Journal

of the

Nottingham Astronomical Society

November 2026



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Thursday, November 5th

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

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

This evening we welcome

Mike Frost

who will be speaking on

Jeremiah Horrocks – A Very Curious Astronomer

Chairman's Message, November 2026

Dear members,

So the weather has taken a turn towards proper autumn, and the heating has been turned on. We had a fantastic talk from Brian Griffin about the history of the observatory, and all the trials and tribulations that they had to go through to bring it to fruition - and it was great that Pat Fountain could also attend. Speaking of which we have managed to extend the observatory track and so hopefully make access much better during the normally very wet and muddy winter months.
In October we had Mike Provost talking about chasing the eclipse with Concorde across Africa. Coming up we have a talk about Jeremiah Horrocks and his short but amazing astronomical life. We also have Leigh telling us how AI is being used in astronomy.

Best wishes and clear skies,

Julian
NAS Chair

Sky Notes
November 2026



Compiled by Roy Gretton

Unless otherwise stated, all times given below are in Universal Time

PHASES OF THE MOON

Phase	Date
Last Quarter	November 1st
New Moon	November 9th
First Quarter	November 17th
Full Moon	November 24th

This month the Moon is closest to Earth on the 25th, and furthest on the 13th.

THE PLANETS

Mercury passes through inferior conjunction on November 4th, after which it moves out into the morning sky, to reach greatest western elongation on the 21st.

Venus passed through inferior conjunction late last month, and is now moving out into the morning sky, where it will shine at a brilliant magnitude -4.9 in the last week of November, having risen at 4 am.

By the end of this month **Mars** will have attained an angular diameter of 8 arcseconds and will be worth observing with moderate-sized telescopes. In mid-November it will be rising at midnight and shining at magnitude 0.7. On November 16th **Mars and Jupiter will be in conjunction with each other in Leo**, making for an interesting pairing in terms of their differing colours and brightnesses. Mars is much the faster-moving of the two planets, and over the course of the autumn will have moved from Gemini through Cancer before speeding past Jupiter in Leo.

Jupiter will be rising at approximately midnight at the beginning of November and will be shining at magnitude -2. Its equatorial diameter will be 36 arcseconds.

As November begins **Saturn** will be due south (and just north of the celestial equator) shortly before 10pm, and well-placed for observation in the evenings.

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Uranus, about midway between Aldebaran and the Pleiades, will be rising in the early evening in November.

Neptune is close to the celestial equator in the constellation of Pisces, and approximately due south at 10 pm in mid-November.

METEORS

The **Leonids** are expected to be at their peak activity in the early hours of November 18th, when a dozen or so events might be seen per hour.

Two Emission Nebulae imaged through a 50mm Meade Refractor



The **Wizard Nebula, NGC7830**

October 3rd
Canon 60Da camera
900 sec exposure at ISO800

with Optolong filter

Magnitude 7.2

The **Skull Nebula** or **Pacman Nebula NGC246**

October 8th
Canon 60Da camera
300 sec at ISO1600

with Optolong filter

Magnitude 7.4



Marcus Stone

DIARY DATES 2026

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
5th November	**Jeremiah Horrocks – A Very Curious Astronomer**	**Mike Frost**
3rd December	**Galaxies and Clusters**	**Dr. Tutku Kolcu** University of Nottingham

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 **November 19th**

Social and Practical Astronomy, Plumtree, October 2026

The **October** Plumtree meeting saw Brian Griffin talking about how the NAS observatory was built. Our chairman, Julian Onions, introduced Brian before handing over for a look back at an important part of the Society's history.



Brian's presentation included photographs of every stage of the construction of the observatory, from marking the ground and digging foundations, to the dome taking shape, as shown here. We also learnt about the discussions which had taken place in the mid 1970s about the need [or not] for an observatory and the research which was undertaken to find a suitable design which would likely be acceptable to the local planning office.



We recorded Brian's talk and hope to make it available on the Society's website in the future, giving those who missed the evening a chance to hear his account. Thank you to Brian for sharing this history with us, and to Julian for introducing the evening.

Diya made a lovely chocolate cake for the occasion, and Brian can be seen cutting it alongside its creator. Clearly, building an observatory and making a cake both deserve a place in the photographic record!
Thank you, Diya.



The **November** Plumtree is Leigh talking about artificial intellegence in amateur astronomy.

James Dawson
helpdesk@nottinghamastro.org.uk

Future Plumtree Meetings (third Thursday of the month):

November 2026	Leigh Blake; the fine line of AI in amateur astronomy
December 2026	AGM and the Christmas Cosmos
January 2027	Joe Colls; Rockets!

Upcoming events for the amateur astronomer

Date	Event	Location
28 October 2026	BAA Meeting and AGM	London
31 October 2026	International Astronomy Show	Coventry
5–12 November 2026	Haw Wood Farm Astronomy Week	Hinton, near Saxmundham, Suffolk
7 November 2026	SHA Autumn Conference	Birmingham
13–15 November 2026	SPA Residential Weekend	Near Shrewsbury
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

James Dawson
helpdesk@nottinghamastro.org.uk

Daily rainfall measurements at Cotgrave Reservoir 1954 to 1983

A Meteorological Office registered rain gauge was installed at Cotgrave Reservoir in 1954. Readings were taken daily by staff of the Trent River Board for a period of 30 years. The rain gauge at Cotgrave was an 8 inch diameter splayed base gauge with a rim 12 inches above ground level.

Digital records from the Cotgrave reservoir rain gauge were only available from 1965 onwards, with the first ten years of measurements on paper records. A data rescue project was launched in 2026 to transcribe all the daily readings taken between 1954 and 1963 from the original annual rainfall sheets held by the National Meteorological Archives in Exeter.

Four members of Nottingham Astronomical Society independently transcribed the daily rainfall values into excel. The records were then crossed checked to identify any discrepancies between the transcriptions.



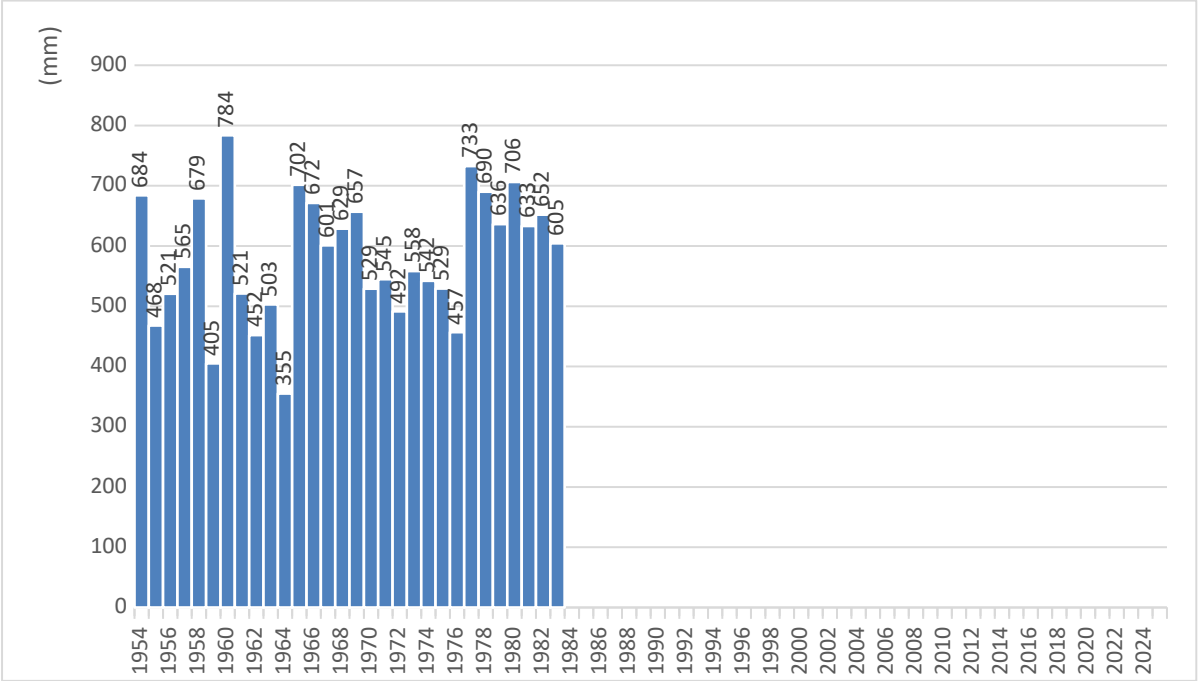


Left. Original location of rain gauge (*g*) 28/05/1959 looking WSW. Barn Hill Plantation visible in the distance. Ventilation pipes visible on the top of the reservoir. **Right** 18/02/1980 New position of the rain gauge located on the eastern side of the reservoir to remedy gauge overexposure.

Annual Precipitation

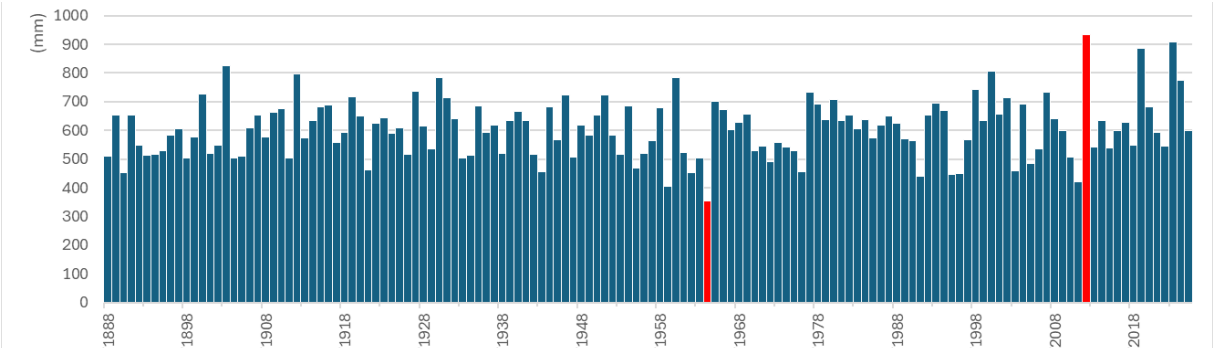
The average annual precipitation at Cotgrave Reservoir for the instrumental record 1954 to 1983 is 584mm (23 inches). The wettest year is 1960 with 783.8 mm recorded. The driest year is 1964 with just 355.2 mm. The trend line of the Cotgrave annual

precipitation 1954 to 1983 shows an increase in rainfall over the 30 year period of record.



Cotgrave Reservoir annual rainfall totals

By extending the precipitation timeseries to include old rain gauges in operation at Nottingham since 1888. 2012 is the wettest year in an extended 138 year record with 932mm. 1964 retains its place as the driest calendar year between 1888 and 2025. The annual average rainfall total between 1888 and 2025 is 605 mm, 21mm wetter than the 30 year Cotgrave reservoir annual average.

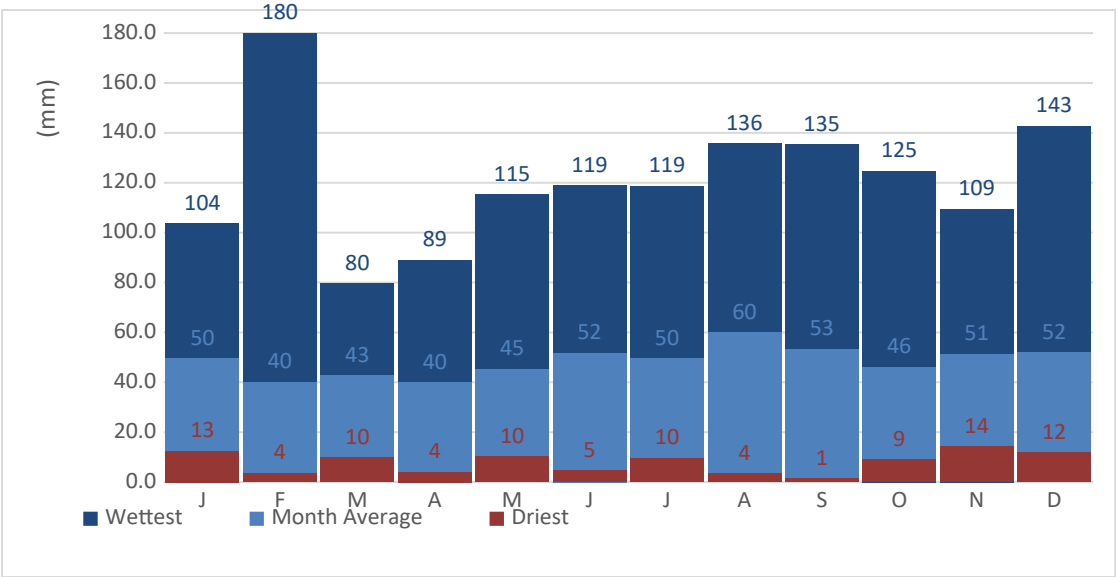


Nottingham extended series annual rainfall totals

The wettest of any 12 consecutive months for the Cotgrave record is 839 mm (September 1976 to August 1977).

Monthly Precipitation

August is on average the wettest calendar month with 60.0mm. April is the driest month on average with 40.0mm over a 30 year record.



Cotgrave Reservoir average, maximum and minimum monthly rainfall totals

The wettest month at Cotgrave Reservoir for the instrumental record 1954 to 1983 is February 1977 180.2mm. The driest Month for this period is September 1959 1.3 mm.

(mm)	Average	Maximum	Year Max	Minimum	Year Min
January	49.5	103.6	1960	12.5	1964
February	40.1	180.2	1977	3.6	1959
March	42.6	79.6	1975	9.7	1961
April	40.0	89.0	1966	4.1	1957
May	45.2	115.4	1969	10.2	1974
June	51.8	118.9	1958	4.7	1962
July	49.6	118.6	1968	9.6	1982
August	60.0	135.6	1982	3.5	1976
September	53.3	135.4	1957	1.3	1959
October	46.1	124.7	1960	9	1969
November	51.3	109.5	1954	14.2	1956
December	52.0	142.7	1978	11.9	1963

Cotgrave Reservoir average, maximum and minimum monthly rainfall totals

2-Month Precipitation records

Cotgrave record (1954 to 1983)
Wettest two consecutive months recorded is 258 mm January & February 1977 (77.8mm and 180.2mm) (Rank 3rd since 1888 to 2025).
Driest two consecutive months 16.5mm July & August 1976 (July 13.0mm August 3.5mm) (Rank 4th since 1888 to 2025).

Wettest Day

Cotgrave record (1954 to 1983) Wettest day was 62 mm measured on 5th August 1982

Most consecutive dry days

Most consecutive days without precipitation being recorded was 32 days from 21st May to 21st June 1970 (only one day of rainfall was recorded in 41 days between 11th May to 21st June 1970 with just 0.2mm being measured).

Acknowledgements

A special note of thanks goes to our four volunteers who transcribed the paper rainfall records providing a full digital record of the rainfall recorded at Cotgrave Reservoir to be rescued and subsequently analysed. Thanks to Holly McNiven, Brian Griffin, Joe Colls and Fred Hopper.

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

The Bubble Nebula and the Pacman Nebula
imaged with a smart telescope

1.

On Saturday 3rd October we had clear skies and small Moon, ideal for astrophotography. I decided to have another go at imaging the Bubble nebula, with its faint outer dust lanes.

The first image is the final live-stack from SeeStar (stretched and de-noised) and the second is an image produced by mapping H-alpha and Oiii emissions onto red and blue channels respectively with appropriate scaling to reveal the contribution from both emissions.

It is worth noting that the processed image reveals detailed structure in outer dust lanes. Quite surprising bearing in mind the limitations of a 50mm objective lens.

Capture data:
Date: 3/4 October 2026
Location: Field next to NAS observatory (with kind permission from the farmer)
Object: NGC7635/Caldwell 11 - Bubble nebula; Magnitude: 10
Telescope: SeeStar S50
Integration: 6h 2min (1086, 20sec subframes)
Filter: LP (H-alpha and Oiii)
Mount: Equatorial wedge
Processing: Histogram stretch, Denoising, Star reduction (Lightroom, Affinity Photo)





2.
5h 40min capture of Pacman nebula. The first image is a stretched/denoised image from the SeeStar that shows H-alpha emission dominating the colour of the nebula. The second image shows the contributions from both H-alpha and Oiii emissions thanks to scaling down the influence of H-alpha in the overall emission of thje nebula. I deliberately preserved red hue from hydrogen emission, rather than mapping it onto a classical Hubble palette (red - Sii, green - Ha, blue - Oiii) since the OSC camera of the SeeStar combined in the red Chanel both Sii and Ha.

Capture data:
Date: 7/8 October 2026
Location: Nottingham, The Park
Object: NGC281 - Pacman nebula; Magnitude: 7.4
Telescope: SeeStar S50
Integration: 5h 42min (1027, 20sec subframes)
Filter: LP (H-alpha and Oiii)
Mount: Equatorial wedge
Processing: Histogram stretch, Denoising, Star reduction (Lightroom, Affinity Photo)



Andrzej Bargiela

M77 and the 2026 Physics Nobel Prize

Early in October 2026, the Royal Swedish Academy of Sciences awarded the Nobel Prize in Physics 2026 to Francis Halzen of the University of Wisconsin–Madison, USA. with the citation

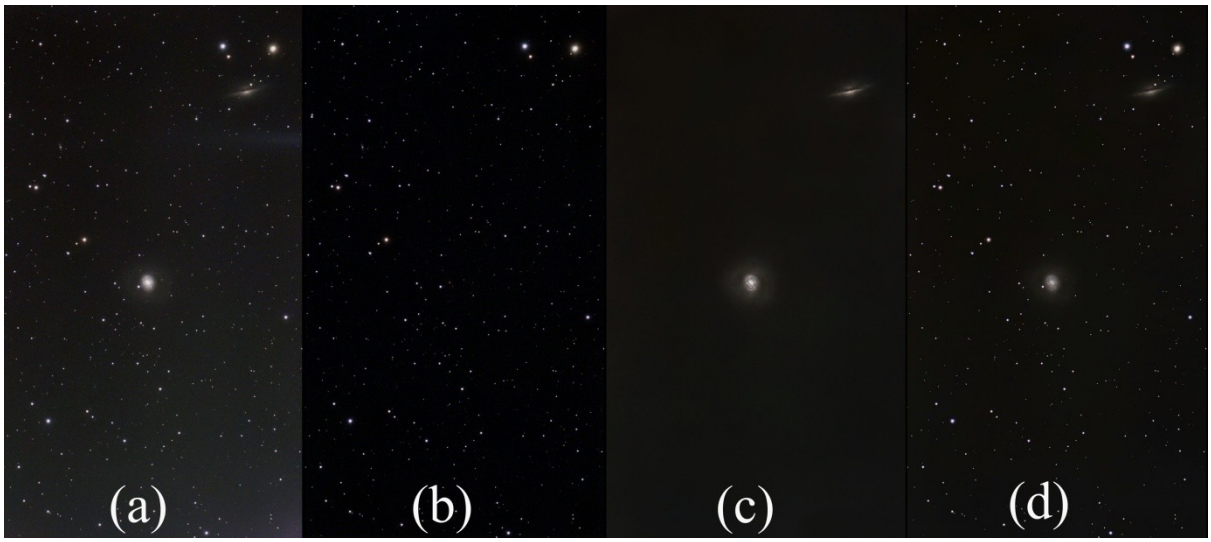
"for decisive contributions to the IceCube Neutrino Observatory and the discovery of high-energy neutrinos of astrophysical origin"

Neutrinos are extraordinary particles. For a long time, it was commonly believed that they are massless, like photons (the quanta of electromagnetism). If true, that would mean that, according to special relativity, neutrinos travel at the speed of light, just like photons. Nowadays it is believed that neutrinos do have rest mass, but one that is more than a half million times smaller than the mass of an electron.
Unlike photons, which have spin angular momentum one (on a basic scale), neutrinos have spin angular momentum of one half, just like electrons. Unlike electrons and like photons, neutrinos carry no electric charge, which is one reason why they are incredibly difficult to observe. Unlike photons, which are their own antiparticles, antineutrinos exist as distinct particles and have the same mass and spin as neutrinos.
Space is literally flooded with neutrinos. It has been estimated that approximately 60 billion to 70 billion solar neutrinos pass through every square centimetre of the Earth's surface every second. These are produced by nuclear reactions in the Sun. Neutrinos have an extremely low interaction cross-section with ordinary matter, meaning that enormous numbers of neutrinos can pass through ordinary matter without interacting with it. Neutrino-matter interactions can occur however and can be detected, but that requires enormously sophisticated apparatus. The IceCube Neutrino Observatory was constructed to do exactly that.
In addition to solar neutrinos, we are in a background ocean of so-called *relic neutrinos* coming from distant sources such as supernovae in other galaxies. This is where our particular interest in Messier 77 comes into the picture. Also known as the Squid Galaxy, M77 is a barred spiral galaxy about 35 to 45 million light-years away. It is classified as an active galaxy on account of its relative proximity and luminosity, giving rise to various observable phenomena such as X-rays, supernovae, cosmic dust, a black hole, and neutrinos (which is where our interest lies).

The Nobel Prize went to Francis Halzen because he was instrumental in the setting up of the giant IceCube Neutrino Observatory buried in the ice on Antarctica (that is, at the South Pole). Because neutrinos pass through ordinary matter without deflection (until they are observed), it turns out that it is possible to use that fact to identify their origins. Essentially, a neutrino travels from say M77 without being deflected on the way, until it hits a target proton or neutron in the ice inside IceCube. The impact releases charged particles that can be detected by sophisticated equipment buried in the ice at IceCube, and that allows the trajectory of the incoming neutron to be established with surprising accuracy. M77 was identified as a source of neutrinos in this way.

Having a SeeStar S50, I realized that it would be an interesting challenge to photograph that particular deep-sky object, if possible. I decided to use my SeeStar in Equatorial Mode. Having centred M77 easily, my Seestar started to take a sequence of ten second exposures and I went to bed. At five thirty next morning, I got up and found that the SeeStar had taken over one thousand excellent ten second exposures of M77.

In astrophotography, the two biggest challenges are the actual taking of long term exposures and then the processing of them. I passed my final SeeStar stacked image (a) to Andrzej Bargiela, who removed the stars electronically (b), cleaned up the remaining background containing M77 (c), returned the stars to give a final improved image (d), all shown below.



Thirty years ago, I bought an eight-inch compact reflector. I spent many hours on cold Autumn and Winter nights getting nowhere with my astrophotography. Setting up took forever, by which time my scope was full of dew and my fingers were falling off with the cold. I never got a decent deep-sky photo. Twenty years later, I bought my Celestron C8-N with GoTo feature and the same thing happened. SeeStar has revolutionized my experience and I would thoroughly recommend it or any of the other robotic telescopes coming onto the market as the way to go. As I said above, I went to bed and had a good night's sleep during the SeeStar's operation.

I have read comments on the internet from experienced astrophotographers who look down on the SeeStar as if it is beneath them. I don't accept such inconsistent attitudes. The SeeStar is just another instrument to allow us to do something enjoyable, no different to the CCD cameras and star trackers those experienced astrophotographers use (as if using that technology was doing authentic astronomy). Ancient astronomers, who had no telescopes, would have said much the same thing about telescopes and cameras.

George Jaroszkiewicz

george.jaroszkiewicz@gmail.com

Advertisement

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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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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