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December 2025 & January 2026 submissions required by 19 November.

UNIVERSE Correspondence and Contributions -

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Front Cover by Chi Chan: IC 4685 This group of nebulae was captured on 2023-06-16 from my backyard. They can be found connected to the M8 Lagoon Nebula complex, which is located just off the left of the image. IC 4685 is the emission nebula around the bright star 11 Sgr at the middle left of the image. Above the middle is the emission nebula NGC 6559 which is star-forming region. The small nebula located just above it is the planetary nebula PK006-02.1. The chain of dark nebulae LDN 210-214 running through IC 4685 to NGC 6559 is given the nickname Chinese Dragon Nebula by astronomers. Towards the bottom are the emission nebulae IC 1274 and IC 1275, separated by the dark nebula LDN 227. Equipment: Celestron Edge HD 9.25 with 0.7x reducer, Custom Scientific LRGB and 3nm Ha filters. Processing: PixInsight 1.8.9-1.x

Rear Cover by Ken Wallace: Two swallow chicks in their nest in the 'breezeway' at Wiruna, October 2025.

November Observer

By Geoff Smith

Daylight saving time began on the 5th of October, and all times given in this report are daylight saving times.

Planets in November

Mercury, after its greatest elongation east of the Sun in late October, is descending sunwards, passing 1.3° from **Mars** on the 13th, and reaching inferior conjunction the 20th. The planet then moves into a horizon-hugging appearance in the dawn sky, reaching greatest elongation west (21°) of the Sun in early December. **Venus** in the dawn sky is too close to the Sun for observation. **Jupiter** rises around midnight in Gemini. **Saturn** transits the meridian around 9pm midmonth for convenient viewing. The rings continue to narrow and will be inclined at just 0.4° midmonth. **Uranus**, in Taurus, comes into opposition on the 21st. Spotting Uranus at magnitude 5.6 with the naked eye is a good test of vision and atmospheric clarity. A 4" telescope should show it as a disc.

Moon Cycles

Full Moon	Third Quarter	New Moon	First Quarter
6 Nov 12:19 am	12 Nov 4:28 pm	20 Nov 5:47 pm	28 Nov 5:58 pm

Meteor Showers

The **Southern Taurids** are active from September 20 to November 20, 2025. They are a long-lasting shower that has several peaks during its activity period. The shower is active for more than two months but rarely produces more than five shower members per hour, even at maximum activity. The Taurids (both branches) are rich in fireballs and are often responsible for increased number of fireball reports from September through November. There are several peak periods, but the peak time for fireballs will be November 4–5. Unfortunately, there is a full Moon at this time.

The **Northern Taurids** are active from October 20 to December 10, 2025. This shower is much like the Southern Taurids, just active a bit later in the year. When the two showers are active simultaneously in late October and early November, there is sometimes a notable increase in the fireball activity. There seems to be a seven year periodicity with these fireballs. 2008 and 2015 both produced remarkable fireball activity.

The Northern Taurids will next peak in late evening on November 12. On this night, the third-quarter Moon will interfere with observations after midnight.

The **Leonid** meteor shower has produced some of the most spectacular meteor displays in history, but it is unfortunately periodic in nature.

The Leonids are active from November 6–30 this year with maximum before dawn on November 18. The Leonids are barely detectable on the beginning and ending dates, but observers are generally treated to displays of about 10 meteors per hour on the night of maximum. About every 33 years, the Leonids enter a phase of enhanced activity that accompanies the return of its parent comet. During these periods, rates can amount to hundreds and even thousands of meteors per hour. The last such enhanced period occurred during the period of 1998-2002 and the Leonids have been winding down ever since.

The Sky in November

As darkness falls, we see **Tucana** at transit with **Hydrus** and **Phoenix** following closely. In the east, **Orion** is nudging above the horizon, signalling the advent of the long hot days of summer. In the north, the Great Square of **Pegasus** is at transit. Now is a good time to catch **M31**, the Great Andromeda Galaxy a bit north-east of the Square of Pegasus and the Triangulum Galaxy **M33** south-east of M31. **Sculptor** with its large galaxies NGC253 and NGC55 is near the zenith in the early evening and there is another fine galaxy NGC247 in nearby **Cetus**.

Early morning risers will get good views of **Orion** and **Taurus** high in the eastern sky with **Jupiter** sliding between **Gemini** and **Cancer**. **Leo** is rising in the east. The northern sky offers views of **Auriga** and the southern part of **Perseus**.

Peculiar Galaxies for November

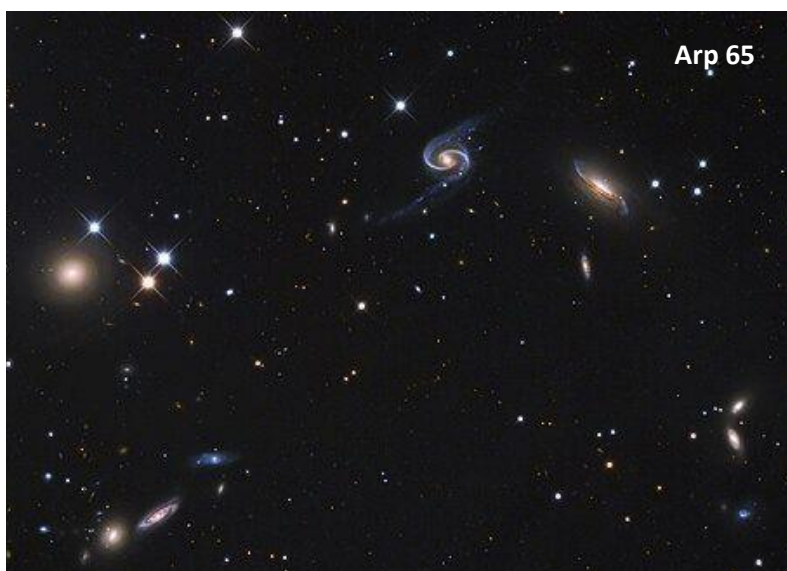
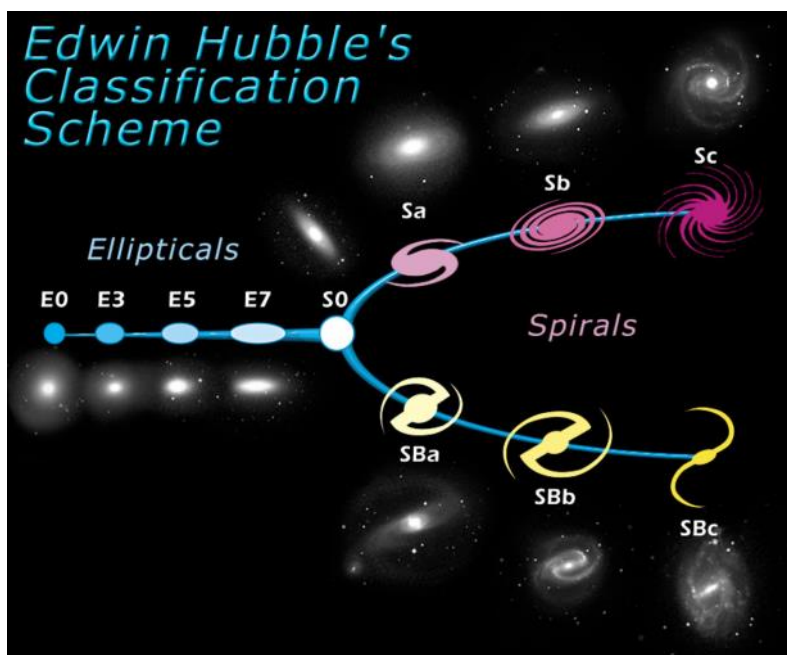
This month we will explore galaxies having some feature which differentiates them from run of the mill galaxies.

Galaxies are fundamental building blocks of the Universe. Some are simple, while others are very complex in structure. As one of the first steps towards a coherent theory of galaxy evolution Edwin Hubble, developed a classification scheme of galaxies in 1926. Although this scheme, also known as the Hubble tuning fork diagram, is now considered somewhat too simple, the basic ideas still hold. Hubble tended to dismiss as unimportant those galaxies that did not fit this scheme. In his book of 1936 (*The Realm of the Nebulae*) he writes:

The remaining irregulars might be arbitrarily placed in the regular sequence as highly peculiar objects, rather than in a separate class. Almost all of them require individual consideration, but, in view of their very limited numbers they can be neglected in preliminary surveys of nebular forms.

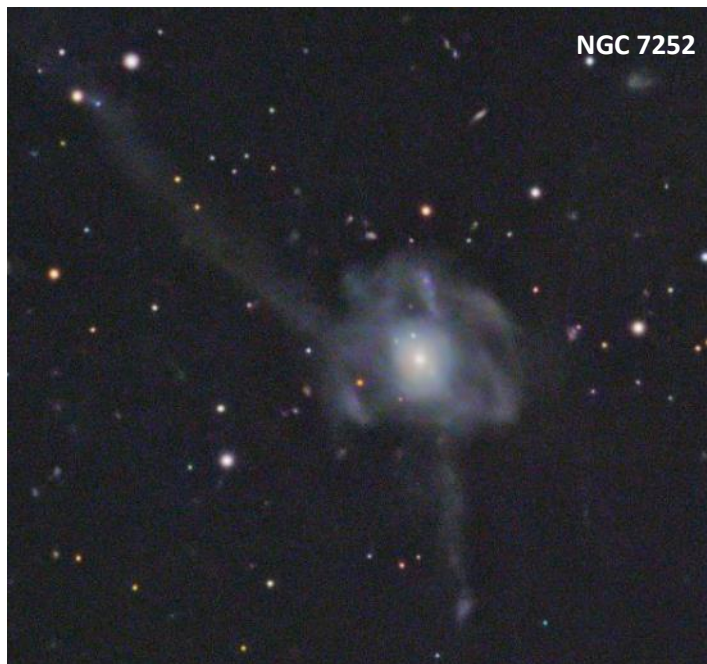
A font of information regarding peculiar galaxies can be found in the *Atlas of Peculiar Galaxies* published by Halton Arp in 1966. A total of 338 galaxies are presented in the atlas, which was originally published by the California Institute of Technology. The primary goal of the catalogue was to present photographs of examples of the different kinds of peculiar structures found among galaxies. For a very accessible guide to this catalogue and interesting discussions see *The Arp atlas of Peculiar Galaxies* by Jeff Kanipe and Dennis Webb (Reference 4).

Let me begin with **Arp 65**, a stunning group of galaxies. Unfortunately, it is quite far north, so you will have to catch it near transit time. Photographs will probably need 2–3 hour exposures for several nights. In this picture the face-on spiral galaxy is **PGC 1405**, while the



interacting spiral galaxy to its right is **NGC 93**. The large elliptical galaxy to the centre left is **NGC 83**. Down in the bottom left the tilted spiral galaxy is **NGC 85**. The field here is about 20' wide.

Next, we move to **Arp 226 (NGC 7252)**. This is a rather strange galaxy and a popular photographic target. In December 1953, U.S. President Dwight D. Eisenhower gave the "Atoms for Peace" speech. The speech was concerned about promoting nuclear power for peaceful purposes instead of nuclear weapons. Significant to the scientific community, the name of the speech was given to this peculiar galaxy inspired by its loop-like structure that resembles a classic diagram of an electron orbiting an atomic nucleus. Here is a picture that I took at the October new moon session at Wiruna. It is still a work in progress as it needs more exposure time. High-resolution images of the central region of NGC 7252 obtained with the Planetary Camera of the HST suggest that NGC 7252 is a prototypical example of a remnant of two merged disk galaxies.



NGC 1097 is at first sight seems to be a normal face-on spiral galaxy. However, take a look at the strange jets emanating from the galaxy on the left of the picture. The uppermost one has a right-angle bend—most peculiar. Deep photographs two more optical jets that appear to emanate from the nucleus. These are in fact composed of stars. NGC 1097 has a supermassive black hole at its centre, which is 140 million times the mass of the Sun. Around the central black hole is a glowing ring of star-forming regions with a network of gas and dust that spirals from the ring to the black hole. An inflow of material toward the central bar of the galaxy causes new stars to be created in the ring. The ring is approximately 5,000 light-years in diameter NGC 1097 has two satellite galaxies, NGC 1097A and NGC 1097B. Dwarf elliptical galaxy NGC 1097A is the larger of the two. It is a peculiar elliptical galaxy that orbits 42,000 light-years from

the centre of NGC 1097. Dwarf galaxy NGC 1097B (5 million solar masses), the outermost one, was discovered by its HI emission, and appears to be a typical dwarf irregular. Little else is known about it.

NGC 520, also known as the Flying Ghost, is a pair of colliding spiral galaxies about 105 million light-years away in the constellation Pisces. Simulations indicate this object consists of two galactic disks that began interacting about 300 million years ago. The system is still in an early stage of its merger, showing two separate velocity systems in the spectra, and two small tails. There are two galactic nuclei and the main galactic component is being viewed edge-on, making it fainter in the optical band. The secondary component is brighter but less massive than the main one, and is located to the northwest. Notice the dwarf galaxy UGC 957 located at the end of the northern tidal tail at the top of the picture. It may have resulted from the interaction of the two main galaxies.



List of Peculiar Galaxies for November

In the table below all times are AEDT, transit times are for 15 October at Wiruna, the Society's premier dark sky site (longitude 149° 46' 49" E). MA denotes the altitude of the object at transit time. Coordinates are for Epoch 2000.

In this list, the ACO catalogue refers to an extension of George O. Abell's original northern-hemisphere catalogue of galaxy clusters, compiled by Abell, Corwin, and Olowin. The APG catalogue is Arp's catalogue of peculiar galaxies.

Object	Alt name	Cons	RA	Dec	Mag	Size	Transit	MA	Notes
NGC 7678	APG 28	Peg	23h 28m 28s	22° 25' 17"	11.8	1.3'	22:23	35	Spiral with one heavy arm
NGC 70	APG 113	And	00h 18m 23s	30° 04' 46"	13.5	59"	23:13	27	Elliptical galaxy perturbing spirals
APG 65	NGC 91/93	And	00h 21m 54s	22° 23' 00"		5.2'	23:16	35	Interacting galaxies
NGC 7252	APG 226	Aqr	22h 20m 45s	-24° 40' 42"	12.1	52"	21:15	82	Amorphous, ill-defined spiral arms
NGC 7285	APG 93	Aqr	22h 28m 37s	-24° 50' 26"	11.9	2.4'	21:23	82	Spiral galaxy with biggish elliptical on one arm
NGC 520	APG 197	Psc	01h 24m 35s	03° 47' 33"	11.4	3.4'	0:15	53	Pair of colliding galaxies with dwarf companion
ACO 194	APG 133/308	Cet	01h 26m 01s	-01° 22' 02"			0:20	58	String of galaxies
IC 298	APG 147	Cet	03h 11m 19s	01° 18' 53"	14.6	39"	2:05	56	Ring galaxy—imaging challenge
NGC 1232	APG 41	Eri	03h 09m 46s	-20° 34' 45"	9.9	6.6'	2:04	78	Galaxy with anomalous red-shift "companion". See October Universe.
NGC 1097	APG 77	For	02h 46m 19s	-30° 16' 30"	9.5	10'	1:40	87	Spiral with companion and strange jets
APG 20	PGC 14892	Tau	04h 19m 54s	02° 05' 36"		40"	3:14	55	Three-armed spiral
NGC 1741	APG 259	Eri	05h 01m 38s	-04° 15' 25"	15	1.2'	3:55	61	Irregular clump of galaxies
NGC 1888	APG 123	Lep	05h 22m 34s	-11° 29' 58"	11.9	1.5'	4:16	68	Spiral next to elliptical

References and Credits:

1. *Astronomy 2025* by Wallace, Dawes and Northfield
2. *The Arp Atlas of Peculiar Galaxies* by Jeff Kanipe and Dennis Webb, <https://shopatsky.com/products/arp-atlas-of-peculiar-galaxies>
3. The constellation charts are from <http://www.iau.org/public/themes/constellations/> and were produced by the IAU in collaboration with *Sky & Telescope* magazine. Their use here is permitted under the creative commons licence <http://creativecommons.org/licenses/by/3.0/>
4. Meteor shower information from <https://www.imo.net/resources/calendar/>
5. Hubble tuning fork diagram from <https://esahubble.org/images/heic9902o/>
6. Arp 65 image from https://en.wikipedia.org/wiki/NGC_90
7. NGC 520 imaged by the *Cerro Tololo Inter-American Observatory*
8. All other photos by Geoff Smith

November Comets

By Greg Bryant

Comet C/2025 A6 (Lemmon): As noted in last month's column, this comet was discovered earlier this year on 3 January but wasn't expected to be brighter than 10th magnitude this month. Instead, since August, it has been considerably brighter than predicted, and brightening at a fairly rapid rate. Comet Lemmon reaches perihelion on 8 November at a distance of just 0.53 au from the Sun.

The northern hemisphere has been favoured with this comet's viewing but we get a brief chance now in the evening twilight skies as Lemmon moves south through Ophiuchus and perhaps fades from 4th to 5th magnitude. Alas, if evening twilight wasn't enough, we'll also have moonlight interfering during the first week, with Full Moon on 6 November. From that evening onward, though, there will be Moon-free time during nautical twilight and astronomical twilight to catch the comet before it sets during this brief window of opportunity.

With the comet at such low altitude, atmospheric extinction will also be a factor to consider as well as the twilight background. Into the 2nd week of November, comet Lemmon will sink rapidly back into the glare of the Sun and will be lost from view in the days after mid-month.

Comet C/2025 A6 (Lemmon)

Date	R.A.	Dec.	Delta (au)	R (au)	Elong. (°)	Mag.
1 Nov	16 ^h 23.6 ^m	+2° 47'	0.779	0.559	34	3.9
8 Nov	16 ^h 54.5 ^m	-8° 52'	1.006	0.530	31	4.2
15 Nov	17 ^h 07.2 ^m	-16° 38'	1.243	0.551	26	4.9
22 Nov	17 ^h 11.5 ^m	-22° 10'	1.455	0.615	19	5.8
29 Nov	17 ^h 12.6 ^m	-26° 21'	1.632	0.707	13	6.8
6 Dec	17 ^h 12.6 ^m	-29° 45'	1.773	0.814	9	7.7

Comet C/2025 R2 (SWAN): Pleasingly, this comet hung on and was 6th magnitude for much of late September and into October. More measurements of the comet's position showed that it was actually long-period, orbiting the Sun every 680 years. November sees the comet now fading from 7th to 10th magnitude as it moves through Aquarius and Pisces, setting just after midnight.

Comet C/2025 R2 (SWAN)

Date	R.A.	Dec.	Delta (au)	R (au)	Elong. (°)	Mag.
1 Nov	21 ^h 53.4 ^m	-1° 37'	0.365	1.174	111	7.4
8 Nov	22 ^h 46.8 ^m	+2° 21'	0.484	1.291	118	8.3
15 Nov	23 ^h 20.5 ^m	+4° 48'	0.621	1.407	120	9.2
22 Nov	23 ^h 44.2 ^m	+6° 29'	0.771	1.520	119	9.9
29 Nov	0 ^h 02.3 ^m	+7° 46'	0.929	1.631	117	10.5
6 Dec	0 ^h 17.2 ^m	+8° 49'	1.094	1.740	114	11.1



Comet C/2025 R2 (SWAN) was an easy target in October's evening sky. This "quick and dirty" image was taken on 11 October with a Seestar S50 telescope. Integrated exposure time 2 minutes. No additional processing.

Credit: Greg Bryant

DARK SKY *Traveler*


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September 2025 - By Alessandro Spina

We arrived on site late Friday afternoon, just in time for the rain to set in. It did not let up for the rest of the night, so our Friday night was spent chatting around the fire (I was told the previous two nights had seen excellent conditions). Saturday morning, we awoke to some blue sky and sun, which looked more promising. The site was busy with several additional members arriving throughout the day. Saturday evening marked the spring equinox dinner. A massive thanks to the organisers and cooks who pulled everything together. About 32 of us squeezed into the bush kitchen for a joyous feast. By dinner time, the wind had settled, and the sky had cleared, so I headed onto the main observing field. In the afternoon Mark Notary had kindly brought me up to speed on how to set up and use the Club's 17.5-inch Dobsonian. So, with a last-minute collimation, and the Argo Narvis set up, the Club telescope was ready. I had last looked through the Club's telescope over 17 years ago. I was excited to get the Club scope up and running.

After setting up the Argo Narvis system I choose a familiar bright object to test the telescope's alignment, starting with familiar favourite, **47 Tuc (NGC 104)**. Always superb, but with the extra aperture it becomes electric. Even at low power the core was peppered with sharply resolved pinpoints of stars. With a crowd of eager onlookers, I next swung the telescope over to **Saturn** which was close to opposition and perfectly placed in the eastern sky. This was the first time I had a chance to observe Saturn this year. With the rings almost edge on, the usual grandeur was reduced to a slim line. I could easily pick out 4 moons in proximity, two above and two tucked tightly beneath. The next crowd sourced suggestion was **NGC 253**, a galaxy in Sculptor. Compared to the view in my 10-inch, the 17.5-inch starts to tease out real structure in this 7.1 magnitude galaxy. This edge on spiral is centred around a brighter core (~27'x7'), but I could easily make out the mottled appearance of dust clouds that mark the disk. This is a large galaxy, taking up a large portion of the field in the 31mm Club eyepiece.

As the cluster of members around the telescope thinned, I went back to the list of objects I planned to starhop to that night. I planned to start my night in the constellation of Norma, which was rapidly sinking towards the western horizon. I began with the open cluster **NGC 6067** (see Figure 1). This bright, 5.6 magnitude cluster, sits in a rich star field (a sharp contrast to the barren field in Sculptor). The cluster itself sits within in a trapezium of brighter stars which frame the field of view nicely. What really stands in this cluster of 250 stars, are the pockets of colour scattered throughout the cluster. I picked out two pairs of orange/reddish stars and a deep coppery-red star to the top of the cluster. Although I had the 17.5 inch, I had not forgotten about my 10-inch LX200 set up next door. Using the LX200 manually, I could find NGC 6067 surprisingly easily. Starting from the pointers I drew a straight line through the constellation of Circinus (easy to pick out its isosceles triangle shape). This pointed towards a slightly brighter patch of sky in the Milky Way just visible to the naked eye. Using the Telrad to aim at this patch, placed a bright knot of stars in the 9x50 finderscope. The 10-inch could also pick out some of the colourful pairs.

Next was the nearby open cluster **NGC 6204** in Ara. With the Club's 31mm Nagler in, I managed to also squeeze the nearby cluster **NGC 6200** in the same field of view (See Figure 2). These two clusters offer quite the contrast. The cluster on the left of the field, NGC 6204, is small (5'), dense grouping of about a dozen stars, with a triplet of bright stars hanging off the bottom edge of the cluster. In contrast, NGC 6200 to the right of the field was a larger (10'), sparser cluster. The combination of the two contrasting clusters makes for a lovely field of view in a low-powered eyepiece.

First stop in Scorpius was **NGC 6192**, a relatively bright (8.5 magnitude) open cluster with an irregular shape. The cluster consists of ~20-30 stars, with one chain of stars in particular seeming to hang off the bottom. To find this cluster start from the naked cluster NGC 6231 in the curve of Scorpius's tail (See Figure 3). Move the telescope so the edge of Telrad sits on magnitude 3.6

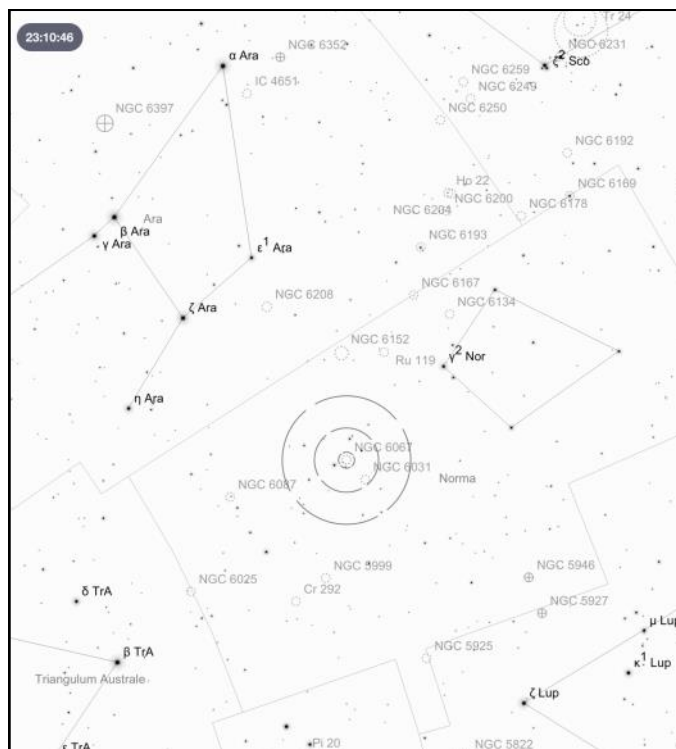


Figure 1: NGC 6067

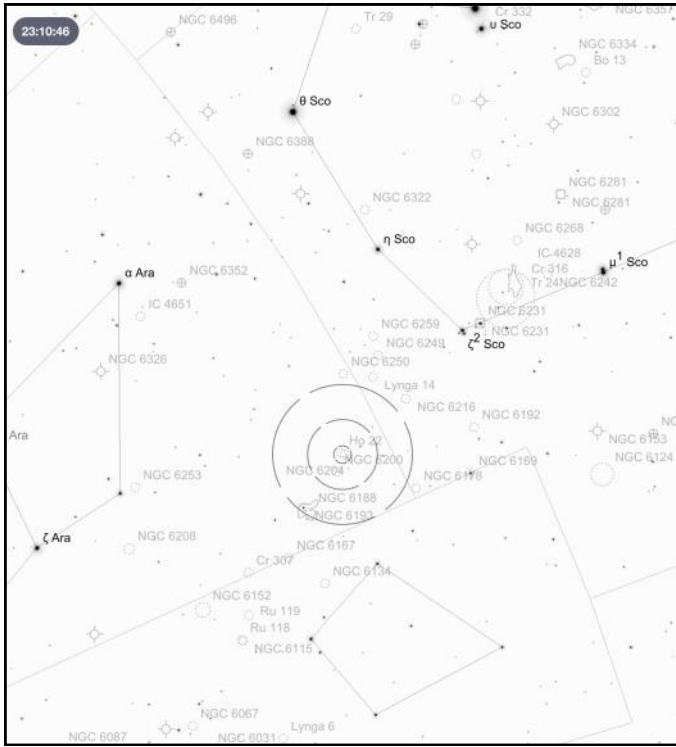


Figure 2: NGC 6200 and 6204 in Ara

from the previous month (See Universe Sep 2025 Vol 74 #10). Easy to find with the 17.5-inch's Argo Navis guiding the way, it should be straightforward to find manually. Draw a straight line between λ Scorpii and μ_1/μ_2 Scorpii and centre the telescope halfway along that imaginary line (roughly in line with η Scorpii).

Nearby sits another planetary, **NGC 6153** (See Figure 5). This planetary appears as a uniform circular disk, clearly a little more bloated (20") then the surrounding stars in the FOV.

(ζ^2) Scorpii (which sits $\sim 2.8^\circ$ west-southwest). This should place the cluster in the finderscope.

Next stop was **NGC 6302**, also known as the Bug nebula. NGC 6302 is a planetary nebula located in the curve of Scorpius's tail (See Figure 4). This nebula is unusually bright (9.6 magnitude). In the 17.5-inch, its elongated "hourglass" shape jumps out of the field of view immediately. Images show, this remnant of an exploding star has created a distinctive bipolar shape cut in half by a dust lane running through the middle of the nebula. Putting the 9mm Nagler in made this structure even more apparent. Adding OIII filter helps improve the contrast, but even unfiltered it is still excellent with the big aperture. This complex planetary reminded me of NGC 5189

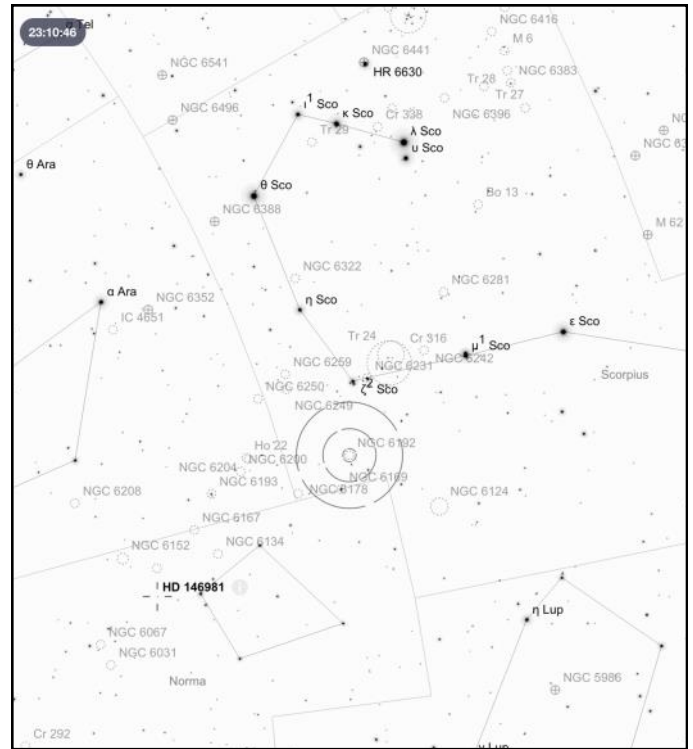


Figure 3: NGC 6192 in Scorpius

The nebula forms a cross with the 3 other bright stars in the FOV. Combined with a pair of stars pointing to the cross, it resembles Crux and the Pointers.

With Scorpius starting to slip towards the western horizon, I aimed higher towards Sagittarius. Although I stopped in last month, I could not help myself and used the larger aperture of the Club scope to visit the globular M55 and M20 (Lagoon Nebula) which were impressive with the combination of larger aperture and low power eyepiece. I then swung the Club scope into the constellation of Pavo. First stop was **NGC 6744** (See Figure 6). This face on spiral has a bright central core, surrounded by a luminous oval halo (21' x 15') which make up the spiral arm disk. Although not immediately obvious, with AV (and perhaps a little imagination on my part), I thought I could begin to pick out some structure in the spiral arms. I then swung the telescope to nearby globular cluster **NGC 6752**. This is a globular I have visited recently visited, but the extra aperture made it a worthy target to revisit. This cluster's distinctive shape, with loops and chains of stars extending out from the well resolved core make it one of my favourites.

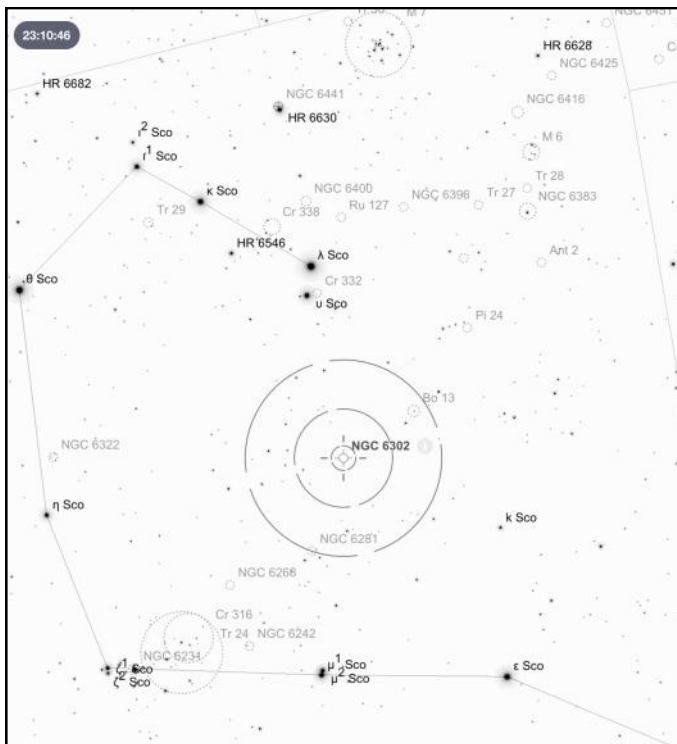


Figure 4: NGC 6302 in Scorpius

A Planet in the Making

By Greg Bryant

Astronomers have imaged a newborn planet forming within the protoplanetary disk of its young parent star. More than 6,000 exoplanets have thus far been found around other stars, but this is the first to be found in a gap inside a multi-ringed disk. This discovery not only shows a planet that is still growing but confirms theories of how young worlds can influence the disks from which they were born.

The host star, 11.6-magnitude TYC 5709-354-1, resides in the southern half of the constellation Aquila (RA 19^h 23^m 17^s, Dec -7° 40' 55"), located roughly 3° east of 5th magnitude Kappa Aquilae, near its border with Sagittarius. It sets mid-evening on November nights if you would like to grab your telescope and set eyes or cameras on this interesting star.

Fascinated by the new discovery, I hunted down this particular star in October from my rural observing site. Suspecting that the field would be filled with starlight given its location on the galactic plane (Aquila's "wings" spread far across the Milky Way), I used an image from the Digitized Sky Survey to prepare myself before slewing my Seestar S50 telescope to the target. Just a seemingly non-descript point of light...



Described as looking like a ripple in space, this image of WISPIT 2 shows the protoplanetary disk and the growing exoplanet. The star itself is masked.

Credit: ESO/R. F. van Capelleveen et al.

It turns out that TYC 5709-354-1, some 440 light-years away, is a 5-million-year-old T-Tauri star, a star similar in mass to our own Sun that is still contracting towards the main sequence. It may belong to the Scorpius-Centaurus OB association, a nearby nursery of young stars, and these characteristics caught the attention of an international team of researchers from Europe, the United States and Japan studying planet formation. Their project, Wide Separation Planets In Time (WISPIT), is searching for planets orbiting far from their young stars to study whether such worlds do form at large distance from their host stars or actually form closer in and are subsequently flung out due to gravitational interactions.

Last August, the WISPIT team announced the first two new planetary systems from their survey (WISPIT 1 and WISPIT 2). It was the latter, the new alternate name for TYC 5709-354-1, that quickly stole the spotlight. While it was only the second known planet still embedded in its embryonic disk, following the discovery of two young worlds around PDS 70 in Centaurus in 2018, it was the first to be sitting neatly within a well-defined ring gap.

The team's discovery came about by initially taking short exposures with the European Southern Observatory's Very Large Telescope in Chile and the SPHERE instrument (connected to the third of the four main 8.2-metre telescopes that make up the VLT) in October 2023 and 2024. Those images, which were made with a coronagraph to block the host star's glare, revealed concentric rings and dark gaps giving an appearance of a "bull's-eye" around the star. Follow-up observations revealed a possible planet. Confirmation came with observations made using one of the two

American-operated 6.5-metre Magellan telescopes, also in Chile, showing that the planet was moving with the same proper motion as the host star, and subsequently showing evidence of orbital motion. Imaging from the Magellan telescope revealed that the faint companion was glowing in the H-alpha wavelength band, evidence that gas was accreting onto the world. It wasn't just any planet, it was a planet still growing!

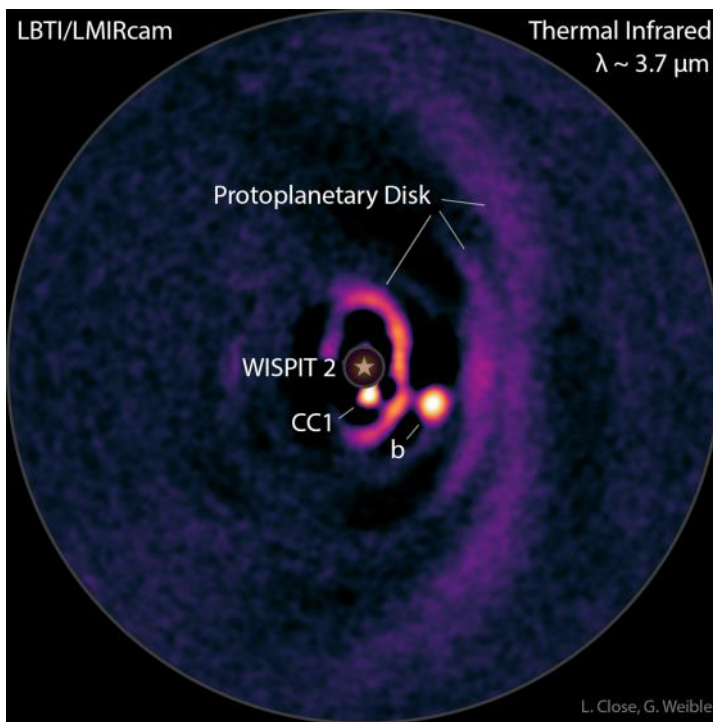
The surrounding protoplanetary disk stretches out to nearly 380 au. The structure of bright rings and darker gaps has been seen in other young systems and astronomers have hypothesised several scenarios to explain their appearance, whether it be forming planets, magnetic fields, or turbulence in the gas. WISPIT 2 shows that with a planet located neatly inside a well-defined gap, some of the observed patterns are definitely planetary in origin, confirming the "planet-cleared gap" model.

The still-forming world, named WISPIT 2b, orbits the star at around 55-57 au (about twice the Sun-Neptune distance). Astronomers believe that the planet, based on analysis of the near-infrared images, has a mass of about five times that of Jupiter. The gas accreting onto the world, as shown by its detection in H-alpha, could be coming from a circumplanetary disk from which moons may also form. The Magellan observations also revealed a possible second object, designated "CC1", lying closer in at around 14-15 au from the star. If it is a member of the system, and that's not confirmed yet, it could be a massive super-Jupiter or just a "dust clump".

The discovery of WISPIT 2b also shows that giant planets can form in wide orbits very early in the lifetime of a star. Such worlds have been directly imaged around other stars, though they have been slightly older systems. In coming years with current or future telescopes, astronomers will be able to track the planet's slow movement to refine its orbit and mass, while millimetre-wave observations may trace motions in the wider protoplanetary disk itself.

H-alpha imaging could show whether the gas accretion is steady or occurring in bursts, and perhaps longer wavelengths may even tease out the planet's circumplanetary disk and unearth clues about the early stages of moon formation.

Such a vivid portrait of a world in the making has turned an otherwise unsuspecting 12th magnitude star in Aquila into what's being described as a new benchmark system in planetary formation.



This false-colour infrared image taken with The Large Binocular Telescope in the United States shows both WISPIT 2b and the possible second planet CC1.

Credit: Laird Close & Gabriel Weible (University of Arizona)

Around the Universe

Hawkesbury Historical Society

INVITES YOU TO

BACK TO TEBBUTT'S SKYWATCHING EVENT

SPECIAL POINTS OF INTEREST:

- Given a clear sky we will observe Jupiter and Saturn.
- Mercury and Venus may be visible.
- Various constellations will be explained and the second quarter moon will be visible.

The popular skywatching event is to be held at the historic Tebbutt's Observatory on Saturday, **1st November 2025** at **6.30pm**.

The sky will be seen through modern telescopes provided by local and Sydney astronomy enthusiasts. The original 8" Grubb Refractor Telescope, installed in 1888 by John Tebbutt, Astronomer, will also be open for inspection.

- We suggest you bring a jacket as it can get cold outdoors and bring a torch covered with red cellophane.



- Refreshments and supper will be available and is included in the booking cost – a delicious event, even in the event of cloudy weather!
- Children particularly enjoy this event but it is an exciting outing for all ages.

DETAILS

Please note that bookings and payment are essential prior to the event due to limited participants being accommodated. The event will proceed in all but severe rain.

Bookings will open on 20 October 2025.

Please phone 0410 498 944 or email secretaryhawkesburyhistory@gmail.com

Family **\$20.00** Singles **\$10.00**

Cost includes supper

When booking by email please provide your name, number of people (adults/children) and a contact phone number.

After confirming your booking with the Secretary, payments are to be made to ANZ Account Hawkesbury Historical Society Inc. **BSB 012874 Acct 227709583**

Link to Hawkesbury Historical Society events page:

[https://
www.hawkesburyhistoricalsociety.org
/events](https://www.hawkesburyhistoricalsociety.org/events)

Presentation Invitation

National Australian Convention of Amateur Astronomers (NACAA)

Hi ASNSW members,

The 2026 NACAA is just over six months away, and it's time to invite you to present a talk if you are interested. We also invite posters and other workshops. You can find the details

<https://www.nacaa.org.au/2026/cfp>.

The Programme Committee hopes that we will be swamped with offers to present at the Tamworth event.

Please consider. :-)

David O'Driscoll

2026 General Secretary & Programme Chair



Comino's Comment



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Crux Quiz

The Answers:

1. Where in the sky would you find the Belt of Venus? ***It appears as a pink band opposite the Sun, just above the horizon during twilight.***
2. What is the youngest supernova remnant in the Milky Way (and strongest extra-solar radio source in the sky)? ***Cassiopeia A resulted from a supernova explosion that occurred around 340 years ago.***
3. In 1965, astronaut John Young caused an incident when he smuggled what food aboard Gemini 3? ***He took a corned beef sandwich; the crumbs could have damaged instruments or clogged filters.***
4. What element, rare on Earth but common in meteorites, was key evidence in the dinosaur extinction impact theory? ***Iridium***
5. Which deep-sky object contains the Pillars of Creation? ***The Eagle Nebula (M16)***
6. Who is the only astronomer buried on the Moon? ***Eugene Shoemaker. His ashes were sent there aboard the Lunar Prospector.***
7. What is the difference between type I and II supernovae? ***Type I don't have hydrogen lines in their spectra, Type II do.***
8. What is the main advantage of using a cooled CCD camera for deep-sky imaging? ***It reduces thermal noise.***
9. What wavelength corresponds to the famous 21 cm line observed in radio astronomy? ***It's the emission from neutral hydrogen due to a spin-flip transition.***
10. What happens when the Chandrasekhar limit is exceeded? ***A white dwarf collapses, possibly leading to a supernova or neutron star (1.4 solar masses).***
11. Are cosmic rays made of photons? ***No. They are composed of high energy particles of matter.***

With thanks to Markus Stone, Astronomical Society of Victoria
Questions, comments and corrections can be directed to astroquiz@markusstone.com.



November Sky Events

By Kendra Melson

Date GMT	Time GMT	Sydney Date	Sydney Eastern Daylight Time		Celestial Event
1	17:46	2	4:46am	4:46	Moon at Ascending Node
2	1:02	2	12:02pm	12:02	Venus 3.3°N of Spica
2	10:46	2	9:46pm	21:46	Saturn 3.7°S of Moon
5	13:00	6	0:00am	0:00	S Taurid Meteor Shower
5	13:19	6	0:19am	0:19	FULL MOON
5	22:29	6	9:29am	9:29	Moon at Perigee: 356833 km
6	15:26	7	2:26am	2:26	Pleiades 0.8°S of Moon
9	2:41	9	1:41pm	13:41	Mercury 2.6°N of Antares
10	6:40	10	5:40pm	17:40	Pollux 2.7°N of Moon
10	7:56	10	6:56pm	18:56	Jupiter 4.0°S of Moon
12	5:28	12	4:28pm	16:28	LAST QUARTER MOON
12	12:00	12	11:00pm	23:00	N Taurid Meteor Shower
12	22:51	13	9:51am	9:51	Regulus 1.1°S of Moon
13	4:00	13	3:00pm	15:00	Mercury 1.2°S of Mars
14	6:38	14	5:38pm	17:38	Moon at Descending Node
17	10:11	17	9:11pm	21:11	Spica 1.2°N of Moon
17	18:00	18	5:00am	5:00	Leonid Meteor Shower
20	2:48	20	1:48pm	13:48	Moon at Apogee: 406693 km
20	6:47	20	5:47pm	17:47	NEW MOON
20	9:00	20	8:00pm	20:00	Mercury at Inferior Conjunction
21	13:00	22	0:00am	0:00	Uranus at Opposition
23	11:00	23	10:00pm	22:00	Mercury at Perihelion
28	6:59	28	5:59pm	17:59	FIRST QUARTER MOON
28	21:33	29	8:33am	8:33	Moon at Ascending Node
29	19:08	30	6:08am	6:08	Saturn 3.7°S of Moon

Adapted from Astropixels.com - 2025 Sky Event Almanac page
<http://astropixels.com/almanac/almanac21/almanac2025gmt.html>

ASNSW Outreach Events

By Lesa Moore

The recent annual Open Night at Macquarie University was a little quieter than usual with the uncooperative weather. Nevertheless, a good time was had by all. I've included some photos from early in the night when I was able to capture some members of the telescope team (Figure 1), the telescope field (Figure 2), and the team at the table (Figure 3). Dinner packs were provided for all the volunteers and those on tables were provided with a "break room", which happened to be the thesis library. I was chuffed to find my Masters thesis on a bottom shelf (Figure 4).



Figure 1: Happy volunteers in the telescope park.



Figure 3: Mainstays on the ASNSW information table.

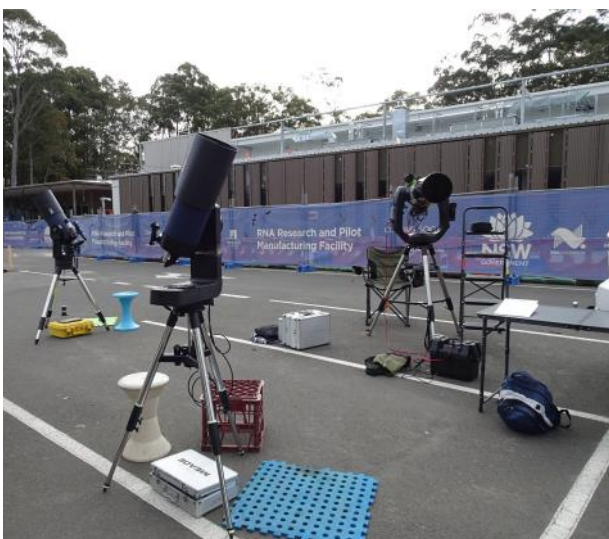


Figure 2: Telescopes in the telescope park, adjacent to a rather large construction site.

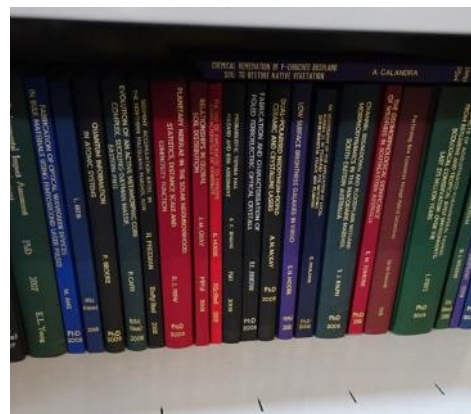


Figure 4: Thesis by E. H. MOORE is right of centre, bound in purple.

ASNSW Member News

By Lesa Moore

Since last issue, one new member has joined the ASNSW. The society welcomes William Lonsdale.

These members celebrate the following significant anniversaries this month (5, 10, 15, 20+ yrs):

Congratulations to these members!

Memberships

Current membership stands at 409 members, including 393 paid-up members, 5 honorary members and 11 life members.

Glenn	Dawes	46
John	Faulkner	43
John	Sumner	40
Gary	Kopff	29
Peter	Kinna	27
Tony	Vukasin	21
Bob	Hughes	5
Mark	Wardle	5

Membership Renewals Now Due

It is that time of year – renewals are due by 31 December. It is easy to renew online, and you can choose to pay by credit card or direct transfer in your online banking. If you do choose the latter, please DON'T FORGET TO MAKE THE ACTUAL PAYMENT! There is a help page here: <https://www.asnsw.com/renew> that shows you how to navigate to the right part of the website and do the renewal. A thousand thank-yous to more than 75 people who have renewed already!

UNIVERSE Contributions

Members will be familiar with Chi Chan's amazing astroimaging skills. His work is featured frequently on the cover. But did you know that ANYONE can send in a contribution for the magazine? Your image doesn't have to be an amazing astrophoto of a celestial target taken with expensive equipment. It could be a nightscape, a wide-field shot, a sketch, or a Wiruna scene or event. Use your imagination or send in a lucky shot. You may make the cover! Or, you may prefer to write a short article about any astronomical experience – an observing night, an interesting object that you observed for the first time, a journey, or something from the history of astronomy that you have recently learned and would like to share. *UNIVERSE* is your magazine. It is for the members and by the members. Don't be too shy to send in a contribution!

Advance Notice – Solstice Dinner at Wiruna – Saturday 20th December

Members may have realised that there is no Christmas Party on the calendar this year. Instead, the end-of-year event will be a communal dinner at Wiruna. Menu – to be decided. Save the date and members will be advised of further details as we get closer.

Joint Society Meeting 13 March 2026

It has been proposed that members of the NSAS and the ASNSW could meet up at the ECC for a joint meeting. Greg McCall has offered to secure a guest speaker for this meeting. Further details will be advised in due course.

Macquarie University Observatory – Free Observing Nights for ASNSW Members

Through our liaison with Macquarie University, we have been scheduling free observing nights for our members. Unfortunately, some have been cancelled because of unfavourable weather, the bane of all astronomers. However, when you receive the notices that these nights are happening, do please book and take advantage of this great opportunity to do some observing without driving all the way to Wiruna. As these nights are only available to our members (and their families), you must log in to the website to book. Log in and check the website "Events Schedule and Bookings" page for the next available evening. Bookings essential as numbers are limited to 40 people per session.

Second Call for Expressions of Interest – Astronomical Convention

At the last AGM, a suggestion was put forward to host a mini-convention at the ECC where members of the ASNSW and other clubs could meet and display their current projects and or equipment and discuss ideas. It would most likely be a daytime event. No date has been arranged until the level of interest is assessed. Update: One member is willing to bring a Dob with associated innovations and another has 3D-printed a binocular telescope! If you have something to share, would be willing to make a small presentation and are interested in seeing this idea become a reality, please email committee@asnsw.com with information about how you would like to participate.

2026 Calendar

Next year's calendar is available on the website as a one-page PDF here: <https://www.asnsw.com/calendar> (look for the link near the top of the page). Events are now all uploaded to the website and the calendar feed is also fully updated.



Meetings & Dates

ASNSW Events

Recordings from Ordinary Meetings link: <https://www.asnsw.com/ordinary>

Astroimaging ZOOM Meetings: 5 Nov, 3 Dec

Ordinary Meetings—Epping: 14 Nov

Committee Meetings: 12 Nov

Wiruna Weekends: 21-22 Nov, 19-20 Dec

For Wiruna bookings and enquiries contact Greg Priestley on m. 0414 300 885 or e. vp_wiruna@asnsw.com

Mudgee Caravan Hire has opened on the corner of Sofala Road and Castlereagh Highway, just 8 kms from Wiruna. Greg Priestley (Wiruna Vice President) has spoken to the owner and he offers small, medium and large caravans at \$50 / \$75 / \$100 per night respectively. He can tow a caravan to and from Wiruna on request giving you the convenience of staying onsite in a private caravan, without needing to own a caravan or managing the logistics.

If this appeals to you, please contact Warren Cramond m: 0417029047 e: hot_spud2006@yahoo.com.au for more information. Note this is an independent business and the ASNSW will not be involved in your commercial arrangement with this business. The normal Wiruna camping fees would remain payable to the ASNSW. As this is a new business and no one has utilised them so far, we're keen for any feedback from anyone who utilises this service.

