

# Walsall Astronomical Society



August 2025

## What's Up Monthly Publication



## What's on this month



August is a much better month for observing, the nights are drawing in and by mid-month it will be dark by 9 o'clock. This month features a close conjunction of Jupiter and Venus, and also one of the best meteor showers of the year, the Perseid's but may be trickier to view with a full moon present. For those of you up late, or early, the constellation of Orion and

Betelgeuse can be seen in the dawn sky and lots of planets are visible. We are still awaiting the NOVA in Corona-Borealis so keep your eyes peeled and on the sky!

Don't forget to send us any images you have taken or post them on the Facebook Group!

**Thursday 7th August:** External Lecture - Martin Lunn - Astronomy and the Anglo Saxons

**Thursday 14th August:** General Club Meeting, for discussion and support - Observing with telescopes if clear

**Thursday 21st August:** General Club Meeting, for discussion and support - Observing with telescopes if clear

**Thursday 28th August:** What's Up for September

**28th August - 1st September:** Dalby Forest Starfest - <https://www.scarborough-ryedale-as.org.uk/saras/starfest/starfest-2025/>

List of Lovell Lecture Series 2025 HERE<sup>1</sup> for those interested.

## Members Gallery

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<sup>1</sup>[https://www.jodrellbank.net/events/lovell-lecture-series/?utm\\_source=email&utm\\_medium=eshot&utm\\_campaign=Lovell Lecture&utm\\_content=Asteroid The me&dm\\_i=1DU9,8UZMY,AMCEUN,10W9TB,1](https://www.jodrellbank.net/events/lovell-lecture-series/?utm_source=email&utm_medium=eshot&utm_campaign=Lovell+Lecture&utm_content=Asteroid+The+me&dm_i=1DU9,8UZMY,AMCEUN,10W9TB,1)



This section is to display some of the images that our own club members have taken during the previous month. Please feel free to submit any images via email, or post on the Facebook Group **Here**<sup>2</sup>

A few members this month all decided to capture the Pacman Nebula across a range of different equipment and processing.

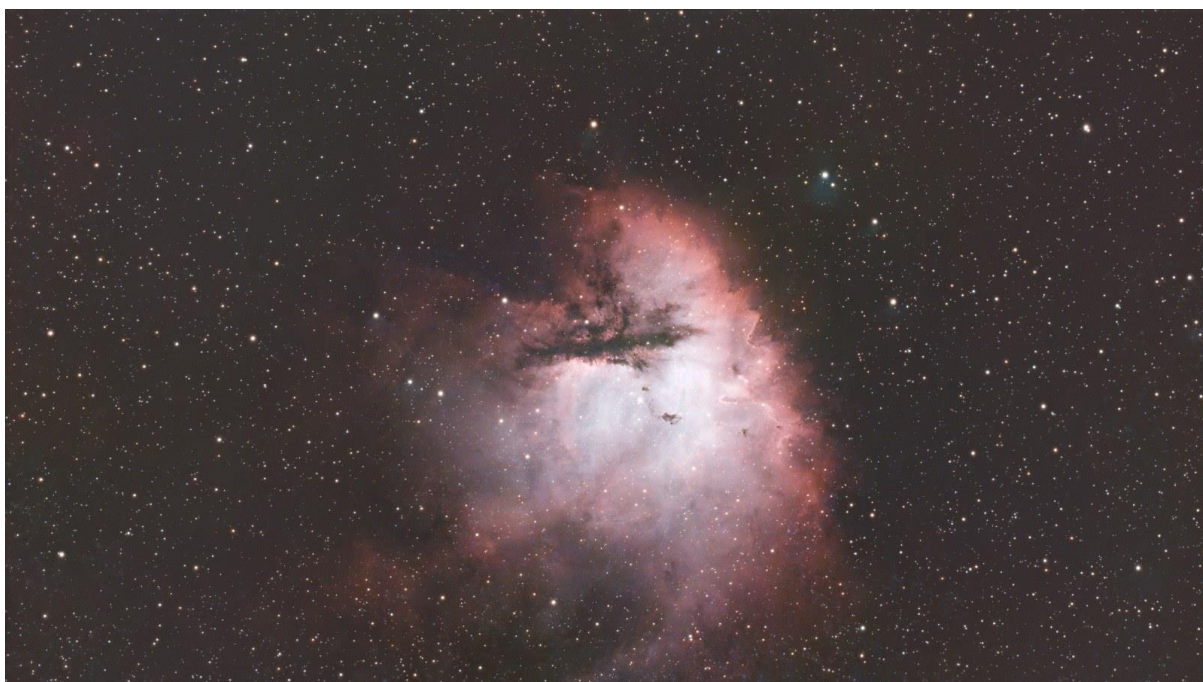
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<sup>2</sup><https://www.facebook.com/groups/251803274136388>






*1 - Pacman Nebula (NGC281) - Peter Biddell*



*2 - Pacman Nebula (NGC281) - Keith Thompson*





Seestar S50 

NGC 281

 Nigelstar/01°W,52°N/2025-07-29 01:01

132min



*3 - Pacman Nebula (NGC281) - Tony Jakeman*



*4 - Eagle Nebula (M16) - Mike Lewis*



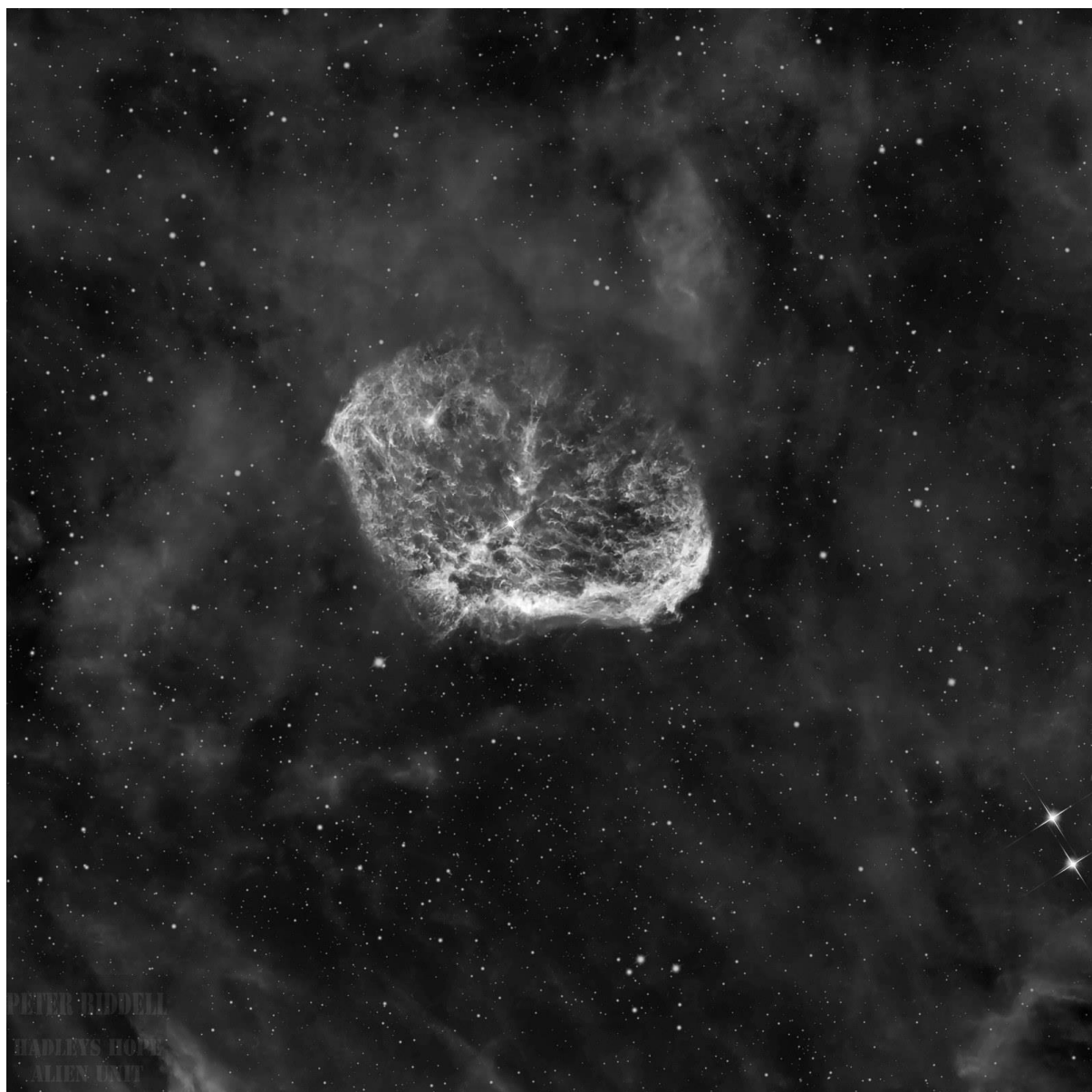
*5 - Lobster Claw Nebula (SH2-157) - Keith Thompson*



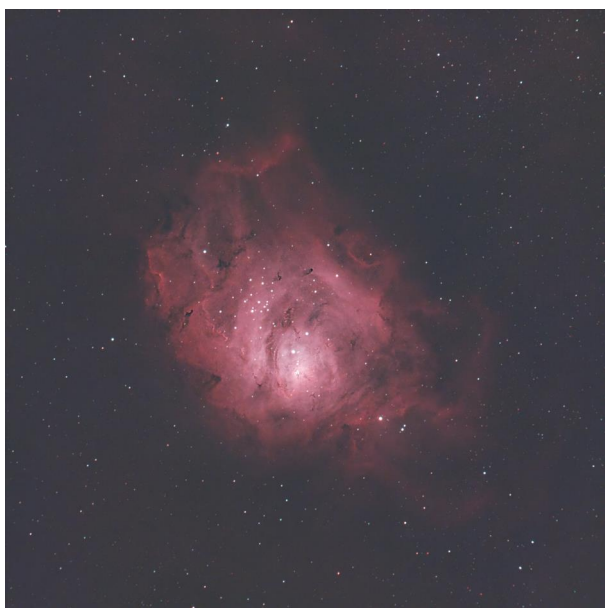


*6 - Andromeda Galaxy (M31) - Tony Jakeman*



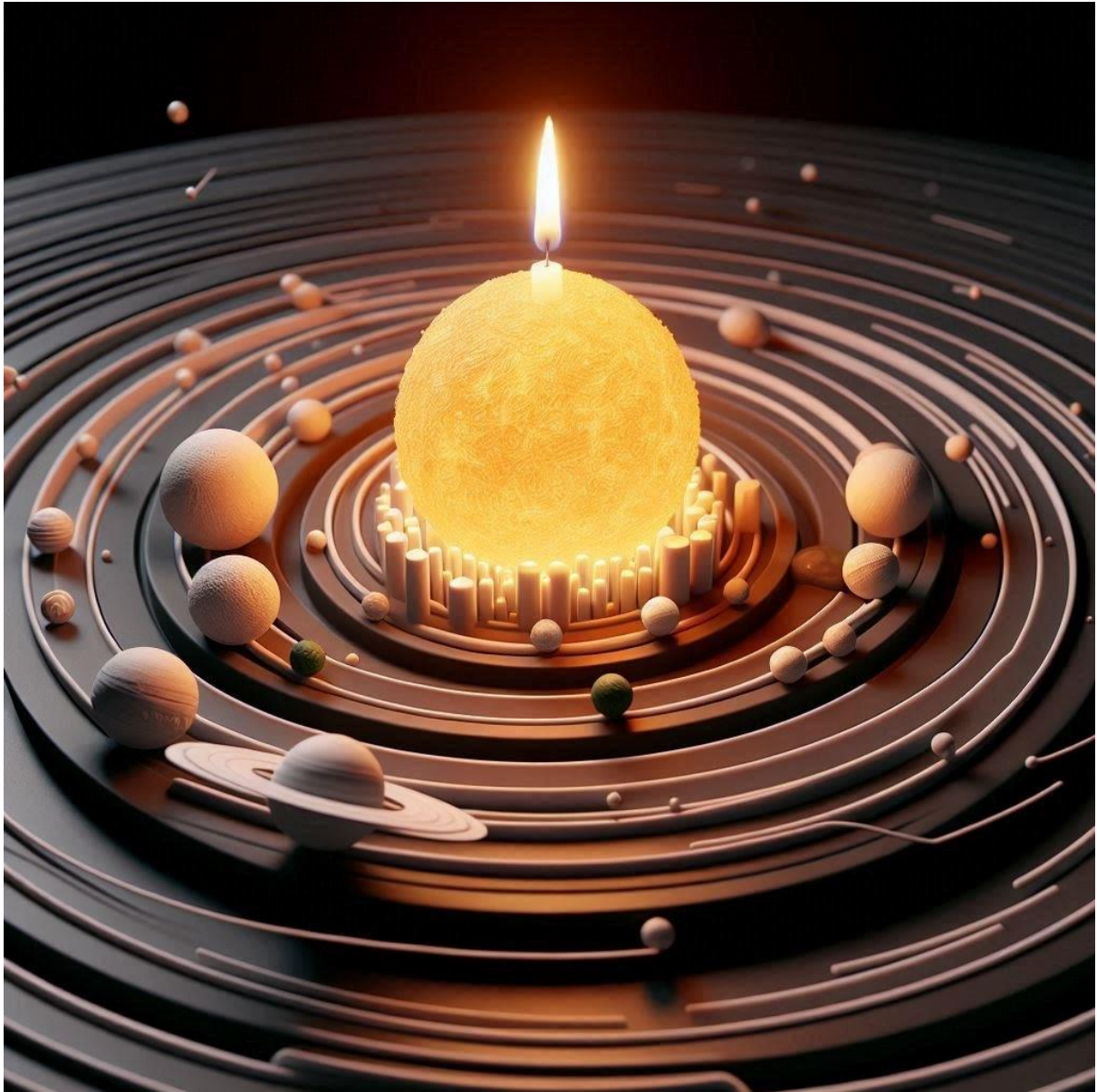


7 - Crescent Nebula (NGC6888) - Peter Biddell



*8 - Lagoon Nebula (M8) - Mike Lewis*

## Anniversaries - June



Here are some significant astronomy anniversaries that occurred in June throughout history:

- **August 4, 1997 – Mars Pathfinder lands on Mars:** Delivering the Sojourner rover to the Martian surface
- **August 12, 1877 – Discovery of Mars' Moons:** Asaph Hall discovered Deimos, and six days later, Phobos, using the U.S. Naval Observatory's 26-inch refractor.
- **August 20, 1977 – Voyager 2 Launch:** NASA launches the Voyager 2 probe to tour the outer planets. It remains one of the farthest human-made objects.



- **August 24, 2006 – Pluto reclassified as a Dwarf Planet:** The International Astronomical Union (IAU) voted to redefine the definition of a planet, officially demoting Pluto to 'dwarf planet' status.
- **August 27, 1962 – Mariner 2 probe is launched:** NASA launches the Mariner 2 probe, which becomes the first successful planetary probe, flying by Venus in December 1962.

These anniversaries highlight key discoveries, milestones, and events that shaped the field of astronomy and space exploration.

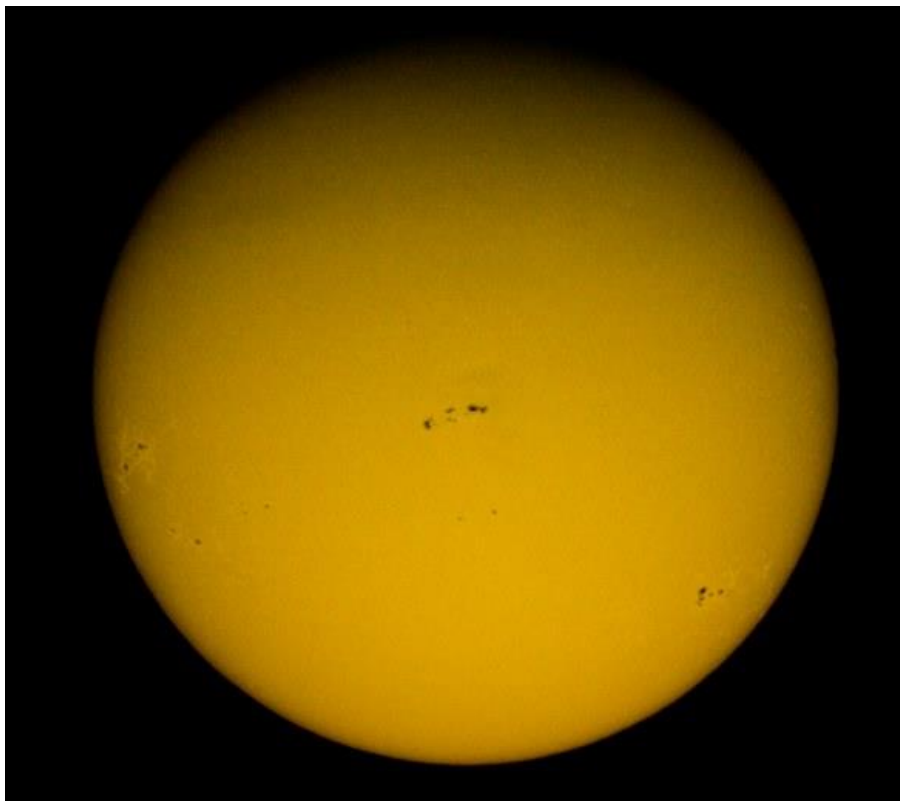
## The Moon



New Moon		24th July
1st Quarter		1st August
Full Moon		9th August
Last Quarter		16th August
New Moon		23rd August

Full Moon Phase Calendar details (Here<sup>3</sup>)

## The Sun



### Solar Activity Highlights for August 2025

1. **Solar Cycle Peak Continues** - August 2025 remains within the peak phase of Solar Cycle 25, which NOAA/NASA had forecast to peak around July 2025 (+/- 8 months) with a smoothed sunspot number near 115

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<sup>3</sup><https://www.moongiant.com/calendar/august/2025/>

crondallweather.co.uk+2nasa.gov+2nypost.com+2<sup>4</sup>ntrs.nasa.gov+11swpc.noaa.gov+11swpc.noaa.gov+11<sup>5</sup>.

2. **Increased Sunspot Activity** Expect higher frequencies of sunspots and M-class to occasional X-class flares en.wikipedia.org+2nasa.gov+2weather.gov+2<sup>6</sup>.

### What to Watch For

- 🌙 **Sunspots:** High-resolution solar filters or solar scopes reveal increasingly active sunspot groups.
- **Flares & CMEs:** Use solar telescopes or online observatories to track M- and X-class flares.
- **Aurora Potential:** Monitor auroral alerts (Kp index  $\geq 5$ ) following any CME hits—northern UK may catch rare Northern Lights.
- **Radio Effects:** Amateur radio operators might experience shortwave disruptions during geomagnetic or flare events.

Aurora Watch UK is a great phone app, that can alert you when the auroral activity is increasing,

Always use the correct solar filters when viewing the Sun, if you have any doubt, please contact us or talk to one of the club committee members.

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<sup>4</sup>[https://www.nasa.gov/news-release/solar-cycle-25-is-here-nasa-noaa-scientists-explain-what-that-means/?utm\\_source=chatgpt.com](https://www.nasa.gov/news-release/solar-cycle-25-is-here-nasa-noaa-scientists-explain-what-that-means/?utm_source=chatgpt.com)

<sup>5</sup>[https://www.swpc.noaa.gov/products/solar-cycle-progression?utm\\_source=chatgpt.com](https://www.swpc.noaa.gov/products/solar-cycle-progression?utm_source=chatgpt.com)

<sup>6</sup>[https://www.nasa.gov/news-release/solar-cycle-25-is-here-nasa-noaa-scientists-explain-what-that-means/?utm\\_source=chatgpt.com](https://www.nasa.gov/news-release/solar-cycle-25-is-here-nasa-noaa-scientists-explain-what-that-means/?utm_source=chatgpt.com)



## The Planets



Here's a summary of the positions and visibility of the planets in August 2025 as seen from the UK:

**CAUTION** - This time of the year some of the planets are close to the sun. Looking at the sun through any none specialist equipment is very dangerous.

### Evening Sky (After Sunset)

- **Mars:** Visible in early evenings, situated in Virgo, but setting around 10.30pm
- **Jupiter:** Rising around 2.30am in Gemini, should be bright as Mag -2. Conjoining with Venus on the 12th.

- **Saturn:** Rising around 9.30pm in Pisces. The rings are still edge on to Earth.
- **Uranus:** Rises around 11.30pm in Taurus, magnitude 5.7 so will be visible through binoculars.
- **Neptune:** Visible near Saturn in Pisces, rising around 9.30pm and visible all night.
- **Pluto:** Was at opposition last month in Capricorn, and is still visible from dark until 2.00am



#### **Morning Sky (Before Sunrise)**

- **Mercury:** Visible early in the morning around the 19th, rising at 4.15am
- **Venus:** A brilliant “morning star,” rising about 2.30am . In conjunction with Jupiter on the 12th.

August offers a wonderful window to see both inner and outer planets, especially if you enjoy predawn sky-watch sessions.



## Comets, Meteors & Asteroids



### Meteor Showers

August offers excellent opportunities for **meteor shower observing**, including:

- **August Perseids** (July 17 – August 24), peaking on the 12th - 13th August with ~150 meteors/hour. It may be trickier to see with a full moon around the same time, so if you can head to darker skies that would be beneficial to seeing more meteors. More great information [HERE](#)<sup>7</sup>

### Asteroids

No bright asteroids visible with the naked eye this month

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<sup>7</sup><https://www.rmg.co.uk/stories/space-astronomy/perseid-meteor-shower-guide-uk-when-where-to-see>



### Binocular/Telescope level Asteroids

- **2 Pallas** reaches opposition on 10th August in the constellation Delphinus —peaks around **magnitude +9.4**on. It will require good binoculars or a telescope to see.
- **89 Julia** also reaching opposition on the 10th August, in the constellation Aquarius. Reaches about **+8.5**, meaning good binoculars or a telescope will be needed to see it.

### Comets

In **August 2025**, no comets **bright enough for naked-eye visibility** are expected to be visible from the UK.

### Deep Sky Targets





## For Telescopes & Astrophotography

August is with us and by mid month should be dark by 9pm, we will get some better astronomical levels of darkness (as can be seen [HERE](#)<sup>8</sup>) with the summer milky way prominent

As discussed at the What's Up talk last Thursday here are some great targets to have a go at. Good luck all!

Target Name followed by a Google Search Link to take a look.

- **Lagoon Nebula (M8)** – A bright emission nebula in Sagittarius, visible even in small scopes.  [View Images](#)<sup>9</sup>
- **Trifid Nebula (M20)** – Near M8, this nebula combines emission, reflection, and dark nebulae.  [View Images](#)<sup>10</sup>
- **Omega Nebula (M17)** – Also known as the Swan Nebula, a bright and detailed emission nebula.  [View Images](#)<sup>11</sup>
- **M27 (Dumbbell Nebula)** – In Vulpecula, bright and easy to spot.  [View Images](#)<sup>12</sup>
- **M57 (Ring Nebula)** – In Lyra, a classic planetary nebula, small but bright.  [View Images](#)<sup>13</sup>
- **Andromeda Galaxy (M31)** – Rising earlier each night, it's a great late-night target.  [View Images](#)<sup>14</sup>
- **M33 (Triangulum Galaxy)** – A bit fainter than M31, but visible under dark skies.  [View Images](#)<sup>15</sup>
- **Sagittarius Star Cloud (M24)** – A dense, bright patch of the Milky Way, great in binoculars or wide-field telescopes.  [View Images](#)<sup>16</sup>
- **The Dark Shark Nebula (LDN 1235)** – A faint dark nebula in Cepheus, resembling a shark in Astro photos.  [View Images](#)<sup>17</sup>

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<sup>8</sup><https://www.timeanddate.com/sun/uk/walsall?month=8&year=2025>

<sup>9</sup><https://www.google.com/search?q=Lagoon+Nebula+M8+astrophoto&tbm=isch>

<sup>10</sup><https://www.google.com/search?q=Trifid+Nebula+M20+astrophoto&tbm=isch>

<sup>11</sup><https://www.google.com/search?q=Omega+Nebula+M17+astrophoto&tbm=isch>


<sup>12</sup><https://www.google.com/search?q=Dumbbell+Nebula+M27+astrophoto&tbm=isch>

<sup>13</sup><https://www.google.com/search?q=Ring+Nebula+M57+astrophoto&tbm=isch>

<sup>14</sup><https://www.google.com/search?q=Andromeda+Galaxy+M31+astrophoto&tbm=isch>

<sup>15</sup><https://www.google.com/search?q=Triangulum+Galaxy+M33+astrophoto&tbm=isch>

<sup>16</sup><https://www.google.com/search?q=Sagittarius+Star+Cloud+M24+astrophoto&tbm=isch>

- **Stephan's Quintet** – A compact group of interacting galaxies in Pegasus.  View Images<sup>18</sup>

### For Binoculars

With 7x50 wide angle binoculars sweep the milky-Way from Cassiopeia through Perseus and Auriga to Procyon. Enjoy the Hyades and Pleiades at the same time.

### Bright Star Clusters

C42 Search<sup>19</sup>

M15 Search<sup>20</sup>

M2 Search<sup>21</sup>

C47 Search<sup>22</sup>

M14 Search<sup>23</sup>

NGC 6760 Search<sup>24</sup>

NGC 6366 Search<sup>25</sup>

NGC 6712 Search<sup>26</sup>

### The Moon

Ideal for exploring craters, mare, and mountains at any phase.

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<sup>17</sup><https://www.google.com/search?q=Dark+Shark+Nebula+LDN+1235+astrophoto&tbm=isch>

<sup>18</sup><https://www.google.com/search?q=Stephan's+Quintet+galaxies+astrophoto&tbm=isch>

<sup>19</sup><https://www.google.com/search?q=Astrobin+C42>

<sup>20</sup><https://www.google.com/search?q=Astrobin+M15>

<sup>21</sup><https://www.google.com/search?q=Astrobin+M2>

<sup>22</sup><https://www.google.com/search?q=Astrobin+C47>

<sup>23</sup><https://www.google.com/search?q=Astrobin+M14>

<sup>24</sup><https://www.google.com/search?q=Astrobin+NGC+6760>

<sup>25</sup><https://www.google.com/search?q=Astrobin+NGC+6366>

<sup>26</sup><https://www.google.com/search?q=Astrobin+NGC+6712>



Hi guys we are back again for another look at articles I hope you will be interested in. I have included some more science articles and summaries this time. It's often worth having a look at the abstracts and the conclusions as they are more detailed than the summaries if you are interested in a subject. The body of the article can be a bit bogged down with maths but have ago some are very readable cheers bill

## Sun

Magnetic sun stronger now

<https://apple.news/A1lIXK1GzRp2R89gs8aye8Q>

## Earth

New satellite sensor will map earth to 1 cm resolution opening up studies into land geometry changes

Powerful satellite will map changes on Earth in stunning detail — down to a centimetre<sup>27</sup>

Light pollution

A Few Bright Buildings Light Up the Entire Night Sky - Universe Today<sup>28</sup>

Mission will look at magnetic field reconnection events

NASA Launches TRACERS Mission to Study Space Weather - Sky & Telescope<sup>29</sup>

## Moon

How do we deal with the problem of lunar dust it's abrasive and harmful

Lunar Dust Mitigation Requires Collaboration And Lots of Tests - Universe Today<sup>30</sup>

Far side radio telescope looks to be a goer

Scientists and engineers craft radio telescope bound for the moon<sup>31</sup>

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<sup>27</sup>[https://www.nature.com/articles/d41586-025-02402-3?utm\\_source=Live+Audience&utm\\_campaign=63ef8fc047-nature-briefing-weekly-20250731&utm\\_medium=email&utm\\_term=0\\_-33f35e09ea-49516740](https://www.nature.com/articles/d41586-025-02402-3?utm_source=Live+Audience&utm_campaign=63ef8fc047-nature-briefing-weekly-20250731&utm_medium=email&utm_term=0_-33f35e09ea-49516740)

<sup>28</sup><https://www.universetoday.com/articles/a-few-bright-buildings-light-up-the-entire-night-sky>

<sup>29</sup>[https://skyandtelescope.org/astronomy-news/nasa-launches-tracers-mission-to-study-space-weather/?utm\\_source=cc&utm\\_medium=newsletter](https://skyandtelescope.org/astronomy-news/nasa-launches-tracers-mission-to-study-space-weather/?utm_source=cc&utm_medium=newsletter)

<sup>30</sup><https://www.universetoday.com/articles/lunar-dust-mitigation-requires-collaboration-and-lots-of-tests>



Chang'e 5 looks to have found evidence that the moon's mantle lasted longer than we thought

A shallow mantle source for the Chang'e 5 lavas reveals how top-down heating prolonged lunar magmatism | Science Advances<sup>32</sup>

Summary below

Lava Existed in the Moon's Subsurface Longer than Previously Thought - Universe Today<sup>33</sup>

Lava tubes collapse over time and some produce entrances that look like portholes. These are the way we could get into the tubes to explore and use as habitats. AI learning has discovered 2 new ones from images

New candidate cave entrances on the Moon found using deep learning - ScienceDirect<sup>34</sup>

## **Planetary**

Heat sources on planets change ideas about formation

A Hidden Heat Source on Uranus Just Changed What We Know About Planets<sup>35</sup>

Multiple sources of carbon dioxide on and around Saturn's moons

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<sup>31</sup><https://phys.org/news/2025-07-scientists-craft-radio-telescope-bound.html>

<sup>32</sup><https://www.science.org/doi/10.1126/sciadv.adr1486>

<sup>33</sup><https://www.universetoday.com/articles/lava-existed-in-the-moons-subsurface-longer-than-previously-thought>

<sup>34</sup>[https://www.sciencedirect.com/science/article/pii/S0019103525002222?dgcid=rss\\_sd\\_all](https://www.sciencedirect.com/science/article/pii/S0019103525002222?dgcid=rss_sd_all)

<sup>35</sup><https://scitechdaily.com/a-hidden-heat-source-on-uranus-just-changed-what-we-know-about-planets/>

[2506.19921] A JWST study of CO<sub>2</sub> on the satellites of Saturn<sup>36</sup>

Summary below

JWST Reveals Four Distinct CO<sub>2</sub> Types on Saturn's Moons - Universe Today<sup>37</sup>

Exploring other planets requires a rover. On earth we have our gravity and know how soils and sand behave. This changes in lower gravity fields and we have to allow for this

Robotic space rovers keep getting stuck. UW engineers have figured out why | EurekAlert!<sup>38</sup>

## **Asteroids**

Quaoar has a system of rings which JWST

Has observed. There are constraints on the orbits of the rings with defined resonance of 6 to 1 with its moon weywot

This article shows recent research into the study of the rings from a stellar occultation and shows differences in the pitch of the rings from one side to the other

Constraints on Quaoar's Rings and Atmosphere from JWST/NIRCam Observations of a Stellar Occultation - IOPscience<sup>39</sup>

## **Comets**

L/3 has been found and will whip between earth and Mars

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<sup>36</sup><https://arxiv.org/abs/2506.19921>

<sup>37</sup><https://www.universetoday.com/articles/a-jwst-study-of-co-2-on-the-satellites-of-saturn>

<sup>38</sup><https://www.eurekalert.org/news-releases/1092587>

<sup>39</sup><https://iopscience.iop.org/article/10.3847/PSJ/addd02>

Rare find: interstellar visitor seen blazing through our Solar System<sup>40</sup>

ESA - ESA tracks rare interstellar comet<sup>41</sup>

Interstellar Comet 3I/ATLAS: What We Know Now - Sky & Telescope<sup>42</sup>

## **Exoplanet**

Proto star has a disk with silicone oxide as a component

Birth of a solar system caught 'on camera' for first time<sup>43</sup>

Are some of the exo planets found bigger than we think ?

Some Planets Are Bigger Than We Thought - Sky & Telescope<sup>44</sup>

## **Astro biology**

Precursors to complex surfers and amino acids found in proto planetary discs

New Findings Indicate that the Origin of Life Started in Space - Universe Today<sup>45</sup>

Articles below

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<sup>40</sup>[https://www.nature.com/articles/d41586-025-02141-5?utm\\_source=Live+Audience&utm\\_campaign=fe4bffa22c-nature-briefing-daily-20250704&utm\\_medium=email&utm\\_term=0\\_-33f35e09ea-49516740](https://www.nature.com/articles/d41586-025-02141-5?utm_source=Live+Audience&utm_campaign=fe4bffa22c-nature-briefing-daily-20250704&utm_medium=email&utm_term=0_-33f35e09ea-49516740)

<sup>41</sup>[https://www.esa.int/Space\\_Safety/Planetary\\_Defence/ESA\\_tracks\\_rare\\_interstellar\\_comet](https://www.esa.int/Space_Safety/Planetary_Defence/ESA_tracks_rare_interstellar_comet)

<sup>42</sup><https://skyandtelescope.org/astronomy-news/interstellar-comet-3i-atlas-what-we-know-now/>

<sup>43</sup>[https://www.nature.com/articles/d41586-025-02245-y?WT.ec\\_id=NATURE-202507](https://www.nature.com/articles/d41586-025-02245-y?WT.ec_id=NATURE-202507)

<sup>44</sup>[https://skyandtelescope.org/astronomy-news/some-planets-are-bigger-than-we-thought/?utm\\_source=cc&utm\\_medium=newsletter](https://skyandtelescope.org/astronomy-news/some-planets-are-bigger-than-we-thought/?utm_source=cc&utm_medium=newsletter)

<sup>45</sup><https://www.universetoday.com/articles/new-findings-indicate-that-the-origin-of-life-started-in-space>



A Deep Search for Complex Organic Molecules toward the Protoplanetary Disk of V883 Ori - IOPscience<sup>46</sup>

Ly $\alpha$  Processing of Solid-state Ethanolamine: Potential Precursors to Sugar and Peptide Derivatives - IOPscience<sup>47</sup>

## **Milky Way**

Betelgeuse has a companion?

Betelgeuse's Companion Has Been Found — Or Has It? - Sky & Telescope<sup>48</sup>

Betelgeuse's long-lost companion emerges from the shadows<sup>49</sup>

## **Galaxies**

Direct collapse black holes

A Candidate Direct-Collapse Black Hole in the Infinity Galaxy - Sky & Telescope<sup>50</sup>

## **Cosmology**

New mini neutrino detector will open up studies

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<sup>46</sup><https://iopscience.iop.org/article/10.3847/1538-3881/adc998>

<sup>47</sup><https://iopscience.iop.org/article/10.3847/1538-4357/adb486>

<sup>48</sup>[https://skyandtelescope.org/astronomy-news/betelgeuses-companion-has-been-found-or-has-it/?utm\\_source=cc&utm\\_medium=newsletter](https://skyandtelescope.org/astronomy-news/betelgeuses-companion-has-been-found-or-has-it/?utm_source=cc&utm_medium=newsletter)

<sup>49</sup>[https://www.astronomy.com/science/betelgeuses-long-lost-companion-emerges-from-the-shadows/?oly\\_enc\\_id=1572E7199645H3F](https://www.astronomy.com/science/betelgeuses-long-lost-companion-emerges-from-the-shadows/?oly_enc_id=1572E7199645H3F)

<sup>50</sup><https://skyandtelescope.org/astronomy-news/a-candidate-direct-collapse-black-hole-in-the-infinity-galaxy/>

Miniature neutrino detector promises to test laws of physics<sup>51</sup>

Biggest black hole merger yet

New Black Hole Merger Breaks Record - Sky & Telescope<sup>52</sup>

Observations of a 23 million light-year-long gaseous filament and 39 bursts of radio waves are helping astronomers chart the universe's largest-scale structures.

Astronomers Map the Cosmic Web - Sky & Telescope<sup>53</sup>

## Telescopes

30 meter telescope could have a new home

<https://www.nature.com/articles/d41586-025-01230-9>

## Observing

FAS NRWS LETTER

No 145 August 2025.pdf - Google Drive<sup>54</sup>

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<sup>51</sup>[https://www.nature.com/articles/d41586-025-02404-1?utm\\_source=Live+Audience&utm\\_campaign=63ef8fc047-nature-briefing-weekly-20250731&utm\\_medium=email&utm\\_term=0\\_-33f35e09ea-49516740](https://www.nature.com/articles/d41586-025-02404-1?utm_source=Live+Audience&utm_campaign=63ef8fc047-nature-briefing-weekly-20250731&utm_medium=email&utm_term=0_-33f35e09ea-49516740)

<sup>52</sup><https://skyandtelescope.org/astronomy-news/new-black-hole-merger-breaks-record/>

<sup>53</sup><https://skyandtelescope.org/astronomy-news/astronomers-map-the-cosmic-web/>

<sup>54</sup>[https://drive.google.com/file/d/17rw89C8fH5a6VKmMkynhbniBoDNeO\\_EB/view](https://drive.google.com/file/d/17rw89C8fH5a6VKmMkynhbniBoDNeO_EB/view)

The astronomical union has recommended reflectivity levels for satellites but are being ignored

Satellite Constellations Are Too Bright for Astronomy - Sky & Telescope<sup>55</sup>

A summary of using filters for imaging

The basics of astroimaging filters<sup>56</sup>

## **Space flight**

Deep solar system internet

ESA - Europe's first deep-space optical communication link<sup>57</sup>

Trump nasa cuts push back by senate

Senate appropriations committee pushes back on NASA budget<sup>58</sup>

Gemini between mercury and Apollo

Behind the scenes of Project Gemini: Interview with Jeffrey Kluger<sup>59</sup>

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<sup>55</sup>[https://skyandtelescope.org/astronomy-news/satellite-constellations-are-too-bright-for-astronomy/?utm\\_source=cc&utm\\_medium=newsletter](https://skyandtelescope.org/astronomy-news/satellite-constellations-are-too-bright-for-astronomy/?utm_source=cc&utm_medium=newsletter)

<sup>56</sup>[https://www.astronomy.com/observing/astroimaging-filter-basics/?oly\\_enc\\_id=1572E7199645H3F](https://www.astronomy.com/observing/astroimaging-filter-basics/?oly_enc_id=1572E7199645H3F)

<sup>57</sup>[https://www.esa.int/Enabling\\_Support/Operations/Europe's\\_first\\_deep-space\\_optical\\_communication\\_link](https://www.esa.int/Enabling_Support/Operations/Europe's_first_deep-space_optical_communication_link)

<sup>58</sup>[https://www.astronomy.com/science/senate-appropriations-committee-pushes-back-on-2026-nasa-budget-cuts/?oly\\_enc\\_id=1572E7199645H3F](https://www.astronomy.com/science/senate-appropriations-committee-pushes-back-on-2026-nasa-budget-cuts/?oly_enc_id=1572E7199645H3F)



The Gemini project

<https://youtu.be/BI1r7PTbxeA?si=g8-BiyDcifQAYDJm>

Schedules, links and contacts



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<sup>59</sup>[https://www.astronomy.com/space-exploration/an-interview-with-jeff-kluger/?oly\\_enc\\_id=1572E7199645H3F](https://www.astronomy.com/space-exploration/an-interview-with-jeff-kluger/?oly_enc_id=1572E7199645H3F)

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- *TV - BBC Sky at night (Here<sup>60</sup>)*
  - *Upcoming Space Launches (Here<sup>61</sup>)*
    - *Moon Phases (Here<sup>62</sup>)*
    - *Dark Sky Calendar (Here<sup>63</sup>)*
  - *Clear Outside - Astronomy weather forecast (Here<sup>64</sup>)*
    - *Cloud radar map (Here<sup>65</sup>)*
    - *Beginners guide (Here<sup>66</sup>)*
  - *Walsall Astronomy Facebook Group (Here<sup>67</sup>)*
  - *Walsall Astronomy Website (Here<sup>68</sup>)*
  - *Contact: Info@walsallastro.com<sup>69</sup>*
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<sup>60</sup><https://www.bbc.co.uk/programmes/b006mk7h>

<sup>61</sup><https://spaceflightnow.com/launch-schedule/>

<sup>62</sup><https://www.moongiant.com/calendar/november/2024/>

<sup>63</sup><https://gostargazing.co.uk/dark-sky-calendar/>

<sup>64</sup><https://clearoutside.com/forecast/50.70/-3.52>

<sup>65</sup><https://www.yourweather.co.uk/weather-maps/nubes-ukn.html>

<sup>66</sup><https://www.skyatnightmagazine.com/advice/astronomy-for-beginners>

<sup>67</sup><https://www.facebook.com/groups/251803274136388>

<sup>68</sup><https://walsallastro.com/>

<sup>69</sup><mailto:Info@walsallastro.com>