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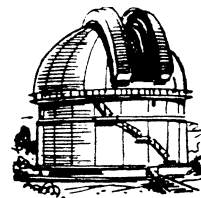
# Journal

of the

## Nottingham Astronomical Society

### January 2019

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**Thursday, January 3<sup>rd</sup>**

Gotham Memorial Hall

Gotham, NG11 0HE

8 pm (doors open at 7 pm)

Tonight we invite you to an

## Open Evening

including a

**NEW YEAR QUIZ**

with refreshments and a buffet

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**We wish all Members and friends of the NAS  
a very happy and prosperous New Year**

### Astronomical Highlights of 2019

- Ideal conditions for the **Quadrantid meteor shower** on the night of January 3<sup>rd</sup>-4<sup>th</sup>
- A **Total Eclipse** of the Moon on January 21<sup>st</sup>
- A **Partial Eclipse** of the Moon on July 16<sup>th</sup>
- A **Transit of Mercury** on November 11<sup>th</sup>

# Sky Notes

## January 2019

Compiled by Roy Gretton

*All times given below are in Universal Time (UT)*



**Earth** will be at **perihelion** at 5:20am on January 3<sup>rd</sup>. The centre of the Earth will then be 147,099,766 km from the centre of the Sun.

### PHASES OF THE MOON

<i>Phase</i>	<i>Date</i>
New Moon	6 <sup>th</sup> January
First Quarter	14 <sup>th</sup> January
Full Moon	21 <sup>st</sup> January
Last Quarter	27 <sup>th</sup> January

This month the Moon is closest to Earth on the 21<sup>st</sup>, and furthest on the 9<sup>th</sup>.

### TOTAL ECLIPSE OF THE MOON, January 21<sup>st</sup>

This eclipse will occur in the early morning. You may notice a slight darkening of the (nearly) Full Moon at about 2:40am, as the Moon starts to enter the penumbral portion of Earth's shadow, but the full umbral stage won't begin until 3:33am. **Maximum eclipse will be at 5:13am**, and the Moon will have left the umbra fully at 6:50am, by which time the Moon will be fairly low in the western sky.

So, if you would like to enjoy at least some of the spectacle, you don't have to stay up all night. You could, for example, set your alarm clock for 5 am, which would allow you to catch the final 40 minutes of totality and then watch the spectacle as the Moon slowly emerges from the umbra...well worth making the effort if a clear sky is forecast.

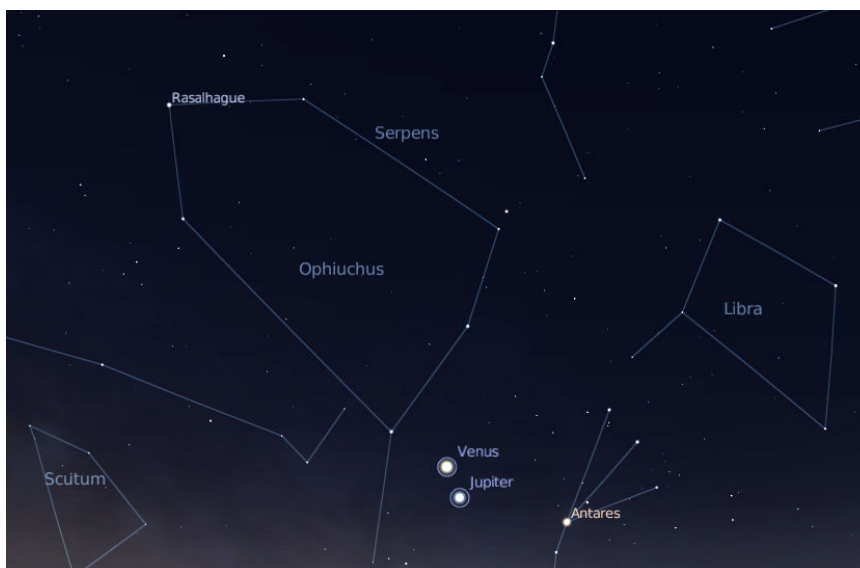
### THE PLANETS

**Mercury** is a morning object until it reaches superior conjunction on January 30<sup>th</sup>. Throughout the month it is well south of the equator, its declination being  $-24$  degrees in mid-month.

As 2019 begins, **Venus** is a brilliant object in the morning sky, reaching greatest western elongation (47 degrees) on January 6<sup>th</sup>, when it will be shining at magnitude  $-4.4$ . Through a telescope its phase will appear like the Moon close to Last Quarter.

**Mars** moves into the northern hemisphere on January 2<sup>nd</sup>, and will be a magnitude  $+0.4$  object in the southwest in the evening. By now its angular size will be less than 8 arcseconds across.

**Jupiter** is a morning object, rising three hours before the Sun by the end of January. On the 22<sup>nd</sup> Jupiter (magnitude  $-1.9$ ) will be about 2 degrees south of Venus (magnitude  $-4.3$ ), a potentially beautiful pairing, with the magnitude  $+1$  Antares close by.



*Looking SSE  
at 6:45 am  
on January 22<sup>nd</sup>*

**Saturn** will be in conjunction with the Sun on January 2<sup>nd</sup>, thereafter moving into the morning sky, but not becoming usefully observable until next month at the earliest. It remains more than 22 degrees south of the celestial equator.

**Uranus**, close to the border between Aries and Pisces, is an evening object, setting at around midnight by the close of the month.

**Neptune**, an evening object in the constellation of Aquarius, will be disappearing into the sunset glow this month.

## METEORS

Conditions are **very favourable** for observing the **Quadrantids** this year, as they reach their maximum activity (perhaps 80 events per hour) just two days before New Moon. These meteors, which appear to radiate from a point in the north of the constellation of Boötes, not far from the handle of the Plough, can be as prolific as the better-known Perseids of August. The Quadrantids are expected to reach their (rather narrow) peak at 3 am on January 4<sup>th</sup>, so the night of the 3<sup>rd</sup>-4<sup>th</sup> is the night to be out watching.

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## Nottingham Astronomical Society 2019 membership

Membership subscriptions for 2019 are now due for renewal. All current members should have received their renewal forms by email detailing your membership rate.

Individual £30, Partnership £45 Concessions £5

### *To renew your subscription please either:*

- 1) Complete the renewal slip sent via email and return with a cheque (payable to Nottingham Astronomical Society) to the Membership Secretary, Nottingham Astronomical Society, 16 Maygreen Avenue, Cotgrave, Nottingham, NG12 3SH.
- 2) If you have an online banking facility then payment may be made direct into the Society's bank as follows: Bank: NatWest, Sort Code: 56-00-61, Account: 44992254.  
Please quote the following reference: your name and membership number if known on the bank transfer reference. Please confirm by email to [membership@nottinghamastro.org.uk](mailto:membership@nottinghamastro.org.uk) that you have made an online bank transfer.
- 3) Bring the renewal slip to a Gotham monthly meeting. Payment may be made by either cheque or cash. (If you are paying by cash it would be helpful if you could bring the correct change).

Looking forward to seeing you at our 2019 meetings

**Richard Severn**, Membership Secretary

# DIARY DATES 2019

## Monthly Meetings of the Nottingham Astronomical Society

### 1. Meetings at Gotham Memorial Hall

Nottingham Road, Gotham, NG11 0HE

Held on the **FIRST Thursday** of each month except **August**

Doors open at 7pm for 8pm start.

*These events are normally centred around a talk by a visiting speaker, except Open Evenings, when NAS members provide the activities.*

*Normally we have a **Library** and a **Helpdesk** open at each meeting.*

<u>Date</u>	<u>Topic</u>	<u>Speaker</u>
January 3 <sup>rd</sup>	Open Evening <i>with a New Year Quiz</i>	
February 7 <sup>th</sup>	Diamonds in the Sky <i>White Dwarfs in Modern Astrophysics</i>	Prof Martin Barstow University of Leicester
March 7 <sup>th</sup>	Beyond Pluto <i>New Horizons in the Kuiper Belt</i>	Paul Money FRAS, FBIS
April 4 <sup>th</sup>	Gaia's Galactic Survey	Dr Nicholas Walton University of Cambridge
May 2 <sup>nd</sup>	It's About Time <i>Time's Arrow and Time Travel</i>	Prof Ian Morison University of Manchester
June 6 <sup>th</sup>	From Tycho to Newton <i>Foundations of modern astronomy</i>	Dr Allan Chapman FRAS
July 4 <sup>th</sup>	Metal Detecting <i>What are metals to astronomers?</i>	Dr Julian Onions University of Nottingham
August 3 <sup>rd</sup> (Saturday)	Annual Barbecue at the Observatory <i>(Members and their guests only)</i>	
September 5 <sup>th</sup>	Where Are the Aliens? <i>Might we be alone?</i>	Prof Brad Gibson University of Hull
October 3 <sup>rd</sup>	The 200 at 70 <i>The Hale Telescope</i>	Dr Steve Barrett University of Liverpool
November 7 <sup>th</sup>	Annual General Meeting with a Wine and Cheese Social	
December 5 <sup>th</sup>	Voyages to the Sun <i>Probing our nearest star</i>	Prof Lucie Green University College London

## 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.*

**The next meeting will be on January 17<sup>th</sup> (see further details below)**

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Check our website: [www.nottinghamastro.org.uk](http://www.nottinghamastro.org.uk)  
for the latest information about the Society's meetings  
and for further information about the talks and speakers

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### **Other astronomy-related events in the coming months open to everyone**

(follow hyperlinks for more information and how to book)

24 <sup>th</sup> January	<a href="#">Open Dome Event</a> , Clifton Campus. Ultima Thule.
26 <sup>th</sup> January	<a href="#">SPA Meeting</a> , London
2 <sup>nd</sup> March	<a href="#">BAA Back to Basics Workshop</a> , Ipswich
9 <sup>th</sup> March	<a href="#">Practical Astronomy Show</a> , Kettering
23 <sup>rd</sup> March	<a href="#">BAA Deep Sky Section Annual Meeting</a> , Cheltenham

### **Skywatcher Synscan Handset Updates**

If you have a Skywatcher handset you might want to update the [firmware](#) in it. The latest version is 3.39.05. If you are unsure how to do this I can do this for you.

**James Dawson**  
Helpdesk



### **NAS Library - Volunteer Wanted: COULD YOU HELP?**

Our successful library service has been running for several years at our Gotham and Plumtree meetings. We are looking for a member to volunteer **to assist with the running of the library at NAS meetings**. The role involves liaising with our Librarian, Lorraine, to ensure the books are brought to our society meetings. You must be able to arrive at the meetings by 7:30pm to put out the books. Any books returned or loaned need to be recorded on our simple paper records system. Other than that you just need a friendly smile! Please help us to keep this service running at our meetings, and volunteer to help out with the library. If you are interested speak to Richard or Lorraine at one of our meetings or email us at

[NASlibrarian@hotmail.com](mailto:NASlibrarian@hotmail.com) or [membership@nottinghamastro.org.uk](mailto:membership@nottinghamastro.org.uk)

## Social and Practical Astronomy, Plumtree

The **December** meeting saw our friend and patron, Professor Mike Merrifield give us a talk on the Science of Christmas. From the bang inside a Christmas cracker, to why Christmas trees are triangular, and the molecular structure of snowflakes, we were given a fascinating insight into some basic science and the history of the science behind many of the things we associate with this time of year. We even worked out how fast Father Christmas must travel in order to visit all the children on the globe... I hope he does his seat belt up!



Chris Sneddon went to a great deal of effort to prepare mulled wine (alcoholic and non-alcoholic) and mince pies and sausage rolls. The mulled wine went down a treat and Professor Merrifield was given half a bottle of the alcoholic version to enjoy when he got home. Chris also made us a Christmas cake, very appropriately decorated and cut up by Professor Merrifield. A great talk and a nice chance for a chat and catch up.



Special thanks to Professor Merrifield, and to Chris and Richard for chairing the meeting.

The **January** meeting at Plumtree will be a session on telescope mounts and we hope to have five or so mounts to talk about.

**James Dawson**

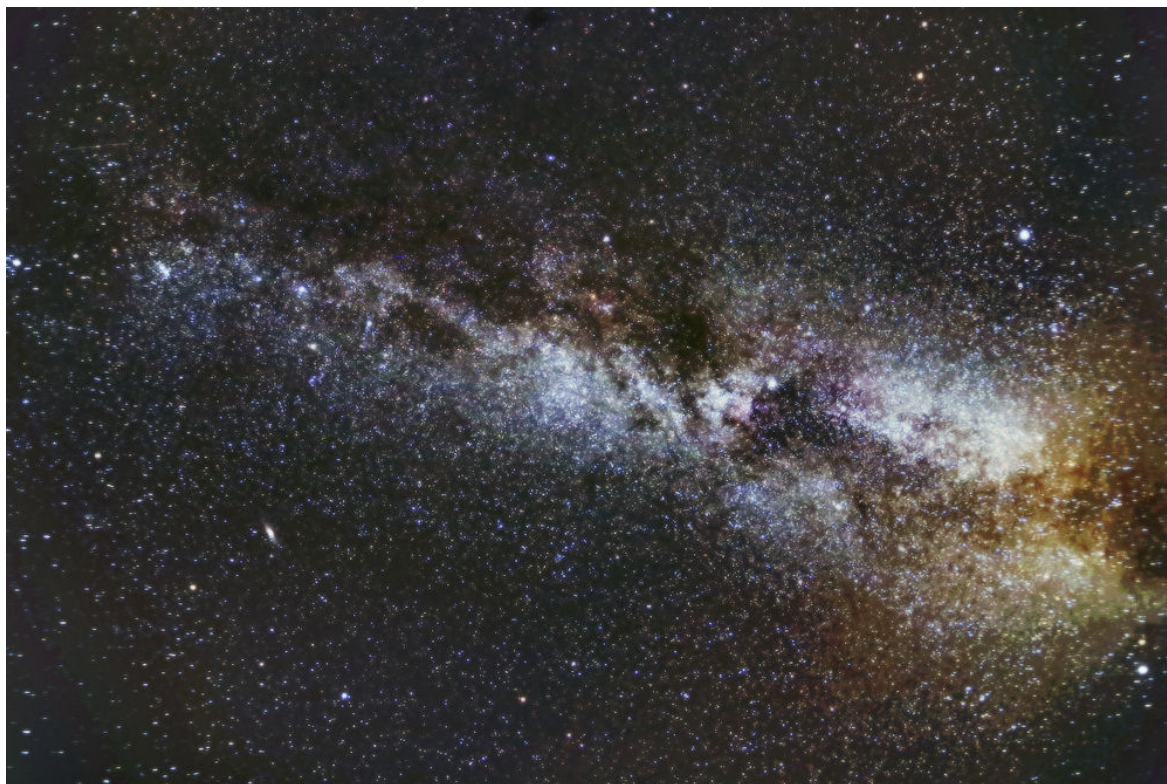
NAS Helpdesk

[helpdesk@nottinghamastro.org.uk](mailto:helpdesk@nottinghamastro.org.uk)



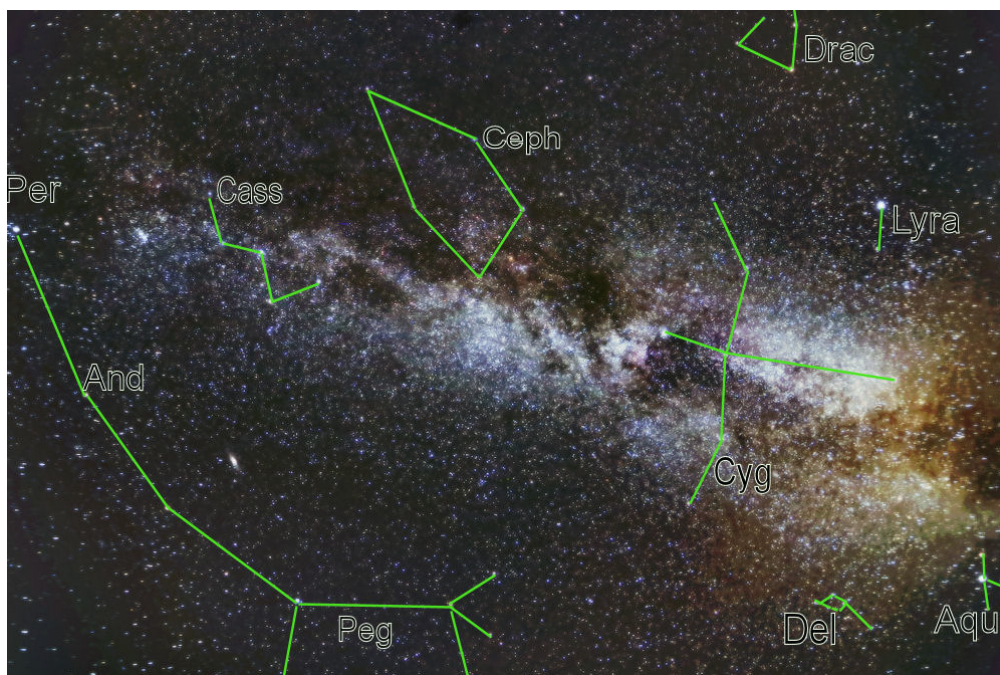
## The Autumn Milky Way

Imaged from Harlech, North Wales, between 18:44 and 18:58 on 26th November 2018 by NAS members **James Dawson** and **Richard Severn**, and processed by **Leigh Blake**



This is a composite image taken with an unmodified Canon 6D camera with a 14mm Samyang lens, f/5.6. The ISO setting was 12800. 42 exposures each of 20 seconds were taken on a static tripod, giving a total exposure time of 14 minutes. Dark field correction was applied. The images were stacked using Deepsky Stacker, and processed in PixInsight.

**Editor's note:** *There is so much detail in this image that a few constellation markers might be useful:*



*For example, you can see M31, toward the bottom left, above the line of Andromeda, and just to the left of the 'W' of Cassiopeia is the Perseus Double Cluster. A lovely image!*



## Observing Comet Wirtanen

On the night of December 12<sup>th</sup>-13<sup>th</sup>, Comet 46P/Wirtanen passed through perihelion, and a few days later made its closest approach to Earth (7.2 million miles, closer than it will be for another 20 years) between the Hyades and Pleiades star clusters on December 16<sup>th</sup>.

The following images were captured by the Editor over a period of 9 minutes in the late evening of December 13<sup>th</sup>, when the comet was about 7.3 million miles distant.

The movement of the comet toward the northeast corner of the image (top-left) is clearly discernable over this short period of time (each image is about 20 arcminutes across). The images (30-second exposures at ISO 800) were captured on a Canon 450D camera at the prime focus of a 30-cm f/5.3 reflector, and cropped to size using PaintShop Pro.



10:49pm



10:52pm



10:55pm



10:58pm

The comet, which belongs to the Jupiter family of comets, has an orbital period of 5.4 years and an approximate diameter of 1.2 kilometres. It was discovered on a photographic plate by the American astronomer Carl A. Wirtanen on January 17<sup>th</sup>, 1948, but more than a year passed before it was recognised as a short-period comet.

Comet Wirtanen was the original planned destination for the ESA *Rosetta* spacecraft, but as the optimum launch window was missed, *Rosetta* was directed to Comet 67P/Churyumov–Gerasimenko instead.

The comet will continue to be visible into the New Year. On January 1<sup>st</sup> it will be in the constellation of Lynx, northeast of Capella, and therefore circumpolar for UK observers, but fading in brightness.

**Roy Gretton**



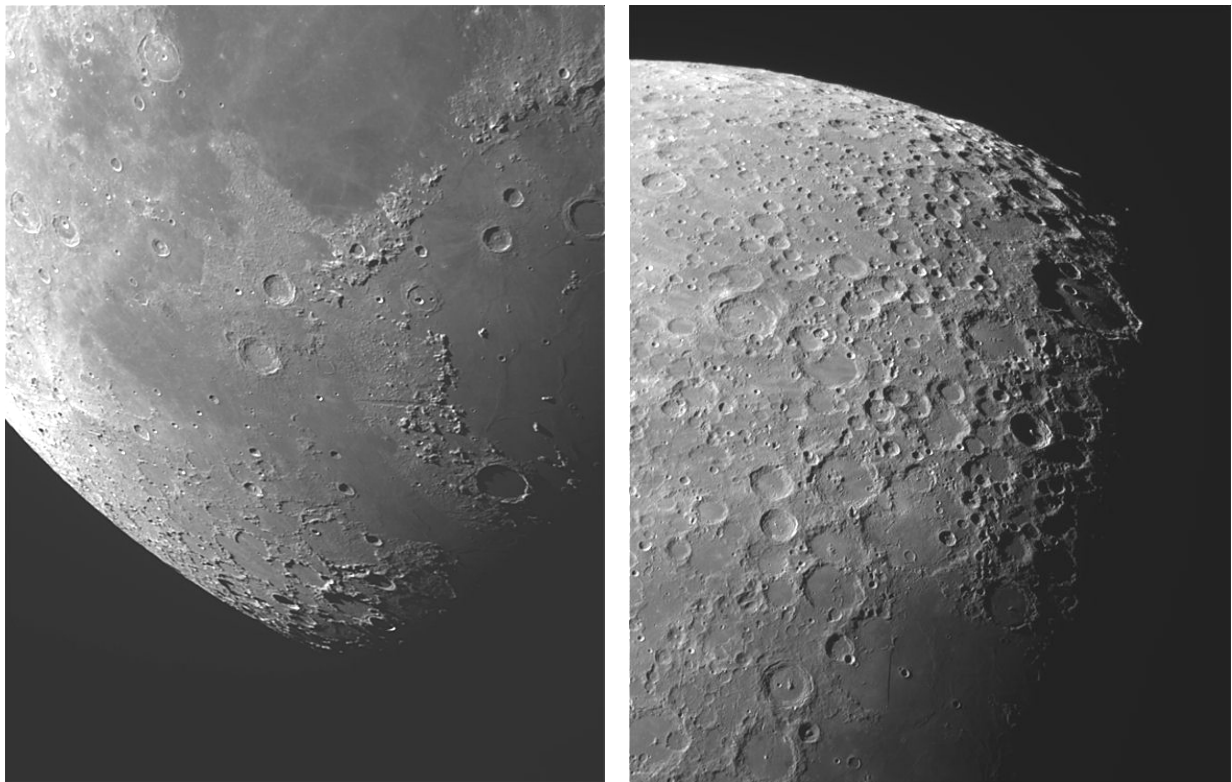
## IMAGING THE MOON

### Marcus Stone shares his experiences

Over the years the moon has always fascinated me, both visually, telescopically and photographically. With the advent of the SLR camera focusing became easier and numerous black & white prints followed, using my homemade enlarger, made out of an old concertina camera (remember those?).

The advent of the digital SLR created many new opportunities, and then the webcam coupled with a suitable power mate or Barlow enabled close up shots of the moon that one could only dream of previously.

Until more recently I had never really tried a CCD camera on the moon, so one very clear night back in March, when the atmosphere was reasonably stable, I gave it a shot. I have a DSI PRO2 Meade Imager, which normally I would use as a guide camera, I coupled this with my TAL 120mm F10 refractor to obtain the two images here. I used the camera's internal guiding software to track with and took over 15 minutes worth of images. The quality/percentage on the camera was set to 90%, really high so that only the frame on or above this was stored and stacked automatically. I used a medium edged enhanced filter, in-built in the camera's software as well as a 2" Orion moon filter with 13% transmission screwed into the eye piece holder. The resultant stacked 100 frames needed little digital enhancement with Photoshop, so the result is pretty much what the camera gave me.



I was pleasantly surprised by the sharpness of the images. Has anyone else tried this method? It would be good to see the results & compare notes.

Happy New Year everyone at NAS!

***Marcus Stone***

## ADVERTISEMENTS

### **ASTRONOMICAL EQUIPMENT FOR SALE**

**All items in good condition, many as new, most boxed**

- Altair Astro 102mm F7 apochromatic refractor with tube rings and dovetail bar, with carry handle and aluminium flight case. £800
- EQ5 mount with instruction manual. £250
- Chinese achromatic 100mm F11 refractor (with favourable performance report in Astronomy Now magazine Feb 2011 issue – available to read). £150
- Celestron 70mm Maksutov telescope with eyepiece and bag, plus tabletop tripod. Magnification range 25x – 75x. £50
- Televue Delos eyepieces: 6mm £150 10mm £150
- Astro EF 16mm 60° flatfield eyepiece £10
- 25mm Super Plossl eyepiece £10
- Eyepiece with illuminated cross-hairs £10
- Orion 3mm long eye relief eyepiece £20
- 12.5mm eyepiece £5
- Televue 2x Powermate £140
- Williams Optics D-D1G2D-C 2 inch dielectric carbon fibre diagonal 1.25 inch adaptor £60
- Antares 2 inch erect image 45° diagonal £50
- Celestron X-Cel LX 3x Barlow lens £40
- TSB 5x Apo Barlow £40
- Williams Optics binoviewers with 20mm eyepieces £140
- Altair 60mm right-angled finder scope with illuminated crosshair eyepiece plus tube ring assembly £80
- Meade 50mm 8x straight finder scope £30
- Sky Scout star locator with bag and instructions £30
- Two 2-inch twist lock eyepiece adapters £10 each
- 4-inch and 6-inch optically flat mirrors £30 each

- 8-inch doublet from submarine, re-figured by E S Reid £30
- 5-inch doublet without cell £30

The present owner is Mr Anthony McCarthy, who can be contacted on 07342 048039 or at [mccarthyad1943@yahoo.co.uk](mailto:mccarthyad1943@yahoo.co.uk)

The equipment can be viewed at Mr McCarthy's home, or he is willing to bring it to one of our Society meetings for members to try.

## Eyepieces for sale

All have been looked after and come with end caps but no boxes. All are 1.25-inch push-fit.

William Optics SPL 6mm. Retails [new](#) for £79. Price £40.



Celestron X-Cel LX 12mm. Retails [new](#) for £80. Price £40.



Sky Watcher Sky Panorama 15mm. Retails [new](#) for £80. Price £40.



TAL 2x Barlow. No longer manufactured; commonly sell for £50. Price £30.



Please contact **James Dawson** on the NAS Helpdesk: [helpdesk@nottinghamastro.org.uk](mailto:helpdesk@nottinghamastro.org.uk)

## **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 meetings and other events by visiting the NAS website:

[www.nottinghamastro.org.uk](http://www.nottinghamastro.org.uk)

### **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 Twitter**

The Society has a Twitter account at <https://twitter.com/NottinghamAstro>

### **NAS Journal e-mailing list**

To register for your monthly e-mailed copy of the NAS Journal, just e-mail [secretary@nottinghamastro.org.uk](mailto:secretary@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 [treasurer@nottinghamastro.org.uk](mailto:treasurer@nottinghamastro.org.uk)*



# Nottingham Astronomical Society

Affiliated to the **British Astronomical Association**  
Member of the **Federation of Astronomical Societies**  
Supporters of the **Commission for Dark Skies**

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## **CHAIRMAN:**

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## **VICE CHAIRMAN:**

**Roy Gretton**

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(vacant post: )

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## **DIRECTOR OF OBSERVING:**

**David Buxton**

email: [observatory@nottinghamastro.org.uk](mailto:observatory@nottinghamastro.org.uk)

**Observatory line: 07726 940700 (line open during observing sessions)**

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## **Meetings**

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

**Gotham Memorial Hall**

**Gotham**

**Nottingham NG11 0HE**

Doors open 7.00pm

**Meetings start 8.00pm**

Meetings end 10.00pm

These meetings are open to the public, and visitors are welcome to attend.

## **Annual subscriptions 2019**

Full	£30
Joint rate for partners living at the same address	£45
Under-18s and full-time students	£5

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

Please make cheques payable to:  
*Nottingham Astronomical Society.*

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If you would like more information about the **Nottingham Astronomical Society**, or would like to become a member, please contact the Secretary [secretary@nottinghamastro.org.uk](mailto:secretary@nottinghamastro.org.uk) or speak to any NAS committee member at one of the regular monthly meetings. A membership application form is inside this issue of the Journal.

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## **The Nottingham Astronomical Society**

The Nottingham Astronomical Society, and/or the Editor accept no responsibility for any errors that may occur within this publication. Any views expressed in the **NAS Journal** are those of the individual authors and not necessarily endorsed by the Nottingham Astronomical Society, its Committee or Members.