JANUS
THE NEWSLETTER OF EWELL ASTRONOMICAL SOCIETY

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Important Reminder:

To allow sufficient time to compile Janus and place it on the EAS Website by the 1st of the month any submissions for publication are required at least 3 days before the end of the month. Any items received after this date will be held over until the following month.

Editorial

Welcome to the first edition of Janus for 2026, and the beginning of a new year. As mentioned in last month's editorial, the first meeting of the new year will be on Friday 9 January when Phil Halper from the Royal Astronomical Society will talk on "The Battle of the Big Bang – The New Tales of Our Cosmic Origins". He's also written a book with the same title - reviewed in Astronomy Now, which also published an article on the Society's Solar System Walk

Last month's AGM was not particularly well attended – 23 in-person attendees plus 2 on Zoom represents only a third of the membership, but with no lecture, the level of attendance was perhaps not surprising. Thinking positively, given that the entire committee was re-elected un-opposed, although the turn-out was disappointing, it presumably indicates that members are happy with the way things are run – certainly there were no complaints!

December saw the Winter Solstice, marking the shortest day of the year, and the start of a gradual lengthening of the days. Sadly, the weather for most of the month was not particularly good for observing – not that many of the planets were observable anyway – but some members took the opportunity of a few clear nights to photograph a selection of deep sky objects.

As was the case last month, this month's edition of Janus contains a mixture of features. Martin Howe is again presenting his "Object of the Month", while John Pillar has departed from his recent theme of planetary geology to contribute a fascinating historically themed piece entitled "Messier and his inspirational catalogue" – no prizes for guessing what it's about!!

Ron Johnson planned to give an update on the status of the Maurice Gavin Observatory at the AGM, but time constraints precluded this, so his update has been included in this newsletter along with some images of the Moon and the Sun which he has also contributed.

John

In this edition:

skyUpdate
What's up this month?

The Solar System January

MERCURY: recently passed behind the Sun at superior solar conjunction. It begins the month not observable – it will reach its highest point in the sky during daytime and is no higher than 0° above the horizon at dawn. By the end of the month, it is still not readily observable since it is very close to the Sun, at a separation of only 6° from it.

VENUS: recently passed behind the Sun at superior solar conjunction. It begins the month not observable since it is very close to the Sun, at a separation of only 1° from it. By the end of the month, it remains not readily observable since it is still very close to the Sun, at a separation of only 5° from it.

MARS: will soon pass behind the Sun at solar conjunction. It begins the month not observable since it is very close to the Sun, at a separation of only 2° from it. By the end it is still not readily observable since it is very close to the Sun, at a separation of only 5° from it.

JUPITER: begins the month approaching opposition. Visible in the morning sky, it becomes accessible around 17:47, when it reaches an altitude of 7° above the NE horizon. It will then reach its highest point in the sky at 00:48, 60° above the S horizon before being lost to dawn twilight around 07:38, 9° above the NW horizon. By the end of the month, having now passed opposition, it is visible in the evening sky, becoming accessible around 17:10 GMT, 23° above the E horizon, as dusk fades to darkness. Reaching its highest point in the sky at 22:30, 61° above the S horizon, it will continue to be observable until around 05:35, when it sinks below 7° above the NW horizon.

SATURN: begins the month as an early evening object, now receding into evening twilight. Visible in the evening sky, it becomes accessible around 16:55, 34° above the S horizon, as dusk fades to darkness. Reaching its highest point in the sky at 17:03, 34° above the S horizon, it will continue to be observable until around 21:26, when it sinks below 11° above the W horizon. By the end of the month, it will soon pass behind the Sun at solar conjunction. It will become visible at around 17:37, 27° above the SW horizon, as dusk fades to darkness, and will then sink towards the horizon, setting at 21:04.

URANUS: is currently an early evening object. Visible in the evening sky, it begins the month becoming accessible around 17:31, 38° above the E horizon, as dusk fades to darkness. Reaching its highest point in the sky at 20:56, 58° above the S horizon, it will continue to be observable until around 02:15, when it sinks below 21° above the W horizon. By the end of the month, now receding into evening twilight, but still visible in the evening sky, it becomes accessible around 18:10, 56° above the S horizon, as dusk fades to darkness. It will then reach its highest point in the sky at 18:56, 57° above the S horizon, and will continue to be observable until around 00:14, when it sinks below 21° above the W horizon.

NEPTUNE: begins the month as an early evening object, now receding into evening twilight. Becoming visible at around 17:31, 36° above the S horizon, as dusk fades to darkness. It will then sink towards the horizon, before setting at 23:10. By the end of the month, it will soon pass behind the Sun at solar conjunction. Becoming visible at around 18:10, 25° above the SW horizon, as dusk fades to darkness, it will then sink towards the horizon, before setting at 21:15.

Notable Events:

Some observations will require a telescope, whilst others will be visible with the naked eye. More information at: *https://in-the-sky.org*

January

1 The Moon at perigee

2 Lunar occultation of Beta Tauri
Asteroid 40 Harmonia at opposition
The cluster Messier 41 is well placed

3 Full Moon
The Moon at aphelion
The Earth at perihelion
Conjunction of the Moon and Jupiter
Quadrantid meteor shower 2026
Close approach of the Moon and Jupiter

4 Comet 24P/Schaumasse passes perigee

5 Close approach of the Moon and M44

6 Mercury at aphelion
Venus at superior solar conjunction
Lunar occultation of Regulus

7 Comet 24P/Schaumasse reaches peak brightness

8 Comet 24P/Schaumasse passes perihelion

9 Jupiter at perigee
Mars at solar conjunction

10 Jupiter at opposition
Moon at Last Quarter

13 The Moon at apogee

14 Lunar occultation of Antares

15 The cluster Messier 47 is well placed
NGC 2403 is well placed

17 The Moon at perihelion
The cluster NGC 2451 is well placed

18 New Moon

19 γ-Ursae Minorid meteor shower 2026

20 Comet C/2024 E1 (Wierzchos) passes perihelion
The cluster NGC 2516 is well placed

21 Mercury at superior solar conjunction

22 Venus at aphelion

23 Close approach of the Moon, Saturn and Neptune
134340 Pluto at solar conjunction
Conjunction of the Moon and Saturn
Asteroid 44 Nysa at opposition
The cluster NGC 2547 is well placed

26 Moon at First Quarter
Comet C/2024 E1 (Wierzchos) reaches peak brightness

27 Close approach of the Moon and M45

29 Lunar occultation of Beta Tauri
The Moon at perigee

31 Conjunction of the Moon and Jupiter
Close approach of the Moon and Jupiter
The Beehive cluster is well placed
The Omicron Velorum cluster is well placed
The cluster IC 2395 is well placed

February

1 Close approach of the Moon and M44
Full Moon

3 Lunar occultation of Regulus
The Moon at aphelion

4 Uranus ends retrograde motion

8 α-Centaurid meteor shower 2026
NGC 2808 is well placed

9 Moon at Last Quarter

10 The Moon at apogee

11 Lunar occultation of Antares

13 Lunar occultation of Sigma Sagittarii

15 The Moon at perihelion

16 Conjunction of Saturn and Neptune

17 Comet C/2024 E1 (Wierzchos) passes perigee
New Moon
Annular solar eclipse

18 Conjunction of the Moon and Mercury
Close approach of the Moon and Mercury
Lunar occultation of Mercury

19 Mercury at perihelion
Mercury at greatest elongation east
Mercury at dichotomy
Messier 81 is well placed

20 Mercury at highest altitude in evening sky
Conjunction of the Moon and Saturn

21 The cluster NGC 3114 is well placed

24 Close approach of the Moon and M45
Moon at First Quarter
The Moon at perigee

25 Lunar occultation of Beta Tauri

26 Conjunction of Venus and Mercury

27 Conjunction of the Moon and Jupiter
Close approach of the Moon and Jupiter
Asteroid 7 Iris at opposition
The cluster IC 2581 is well placed

28 Close approach of the Moon and M44

Collected Observations (and thoughts) – Gary Walker

The AGM Night – Posted 13 December

Yesterday, we had the Society's AGM. As usual, we had no Speaker for this meeting. Only 23 people attended in person, plus 2 more on Zoom!

Some of the AGM business was concerned with the Solar System Walk at Nonsuch Park, opened on 25 October. The consensus was that the Society had had a good year!

After the AGM was over, we had refreshments provided by the group. I had some mulled wine! Casper's wife again provided some delicious cakes, and someone had brought mince pies!

Afterwards, we had the quiz; like last year, we were divided into 4 teams, whilst Anita asked each team a question. I was in Team D. We got 8 points, but some teams got 9 or more! Unfortunately, we didn't have enough time to finish the quiz, as we had to vacate the library, so time ran out! This meant that there was also no time for the Usual "Sky at Night" presentation!

Then we had the Raffle. Prizes included bottles of wine, an astronomical calendar, a box of shortbread biscuits, and 5 giant balloons, featuring planets such as Jupiter, which must have been left over from the official opening ceremony of the Nonsuch Park Solar System Walk!

As usual, we had the hilarious (and absurd) phenomenon of Committee Members and Anita repeatedly winning, so they had to draw another ticket! Anita "won" at least 4 times!

Amazingly enough, I did not win until the end; having said that, my ticket only came up for the last balloon, which was a pathetic shrunken one, so I didn't bother to accept it!

Although the AGM took place as planned, it was against a background of the News and other media telling us all about a new, more virulent strain of Flu hitting the hospitals, starting a month earlier than usual! They were saying that it was the worst outbreak of Flu since the Covid Pandemic.

Some schools were reported to be temporarily closed, and the wearing of face masks was "advised" in some hospitals! This all sounds worryingly similar - and all too familiar – although I don't know if the Government will impose any restrictions on us, or not.

However, the Media are probably, as usual, going into hyperbole and making it seem worse than it actually is!

When leaving the meeting, Christine Beavan received an Aurora Alert on her phone, saying that an Aurora was expected around 10.15pm that evening. Unfortunately, of course, it was overcast at the time!

The Return of the King – Posted 18 December

Jupiter is now rising in the evening skies at a reasonable time, and I observed it on 16-17 December. The Equatorial Belts both appeared at about the same width and prominence.

Jupiter is still in a line with Pollux and Castor, (The "Twins").

I could see that Io definitely appeared orange in colour, unlike the other Galilean Moons, which appear white or yellowish. That must be because Io is a highly volcanic moon and is orange or reddish in colour!

Comet 31/Atlas – Posted 19 December

The interstellar comet, 31/ATLAS, passed closest to the Earth today, at a distance of 170 million miles. It appeared on the BBC News at lunchtime (inevitably as the final item!).
Irritatingly, it has been the focus of conspiracy theorists claiming that it is not

behaving like normal comets, so must be an alien spacecraft! There are a lot of social media sites, with some showing vastly exaggerated views of how the comet will look! In reality, of course, it was faint, at about 11th magnitude, so only visible through a good telescope!

The Solstice – Posted 21 December

Today is, of course, the Winter Solstice, with the shortest day and the longest night!

Inevitably, for a few weeks now, the Sun has been noticeably very low in the Southern sky, even at Midday, so it was harder to observe it from my garden, without being blocked by trees and hedges!

I expect that all in the Society will feel the despair that, after this Solstice, the nights will be getting shorter, meaning less and less observing time!

Saturn's icy moon Enceladus is an attractive target in the search for life – new research

Acknowledgement: This article was written by Flynn Ames, PhD candidate, Meteorology, University of Reading and was first published in THE CONVERSATION on 19 December 2025. It is republished in full under a Creative Commons Licence. The original article, with additional links and images can be found here: *https://theconversation.com/saturns-icy-moon-enceladus-is-an-attractive-target-in-the-search-for-life-new-research-270694*

A small, icy moon of Saturn called Enceladus is one of the prime targets in the search for life elsewhere in the solar system. A new study strengthens the case for Enceladus being a habitable world.

The data for those new research findings comes from the Cassini spacecraft, which orbited Saturn from 2004-2017. In 2005, Cassini discovered geyser-like plumes of water vapour and ice grains erupting continuously out of cracks in Enceladus' icy shell.

In the latest study, Nozair Khawaja, from the Free University of Berlin, and his team set out to re-analyse a Cassini sample of material from Enceladus' south pole.

Most analyses of solid particles from Enceladus' plumes had been done on Saturn's E-ring. The E-ring is an outer diffuse ring in the majestic ring system that surrounds the planet. It is continuously replenished with material from Enceladus' plumes. But this material is not fresh – and exposure to radiation in space can alter its characteristics.

The younger material analysed by Khawaja and colleagues was sampled by Cassini during a particularly fast flyby over Enceladus' south pole. The use of freshly ejected plume material guaranteed the removal of any possible interference from radiation.

So, what do these and other analyses of plume samples tell us about Enceladus? Early Cassini samples were found to contain sodium salts, suggesting the plumes are fed by an underground liquid water ocean in contact with a rocky bottom. Later observations of Enceladus' "wobble" (slight shifts in its rotation) relative to Saturn demonstrated that its icy exterior shell is probably completely detached from the rocky core below.

This means that Enceladus' underground ocean (sandwiched between the ice and rock) is global, extending across the entire moon. The ocean is likely sustained by tidal flexing, where the varying gravitational tug of Saturn on Enceladus stretches and squeezes it, causing Enceladus to heat up and preventing the ocean from freezing and preventing the ocean from freezing.

The ability to (albeit, indirectly) sample the ocean has permitted a more comprehensive investigation of Enceladus' habitability – that is, whether Enceladus contains the necessary ingredients for lif
e as we know it (namely a suitable energy source and mix of chemical elements).

Sampling the plumes

Analysis of Cassini's plume samples was made possible by a technique called "mass spectrometry". The process began with the high velocity impact between Cassini (flying at speeds of kilometres per second) and the solid plume material it collected.

This broke up the material smaller, charged fragments. After impact, an instrument exposed the fragments to an electric field which moved them towards a detector.

The timing of impact of the chemical fragments with the detector was then used to determine their mass and charge. Scientists could then "piece the jigsaw" back together to figure out the identity of the molecules that the fragments once formed.

When attempting to determine habitability, there are certain molecules to look out for in the data. Organics are simply molecules that contain carbon. Because life on Earth is fundamentally carbon-based, detecting carbon-bearing molecules of any form is a good start.

Organics have been detected with confidence in plume material, including "amines", which can be precursors to amino acids (which in turn, can be precursors to proteins). Much larger "macromolecules" have also been seen. But their exact identity is currently uncertain owing to the limitations of the Cassini instrumentation.

Carbon is one of the "CHNOPS" elements (carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulphur) which form the majority of atoms within living organisms on Earth. Apart from sulphur, these have all been detected with confidence in plume material.

Mass spectrometry can also indicate the types of energy sources available within an ocean. Photosynthesis, the primary energy source for life on Earth, is unlikely to be viable within Enceladus because its ocean is buried under kilometres of ice. Photosynthesis requires light and the ocean is almost certainly dark.

Luckily, there are other ways that life can extract energy from its environment. In the late 1970s, vast ecosystems were discovered at Earth's ocean depths, around hydrothermal vents – fissures on the ocean floor from which hot water rich in minerals emerges.

The microbes surviving around hydrothermal vents are forms of “chemosynthetic” life. They use the various substances found in hydrothermal waters to perform chemical reactions to get the energy they need.

It appears that ingredients for some chemosynthetic pathways such as carbon dioxide and hydrogen are available in sufficient quantities within Enceladus’ ocean to theoretically make it a viable energy source.

In fact, the amount of hydrogen in plume material is so large that it would require a present-day source in Enceladus’ ocean to explain it, most likely hydrothermal vents.

Recent study

Of course, we need to be careful in using plume material to infer what is inside the ocean. Processes during the formation of the plume (as it travels through the ice into space), may either dilute or concentrate certain substances. The harsh radiation could also cause chemicals within the plumes to react, leaving the material unrepresentative of the ocean it came from.

By analysing the freshly ejected plume material, the latest study removes that problem. Owing to the higher speed, samples obtained during this flyby should have fragmented in a way that would allow more types of molecules to become visible in the data.

And the samples collected did include new substances, as well as some that were already known, confirming that they came from within Enceladus, not from radiative alteration. Some of the newly detected substances further hint at a hydrothermal origin.

With knowledge of Enceladus’ potential habitability, the European Space Agency is planning a mission, launching in the 2040s, that will perform flybys of Enceladus, and possibly even orbit and land on its surface.

With an upgraded suite of instruments, the mission will aim to look for evidence of life within plume material. If life resides around hydrothermal systems at Enceladus’ depths, its journey to the ocean top and out into space may be long and arduous.

Yet recent work by Fabian Klenner from the University of Washington and colleagues, showed that even a single bacterial cell within an ice grain could be detectable via mass spectrometry. Thus, the hope remains that if life resides within Enceladus, the evidence of it may be floating in space waiting for us to come and see it.

Object of the month – The Pacman Nebula (NGC 281) - Martin Howe

The Pacman Nebula, officially designated NGC 281, is a striking emission nebula located in the constellation of Cepheus. The Pacman nebula is situated very close to the border with Cassiopeia, and so is currently riding very high in in the sky in the north-to-northwest at this time of year. It is approximately 9,500 light-years from Earth and has an apparent size of about 20 x 30 arcminutes in the sky – comparable to the angular size of the Moon. Its unofficial name comes from its distinctive shape, resembling the iconic Pac-Man character.

NGC 281 is primarily composed of ionized hydrogen gas, which emits a characteristic red glow when energised by intense ultraviolet radiation from nearby hot, young stars. Within the nebula is the open star cluster, IC 1590. This cluster is comprised of massive blue stars, only a few million years old. The radiation from these massive stars is responsible for sculpting the surrounding gas, giving the nebula its distinctive form.

One of the distinguishing features of the Pacman Nebula is the presence of dark dust globules embedded within the glowing gas (for example, like the one forming the eye of the Pac-Man). These dense knots of cold material, known as Bok globules, are thought to be sites of future star formation. Gravity causes these clumps to collapse, eventually becoming dense enough to trigger new stars.

As the nebula radiates strongly in hydrogen-alpha emissions, it is a prime target for narrow band imaging from London's light polluted skies. Using a narrowband hydrogen-alpha pass filter other wavelengths of light, including light pollution, can be blocked, leaving only the wavelength of the hydrogen-alpha emission to reach our camera sensors. The resulting image can then be merged with images through other narrowband filters such as oxygen-III and sulphur-II to create a synthetic colour image. The image below was taken with a 127mm refractor and an ATIK314L mono CCD camera from southwest London.

Messier and his inspirational catalogue - John Pillar

Figure 1: Charles Messier, painted in 1771 by Nicolas Anseaume.

Around a year ago I decided that a fun challenge for 2025 would be to image all of Messier's catalogue objects… galaxies, star clusters, and nebulae. Well…. It's crunch time… and I've managed 89 of the 110 (See catalogue at the end of this piece). The ones I missed were below the rooflines of my neighbours, and are mostly in Sagittarius, Scorpio and Ophiuchus. These are visible in the southern summer skies – and although I managed to catch some of the southern summer objects from Ranmore – too often the clouds didn't play ball. On many occasions the skies would be clear overhead in the North Downs, but clouds building up over the English Channel would obscure the low southern horizon.

Nevertheless – it's been a fun challenge, and hopefully the remaining 21 will sneak above the clouds in 2026 … and the rest will always benefit from more imaging time as well. I've included a montage of all the Messier objects I managed to capture in the year at the end of this article – many are not the best and need more time and better processing, but even so, I hope the collection highlights the fabulous diversity and beauty of the 110 objects in the Messier Catalogue.

Charles Messier was a French astronomer (1730-1817), born into a wealthy family in Badonviller, a town a little south of Montreux in eastern France. Charles' father, Nicholas, worked in the administration of the local ruling Prince, maintaining records and preserving treasures seized by the authorities and courts. The demise of the local princedom in 1751 forced the family to move from Badonviller and Charles took an opportunity to start work as an understudy to Joseph Delisle, astronomer of the Navy. Apparently, he got the job because of his neat handwriting, and he was set to work making hand copies of documents and maps.

Charles' interest in astronomy was stimulated as a young teenager by the appearance of a great six-tailed comet in 1744 and by a partial solar eclipse in 1748, and in Paris Charles had the chance to join Delisle in his observatory, learning how to use the telescopes and make accurate measurements and records of astronomical observations.

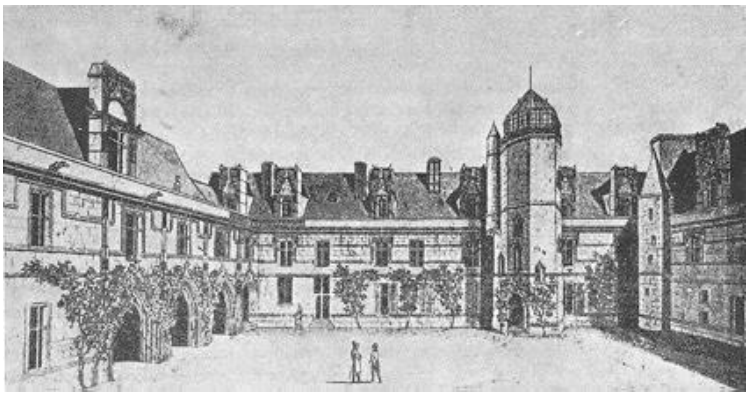


Figure 2: Hotel de Cluny in Messier's days- the observatory is on top of the tower.

Delisle's observatory was in a tower in the Hotel de Cluny in the centre of Paris near the Seine (Figure 2). The observatory was a pyramidal structure of wood and glass built by Delisle in 1748 and used by Messier until his death in 1817. The observatory was removed early in the 1800's though the tower still stands. The Hotel de Cluny is open to

visit as a museum today, but apparently not much is made of the importance and contribution Messier made to astronomy from the observatory on the site.

Clearly, even in the middle of Paris in the 1800s the light pollution wasn't an issue (the 'City of Light' description of Paris came a little bit later), though I suspect smoke from the many chimneys and mist from the river must have been a problem at times.

Messier's first documented observation was of the Mercury transit in 1753, and 21 years later Messier published the first version of his catalogue of 45 objects. The final version of his catalogue was produced in 1781, containing 103 objects. The list has now grown to 110 because astronomers and historians have found notes of 7 additional objects that were observed by Messier or his assistant, Mechain, shortly after the final catalogue was published.

Comet Halley

Edmond Halley had realised that the great comets observed in 1531, 1607, 1682 were one and the same and he predicted its return in 1758, a period of 75.5 years. Halley's prediction was further refined by astronomer mathematicians Joseph Lalande and Madame Hortense Lepaute, who worked out in detail the effects of the gravitational pull of Jupiter and Saturn on the path of the comet… these calculations were announced in November 1958 and predicted a delay to the perihelion (closest approach to the sun) till April 1759.

Edmond Halley was an English astrophysicist and mathematician, and the 2nd Astronomer Royal. He had an observatory on the island of St Helena 1676-77. Halley helped fund the printing of Isaac Newtons's Principia, and he used and validated Newtons' laws of gravity to predict the periodicity of Halley's comet.

Messier started looking for Comet Halley in 1757 at the request of Delisle (before Lalande/Lepaute had finished their calculations). However, because Delisle's basis for the comets return date was flawed he unfortunately instructed Messier to look for the comet in the wrong place. In his search, however, Messier did observe another comet (first observed earlier that year) and he also observed another 'comet-like' blur of light in Taurus (many degrees away from where the comet was actually first seen).

Messier recorded objects using RA and Dec coordinates, but whereas today we commonly use values referenced to year 2000 (epoch J2000), Messier used coordinates based on recent years, e.g. 1758 for M1, 1760 for M2 etc. All his values have to be recalculated into a modern reference frame. Also, I found that Stellarium and Kstars didn't have historical comet data, 'TheSkyLive' site had trajectory data for 1759.

Figure 3: Messier 1, the Crab Nebula in Taurus

This patch of light had the appearance of a comet but didn't move across the sky – Messier catalogued this object on 12 September 1758 as Messier No1, now known as the Crab Nebula. It was this object that motivated Messier to both seek comets and, also catalogue nebulous objects that might be mistaken for comets.

Comet Halley was eventually first seen on Christmas Day 1758, by a German farmer, Johann Georg Palitzch (amateur citizen science in action 😊). Messier independently observed the comet on 21January 1759, and found Delisle's calculated prediction to be incorrect. Delisle initially refused permission for Messier to publish his findings, and Messier, because Delisle was his boss, and also provided him somewhere to live, didn't make anything of it. It wasn't until 1760 and the cataloguing of a 2nd nebula (M2), that Messier dared show the correct location of Halley's comet (Figure 4, courtesy of Henk Bril, https://pbase.com/henkbril/messier, who has a website with an absolutely super collection of historical maps).

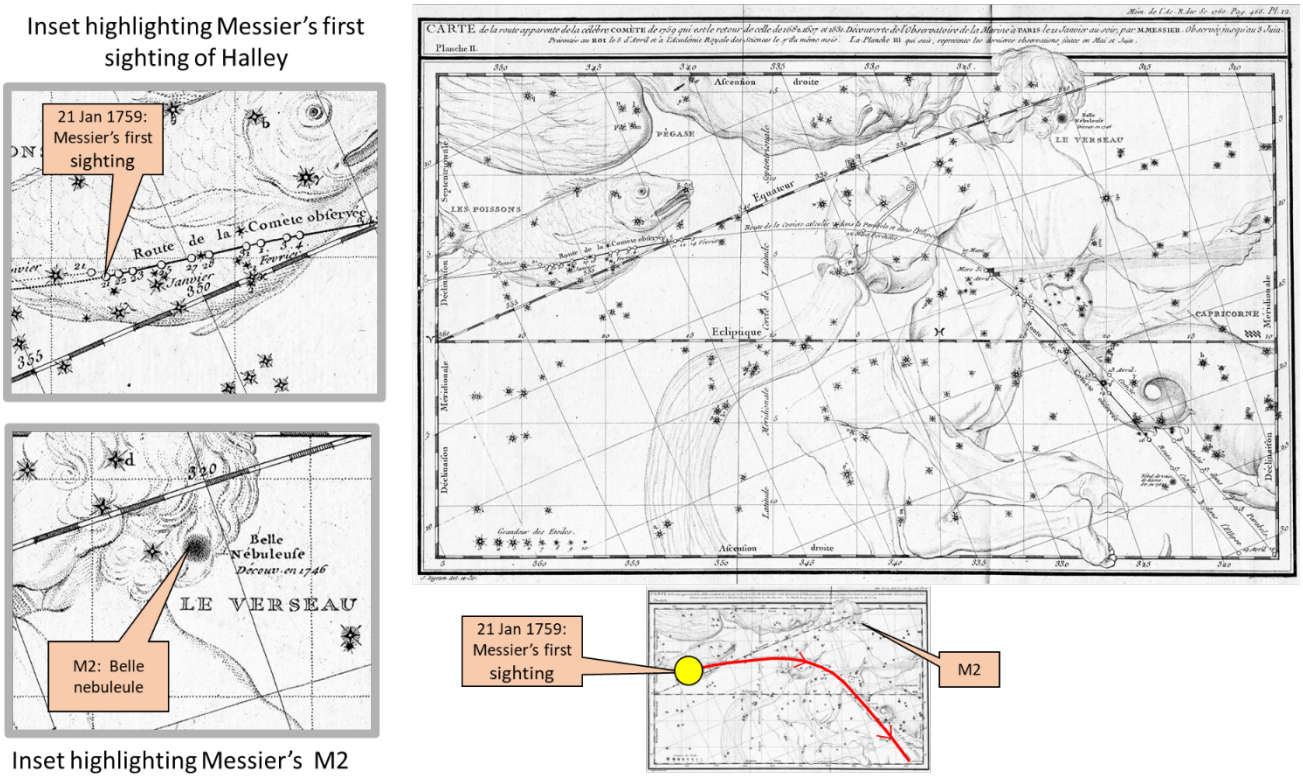


Figure 4: Messier's star chart showing his first sighting of comet Halley, and its observed trajectory. Also shown is the location of M2. Courtesy of Henk Bril.

Henk Bril also permitted the inclusion here of a follow-on star chart by Messier, charting the path of the comet through to 3 June 1759 (Figure 5).

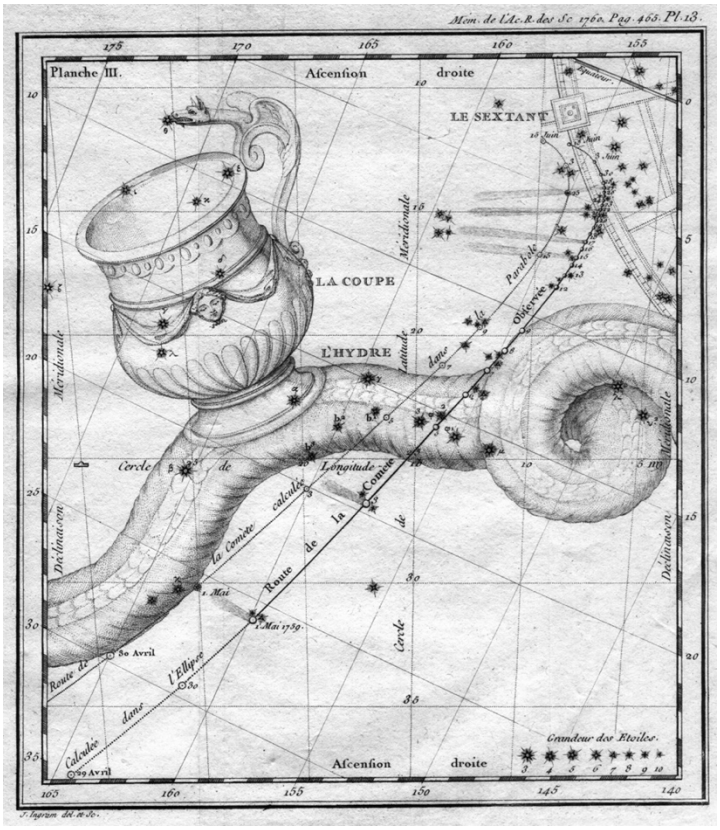


Figure 5: Messier star chart showing the continuation of comet Halley, through 30th April to early June, 1759. Courtesy of Henk Bril.

Messier pushed on with renewed vigour after publishing his observation of M2 and comet Halley – possibly incentivised by his treatment by Delisle (now aging, and who ultimately retired in 1765), and he discovered M3 in 1764, his first actual new find.

By the end of 1764 Messier's catalogue had grown to 40 entries, he was made a member of the London Royal Society. Over the next few years his catalogue continued to grow, and Messier published the first edition of 45 entries in 1769. In addition, he had independently discovered 6 new comets plus 5 jointly with other workers. To his great satisfaction he was elected into the Paris *Académie Royale des Sciences* in 1770 - an accolade that had eluded him for many years.

Also in 1770, Messier married his long-time friend and fellow astronomer, Marie-Françoise de Vermauchampt and they moved into the Hotel de Cluny building in 1771, Messier having been promoted to the role of Astronomer of the Navy and granted a significant salary.

On 15 March 1772, Marie gave birth to a son but, sadly, she died shortly after, and the baby died a few days later, and, although Messier continued observing through this personal tragedy, he took a 3-month vacation to Lorraine. In the following years the pace of his work and observations slowed – his next discovery was made 5 years later… M53. The catalogued number grew to M79 by the end of 1780 with the help of an accomplice, Pierre Méchain.

Charles Messier primarily used the plates from John Flamsteed's 1729, Atlas Céleste, which were updated by a French engineer, Nicolas Fortin, in 1766.

In December 1780 Messier and Méchain seemed to re-energise, and they started searching for new nebulae with renewed vigour – by May 1781 the catalogue had grown to 103 objects. In the years following, it appears that Méchain became more instrumental in detailing new observations and although Messier continued to search for comets, and continued to add personal notes to his catalogue (including important updates to the positions of several catalogue entries), he became increasingly aware that William Herschel and his sister were systematically mapping the skies using significantly more powerful telescopes. Herschel had procured a copy of Messier's catalogue in 1781 and, subsequently, in September 1782, Heschel made his first discovery –

NGC7009, the Saturn Nebula. By the end of 1786 Herschel's catalogue contained 1000 objects, growing to around 2500 by 1802.

Figure 6: M45, the Pleiades Cluster

The French Revolution began in 1789, and in the years following, Messier lost his job, his position and salary. When peace was restored in 1794, Messier and Méchain entered the new National Institute of Sciences and Arts and resumed their astronomical observations – these included the minor planets Ceres and Pallas, various occultations, and Messier's final comet co-discovery on 12 July 1801, comet 1801 Pons.

In 1815, Messier suffered a stroke which left him partially paralyzed. After partial recovery, he attended one or two more academy meetings, but his everyday life became more and more difficult. On the night of 11 -12 April 1817, Charles Messier passed away in his 87th year, in his home in Paris.

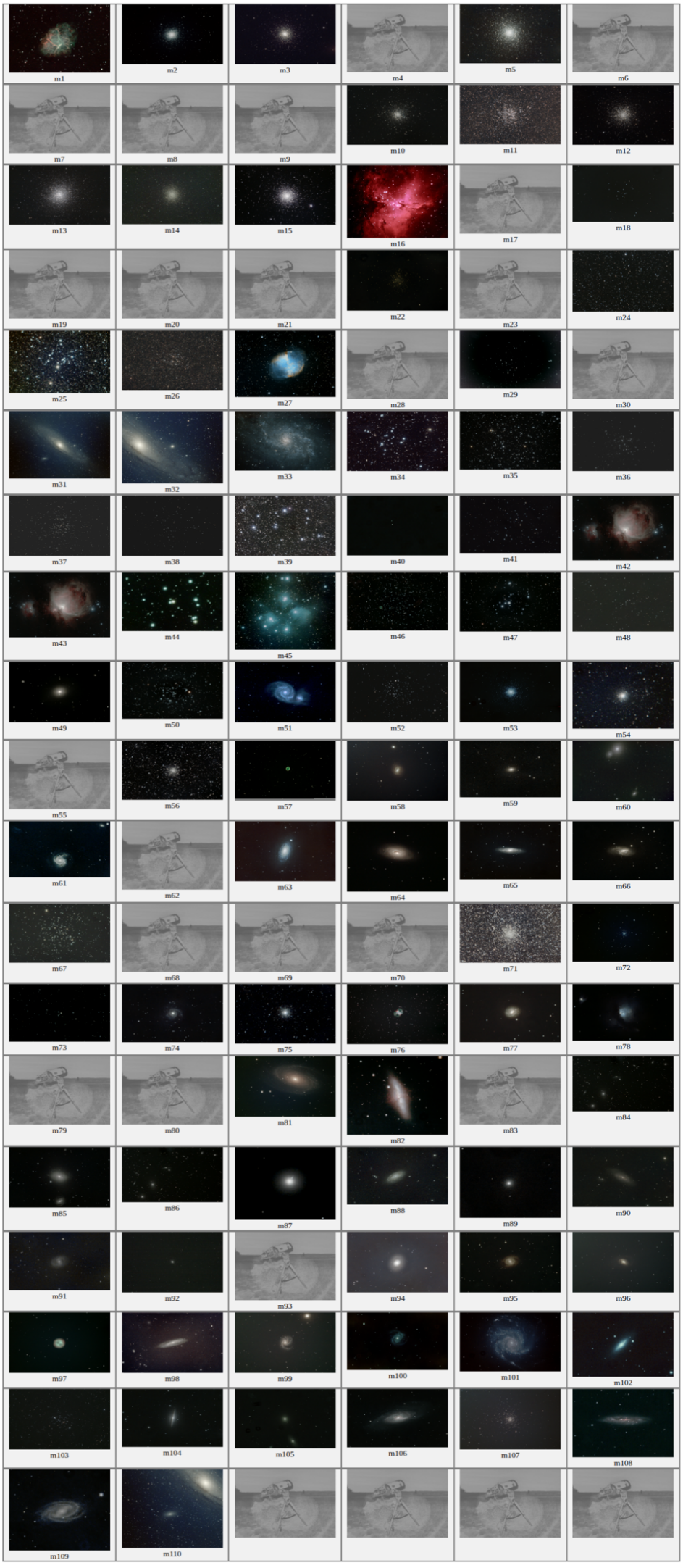
Messier made such a significant contribution – his motivation may be summed up by this note in the *Connaissance des Temps* for the 1800/1801.

"What caused me to undertake the catalogue was the nebula I discovered above the southern horn of Taurus on September 12, 1758, whilst observing the comet of that year. This nebula had such a resemblance to a comet in its form and brightness that I endeavoured to find others, so that astronomers would no more confuse these same nebulae with comets just beginning to appear. I observed further with suitable refractors for the discovery of comets, and this is the purpose I had in mind in compiling the catalogue.

After me, the celebrated Herschel published a catalogue of 2000 which he has observed. This unveiling the heavens, made with instruments of great aperture, does not help in the perusal of the sky for faint comets. Thus, my object is different from his, and I need only nebulae visible in a telescope of two feet [focal length]. Since the publication of my catalogue, I have observed still others: I will publish them in the future in the order of right ascension for the purpose of making them more easy to recognise and for those searching for comets to have less uncertainty."

Much of the information in these notes is taken from an online database devoted to Messier's life and work: *http://www.messier.seds.org/*

Messier Catalogue images



Maurice Gavin Observatory – Brief Update – Ron Johnson

I was asked to give an update on the progress of the Maurice Gavin Observatory at the December meeting. Due to the overrun of the meeting this did not happen. So, I thought the next best option was to put an update in the next Janus.

16 October – School Governors meeting - They want to draw up a legal document to cover access and use of the proposed observatory by the School and Society.

This meant that it was not going to be possible to commence construction before the winter.

20 November – School Governors meeting – They confirmed their support for the project

Still no comment on providing any funding.

I have been back to the school and set them a deadline of the end of January to complete and agree the legal document. They have agreed to this.

Once the legal document is agreed we can then place an order for the observatory building, currently on 6 – 8 weeks delivery.

If we start construction mid-March (weather permitting) the foundations should be completed by the time the observatory building is available.

During January I will be meeting Tom Owen (the school's Property Manager) to discuss the logistics of carrying out the works, access, timing and temporary services required.

It is likely that a further meeting with the school's Finance Director will be necessary to discuss safety issues and DBS checks etc.

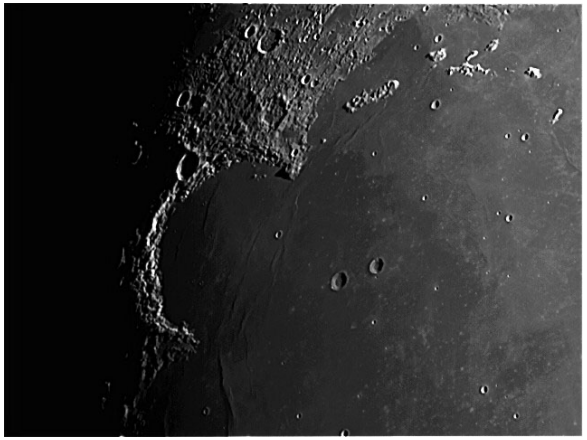
Funding - there is no sign so far that the school is willing to contribute any funding towards the project.

We are currently £2,500 short of the amount needed to complete the project.

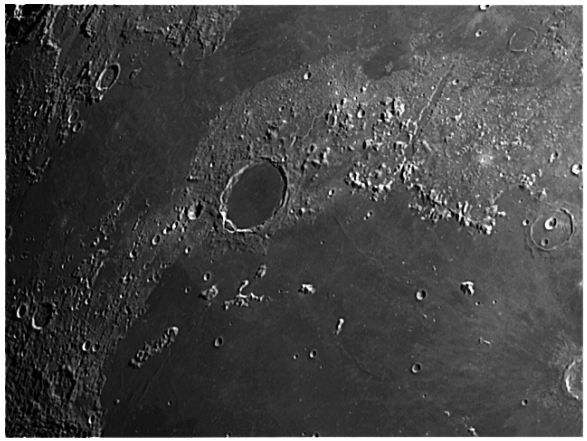
Martin Howe is negotiating with Counceller McCormack to see if it is possible to redirect the surplus funding the Solar System Walk to our observatory project. Approx. £1,300.

If the surplus funding is diverted to the observatory project the Society will make up the balance.

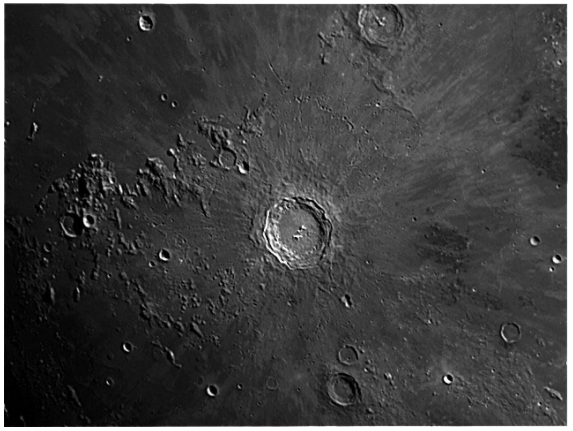
The Moon – Ron Johnson



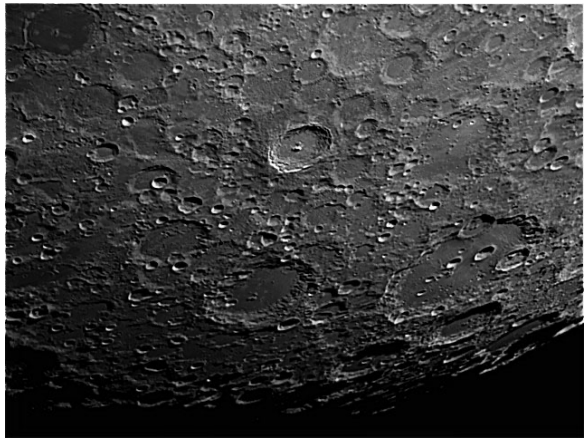
Sinus Iridum & Mare Imbrium



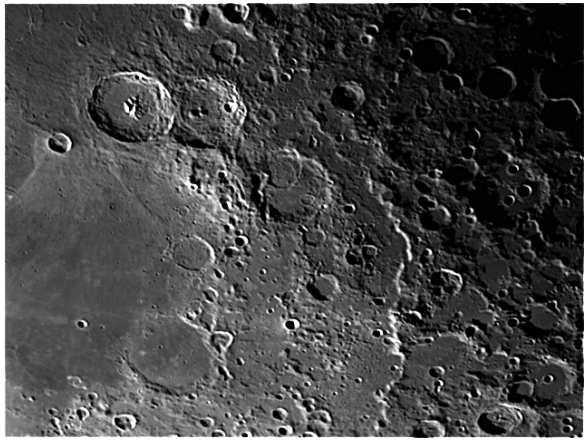
Plato (101km in diameter) & Vallis Alpes



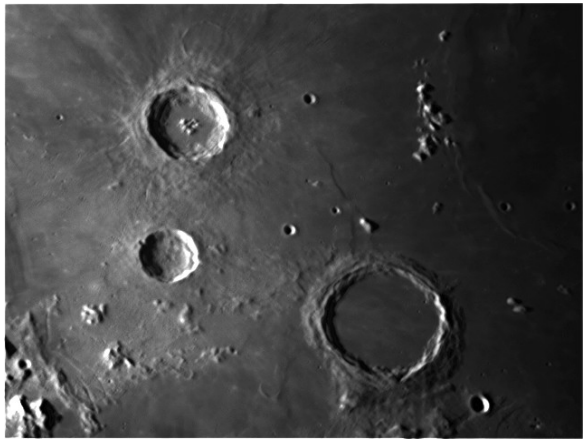
Copernicus (93km in diameter)



Clavius (225km in diameter)

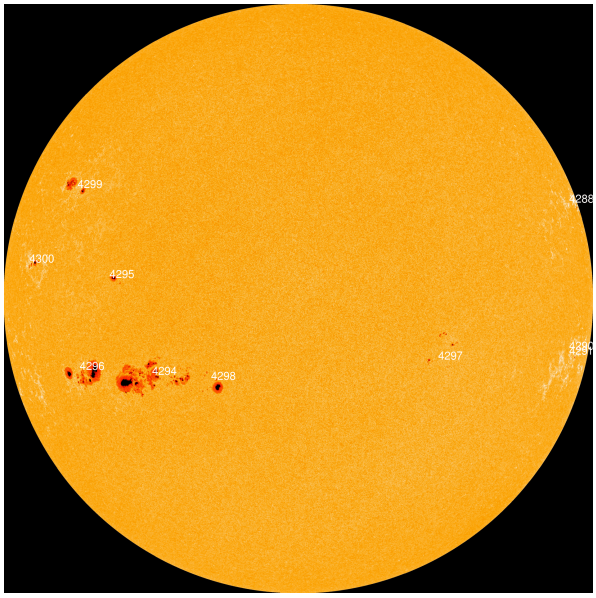


Theophilus (100km) Cyrillus (98km)
Catherina (100km)



Aristillus (55km) Autolycus (39km)
Archimedes (83km)

The Sun – Ron Johnson



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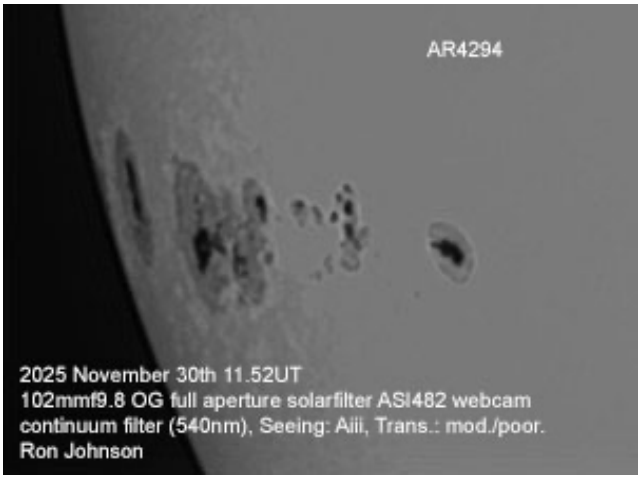
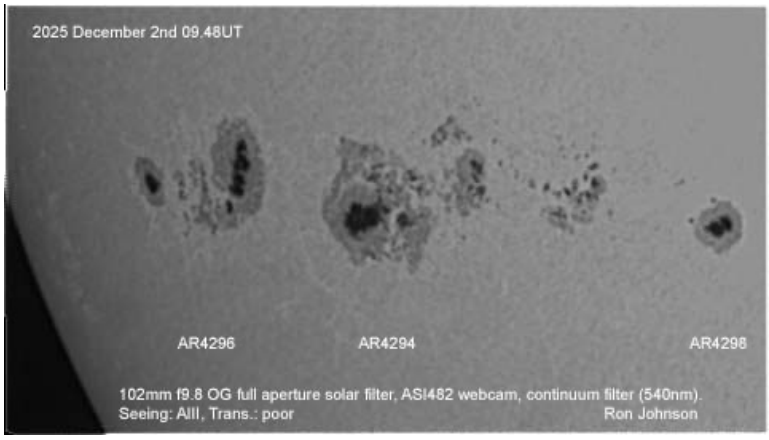
3 December 2025

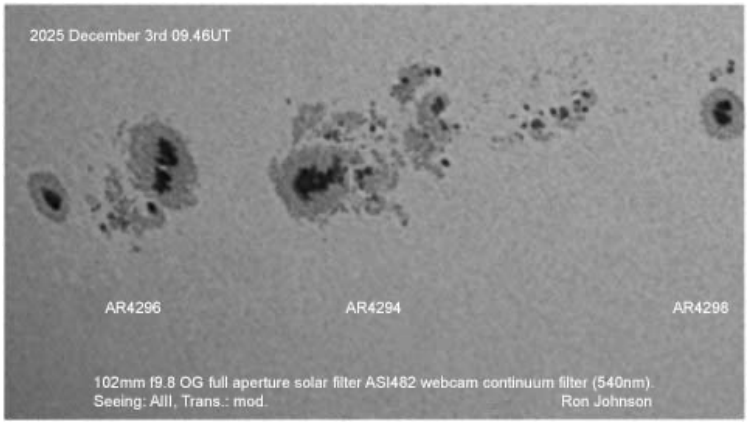
This is the largest sun spot group for at least the last ten years.
It is 180,000km end to end
At least five of the dark cores are individually larger than the Earth.



30 November 2025



2 December 2025



3 December 2025

Up Next:

NEXT MEETING: 8pm Friday 9 January – Nonsuch High School

Phil Halper from the Royal Astronomical Society will talk about the Battle of the Big Bang – The New Tales of Our Cosmic Origins.

Phil is the creator of the popular YouTube series Before the Big Bang, which has had several million views, and was previously journalist in residence at the Penn State Institute for Gravitation and the Cosmos. His astronomy images have been featured in major media outlets including The Washington Post, the BBC, and The Guardian, and he has published several papers in peer-reviewed journals.

As usual, there will also be a presentation on the sky at night for the coming month.

NEXT USER GROUP:

Suspended until further notice.

NEXT DENBIES OBSERVING SESSION:

The next sessions, allowing for moon rise & set times and cloud conditions, should be sometime around the new moon which is on 18 January.

The precise date and timings of any session will be advised by email and WhatsApp a few days in advance but should be within the period 15 – 21 January.

AD HOC OBSERVING AT WARREN FARM:

These will be at short notice when the weather is favourable, and may replace, or be additional to, sessions at Denbies. Please watch our WhatsApp feed for alerts