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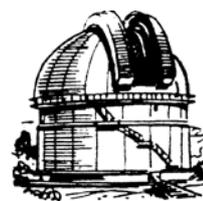
# Journal

of the

Nottingham Astronomical Society

January 2016

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*In this issue*

- Sky Notes for January
- Diary Dates 2016
- NAS Library
- NAS Helpdesk
- E-services
- Report: BAA Christmas Lecture
- Advertisement
- Society Information
- Membership application form

Thursday, 7<sup>th</sup> January

British Geological Survey  
Nicker Hill, Keyworth

8 pm (doors open at 7.30pm)

Tonight we will be holding an

## Open Evening

A great opportunity to meet new members, peruse our library, seek answers at our Help Desk, and take part in our

***New Year Astronomical Quiz***

**The Committee wishes all members and friends of the Society  
a very happy and prosperous New Year**

*A couple of astronomical highlights to look forward to  
(weather permitting) in 2016 are:*

A transit of **Mercury** on May 9<sup>th</sup>, visible in its entirety from the UK.

An opposition of **Mars** on May 22<sup>th</sup>. The planet will have an angular diameter of 18.3 arcseconds and will be at the same brightness as Jupiter on that date.

***But on the down side...***

Mars will be more than 21 degrees south of the equator at this time, making telescopic observation from Britain far from ideal.

Meanwhile **Saturn** will spend the whole of 2016 more than 20 degrees south of the celestial equator. *Ditto telescopic observation.*

Our most prolific meteor shower, the **Geminids**, reaches maximum activity on the night of a Full Moon...*the worst time of the month.*

And...this year sees a dearth of solar and lunar eclipses for UK observers.

# Sky Notes

## January 2016

Compiled by Roy Gretton



*All times given below are in Greenwich Mean Time (GMT)*

**Earth** will be at **perihelion** (its closest approach to the Sun) on the evening of January 2<sup>nd</sup>, when we shall be 147.1 million kilometres from our nearest star.

### PHASES OF THE MOON

<i>Phase</i>	<i>Date and time</i>	<i>Moonrise</i>	<i>Moonset</i>
Last Quarter	2 <sup>nd</sup> January, 5:30 am	Midnight	11:50 am
New Moon	10 <sup>th</sup> January, 1:31 am	7:50 am	5:10 pm
First Quarter	16 <sup>th</sup> January, 11:26 pm	11:05 am	---
Full Moon	24 <sup>th</sup> January, 1:46 am	5:25 pm	7:40 am

This month the Moon is closest to the Earth on the 15<sup>th</sup> and furthest on the 2<sup>nd</sup>.

### THE PLANETS

**Mercury** begins the New Year as an evening object, 20 degrees from the Sun, but less than 6 degrees above the southwestern horizon at the end of civil twilight, so very difficult to spot. Moving steadily toward the Sun, it passes through inferior conjunction on January 14<sup>th</sup>, thereafter emerging as a morning object, but not well placed for observation from Britain.

**Venus**, still a brilliant morning object, is steadily becoming less prominent, and shrinking in apparent size to less than 13 arcseconds diameter by the close of the month. On the morning of January 9<sup>th</sup>, Venus passes a mere **5 arcminutes** to the north of Saturn.

**Mars** will be due south at 7 am in mid-January, and will brighten above magnitude +1 before the month is out. By then its angular size will have increased to nearly 7 arcseconds, but even so, surface detail will remain very difficult to see, even through large amateur telescopes.

**Jupiter**, in the constellation of Leo, reaches its first stationary point on January 8<sup>th</sup>. Thereafter it will be moving in a retrograde fashion (westwards) until May, due to the Earth "overtaking" the gas giant near opposition, which will occur in March. By the end of January, Jupiter will be rising shortly before 9 pm, and its equatorial diameter will have increased above 42 arcseconds, making it an excellent subject for telescopic observation. For those who enjoy watching the movements of the four brightest satellites, a list of shadow transits (the easiest phenomena to observe) visible in the *evenings* this month is given below. Look out for a dark spot crossing Jupiter's disk.

<b>January</b>	<b>Shadow transit of</b>
3 <sup>rd</sup>	Europa begins at 23:48
7 <sup>th</sup>	Io ends at 22:40
10 <sup>th</sup>	Callisto begins at 21:12
14 <sup>th</sup>	Io begins at 22:18
28 <sup>th</sup>	Europa 21:51 to 23:39
30 <sup>th</sup>	Io 20:33 to 22:48

**Saturn** begins January very close to the Sun in the morning sky. On the morning of the 9<sup>th</sup> it will be *less than one-tenth of a degree* south of the much brighter Venus. If you have an unobstructed southeastern horizon and can spot Venus, look just below this planet to find Saturn. Later, by the end of January, Saturn will be rising just after 4 am.

**Uranus** is an evening object about seven degrees north of the celestial equator in the constellation of Pisces, shining at magnitude 5.8 and having an angular diameter of 3.6 arcseconds.

**Neptune** is an evening object in the constellation of Aquarius, becoming more difficult to observe as January progresses.

## METEORS

The **Quadrantids** reach their maximum activity (perhaps up to 80 events per hour) on the morning of January 4<sup>th</sup>, which is less than a week before New Moon, so conditions are reasonably favourable this year. The meteors, which appear to radiate from a point in the north of the constellation of Boötes, not far from the handle of the Plough, may show distinct blue or yellow colours.

## COMET Catalina (C/2013 US<sub>10</sub>)

This comet is expected to be a little fainter than magnitude 6 as the New Year begins. It can be observed in the southeast well before sunrise (which at this time of year doesn't mean that you have to be out of bed particularly early, as the Sun doesn't rise until about 8:30 am). A good time to observe is at around 6:30, when you may be able to see up to four naked eye planets as well as Comet Catalina, which will be passing about one degree from the bright star Arcturus on January 1<sup>st</sup>.... so finding it should be easy with binoculars or a small telescope.

Thereafter the comet continues its northward journey, passing **Alkaid** in the Plough on January 15<sup>th</sup>, and Polaris late in the month. By then will probably have faded well below 6<sup>th</sup> magnitude.



**Looking  
southeast at  
7 am on  
January 1<sup>st</sup>**

The approximate  
position of  
Comet Catalina  
is indicated by  
the red marker

# DIARY DATES 2016

## Monthly Meetings of the Nottingham Astronomical Society

Our programme for this year is shown below. 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.

Our meetings are held on the **FIRST THURSDAY** of the month, at the British Geological Survey, Keyworth, Notts, NG12 5GG

(except **August**, when we meet at our observatory site, between Cotgrave and Cropwell Bishop)

Doors open at 7:30pm for 8pm start.

<u>Date</u>	<u>Topic</u>	<u>Speaker</u>
January 7 <sup>th</sup>	Open Evening <i>including a New Year Quiz</i>	
February 4 <sup>th</sup>	The Formation of the Solar System	Dr Richard Alexander <i>University of Leicester</i>
March 3 <sup>rd</sup>	Rosetta: Anatomy of a Comet	Dr Colin Snodgrass <i>The Open University</i>
April 7 <sup>th</sup>	Is There Anyone Out There?	Prof Ian Morison <i>University of Manchester</i>
May 5 <sup>th</sup>	Gamma Ray Bursts	Prof Nial Tanvir <i>University of Leicester</i>
June 2 <sup>nd</sup>	Gaia: A Billion Pixel Survey of a Billion Stars	Dr Elme Breedt <i>University of Warwick</i>
July 7 <sup>th</sup>	The Antikythera Mechanism: an Ancient Astronomical Computer	Prof Mike Edmunds <i>University of Cardiff</i>
August 6 <sup>th</sup> (Saturday)	Society BBQ at the Observatory	
September 1 <sup>st</sup>	Images of the Universe - 2	Paul Money
October 6 <sup>th</sup>	Open Evening <i>including a Telescope Surgery</i>	
November 3 <sup>rd</sup>	Annual General Meeting 2016	
December 1 <sup>st</sup>	Galactic Monsters: Seyfert Galaxies, Radio Galaxies and Quasars	Dr Marek Kukula <i>Greenwich Observatory</i>

## **NAS Library**

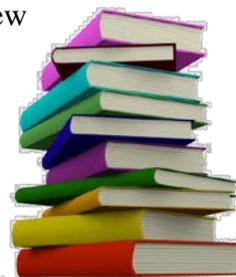
I hope you've had a merry Christmas and I wish you all the best for the New Year; lots of clear skies and plenty of reading!

We have a few copies of Patrick Moore's Yearbooks of Astronomy we no longer need, so if you want a free copy from one of the following years, please email me and I'll reserve it for you (one copy per individual please unless no one else shows interest):

- 1970
- 1975
- 1987 (two copies)
- 1988

There is also a 1960 (1st) edition of Patrick Moore's Guide to the Stars available to a good home.

The full list of books in our lending collection can be found here: [NAS Library Collection](#).  
Lorraine [NASlibrarian@hotmail.com](mailto:NASlibrarian@hotmail.com)



## **NAS Helpdesk**

Did you get any new or second-hand astronomy equipment for Christmas? If so and you are struggling to get to grips with it bring it along to the January meeting and we'll have a look at it for you. Else send us an email about it. We are happy to try and help members get the most of out their equipment and maximise their enjoyment of amateur astronomy.

We still have a couple of copies left of the 2015/2016 Federation of Astronomical Societies' Astrocalendar for sale at £2 each; £1 goes to Nottingham Astronomical Society, and £1 pays for the calendar. These will be on the Helpdesk at the January meeting.

James Dawson and Bob Richardson [NAShelpdesk@hotmail.com](mailto:NAShelpdesk@hotmail.com)



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## **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 now 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.

**British Astronomical Association Christmas Lecture 2015**  
**Saturday 12th December, 2015**  
Christopher Ingold Building, University College London



The 2015 [British Astronomical Association's](#) Christmas Lecture is an annual event and held this year in the Christopher Ingold Building, home to the Chemistry Department at University College London. The lecture theatre was full with BAA members and visitors and the talks were recorded and are available to BAA members on the BAA's website. The [meeting](#) was opened by Dr Jeremy Shears, the new president of the BAA, who welcomed the audience and in particular new members of the BAA. The BAA aims to encourage and support all aspects of astronomy, and caters for all levels from new comers to professional scientists.

The first lecture was by [Professor Gerry Gilmore](#) from the [Institute of Astronomy](#) in Cambridge. Professor Gilmore talked about the [Gaia project](#), a European Space Agency mission to map the precise position, distances, movements and change in brightness of one billion stars in the Milky Way; it will monitor each of its targets about 70 times over a five-year period and give us the best ever 3D map of our galaxy. The Gaia spacecraft was launched in 2013 and the [camera](#) inside has nearly one billion pixels and is the largest camera ever launched into space; the camera generates 50 Gigabytes of data per day which is transmitted back to Earth where it is being analysed. The first catalogue of results from Gaia are anticipated to be released in 2016.



The second lecture was delivered by [Professor Lucie Green](#) of TV fame but also an internationally recognised [research scientist](#) based at University College London. Lucie's mesmerising talk titled "At the edge: how leaving the solar system can tell us more about the Sun" discussed the Voyager missions and how they have helped us understand where the 'edge' of our solar system is; Lucie also talked about other probes and spacecraft which have, or are planned to, observe the sun and the matter which it ejects and which makes up the [solar wind](#) and which contributes to [space weather](#). Having a better understanding of the solar wind and of space weather is not only helpful when considering solar system formation and evolution, it also has direct implications for human life; outbursts in solar activity can have severely detrimental effects on orbiting satellites on which we are so reliant for communications in all aspects of our lives whether talking to friends and relatives, online shopping, shipping and aircraft navigation as well as World-trade and secret military activities. A European Space Agency mission is planned to be launched in 2018 where the [Solar Orbiter](#) satellite will orbit the Sun and has a number of objectives which includes gaining a more detailed understanding of the Sun's corona (an aura of plasma which surrounds the Sun) and how fluctuating solar activity influences the variability of the [heliosphere](#) (the Sun's sphere of influence which extends out beyond the Kuiper belt where Pluto resides). There are exciting times ahead for solar scientists.

The meeting was closed with a Sky Notes presentation for December and January delivered by Nick James, the BAA Comet Section Director; then end to a thoroughly fascinating afternoon.

**James Dawson, NAS Helpdesk**  
[NAShelpdesk@hotmail.com](mailto:NAShelpdesk@hotmail.com)

## Advertisement

### FOR SALE

Brightstar manual filter wheel (holds up to five 1¼-inch filters)	£30
Set of four 1¼-inch coloured filters (red, yellow, green, blue)	£20
Mars filter 1¼-inch	£10
Moon filter 1¼-inch (25% transmission)	£10
Filter case (holds up to four 1¼-inch filters)	£2
Celestron lens pen	£2
Micro-fibre cleaning cloth	£2

**Sam Boote [s.boote@bcs.org](mailto:s.boote@bcs.org) or at Society meetings**

# 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 **Campaign for Dark Skies**  
**Registered Charity No: 1066645**

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## **DIRECTOR OF OBSERVING:**

**(vacant post)**

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

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

## **ORDINARY COMMITTEE MEMBERS:**

**Sam Boote**

**Barrie Chacksfield**

**James Dawson**

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## **Meetings**

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

**The British Geological Survey  
Nicker Hill  
Keyworth  
Nottingham NG12 5GG**

Doors open                    7.30pm  
**Meetings start                8.00pm**  
Meetings end                10.00pm

Meetings are open to the public, and visitors are welcome to attend.

## **Annual subscriptions 2016**

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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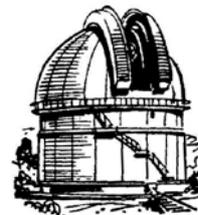
### **The Nottingham Astronomical Society**

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# NOTTINGHAM ASTRONOMICAL SOCIETY

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Affiliated to the British Astronomical Association  
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Registered Charity No. 1066645  
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## Membership application and Gift Aid declaration

**Title:**

**Full name:**

**Full home address:**

**Postcode:**

**Telephone:**

**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**

## Gift Aid declaration

**(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.

**Signature:**

**Date:**