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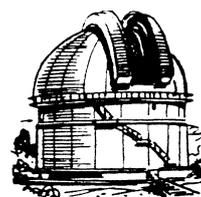
# Journal

of the

## Nottingham Astronomical Society

October 2017

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**Thursday, October 5<sup>th</sup>**

**Gotham Memorial Hall  
Gotham, NG11 0HE**

**8 pm (doors open at 7 pm)**

**This evening we give a warm welcome to**

**Dr Mike Leggett, FRAS**

**who will be speaking on**

**Space Stations  
from Salyut to the ISS**

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### **The Dawn of the Space Age – 60 years on** **1957 - 2017**

You have to be of a certain generation to remember where you were when you heard, in real time, that the Soviet Union had launched the first artificial earth satellite, Sputnik One. It happened on **October 4<sup>th</sup>, 1957**, when I was a 13 year-old schoolboy, mad on astronomy, having just built my first telescope, a six-inch reflector.

What we witnessed in the following decade-and-a-bit was nothing short of astonishing. In less than 12 years, mankind went from launching that small metal sphere into low earth orbit, to being able to send a crew of men to the Moon and bring them back safely. Arguably there has never been such rapid technological progress in any other comparable period of human history!



# Sky Notes

## October 2017



Compiled by Roy Gretton

*All times given below are in British Summer Time*

**British Summer Time ends** at 2 am on Sunday, October 29<sup>th</sup>. Clocks should be put back one hour on that date.

### PHASES OF THE MOON

| <i>Phase</i>  | <i>Date and time</i>               |
|---------------|------------------------------------|
| Full Moon     | 7:40 pm on October 5 <sup>th</sup> |
| Last Quarter  | 1:12 pm on the 12 <sup>th</sup>    |
| New Moon      | 8:12 pm on the 19 <sup>th</sup>    |
| First Quarter | 11:22 pm on the 27 <sup>th</sup>   |

This month the Moon is closest to the Earth on the 9<sup>th</sup>, and furthest on the 25<sup>th</sup>.

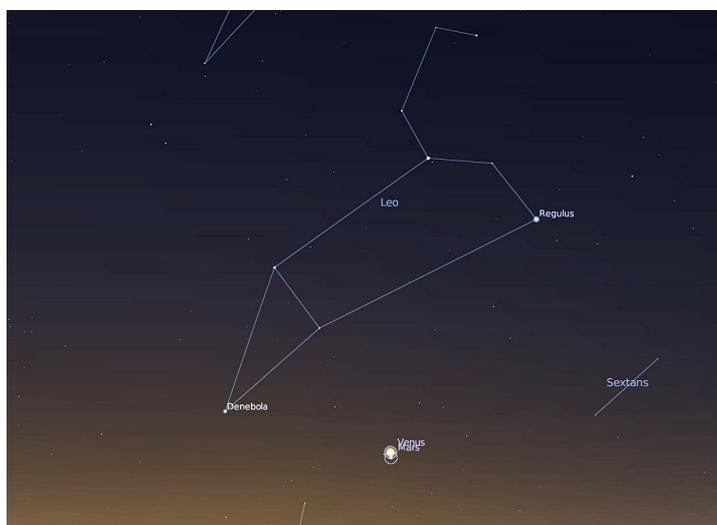
### THE PLANETS

**Mercury** is virtually unobservable this month, as it passes through superior conjunction (on the far side of the Sun) on October 8<sup>th</sup>.

**Venus** (magnitude  $-3.9$ ) remains bright in the morning sky, rising two hours before sunrise, but all the time moving closer to the Sun. By the end of the month its elongation will have diminished to 17 degrees, and it will be rising little more than an hour before sunrise.

**Mars**, though still relatively distant from Earth and therefore less than 4 arcseconds in apparent diameter, is gradually moving further from the Sun in the morning sky. As October begins it will be rising about two hours before the Sun.

An interesting planetary conjunction will occur on October 5<sup>th</sup>, when Mars and Venus will pass each other, coming within one-fifth of a degree separation. Closest approach will occur early in the afternoon of the 5<sup>th</sup>, so the two planets will be seen very close together on the mornings of both October 5<sup>th</sup> and 6<sup>th</sup>.



Looking east  
at 6:15am on  
October 5<sup>th</sup>

*Venus and Mars  
less than  
half a degree apart*

**Jupiter** is unobservable this month, as it reaches conjunction with the Sun on October 26<sup>th</sup>.

**Saturn**, in the constellation of Ophiuchus, is now approaching the limits of its observability. If you make the effort, you may still be able to find it low down in the south-west after sunset, and glimpse the magnificent ring system that the Cassini spacecraft spent so long studying, but unfortunately the view is likely to be poor due to conditions in our own atmosphere.

**Uranus**, about 10 degrees north of the celestial equator in the constellation of Pisces, will be at opposition to the Sun on October 19<sup>th</sup>, and therefore observable throughout the night. At magnitude 5.8 it is theoretically within the limits of naked eye visibility, but realistically you will need binoculars to go searching for this planet. Through a telescope it appears as a pale greenish disk, 3.6 arcseconds across.

**Neptune** is nearly 8 degrees south of the celestial equator in the constellation of Aquarius, and shining at magnitude 7.8.

## METEORS

October's main shower is the **Orionids**, which are fast-moving meteors with a tendency to leave trails that can remain visible for a second or two. This year their maximum activity (up to 25 events per hour) occurs between October 21<sup>st</sup> and the 24<sup>th</sup>. Conditions this year are very favourable for observing the Orionids, as the Moon will be New on the 19<sup>th</sup>. The radiant doesn't rise until after 10 pm, so don't expect to see much activity before this time.

### 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)*

# DIARY DATES 2017

## 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 Opening 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>        |
|--------------------------|--|-----------------------|
| October 5 <sup>th</sup>  | Space Stations<br>from Salyut to the ISS | Dr Mike Leggett, FRAS |
| November 2 <sup>nd</sup> | Annual General Meeting                   |                       |
| December 7 <sup>th</sup> | Voyager 40 Years On (Part 1)             | Paul Money, FRAS      |

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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.

**For your information, the Society has now booked the use of the  
Gotham Memorial Hall for all of our First Thursday meetings in 2018**

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### 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.*

*Members and their guests are welcome.*

**The next meeting will be on October 19<sup>th</sup> (see article below)**

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**Events in the coming months open to everyone (follow hyperlinks for more info. and how to book)**

|                 |  |
|-----------------|--|
| 28th September  | Open Dome Event – <a href="#">Reviewing the End of Cassini</a> , Nottingham    |
| 30th September  | BAA Observers' Workshop - <a href="#">Lunar and Solar</a> , London             |
| 30th September  | FAS <a href="#">Convention &amp; AGM 2017</a> , Birmingham                     |
| 7th October     | BAA <a href="#">Back to Basics Workshop</a> , Norfolk                          |
| 13-14th October | <a href="#">International Astronomy Show</a> , Coventry                        |
| 19th October    | <a href="#">Lasers in the Jungle</a> , University of Nottingham Public Lecture |
| 28th October    | Society for the History of Astronomy <a href="#">Conference</a> , Birmingham   |
| 25th November   | BAA <a href="#">Historical Section Meeting</a> , Birmingham                    |

## Social and Practical Astronomy, Plumtree

The **July** meeting at Plumtree saw Brian Griffin give us a pictorial account of the building of the observatory in Cotgrave. Despite the initial technical issues with the projector, Richard Severn saved the day by going home and picking up his enormous TV. Brian has pulled together hundreds of photographs and documents relating to the planning and building of the observatory, and we had a fascinating insight into its construction. We are grateful to Brian for delivering such a unique and personal account on the history of this vital component of our Society.

The **August** meeting saw our longest standing member, Alan Heath (right), give a talk on the use of colour filters in planetary observation. Alan first joined the Society in 1952 and was elected president in 1958 and is an honorary life member. Alan has been using coloured filters for many years and in his talk described how they can be used to enhance detail when making visual observations and be used to help determine colour. Alan has kindly written a brief report about his talk which appears in this edition of the Journal. In addition to his talk, Alan also brought along a selection of his drawings and photographs, and a number of physical objects including some of his meteorites. The talk was a great success and we'll be seeing Alan again for another fascinating talk in the coming months.



At the **September** meeting NAS member Leigh Blake gave a practical demonstration of his astrophotography set-up (left). A question and answer session followed on a range of topics relating to imaging. The session was well attended and well received; many thanks to Leigh for this.

The **October** meeting at Plumtree will see NAS Secretary Sam Boote run an interactive session on "what the Society stands for, and what the Society can do". As always, the doors will open at 7:30pm and the session will start at 8pm. We hope to see you there.

**James Dawson**

NAS Helpdesk

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

## The Total Solar Eclipse of August 21<sup>st</sup>, 2017

I was one of many people from around the world who travelled to the USA in the hope of observing this summer's total eclipse of the Sun. Not that I'm a seasoned eclipse-chaser, having been to a zone of totality only once before, and that was in Cornwall in August 1999, when the whole thing was clouded out by an Atlantic weather front.

Eighteen years later I hit lucky. I chose a place in Oregon as my observing site, and to my delight the day dawned with clear blue sky, and remained that way.

The partial phase began at 9:05 am Pacific Time, with totality lasting barely 2 minutes from 10:16 am. We parked on a piece of ground beside a minor thoroughfare called Adair Frontage Road, between the towns of Monmouth and **Corvallis** (where we had stayed overnight prior to the event), close to the centre line of totality.



Apart from the mandatory dark glasses, the only item of observing equipment I had taken with me was a pair of 7x25mm binoculars. I had decided in advance that I wasn't going to waste any of those precious seconds trying to take photographs. There would be plenty of people imaging the event with cameras superior to mine. I just wanted to absorb and enjoy the spectacle, the likes of which I might never see again.



In the couple of hours leading up to the start of the eclipse, more and more cars arrived, until a small crowd of people had assembled there. Most were Americans, but there were at least six of us Brits, two of whom had been parked at the spot from soon after 4 am, about 6 hours before totality! (TV stations had warned that local roads would be clogged with traffic as people converged on the centre line, but these fears were grossly exaggerated). However, being able to share the event with other people made the experience all the more enjoyable.



Some minutes before totality was due, someone pointed up at a white dot in the sky and said, “Look, there’s Venus!”

I knew that Venus would be visible during totality, but was doubtful that it would be easy to spot while the Sun’s disk was little more than 90 percent obscured. Besides, the white dot seemed to be too far west to be Venus. (Data tables gave the elongation of the planet as 34 degrees). When totality finally arrived, the true position of Venus was obvious, almost due south, while the mystery object had completely disappeared. So what was it? It couldn’t have been an aircraft as it was apparently stationary, but it occurred to me that it might have been a high-altitude balloon. A little research on the internet revealed that over 70 such balloons were launched that day along the line of totality, including one from **Corvallis**, just a few miles down the road, by students from the Oregon Institute of Technology, with the aim of monitoring the effects of the eclipse. My guess is that we had caught sight of that very balloon. See <http://oitgrasp.wixsite.com/eclipse>

<http://nwnewsnetwork.org/post/high-altitude-balloons-have-mixed-success-giving-view-eclipse-near-space>

The sight of a total solar eclipse is a gripping experience that goes by all too quickly. I took in the scene with the naked eye, as well as viewing the corona through my small binoculars. A pink prominence was clearly visible at about 3 o’clock on the disk. A star visible close to the Sun, in the same binocular field of view was, I believe, Regulus (the Sun is in Leo in late August). After totality, I wandered along the road to capture multiple images of the crescent Sun produced by the pin-hole effect of hundreds of leaves on a tree.



Whether I’ll ever witness another total solar eclipse is unknown, but travelling to see this one was worth every cent of the cost!

*Roy Gretton*

## Observation of planets using colour filters

By Alan Heath



In the early 1960s there was a debate at the [British Astronomical Association](#) (BAA) as to the value or other wise of using colour filters for visual observation. It became known as the **Great Filter Debate**. The outcome was that filters are of value and they can show features which are not seen in integrated light.

The method of using filters with **JUPITER and SATURN** is as follows. The global features (and rings of Saturn) are first estimated for intensity on a scale of '0' (white) and '10' (black background sky). The estimates are then repeated using a red filter and repeated again using a blue filter. The filters used are Wratten 25 (red), Wratten 44a (blue) and Wratten 47 (deep blue). The usual data of date, time (Universal Time, UT), longitude and Systems 1 and 2 as well as seeing conditions are added; seeing conditions are based on the [Antoniadi Scale](#) where 1 is excellent and 5 is bad. System 1 and 2 relates to the differing speeds at which the equatorial region rotates compared to latitudes further north or south (these can be calculated using data in the [BAA Handbook](#)). At the end of the apparition these figures are totalled and divided by the number of observations made and taken to one decimal place. By subtracting the figures which are SHADING from 10 we get LIGHT INTENSITY, i.e. 4.6 for shading will be 5.4 for light intensity. Using the light intensity it is possible to get red minus blue (R-B) which serves as a numerical indication of colour. Colour of features is often at the threshold of vision but using the described method an indication of colour can be obtained. The Red Spot of Jupiter demonstrates this very well.

Observing **MARS** with filters is of value as the dark features appear in better contrast with a red filter but a blue filter will show the dark features weaker or not at all. The W47 filter can show any white clouds which are not seen without it. Sometimes the dark features are seen with a blue filter just as well as in integrated light and this is known as a 'blue clearing'.

Observing **VENUS** shows a number of differences depending on which filter is used. The PHASE varies by a few percent from red to blue and the cusps can be sharp in red but diffuse in blue. Subtle changes can sometimes be seen with filters which are not seen in integrated light. Filters are of use when looking for the [Ashen Light](#). In order to standardise the phase of visual observations of Venus, a Wratten 15 Yellow filter is recommended as it reduces the scatter between individual observers.

There is an interesting phenomenon with Saturn known as the BI-COLOURED ASPECT OF THE RINGS first noted by [Walter Haas](#) of the Association of Lunar and Planetary Observers (ALPO) in 1949. Usually seen with a blue filter one side of the outer part of the rings ([Ring A](#)) may be brighter than the other but this is not always the case. Using filters requires practice especially with the estimation of intensities.

### **References:**

[The Great Filter Debate](#), Alan Heath, *JBAA* 127, 3, 2017

**Saturn's Colourful Mystery**, Thomas Dobbins, Alan Heath and Valeri Dikarev, *Sky & Telescope*, January 2003, p106-111

## **ADVERTISEMENT**

### **FOR SALE**

Lunt LS50THA/B400 PT pressure tuned solar scope complete with TeleVue sol searcher and Lunt dovetail bar. In excellent condition, £800 for scope with standard helical focuser, £950 for scope with Starlight feathertouch focuser.

All enquiries to Dave Mattison,  
Email [dave.mattison@btinternet.com](mailto:dave.mattison@btinternet.com), tel 0115 9260873

# Nottingham Astronomical Society

Affiliated to the **British Astronomical Association**  
Member of the **Federation of Astronomical Societies**  
Member of the **Society for Popular Astronomy**  
Supporters of the **Commission for Dark Skies**  
**Registered Charity No: 1066645**

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**(vacant post; Acting Director: John Hurst)**

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

## **ORDINARY COMMITTEE MEMBERS:**

**Barrie Chacksfield**

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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 2017**

|  |     |
|--|-----|
| 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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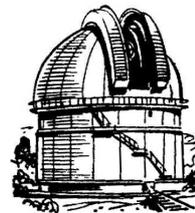
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Affiliated to the British Astronomical Association  
Member of the Federation of Astronomical Societies

Registered Charity No. 1066645  
Member of the Society for Popular Astronomy  
Supporter of the Commission for Dark Skies



## Membership application and Gift Aid declaration

**Title:**

**Full name:**

**Full home address:**

**Postcode:**

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**e-mail address:**

|                           |                                 |        |        |        |             |
|---------------------------|---------------------------------|--------|--------|--------|-------------|
| <b>Subscription rate:</b> | Full                            | £30.00 | (year) | £15.00 | (half year) |
|                           | Partnership                     | £45.00 | (year) | £22.50 | (half year) |
|                           | Under-18 and full-time students | £5     |        |        |             |

Partnership = two members living together as a couple at the same address

I wish my subscriptions to be eligible for Gift Aid **Yes / No**

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**(HMRC reference XR32048)**

I want Nottingham Astronomical Society to treat all subscriptions and donations that I make from the date of this declaration as Gift Aid donations, until I notify you otherwise.

I pay an amount of UK Income Tax and/or Capital Gains Tax at least equal to the tax that Nottingham Astronomical Society reclaims on my donations in the appropriate tax year.

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