

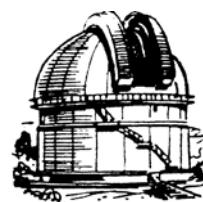
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# Journal

of the

**Nottingham Astronomical Society**  
**June 2016**

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## *In this issue*

- Sky Notes for June
- Diary Dates 2016
- Astronomy for the Younger Generation
- Images of the Transit of Mercury
- LED Street Lighting
- NAS Helpdesk
- NAS Library
- Advertisement
- E-Services
- Society Information
- Membership application form

**Thursday, June 2<sup>nd</sup>**

**British Geological Survey  
Nicker Hill, Keyworth**

**8 pm (doors open at 7.30pm)**

**This evening we welcome**

**Dr Elme Breedt**



**of the University of Warwick  
who will be speaking on**

**Gaia: A Billion Pixel Survey  
of a Billion Stars**

## **Online Parliamentary Petition on Light Pollution**

Here is an opportunity for everyone to support measures to combat light pollution, which is so damaging to our hobby. Although this particular petition makes only a brief reference to astronomical matters, and concentrates on human health issues and the terrestrial environment, it represents another chance to make our voice heard in our ongoing quest to protect the night sky.

At 10,000 signatures, the government will respond to the petition.

At 100,000 signatures, this petition will be considered for debate in Parliament.

The deadline for completing this petition is 22<sup>nd</sup> July.

Please take part if you are concerned about this issue; and, if possible, encourage your friends to support us.

Go to <https://petition.parliament.uk/petitions/119428>

*Thank you.*

# Sky Notes

## June 2016

Compiled by Roy Gretton



*All times given below are in British Summer Time*

The Summer Solstice, when the Sun appears at its most northerly point in the sky (23.4372 degrees north of the celestial equator), will occur at 11:34pm on June 20<sup>th</sup>.

### PHASES OF THE MOON

<i>Phase</i>	<i>Date and time</i>	<i>Moonrise</i>	<i>Moonsset</i>
New Moon	4am on June 5 <sup>th</sup>	5:30am	9:20pm
First Quarter	9:10am on the 12 <sup>th</sup>	1pm	1:15am
Full Moon	12:02pm on the 20 <sup>th</sup>	9:05pm	5:05am
Last Quarter	7:19pm on the 27 <sup>th</sup>	-----	12:45pm

This month the Moon is closest to the Earth on the 3<sup>rd</sup>, and furthest on the 15<sup>th</sup>.

### THE PLANETS

**Mercury** is a morning object throughout the month, reaching greatest western elongation (24 degrees) on June 5<sup>th</sup>. It will, however, be very difficult to spot, rising less than an hour before the Sun.

**Venus** reaches superior conjunction on June 6<sup>th</sup>, and in so doing passes directly behind the Sun (the opposite of a transit). Thus the planet will be unobservable this month.

**Mars** begins June at its closest approach to the Earth during this apparition, and will show a visible disk 18.6 arcseconds across, so this will be the best time in 2016 to observe the Red Planet. At magnitude  $-2.0$  it will be a bright object, rivalling Jupiter in prominence, but at a declination of  $-21^{\circ}25'$ , observing surface details will be challenging due to atmospheric degradation of the image.

**Jupiter** is visible throughout the whole evening during June, and although its apparent diameter will have shrunk to less than 35 arcseconds by the close of the month, it will still be a worthwhile object to observe.

**Saturn** will be at opposition to the Sun on June 3<sup>rd</sup>, so this should be the best time of year to observe the planet. Saturn's disk will have an equatorial diameter of 18.4 arcseconds, and the ring system a maximum span of 41.8 arcseconds. But like Mars, it will be very low in our sky (more than 20 degrees south of the celestial equator), so not seen to advantage from the British Isles.

**Uranus** and **Neptune** are unobservable this month.

### METEORS

With its lack of true darkness, June is not the best time of the year for observing meteors, and there are no major showers during the month.

# 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>
June 2 <sup>nd</sup>	Gaia: A Billion Pixel Survey of a Billion Stars	Dr Elme Breedt University of Warwick
July 7 <sup>th</sup>	The Antikythera Mechanism: an Ancient Astronomical Computer	Prof Mike Edmunds University of Cardiff
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 including a Telescope Surgery	
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 Greenwich Observatory

### Some astronomy-related events and meetings held locally and further afield

Thursday 26.05.2016 	<b>From Earth's Images to the Hubble Deep Field - Nottingham Trent University Public Lecture</b> Nottingham Trent University hosts monthly public lectures on astronomy at its Clifton Campus; the coming talk (Thursday 26th May, 2016) takes the audience on a journey of images of the Earth and the Universe in which it resides. Attendance is free but booking is required. For further information and to book tickets use this <a href="#">link</a> .
Thursday 16.06.2016 	<b>Gravitational Waves - University of Nottingham Public Science Lectures</b> The School of Physics & Astronomy at the University of Nottingham holds monthly public lectures, and these cover a range of topics. The next lecture is part two of two devoted to gravitational waves. Attendance is free and no booking is required. For further information use the <a href="#">link</a> .
Saturday 18.06.2016 	<b>Webb Deep-Sky Society Annual Meeting</b> This meeting is being held at the Institute of Astronomy in Cambridge and will start with the AGM for members only, but a programme of lectures on theoretical and practical astronomy follows. For further information on the programme or to book tickets use this <a href="#">link</a> .
Saturday 02.07.2016 	<b>British Astronomical Association Summer Meeting</b> The BAAs Summer Meeting is being held this year in York on Saturday 2nd July 2016, between 10am and 6pm. The theme of the day is "Cosmology today: probing the dark side of the Universe." Tickets are £5 for BAA members and £7.50 for non-members. For further information on the programme or to book tickets use this <a href="#">link</a> .
<b>Society for Popular Astronomy (SPA)</b> Many people will be aware of the existence of the SPA, and even be members. Many of their past lectures from their meetings are available free online and can be found using this <a href="#">link</a> .	

## **Astronomy For The Younger Generation**

A while ago I was invited to the school that is attended by a 10 year old relative of mine to give a talk on Astronomy to her class as part of their science studies. The 90 minute session proved to be quite eye opening – the pupils were very inquisitive, perceptive and at times amusing, and I feel fortunate that I am due to speak to another class in the near future. Whilst putting pen to paper for this small article, I felt that it may be useful for NAS members to know what was covered (and pupil responses) as others may be asked to give outreach talks to similar groups of children. I went along to the talk equipped with a few notes, a collection of JPEG images stored on memory stick, a Philip's Planisphere, binoculars and refractor (without tripod).

In order to kick off the session we covered a definition of Astronomy with reference to Stars, Planets and the Universe. This then led into a description of our Solar System with a photograph showing the position and relative sizes of the planets; we talked about the Sun being our nearest star – how it was formed, and hence how planets within our solar system were formed (from the residual debris). Many of the class were not aware of the nature of the Sun, some believing that it was mainly liquid or rock. I took a quick understanding of large numbers (millions, billions etc), so that they could appreciate the distance we reside from the Sun, and how far bodies like Jupiter and Saturn are away from the Sun. The size of the Sun in relation to the number of times the Earth could fit into it and the age of the Sun came as a great surprise to the class as did the levels of surface and core temperature. I made a point of asking 'What we should never do when the Sun is visible' and the class chorused 'Never stare at it' - good to know that they were all health and safety trained!

I explained which planets were classified as rock planets and which were gas and how this related to their distance from the sun and the temperatures of the planets. I also gave them details of the number of moons which each planet has, again a bit of a revelation as children of this age understandably think there is only one Moon - pictures of our moon and its distance from Earth were of great interest and I suppose with it being our nearest neighbour that was to be expected. Their teacher had at some stage covered the rotation of Moon around Earth and Earth around Sun, so they were on board with how the latter drives the various seasons of the year. A couple of pupils were able to explain on being questioned that the changing night sky is due to the rotation of the Earth.

Other areas covered during this section of my talk were our galaxy the Milky Way (its composition, number of stars, the size and brightness of other stars relative to our Sun, our next nearest star Proxima Centauri and its distance from us relative to the Earth-Sun distance). I also spoke about the Andromeda galaxy and its distance from us and from there the presence of an unimaginable number of other galaxies, and hence the concept of the Universe. I showed some photographs of observatories and the Hubble Space Telescope, and how scientists use these to explore and photograph our Universe. Out of the blue one bright girl wanted an explanation of the Big Bang – all a bit disconcerting at times!

The speed of light was an interesting area for the class and how this meant that the view we see of the Sun is effectively about 8 minutes back in time. We were then able to expand this in order to understand that our views of the sky are 'historical' views depending on the distance of the object/s viewed. I was surprised that the class was able to grasp this, unless they were simply being polite to me!

I suppose for me one of the important aspects of this session was to leave the class with a good idea of how they could if wish get into Astronomy so I took along a couple of pairs of binoculars (10 x 50 and 15 x 70) and a refractor (100mm f/9). Plainly, neither the teacher or class were aware of the capabilities of binoculars for skywatching and I encouraged them to

either borrow a pair or get someone (Mum or Dad) to buy them a pair. The importance of choosing a clear night to observe and the benefits of a tripod (if available) were also covered, as were the differing colours of some stars (and how this relates to their age). In showing the class the refractor, I displayed more detailed photographs of an open cluster, twin cluster, globular cluster, double star system (Albireo) and nebula as an indicator of what a more powerful bit of kit would enable them to see. Importantly the recognition of Constellations as 'road signs' within the night sky were covered, particularly the Plough and how it points to Polaris (and therefore shows where North is) – the Philips Planisphere was very useful during this part of my session, as was the Swan shape of Cygnus as I could show how the main line of stars leads to Albireo; we also discussed 'shooting stars' and how these were visible throughout the year.

I asked a number of questions throughout the talk in order to fully engage the class and in turn was presented with a very large number of questions including the existence of Aliens, what would happen if gravity didn't exist, what would happen if a planet collided with the Earth, will the Universe cease (and if it does will it start up again !), what are Saturn's rings made of ? – all good stuff and a bit challenging at times. The use of plenty of photographs and diagrams turned out to be very stimulating and enjoyable for the class

Finally, I left them with some 'homework', if I can call it that – I asked them to try and explore some further information, probably via the internet, on Constellations and then have a go at identifying a few in the night sky with the naked eye. Try to establish where Jupiter is in the night sky (the bright 'star') – at the time of my talk this planet was visible in the East at about 8pm – and use binoculars if available to see its moons. I thought it quite reasonable to suggest to this age group that they download a programme such as Stellarium and explore what that has to offer (the teacher said she would try to do this for them in class). I can only finish by saying how rewarding it was to talk to this particular age group of children.

## **Dave Mattison**

May 2016

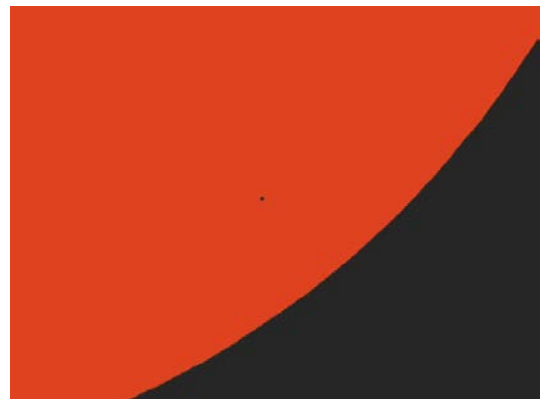
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### **The Transit of Mercury, 2016 May 9**

NAS member **Dave Mattison** took these images of last month's transit of Mercury. They were acquired between 12.15 and 12.50 BST on May 9th using a Lunt 50 mm solar telescope and Canon digital camera with eyepiece projection using 5mm and 13mm eyepieces. In Nottinghamshire we were lucky with the weather. It was a largely sunny day, with variable cloud that tended to increase toward evening. But the following day (Tuesday) was thoroughly overcast!



12:15 BST



12:50 BST

## **LED street lighting... coming to a street near you?**



During mid-May the way the streets of Compton Acres are illuminated at night has changed. Whilst I've been away from home during the day the street lighting team must have been extremely busy taking down the old low pressure sodium lanterns and installing new LED fixtures onto the existing lampposts.

The new fittings just appear like a square plate at the top of the lamppost. I think they look quite stylish, but there will be others who will miss the old lights which I am told have been here since the 1980s.

Areas of my back garden have been reasonably sheltered from street lighting, but three of the old lights did bombard parts of the garden and house with unwanted photons which has hindered the limiting magnitude of stars that I can see with the naked eye, and also made long-exposure astrophotography nearly impossible without quality light pollution filters. So I was excited, and nervous, to see what impact these new lights would have on my own "backyard" astronomy.

Driving home late one night I noticed a real difference in the ambient colour of the lighting. There was no golden/orange glow, just a cool almost grey illumination of the main road and of my own cul-de-sac, not dissimilar to the light of a full moon. As I got out of the car and looked up at one of the new LED lights I was astonished at how bright it was, finding it quite uncomfortable on my eyes. Alarmed at the prospect of my back garden rivalling Blackpool I dashed through the house and out the back, only to trip over a plant pot. It was pitch black! There was next to no illumination of my house or my garden and compared to before it felt like being in a rural location.

**James Dawson**

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### **NAS Helpdesk**

We look forward to seeing you at the June meeting and we will now be regularly joined by NAS member Richard Severn. As always we are happy to try and help you solve your astronomy issues, or just to have a chat.



If you have any recent (last few years) astronomy magazines you no longer want, bring a few along and we can pass these on to other members.

**James Dawson, Bob Richardson and Richard Severn**

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

## **NAS Library**

We will have the usual selection of books for everyone to browse at the June meeting plus a couple of new additions – Constellation Guidebook (A Rukl) aimed at the more Intermediate and Advanced level and one of the Voyage through the Universe series, Moons and Rings, which is one for every level.

Again, please don't hesitate to let us know if there is any book (or DVD as we now seem to have branched out!) you would like to see in our library – we can then try to source it.

See you in June.

The full list of books in our lending collection can be found here:

[NAS Library Collection](#).



Lorraine [NASlibrarian@hotmail.com](mailto:NASlibrarian@hotmail.com)

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## **Advertisement**

### **FOR SALE**

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

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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 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.

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### **\*NOTE to NAS Members and Journal Subscribers\***

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  
Member of the Society for Popular Astronomy  
Supporters of the Campaign for Dark Skies  
Registered Charity No: 1066645

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

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**

**Lynda Foot**

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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**

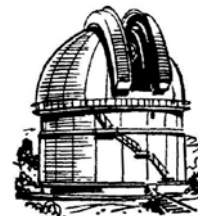
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# NOTTINGHAM ASTRONOMICAL SOCIETY

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## 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:**