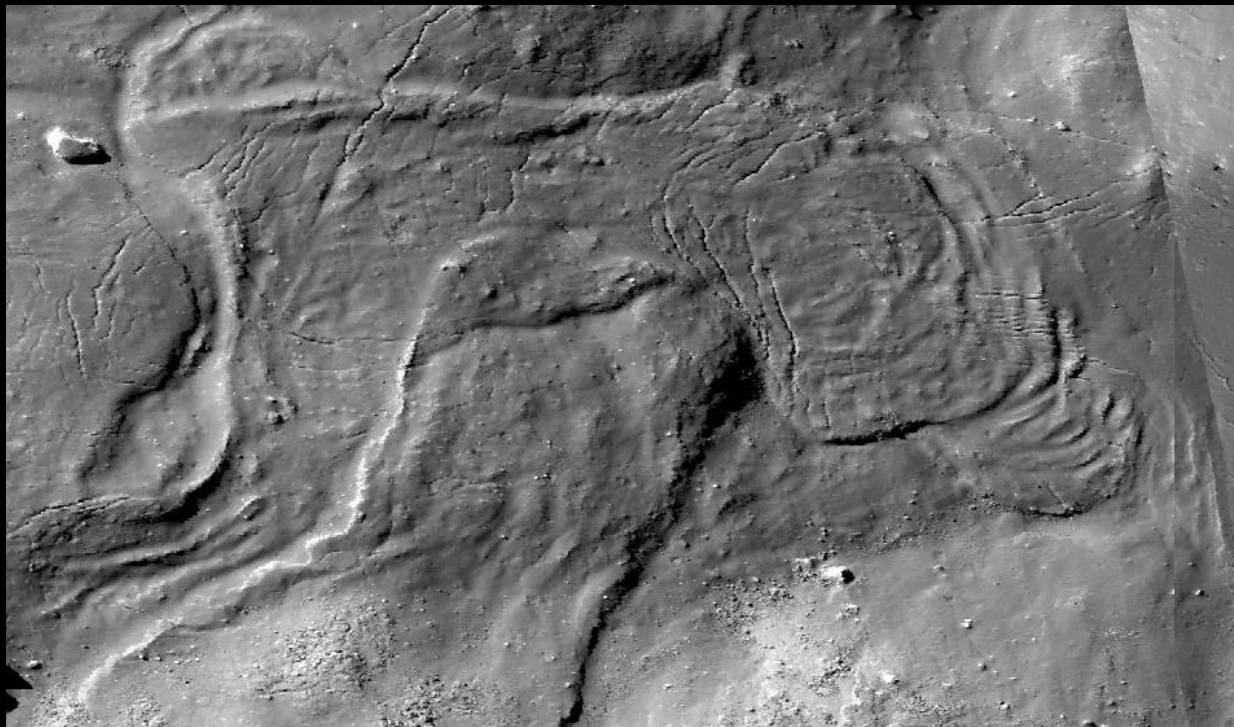
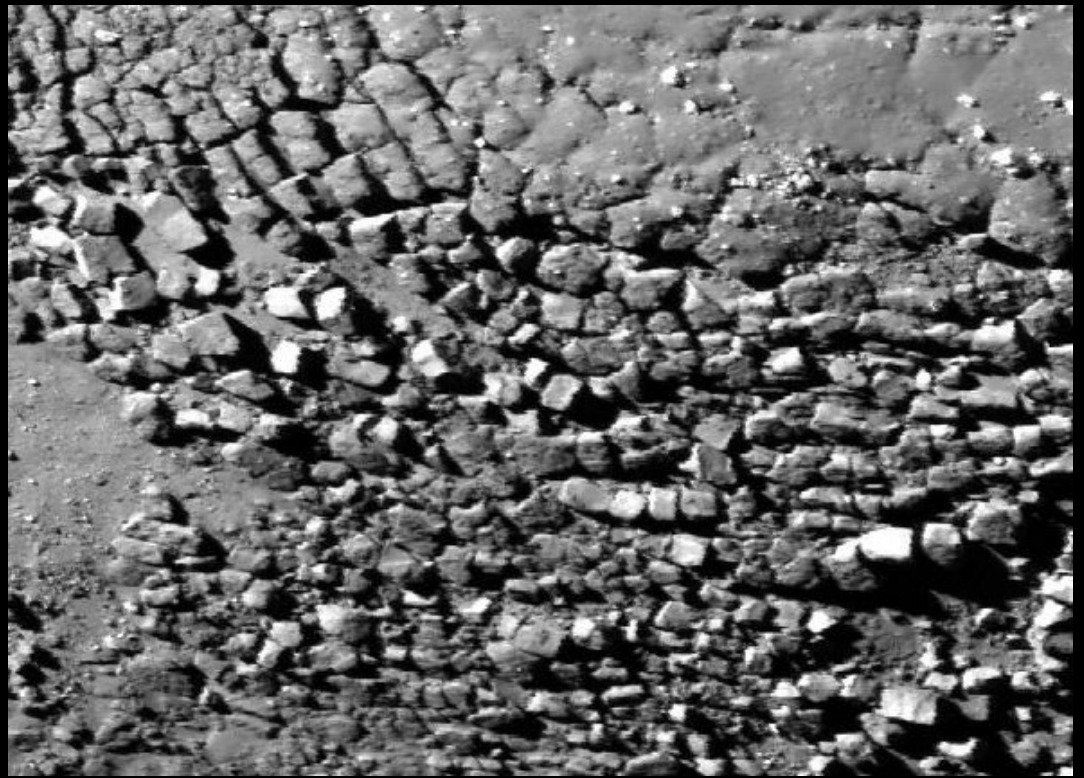
Return to Tycho



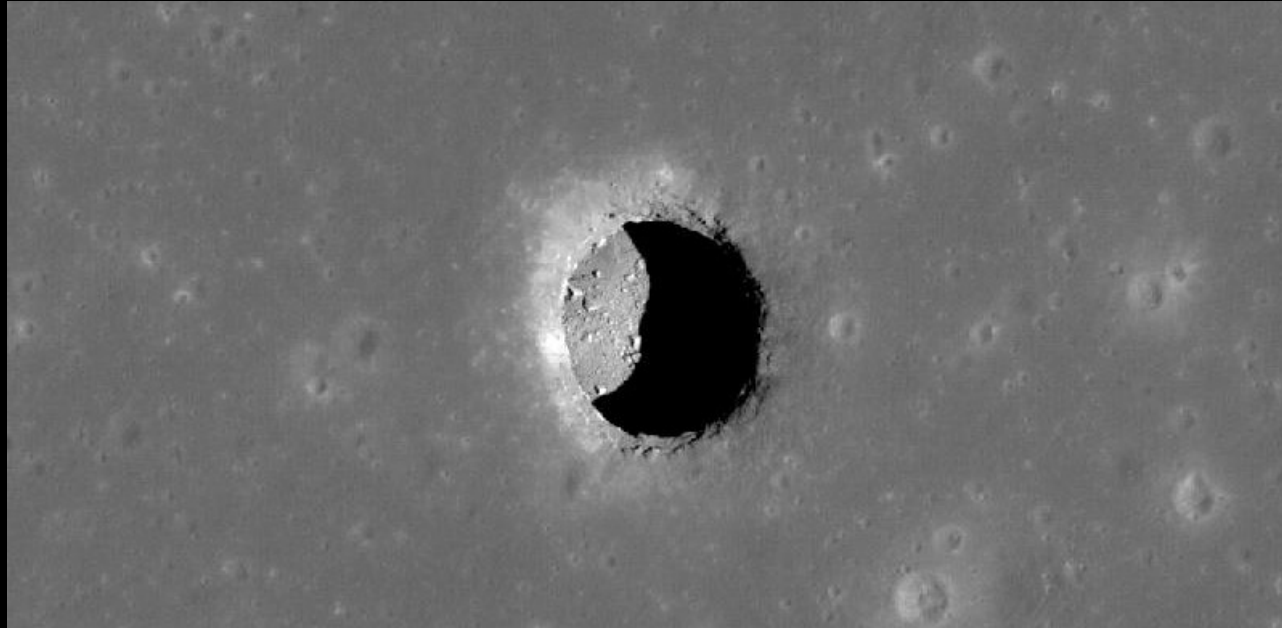
Return to Tycho

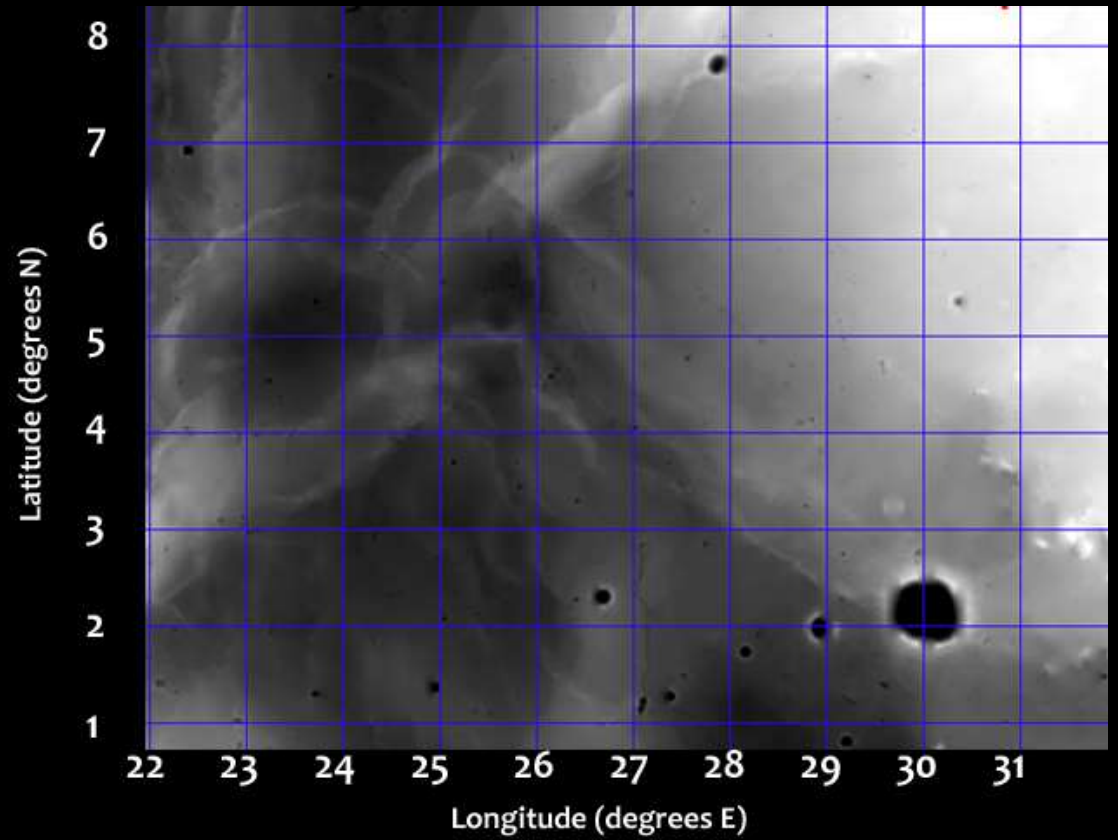
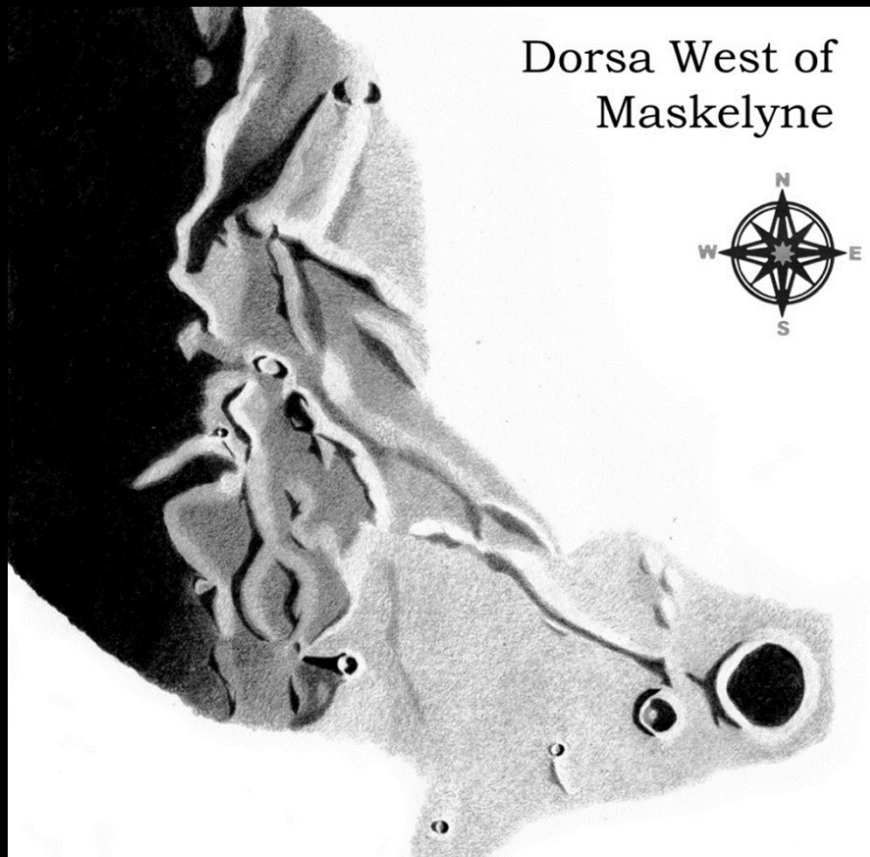
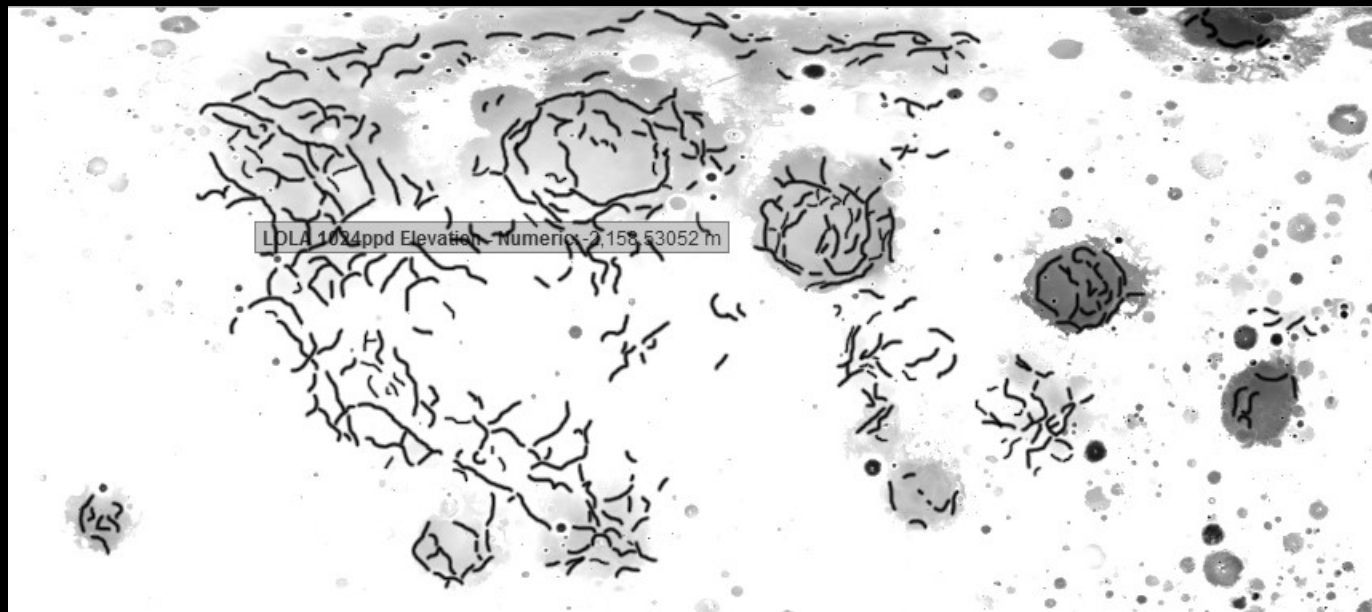


Return to Tycho

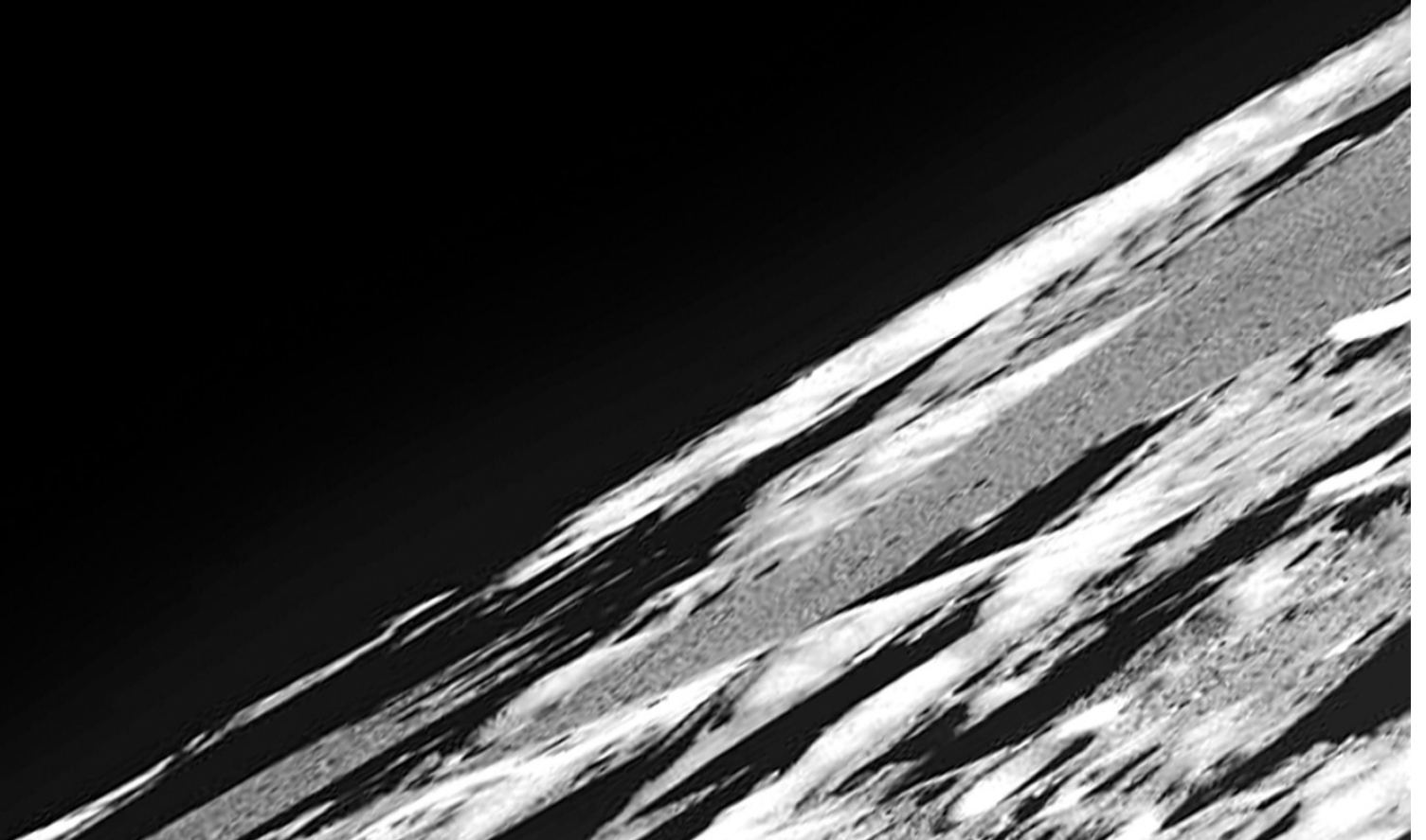


A bridge on the Moon





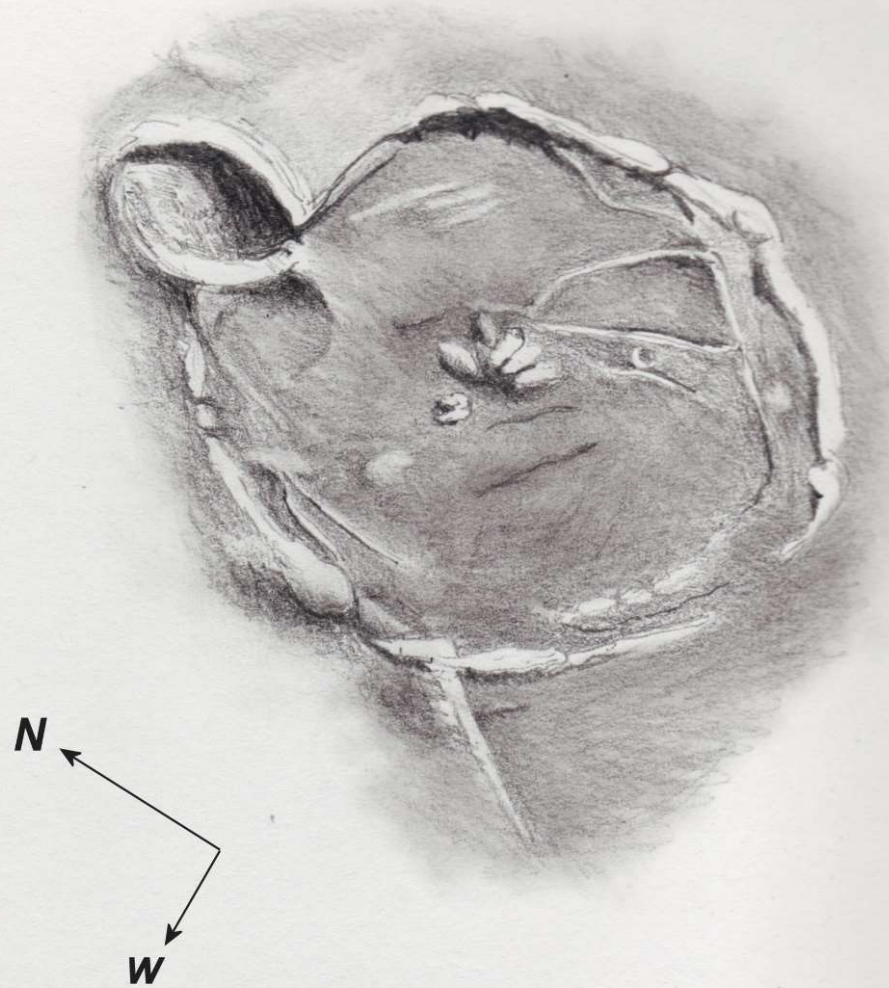
Making an observation





Gassendi
2021-04-23
19:17-20:57 UT
Seeing: A II-III
C11 SCT, 290x
Sally Russell, UK

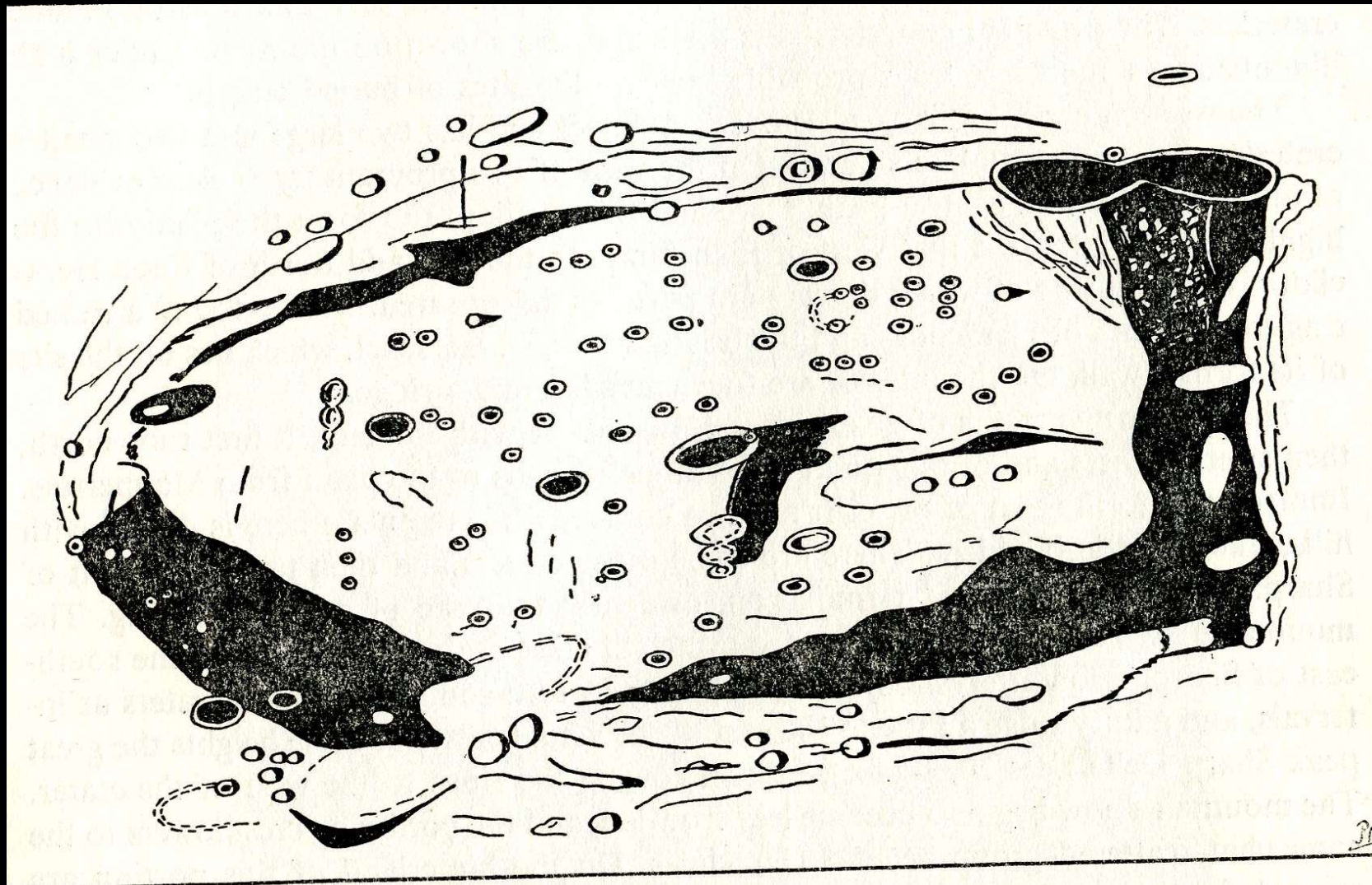
Moon's age: 11.7d
Illumination: 85%
Colongitude: 50.5-51.3 deg







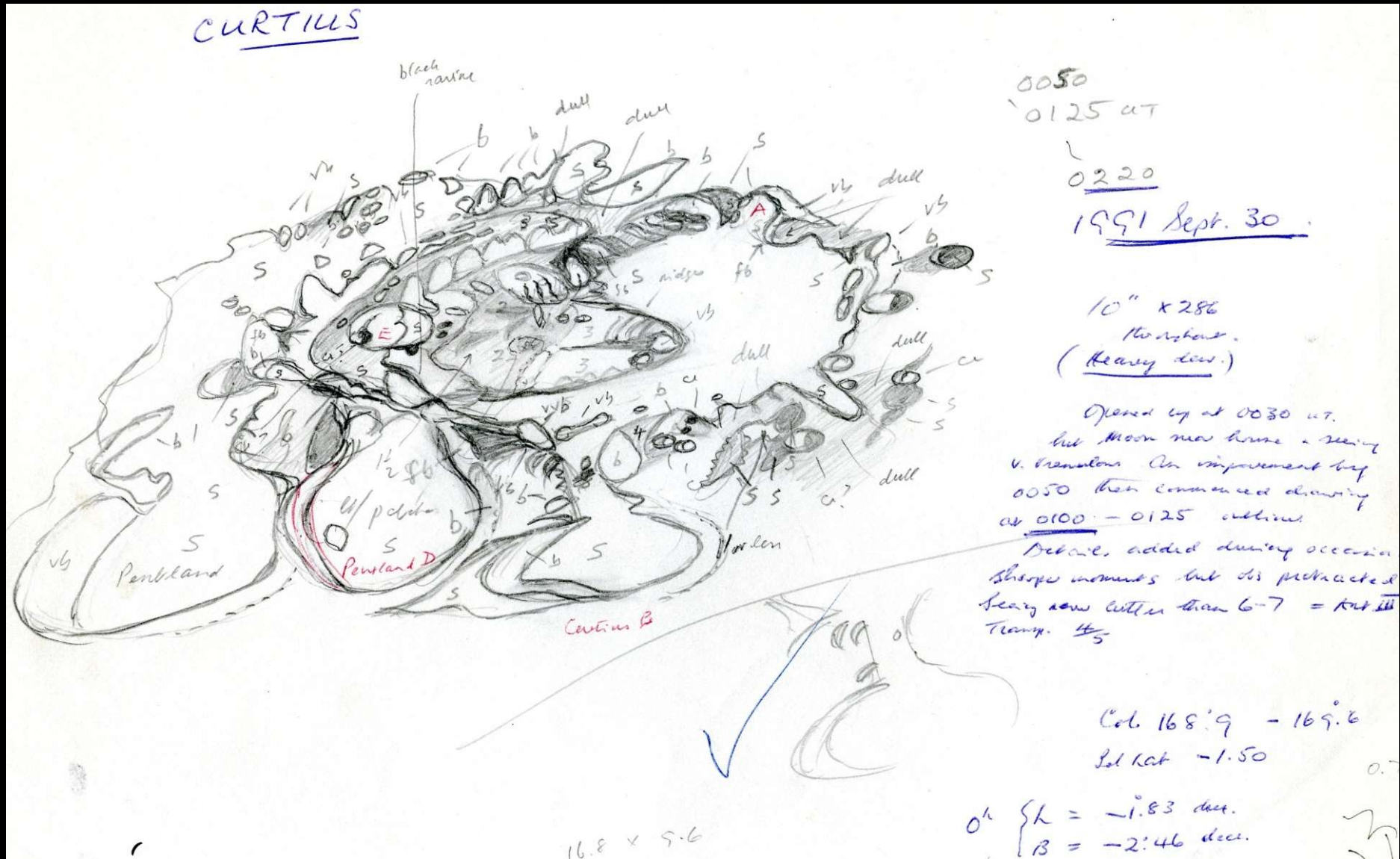
J. Herschel by Patrick Moore – line sketch



JOHN HERSCHEL

24 April 1953, 21h. 33-inch O.G. (Meudon) \times 560, Patrick Moore

Curtius by Harold Hill – eyepiece sketch

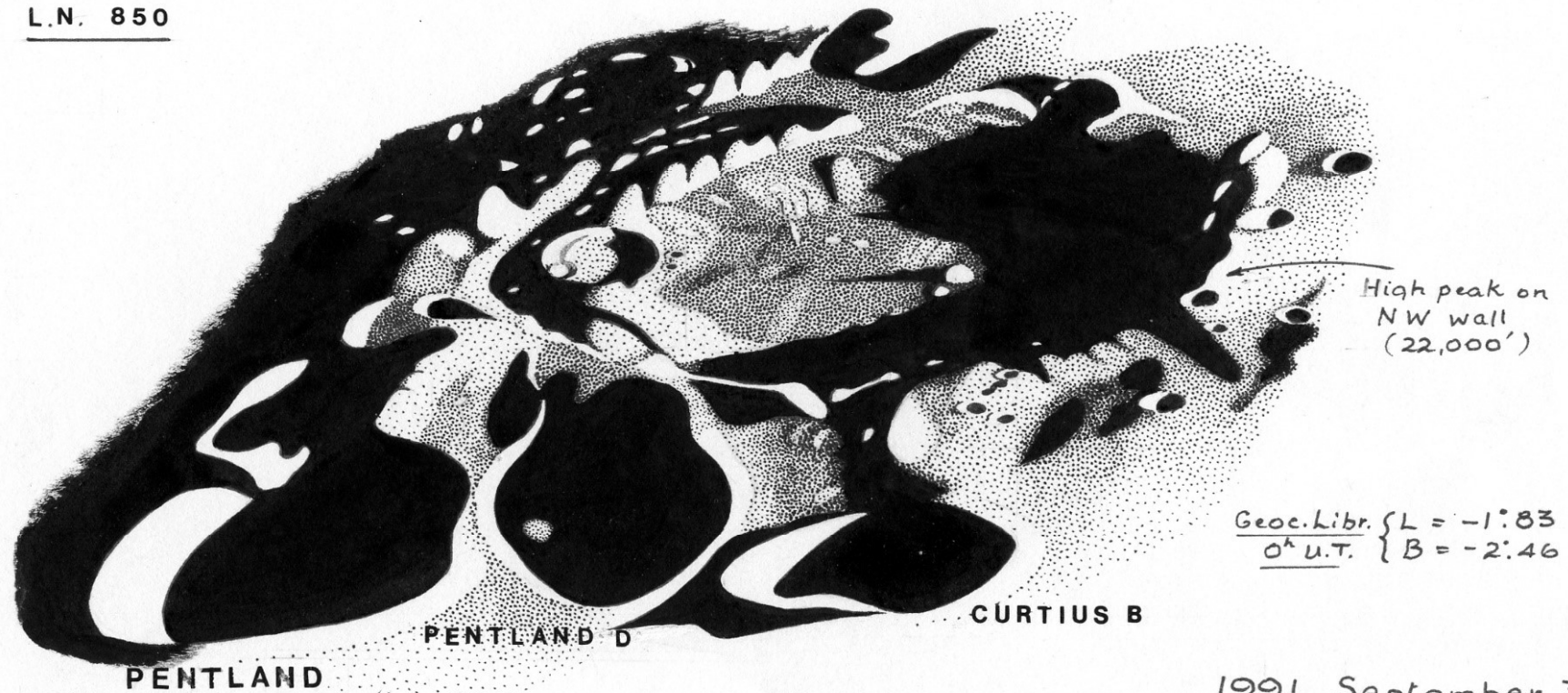


Curtius by Harold Hill – finished version

Late afternoon lighting

on CURTIUS

L.N. 850



1991 September 30

10" Reflector (Newt. $\frac{f}{10}$) x 286

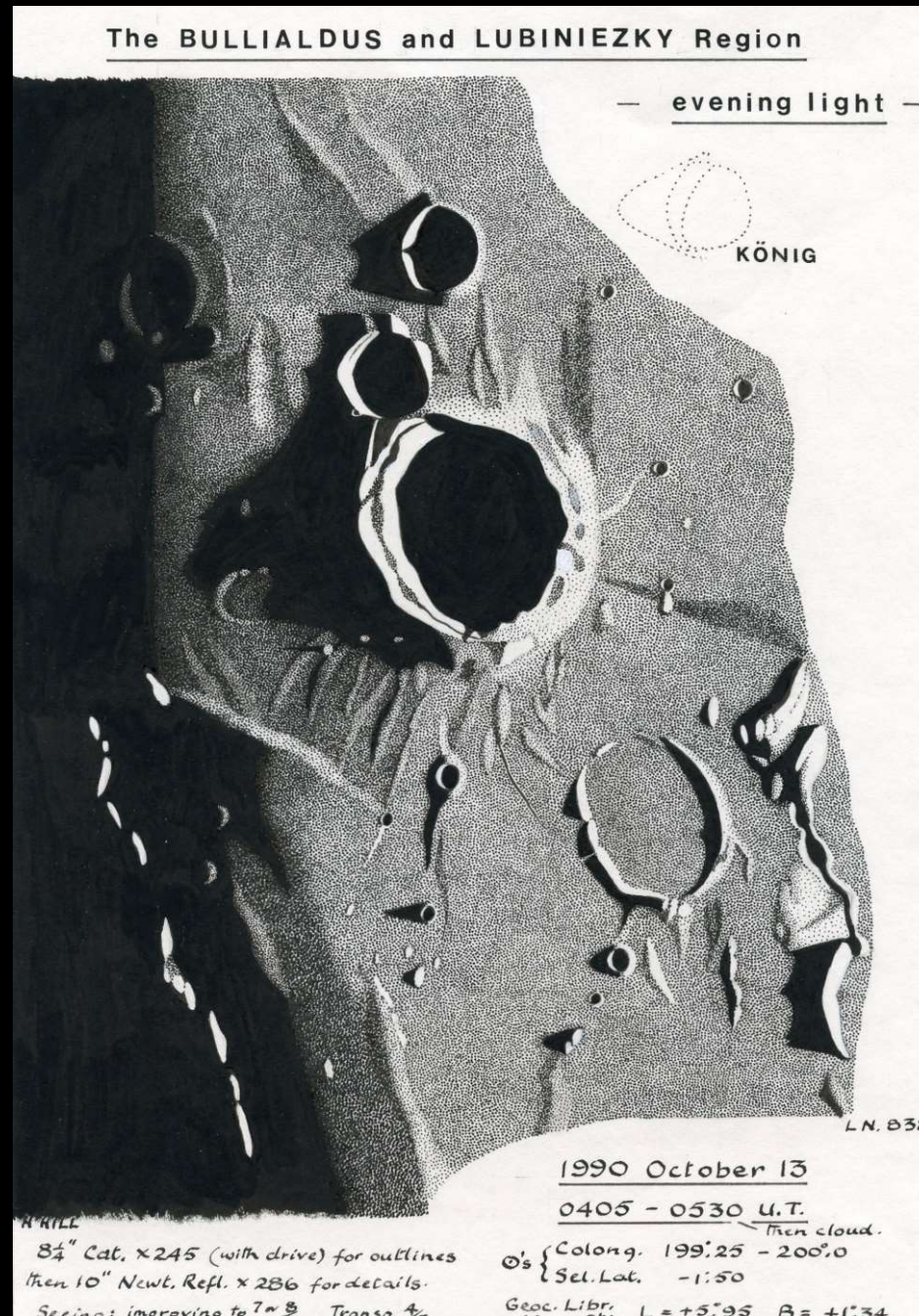
Details added during the sharper moments but observation protracted & seeing never better than $6\frac{7}{10}$
Transparency good = $\frac{4}{5}$

Outlines: 0050 - 0125 u.T.

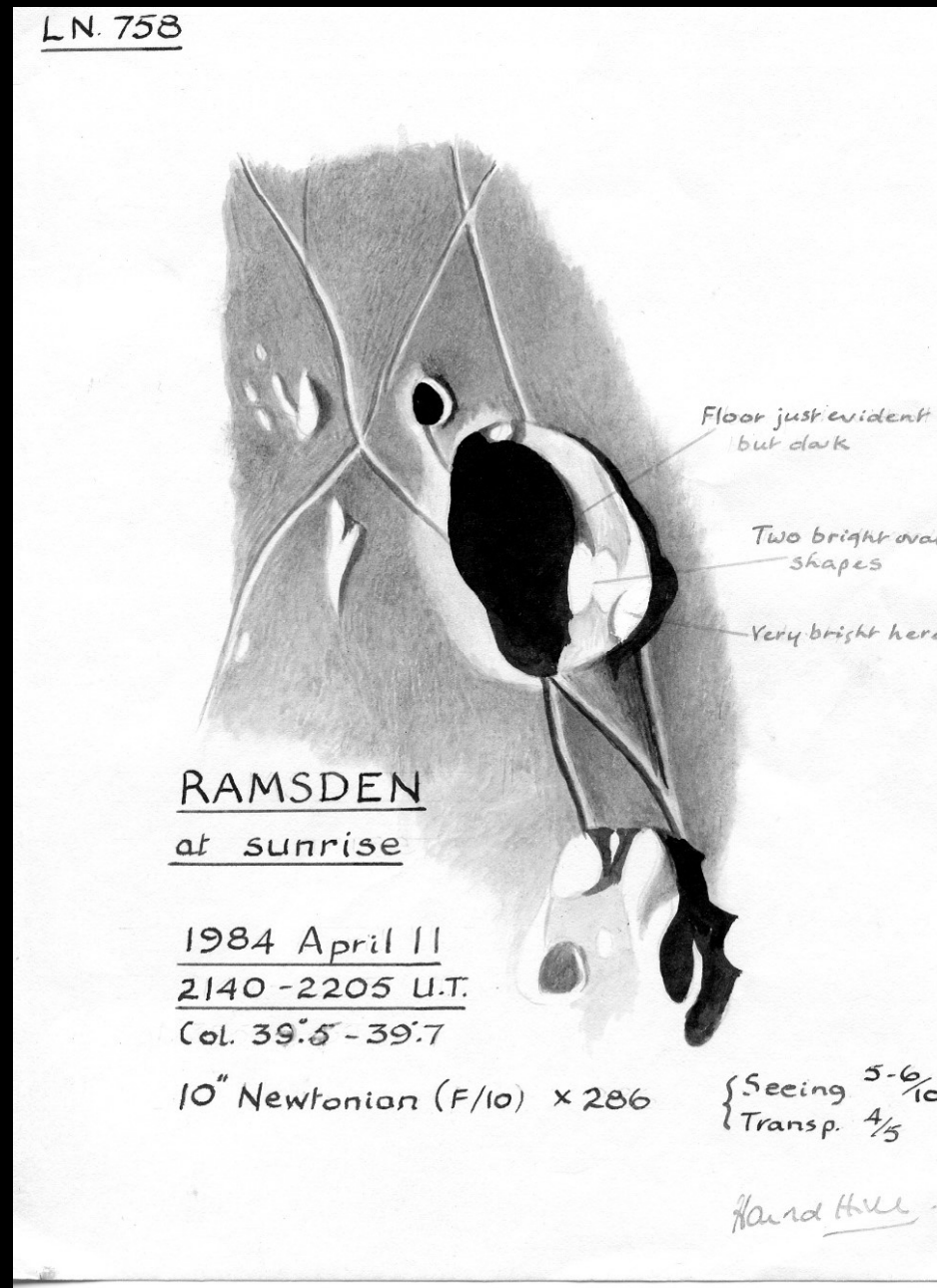
Details: 0125 - 0220 u.T.

\odot 's { Col. 168:9 - 169:6
Sel. Lat. -1:50

Bullialdus drawn by Harold Hill - stippling



Ramsden by Harold Hill – pencil sketch



Birt – pencil and ink sketch

LN. 548

Sunrise on Birt and the Straight Wall (S. end)

$8\frac{1}{2}$ -inch spec. $\times 240$.

THEBIT



BIRT

$$T_r = \frac{4}{5} \quad S = \frac{2}{5}^{-3}$$

April 17th, 1967.

20^h 45^m
to
22^h 30^m } U.T.

Sun's selen. colong. $\left\{ \begin{array}{l} 7^{\circ}.5 \\ \text{to} \\ 8^{\circ}.4 \end{array} \right.$

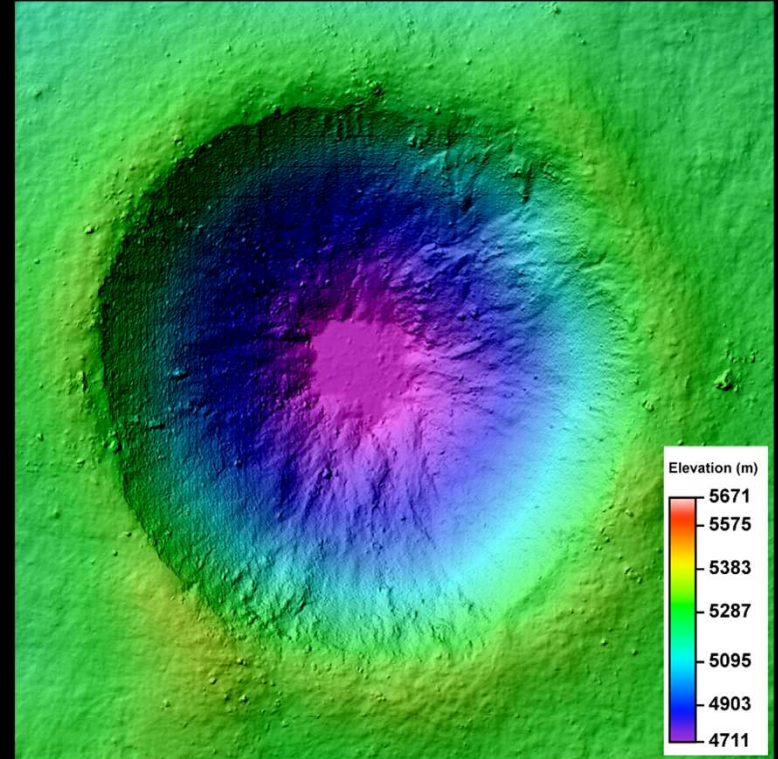
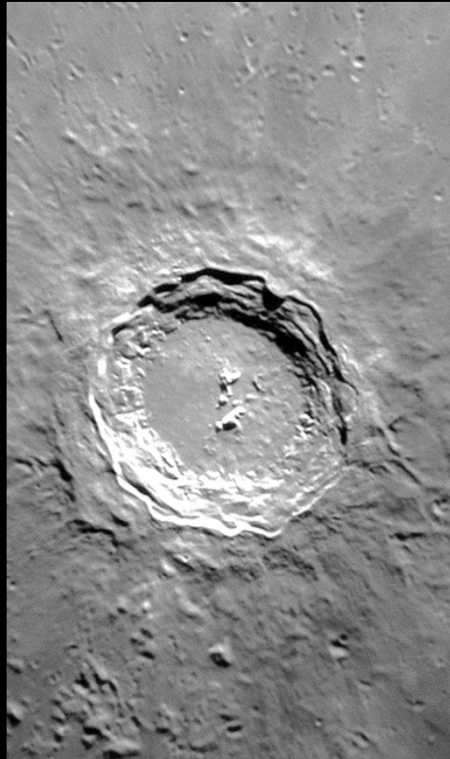
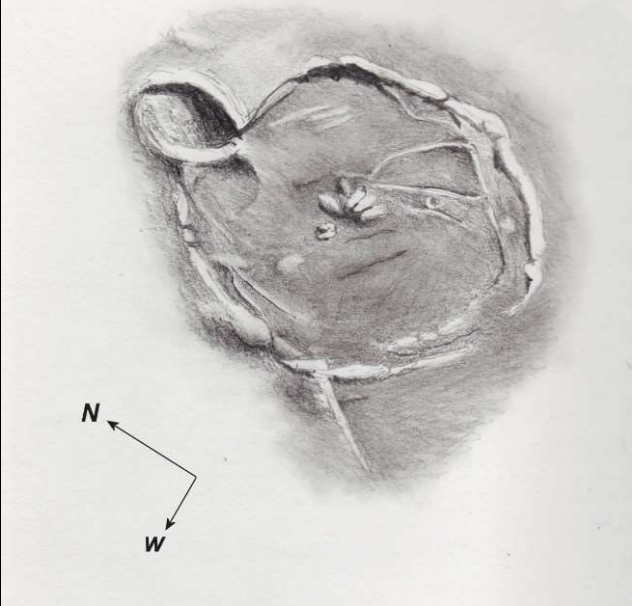
Observation unfinished due to considerable illumination changes during observing period.

W.J. Leatherbarrow.

A golden age?

Gassendi
2021-04-23
19:17-20:57 UT
Seeing: A II-III
C11 SCT, 290x
Sally Russell, UK

Moon's age: 11.7d
Illumination: 85%
Colongitude: 50.5-51.3 deg



A final thought



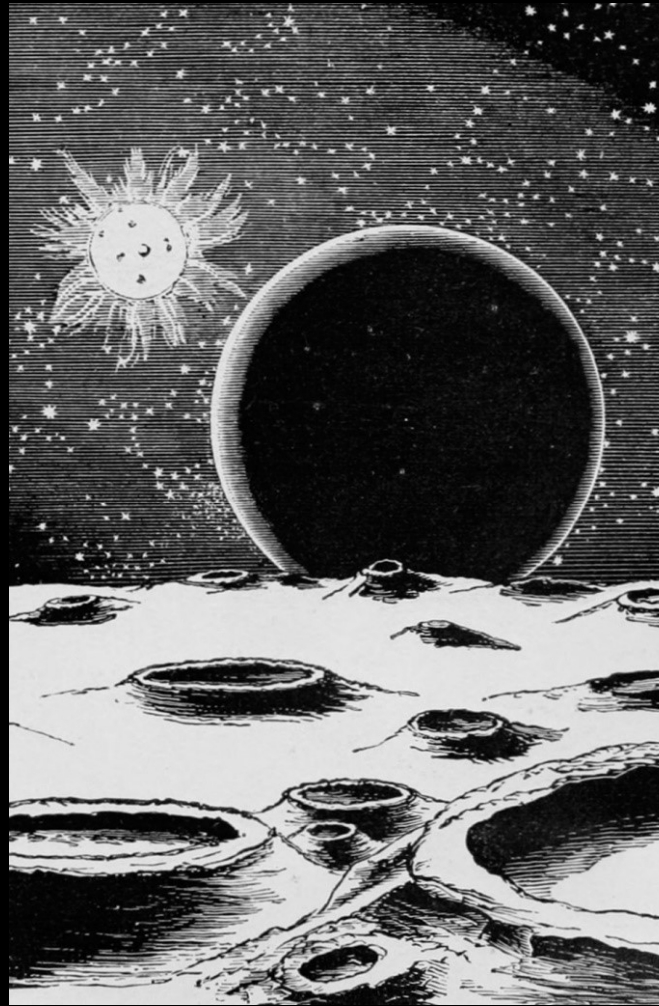
Each blue dot below represents a cenote such as the one to the left



A ring of cenotes
is a modern-day signature
of the subsurface Chicxulub crater

A final thought





"We came all this way to explore the Moon, and the most important thing is that we discovered the Earth"

- Bill Anders, Apollo 8

A full moon is visible through the dark, silhouetted branches of trees at night. The moon is bright and circular, positioned in the center of the frame. The sky is a deep blue, and the tree branches are dark and intricate, creating a complex pattern around the moon. The overall mood is serene and quiet.

THANKS FOR LISTENING
AND
HAPPY OBSERVING!

