Journal

of the

Nottingham Astronomical Society

December 2026



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Thursday, December 3rd

Nottingham Emmanuel School
Gresham Park Road,
West Bridgford,
Nottingham, NG2 7YF

7:45pm (doors open at 7:15pm)

This evening we welcome

Dr. Tutku Kolcu
of the University of Nottingham

who will be speaking on

Galaxies and Clusters

Chairman's Message, December 2026

Dear Members,

Almost the end of the year, a few clear nights but a lot of cloud around! In November we had an excellent historical talk on the astronomer Jeremiah Horrocks and his attempts to view the transit of Venus. An excellent talk by Mike Frost. At the Plumtree meeting we had Leigh talk to us about the use of AI in astronomy - something I think were going to see a lot more of going forwards.

Coming up we have a talk by Nottingham postdoc, Dr Tutku Kolcu looking at galaxies telescopes and clusters. The Plumtree meeting will be the yearly AGM where we approve the accounts, fees and committee. Hopefully everyone should have received the AGM pack. Please come along to the AGM as we will be having a party with mince pies, mulled wine and other snacks, and maybe an astronomy quiz. We need a certain number of members to be present to reach quorum to approve the agenda. Otherwise we mostly hope to have a thoroughly good time!

Julian
NAS Chair

Sky Notes
December 2026



Compiled by Roy Gretton

All times given below are in Universal Time

The **Winter Solstice**, when the Sun will be 23.436 degrees south of the celestial equator, will occur at 8:50pm on December 21st.

PHASES OF THE MOON

Phase	Date
First Quarter	December 6th
Full Moon	December 13th
Last Quarter	December 20th
New Moon	December 27th

This month the Moon is closest to Earth on the 16th, and furthest on the 4th.

THE PLANETS

Mercury is visible in the morning sky about 17 degrees from the Sun at the beginning of December, thereafter moving in toward superior conjunction which will occur on New Year's Day.

Venus continues its spectacular pre-dawn display throughout December, as it heads toward greatest western elongation which will occur on January 3rd.

By the end of this month **Mars** will have attained an angular diameter of 10 arcseconds and will be well worth observing/imaging with moderate-sized telescopes. With opposition not due until February 19th, it will still be undergoing direct motion in the constellation of Leo throughout December. By the end of the month Mars will have brightened to magnitude -0.1.

Jupiter will be rising soon after 10pm at the beginning of December and shining at magnitude -2.2, making it unmissable a few degrees from Regulus in Leo. By the close of the month it will be rising at 8pm, about 75 minutes ahead of Mars, and its equatorial diameter will have increased to almost 43 arcseconds.

Phenomena of Jupiter's satellites

The **disappearance** of Jovian satellites **into eclipse** is the easiest type of phenomenon to observe with a small telescope (say, 50mm aperture).

As we are currently viewing Jupiter before opposition, satellites disappear into Jupiter's shadow on the west side of the planet (viewed from Earth). Next in ease of observation (with instruments of 100mm aperture and above) are **shadow transits**. In this case, look for a dark spot crossing Jupiter's disk.

Lists of eclipse disappearances and shadow transits visible in the *evenings* this month are given below.

*In the case of **disappearances**, start looking **several minutes ahead** of the stated time, because this refers to the moment when Jupiter's shadow bisects the satellite*.

December	Disappearance into eclipse of
2	Callisto 20:47
2	Europa 22:28
3	Io 22:14
19	Io 20:30
26	Io 22:24

December	Shadow transit of
9	Ganymede begins 21:16
11	Europa ends 22:26
11	Io 21:25 to 23:42
18	Europa begins 22:08
18	Io begins 23:18
20	Io ends 20:03
27	Io ends 21:56

Saturn, still in the constellation of Cetus, will be due south a few minutes before 8pm at the beginning of December, and by the end of the month will be culminating two hours earlier than this. At the close of the month the ring system will still be more than 40 arcseconds wide, with the angle of the ring-plane to our line of sight 6.4 degrees and widening.



Saturn, imaged by the Editor on November 2nd

(Celestron C11 and Canon 700Da camera)

Saturn's largest and brightest satellite, **Titan** (magnitude 8.5) will be due east of the planet on December 7th, and due west on the 15th.

Uranus, magnitude 5.6, midway between the Hyades and the Pleiades, will be due south at 11:20pm at the beginning of December.

Neptune, magnitude 7.9, is close to the celestial equator in the constellation of Pisces, and about 8 degrees west of Saturn.

METEORS

Geminids may be seen on any night between December 4th and 17th, but this year their peak is expected to occur around midday (Britsh Time) on the 14th. This coincides with a 5-day-old Moon, giving **very favourable** observing conditions in the hours after midnight on the 14th.

The maximum of the **Ursids** on the night of December 22nd - 23rd coincides with a 13-day-old Moon, so decidedly unfavourable this year.

The Nottingham Astronomical Society: E - SERVICES

Whether or not you are a NAS member, you can keep up to date with details of the Society's

NAS on Facebook
You are welcome to connect with other members and friends of the NAS on Facebook by going to:
http://www.facebook.com/nas.org.uk

NAS on X
The Society has an X account at https://twitter.com/NottinghamAstro

NAS Journal e-mailing list
To register for your monthly e-mailed link to the NAS Journal, just e-mail
membership@nottinghamastro.org.uk

You don't have to be a Society member to take advantage of this service.
If you happen to change your email address, please remember to inform the Society by emailing us at membership@nottinghamastro.org.uk

DIARY DATES 2026-27

Monthly Meetings of the Nottingham Astronomical Society

1. Meetings at
Nottingham Emmanuel School
Gresham Park Road,
West Bridgford,
Nottingham, NG2 7YF

Held on the **FIRST Thursday** of each month **(unless otherwise stated)**
except **August**

Doors open at 7:15pm for 7:45pm start.

*These events are normally centred around a talk by a visiting speaker, except Quiz Nights, etc, when NAS members provide the activities. Normally we have a **Helpdesk** open at each meeting.*

Date	Topic	Speaker
3rd December	**Galaxies and Clusters**	**Dr. Tutku Kolcu** University of Nottingham
7th January	**New Horizons for Mankind** (about the Pluto mission)	**Keith Townsend**

2. Social and Practical Astronomy Meetings
at the Burnside Memorial Hall, Plumtree

Church Hill, Plumtree, Nottingham, NG12 5ND
Held on the **THIRD Thursday** of each month from **7:30pm**

These meetings are of a more informal nature, providing opportunity for members and guests to share their hobby over a cup of tea or coffee, as well as listening to a short talk or discussion

The next meeting will be on **December 17th**
and will be our **Annual General Meeting**
followed by seasonal refreshments

Social and Practical Astronomy, Plumtree, November 2026

The November Plumtree meeting was a talk on Artificial Intellegence in Astronomy by our webmaster Leigh Blake. Chris made a lovely cake which didn't last long! Thank you Chris.



Leigh described the different types of AI and how AI has developed over the years, as well as showing us how 50 years ago we thought AI would operate today, including from the iconic film *2001 a Space Odyssey*.

Leigh demonstrated some of the capabilities of AI in amateir astronomy in relation to image processing, as well as gave a balanced view of how difficult it can be to draw the line between a science and art, especially when thinking about image manipulation. It is all quite philosophical. There were plenty of questions and I think a lot of mixed feelings about AI in general, not just in amateur astronomy.
Thank you, it is a most fascinating topic and one that is here to stay.



James Dawson
helpdesk@nottinghamastro.org.uk

Upcoming events for the amateur astronomer

Date	Event	Location
5 December 2026	BAA Back to Basics – Aurora Special	Ipswich
12 December 2026	BAA Christmas Meeting	London
23 January 2027	BAA Meeting	London
30 January 2027	SPA Meeting	London
5–6 February 2027	European AstroFest	Kensington, London
3–8 March 2027	Kielder Spring Star Camp	Kielder, Northumberland
4–11 March 2027	Kelling Heath Spring Star Party	Near Holt, Norfolk
13 March 2027	Practical Astronomy Show	NAEC Stoneleigh, near Coventry
20 March 2027	BAA Deep Sky Section Meeting	TBC
2–4 April 2027	BAA Winchester Weekend	Winchester
23–25 April 2027	SHA Spring Conference	Cambridge
24 April 2027	SPA Meeting	UCL, London
28 May 2027	BAA Spring Meeting	Eastbourne
27 September–4 October 2027	Kelling Heath Autumn Star Party*	Near Holt, Norfolk
16 October 2027	BAA Variable Star Section Meeting	TBC
27 October–1 November 2027	Kielder Autumn Star Camp	Kielder, Northumberland

The Crescent Nebula and its Wolf-Rayet Star WR 136

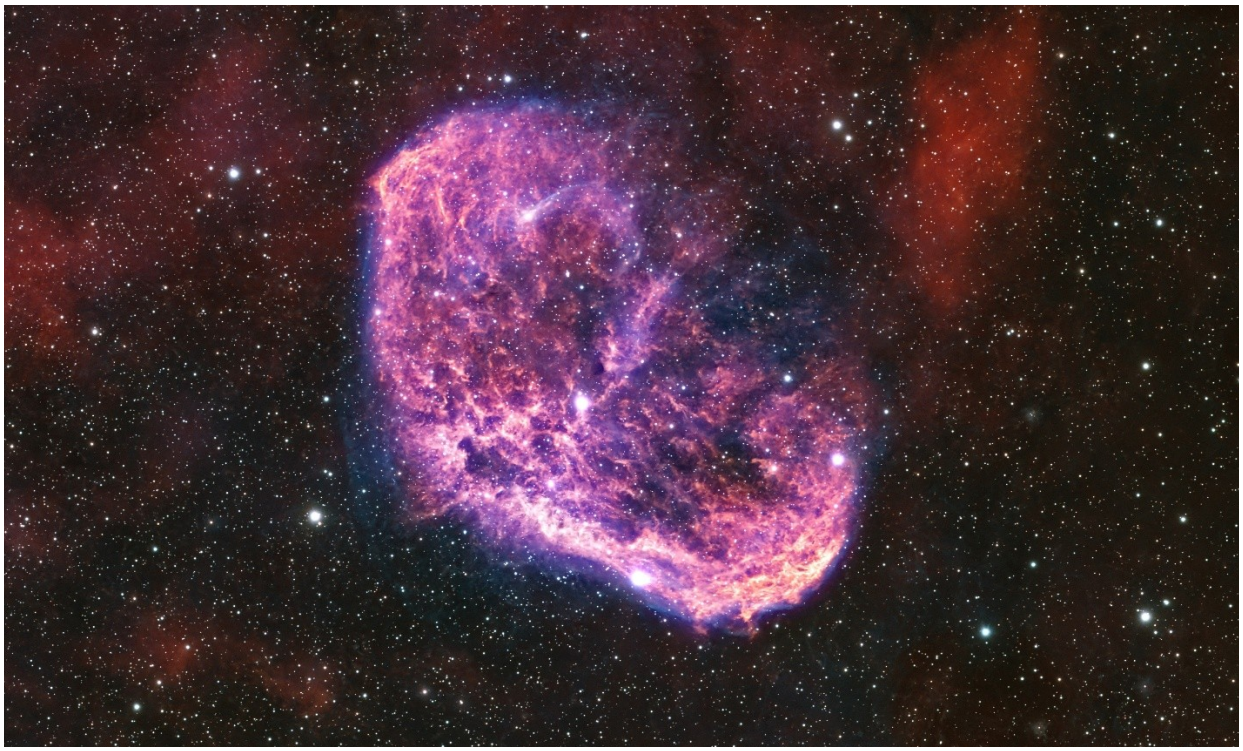


Figure 1. The Crescent Nebula NGC 6888 imaged using the HOO palette by the author on 13/11/2026 (see below for equipment and image processing). WR 136 is the bright star near the centre of the image.

The Crescent Nebula NGC 6888 is a striking emission nebula in Cygnus, near to the centre of the Northern Cross asterism. It's a popular target, but this was my first go at imaging it. I used the HOO palette with a dual band H α / [O III] filter and a colour camera with a total of 3 hours integration time (Figure 1). This really brings out the 'milky glow'.

The nebula is approximately 25 ly across and 6,000 ly distant. It formed when the central star ejected material during its red supergiant phase (approx. 200,000 years ago). The star has since become an extremely hot Wolf-Rayet (WR) star, WR 136, with very high stellar winds.

To get some further insight I recorded a spectrum of WR 136 (Figure 2). This shows the presence of several emission lines typical of WR stars. The He II (singly ionised helium) and NIII/NIV (doubly and triply ionised nitrogen) signals are characteristic for this class of nitrogen-dominated WR star, whilst the presence of the Balmer hydrogen series shows that it still retains some of this element.

The emission lines in the spectrum are Doppler-broadened by the high velocity stellar wind, which gives an opportunity to measure this property from their instrument-corrected full width half maxima ($FWHM_{corr}$) values. Using the two major He II lines and the H β line (selected because they are singlet lines, unaffected by unresolved doublet broadening), a maximum velocity for the stellar wind was measured to be $v_\infty = 1778 \pm 80$ km s^{-1}. This is in good agreement with the literature value of 1700 km s^{-1} (*A&A, **281**: 184, 1994*). In more 'down-to-Earth' units, this equates to 3.8 million mph!

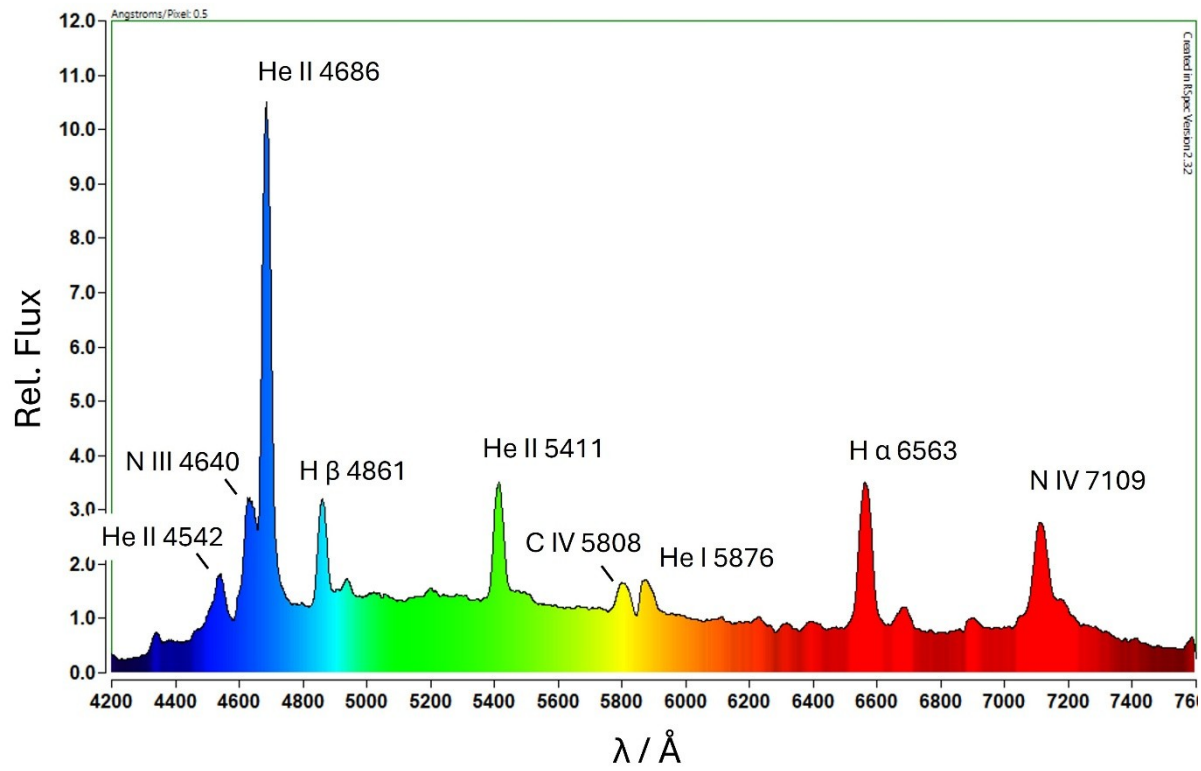


Figure 2. Visible spectrum of WR 136 measured by the author on 16/11/2026 (see below for equipment and spectrum processing details). A synthetic 'rainbow' fill is provided to indicate the colour of each peak on the wavelength scale.

Equipment and data processing

General: Askar 120APO triplet refractor telescope and Sky Watcher HEQ5 mount controlled by ZWO Asiair.

Imaging: ZWO ASI 585 MC Pro cooled main camera, ZWO DB Filter, Astro Essentials 50 mm guide scope with ZWO ASI 120MM mini guide camera. Light frames: 40 x 300 sec, Flats: 30 x automatic exposure, Bias: 30 x 0.01 sec. Images calibrated, stacked and processed in Pixinsight.

Spectroscopy: Shelyak Alpy 600 spectroscope (23 µm slit, 600 lines mm^{-1} grating) with ZWO ASI 585 MC Pro main (scientific) camera, Alpy Guide Unit with ZWO ASI 220MM mini guide camera. Light frames: 5 x 60 sec, Flats: 5 x automatic exposure, Bias: 5 x 0.01 sec, Darks: 5 x 60 sec. Spectra stacked, reduced, and calibrated (Ne/Ar lamp) using ISIS software and displayed in RSpec software.

Neil Oldham

Processing Workflow of SeeStar S50 subframes

The Fish Head Nebula (IC 1795) is a vibrant emission nebula in the constellation Cassiopeia, located about 6,000 light-years from Earth. It sits right next to the larger Heart Nebula and gets its name from a dark lane of dust that carves out a fish-head shape. The region is packed with young, massive stars that blast out intense ultraviolet light. This UV radiation makes the surrounding gas glow in their respective emission spectra. The eastern part of the nebula is occluded by the non-ionised molecular cloud which makes it less bright from our direction of observation and less sharp due to light diffraction.

With clear sky on 16-17th October an opportunity presented itself for an extended period integration of SeeStar S50 images of this nebula. I managed to collect 10hours 46min of data. This created good basis for a more elaborate processing of the subframes. The workflow presented here is a result of my trial-and-error process refined over the last few months.

Table1: Processing workflow

Activity	Images	Software
Registration, Demosaicing (GRBG) Per-channel integration of Light frames Histogram stretch	H-alpha **v1**(mono) Oiii **v1**(mono) Luminance **v1**(mono)	SIRIL (free) or Registax(free) or APP (paid)
De-noising of mono images	H-alpha **v2**(mono) Oiii **v2**(mono) Luminance **v2**(mono)	SIRIL (free) or NoiseXterminator (paid) Topaz (paid)
Generation of starless images and a master star image	H-alpha **v3**(mono) Oiii **v3**(mono) Luminance **v3**(mono) Master Stars **v1**	SIRIL (free) or StarXterminator (paid)
Sharpening of the Luminance	Luminance **v4**(mono)	Topaz sharpen(paid)
Generation of synthetic Sii image using H-alpha **v3**(mono) and Oiii **v3**(mono)	Sii **v1**(mono)	SIRIL (free) or Registax(free) or APP (paid)
Channel equalisation with masks	H-alpha **v4**(mono) Oiii **v4**(mono) Sii **v2**(mono)	GIMP (free) or Photoshop(paid)
RGB combination of monochrome images H-alpha – Red; Oiii – Blue; Sii - Green	RGB **v1**(colour)	SIRIL (free) or Registax(free) or APP(paid)
HSL selective colour adjustment	RGB **v2**(colour)	GIMP (free) or Photoshop(paid)
Sharpening of the image using Luminance **v4** image	RGB **v3**(colour)	SIRIL (free) or Registax(free) or APP(paid)
Inclusion of the Master Stars **v1** into the final image	**RGB v4(colour) - final**	GIMP (free) or Photoshop(paid)

Technical details of the image:

Object: IC1795 Fish Head nebula, **Visual magnitude**: 10; **Date**: 16-17 October 2026
Telescope: SeeStar S50 (50mm f5, ASI462, LP filter)**; Integration:** 10h46min
Location: Field next to NAS Observatory (with kind permission from the farmer)



Andrzej Bargiela

Imaging a Nebula from the Southern Hemisphere

Having tried imaging nebulae from the field next to the NAS observatory I have decided to try an alternative set-up. I've sent one of my SeeStar S50 telescopes to a remote observatory in Victoria, Australia. The NebulaNest observatory is based north-east from Melbourne in Bortle 1 area and offers excellent opportunities for capturing faint nebulae. The telescope is accessed via a ZWO Telescope Network facilitating both full control of the telescope and the download of captured sub-frames. As an added bonus to astrophotographers, there is an 11-hour time difference between Victoria and the UK, so astro-imaging can be done during the day!!!

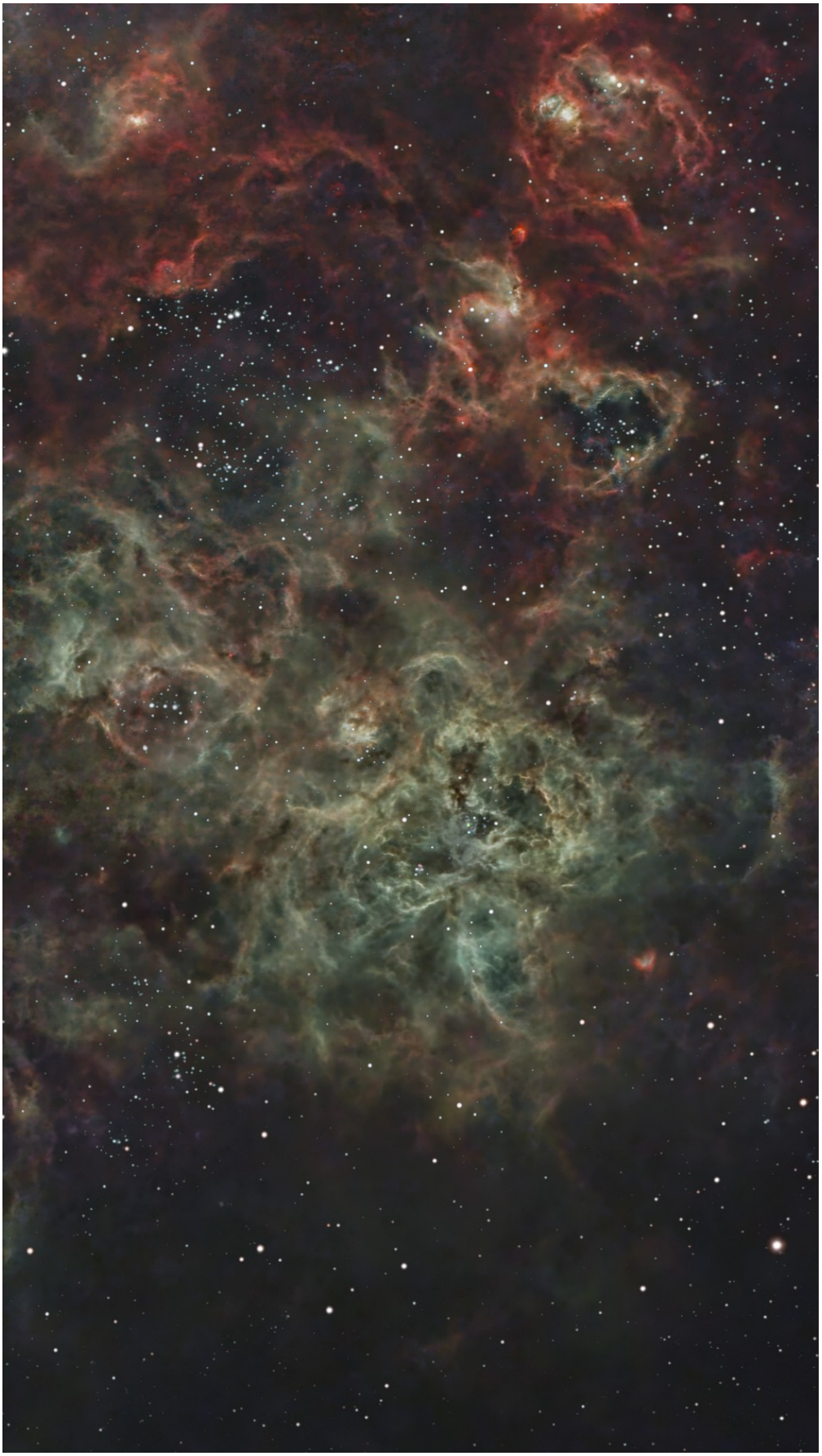
Below is my first image from the southern hemisphere: Tarantula Nebula NGC2070. The nebula is a large H ii region in the Large Magellanic Cloud (LMC), forming its south-east corner (from Earth's perspective). The nebula is named for the arrangement of its bright, glowing gas filaments and dusty tendrils, which stretch outward and look like the legs of a tarantula. The glowing red gas clouds look like remnants of tarantula's dinner and add to the drama of the image.

Technical details of the image:

> **Object:** NGC2070 Tarantula nebula; Visual magnitude: 8; Date: 17-18 November 2026
>
> **Telescope:** SeeStar S50 (50mm f5, ASI462, LP filter); **Integration:** 284 60sec subframes
>
> **Location:** Nebula Nest, Victoria, Australia (36.3 S, 142.05 E)

(Image on next page)

Andrzej Bargiela



Advertisements

For Sale: Sky-Watcher 8” Dobsonian Telescope + Accessories



Telescope + mount + Asterion NT-8 Newtonian
cooler + balance weights
Lukehurst equatorial mount
Wheeled platform for easy movement
Two Sky-Watcher finderscopes (one RACI)
Two red dot finders (Baader and JH400) + mounts
Range of eyepieces and other accessories in carry case
William Optics bino viewer
Pairs of 6mm, 10mm and 20mm eyepieces
Helios HyperFlex 9-27mm Zoom Eyepiece
Sky-Watcher 10mm and 25mm eyepieces
Celestron NexImage CCD camera
Laser collimator
Collimating eyepiece
Bahtinov Mask
Filters
Sky-Watcher Tools
Solar filter (slightly damaged)
Digital level
Collins Sky Guide + Philip’s Planisphere
Geoptik artificial star
Large nPAE red LED torch

All (except solar filter) in excellent condition: some boxed, with manuals

£600 o.n.o. for entire collection: buyer collects from Bramcote

Contact **Mike Provost** (mike.provost@ntlworld.com, 07811 944990) for details

For Sale: UniStellar eVscope 1 Smart Telescope + Accessories

Telescope + mount + accessories (charger, Allen keys, spare mounting bolts)
Backpack
Solar filter
Celestron dew shield, modified to fit telescope
Optalong L-Pro light pollution filter + adaptor
Small nPAE red LED torch

All in excellent condition with manuals

£500 o.n.o.: buyer collects from Bramcote



Contact **Mike Provost** (mike.provost@ntlworld.com, 07811 944990) for details

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FOR SALE

Celestron 7 Amp Power Tank, 12v power supply (model no. 18774) for £45

- Two 12V output cigarette lighter ports
- Built-in flashlight with red filter cap & energy efficient LED spotlight
- Built-in (2) USB ports for charging portable devices
- Built-in Circuit Breaker for safety
- AC adapter & Cigarette lighter adapter included



Contact **Mark Fairfax** at fairf77@btinternet.com

For Sale

Accessories for 6-inch SCT

Kendrick white-light solar filter with solar finder £40
Astrozap dew heater £40
Astrozap dew shield £30

or £100 for the lot

Sam Boote

samjboote@gmail.com

or at Society meetings

Nottingham Astronomical Society

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Aniket Mahapure

Meetings
Our formal meetings, often with an illustrated talk by a guest speaker, **normally** are held on the first Thursday of each month (except in August) at:

Nottingham Emmanuel School
Gresham Park Road,
West Bridgford,
Nottingham, NG2 7YF

Doors open	7:15pm
Meetings start	**7:45pm**
Meetings end	9:15 pm

These meetings are open to the public, and visitors are welcome to attend, subject to a charge of £5 per meeting for adults (£1 for concessions).

Annual subscriptions 2026

Individual	£40
Family (maximum of two adults, and children/students living at the same address)	£55
Under-18s and full-time students	£5

Subscriptions become due on 1st January. Half-price subscription is charged if joining after 30th June (minimum subscription £5).

Please make cheques payable to:
Nottingham Astronomical Society.

If you would like more information about the **Nottingham Astronomical Society**, or would like to become a member, please contact membership@nottinghamastro.org.uk or speak to any NAS committee member at one of our regular monthly meetings.

The Nottingham Astronomical Society
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