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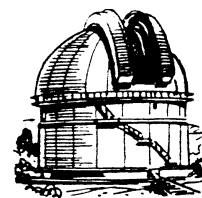
# Journal

of the

## Nottingham Astronomical Society

### December 2019

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- Society for the History of Astronomy Conference
- BAA Equipment & Techniques Section Meeting
- Society Information

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

Gotham Memorial Hall  
Gotham, NG11 0HE

7pm (doors open at 6pm)

**Note the EARLIER TIME for this,  
our Christmas Lecture,  
with our special guest**

**Professor Lucie Green**

Professor of Physics at the  
Mullard Space Science Laboratory  
University College London

who will be speaking on

**"Voyages to the Sun"**

*Probing our nearest star*

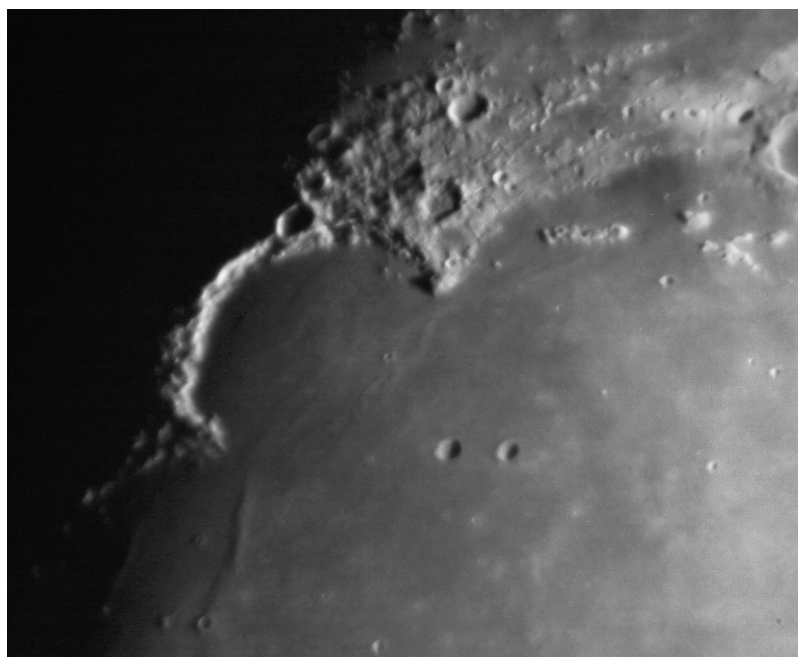
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### Sunrise on the Bay of Rainbows

**The Sinus Iridum  
in the  
Moon's northern  
hemisphere**

Imaged by the Editor  
using eyepiece projection  
with a Canon 450D  
camera and a 10mm  
focal length eyepiece on  
a 30-cm f5.3 Newtonian  
reflector

1/40<sup>th</sup> second at ISO1600





# Sky Notes

## December 2019

Compiled by Roy Gretton

*All times given below are in Greenwich Mean Time*



The northern hemisphere **Winter Solstice** occurs in the early morning of December 22<sup>nd</sup>. At this time the Sun will be 23.437 degrees south of the celestial equator.

### PHASES OF THE MOON

<i>Phase</i>	<i>Date</i>
First Quarter	December 4 <sup>th</sup>
Full Moon	December 12 <sup>th</sup>
Last Quarter	December 19 <sup>th</sup>
New Moon	December 26 <sup>th</sup>

This month the Moon is closest to Earth on the 18<sup>th</sup>, and furthest on the 5<sup>th</sup>.

### THE PLANETS

**Mercury** begins the month as a magnitude  $-0.5$  morning object, 15 degrees south of the celestial equator. Although it will be rising nearly 2 hours before the Sun, it will be very low down and difficult to spot. For the remainder of the month, Mercury will be disappearing into the solar glare as it moves toward the far side of the Sun.

As December progresses, **Venus** (magnitude  $-4$ ) moves further from the Sun in the evening sky, until by New Year's Eve it will be setting nearly three hours after sunset. The fact that such a brilliant object is not even more prominent is down to Venus being more than 24 degrees south of the celestial equator at the beginning of the month; and even by December 31<sup>st</sup> it will still be about 20 degrees south. However, the situation will rapidly improve in the New Year, with Venus moving north of the equator in early February.

**Mars** (magnitude  $+1.7$ ) is a relatively inconspicuous object in the constellation of Libra, in mid-December rising three hours before the Sun. With an angular diameter of 4 arcseconds, it is too tiny for any detail to become visible on the Martian surface.

**Jupiter** is unobservable this month, as it reaches conjunction with the Sun on December 27<sup>th</sup>.



**Looking  
southwest  
at 5pm on  
December  
10<sup>th</sup>**



**Saturn** (magnitude +0.5) disappears into the sunset glow as December progresses. On the 10<sup>th</sup> you may be able to spot it just to the north of the much brighter Venus as the sky darkens.

**Uranus** is an evening object about 13 degrees north of the celestial equator in the constellation of Aries, and shining at magnitude 5.8.

**Neptune** is also an evening object, about 6 degrees south of the celestial equator in the constellation of Aquarius, and shining at magnitude 7.9.

## METEORS

Our most prolific meteor shower of the year occurs in December, but unfortunately this year maximum activity of the **Geminids** occurs very close to the Full Moon, so conditions will be highly unfavourable (unlike 2020, when the reverse will be the case!)

### 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 link to the NAS Journal, and a copy of our SkyNotes, 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)*

## Advertisement

### FOR SALE

Kendrick 8-inch solar filter with custom-made box  
£40

Observing stool (adjustable height)  
£10

Please contact Sam Boote  
[sam@boote.myzen.co.uk](mailto:sam@boote.myzen.co.uk) or at Society meetings



# DIARY DATES 2019-2020

## 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 Quiz Nights, etc, when NAS members provide the activities. Normally we have a **Library** and a **Helpdesk** open at each meeting.*

<b>Date</b>	<b>Topic</b>	<b>Speaker</b>
<b>December 5<sup>th</sup></b> 6pm for 7pm start	<b>Voyages to the Sun</b> <i>Probing our nearest star</i>	<b>Prof Lucie Green</b> University College London
<b>January 2<sup>nd</sup></b>	<b>NAS New Year Quiz</b> with Buffet, Wine & soft drinks	
<b>February 6<sup>th</sup></b>	<b>APOLLO 13 - Ingenuity &amp; Survival</b> 13 factors that saved 3 brave astronauts	<b>Dr Nigel Bannister</b> Senior Lecturer, University of Leicester
<b>March 5<sup>th</sup></b>	<b>FIAT LUX 3 - The LSST Jedi</b> The Large Synoptic Survey Telescope, the greatest survey yet	<b>Dr Steve Barrett</b> Senior Research Fellow, University of Liverpool
<b>April 2<sup>nd</sup></b>	<b>EXTREMOPHILES</b> Why there must be life elsewhere in the Universe	<b>Dr Martin Braddock</b> FRAS
<b>May 7<sup>th</sup></b>	<b>Wonders of the Southern Sky</b>	<b>Professor Ian Morison</b> Emeritus Gresham Professor of Astronomy
<b>June 4<sup>th</sup></b>	<b>VENUS - why so different?</b> New insights from our closest earth sized planet	<b>Dr Richard Ghail</b> Royal Holloway, University of London
<b>July 2<sup>nd</sup></b>	<b>Live Long and Prosper</b> The search for Vulcan and other hypothetical Solar System objects	<b>Dr Ann Bonell</b> Leicester Astronomical Society
<b>August 1<sup>st</sup></b> (Saturday, 5pm)	<b>NAS Annual BBQ at the Observatory</b>	
<b>September 3<sup>rd</sup></b>	<b>The Plumes of Enceladus</b>	<b>Dr Chris Arridge</b> Reader, University of Lancaster
<b>October 1<sup>st</sup></b>	<i>Speaker and title to be confirmed</i>	
<b>November 5<sup>th</sup></b>	<b>Annual General Meeting</b> followed by a Wine and Cheese Buffet	
<b>December 3<sup>rd</sup></b>	<b>The Vikings at Barsoom - Part 1</b> <i>Orbital Operations</i>	<b>Paul Money</b>



## 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 December 19<sup>th</sup> (see further details below, Page 11)**

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### Our AGM 2019

There was a good turnout for our Annual General Meeting on November 7<sup>th</sup>, with the accompanying Cheese and Wine Social adding to members' enjoyment of the occasion.

Many thanks to members who did the catering!





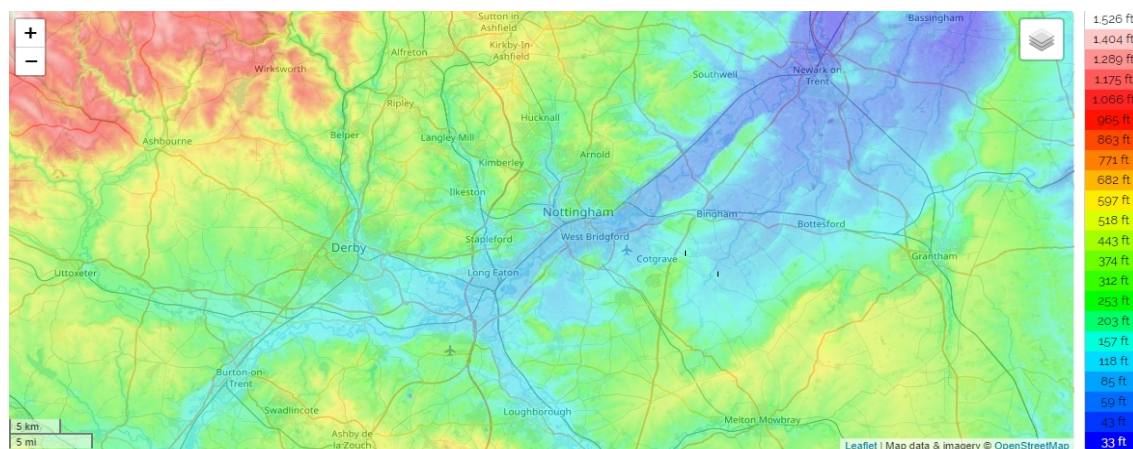
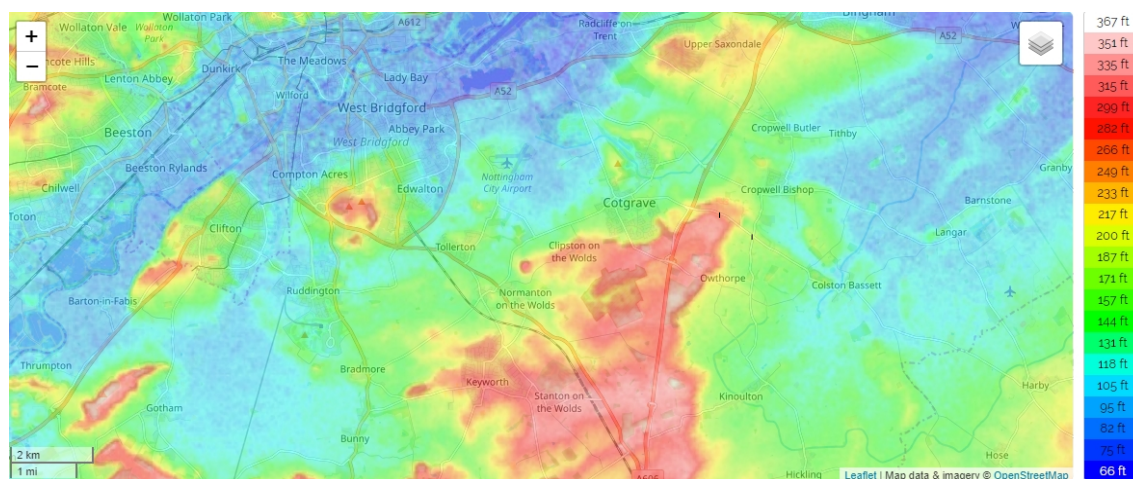
## The Transit of Mercury, 11<sup>th</sup> November 2019

Nottingham Astronomical Society's Observatory, Cotgrave

By **Leigh Blake, James Dawson, Richard Severn**

On the morning of the 11<sup>th</sup> November 2019 there was patchy cloud, and the forecast was for sunny spells, and winds up to 20 mph, with a high chance of rain. At 11am GMT the sky was remarkably clear of cloud and the warmth of the sun could be felt, but with a gusty, mainly, westerly wind.

For those that don't know, the observatory is on an elevated site, on a ridge of the South Nottinghamshire Wolds. Lincoln is about 30 miles away to the north east down the Trent Valley, with Nottingham city centre about 7 miles to the north west, the other side of the Trent Valley and the River Trent. The site stands at about 310 feet (94m) above sea level; in comparison, the centre of West Bridgford is just 86 feet (26m) above sea level. The two maps below illustrate the topography of the site in relation to the Trent Valley; the first map showing part of the Trent Valley from Derby to Newark on Trent, with the observatory site marked with an arrow, and the second a zoomed in view again showing the observatory site on its elevation position overlooking the city to the north west; height scales on the right hand side. Screen shots taken from [www.topographic-map.com](http://www.topographic-map.com)



Three of us were to try and observe the transit with two telescopes; a Celestron C11 with a home made white light filter, and a Lunt 50mm solar scope, each mounted on Skywatcher AZEQ6 mounts.



The mounts were pointed to magnetic north and the altitude adjustments left in place from the last previous night time polar alignments. Scopes were mounted and solar finders attached. By now the wind had picked up with significant gusts and the occasional spots of rain. Through very small patches in the cloud the scopes were aligned to the Sun. The weather had worsened and the gaps in the cloud were few and far between and the westerly wind had again picked up. I managed to centre the Sun in the Lunt and attached a Canon 6D to a 24mm eye piece for eyepiece projection imaging, and commenced taking video two minute before predicted first contact. The C11 was taking longer to align on the Sun with its much greater focal length and subsequent reduced field of view, hindered further by the gusty conditions. The time of first contact came and went, and none of us visually saw anything.

In retrospect I think the seeing conditions were so atrocious, and together with the near continuous cloud cover and wind, this really hampered the views through the Lunt; people often report that cloud and poor seeing makes H-alpha work more difficult. About 60 minutes into the transit we managed to see the dot of Mercury against a white light sun background through the C11. We attached the Canon 6D at prime focus to the C11 and took a few stills and some video footage, but again the busts of wind made this very difficult to determine focus or to keep the image stable.

On assessing the data subsequently, in the warmth, we identified that we had managed to capture one image of the event through the C11, none through the Lunt, and whilst our ventures have not contributed to the advancement of science, it was a fun exercise to at least observe (and image) part of the transit. We had much better views and images of the previous transit of Mercury in 2016.

We are hoping for better luck for future transits, though to observe one from start to finish from the UK it looks like we have to wait until May 7<sup>th</sup> 2049...

*This image from Meteosat 10, shows the cloud cover over the UK at 13:05 GMT on 11th November 2019. A line of cloud from a north west air flow plagued observations of the transit however brief breaks in the cloud allowed several observations of the transit after first contact to be made.*







*Homemade white light solar filter for C11, 90mm aperture, making the scope f/31*



*Setting up before first contact; note the relatively blue sky...*



*From the safety of one of the cars during the transit, and during a wet and gusty spell.*

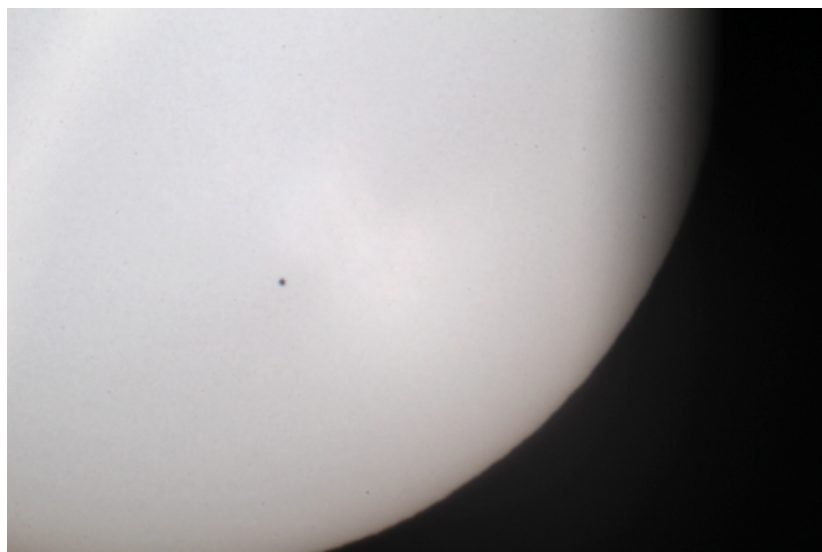




*The Lunt under cover during a windy spell.*



*James' car is stuck in the mud!*



*Mercury silhouetted against the Sun, taken with the C11 and a white light filter, with a Canon 6D at prime focus; 11<sup>th</sup> November 2019, 14:57, ISO 320, 1/60<sup>th</sup> second, focal length 2812mm, 90mm aperture, f/31*



Independently, **Marcus Stone** imaged the transit using his DSLR camera with a 300mm lens and 2x converter, with a solar filter in place.





## Social and Practical Astronomy, Plumtree, November 2019

The **November** meeting at Plumtree was devoted to books. Everyone was asked to bring along a book to talk about, and it was great to see that everyone who attended did bring along at least one book, many brought two or more. We sat in a large circle and went around and heard about each of the books in turn which generated questions and discussion. A really relaxed and informative evening. I've tried to list all of the books mentioned on the night below – I've put a hyperlink to Amazon (other retailers are available) for these books, but there is no guarantee the edition is correct so please contact me if you want more information on the books discussed on the night:

Author	Title
Blaikie	1939 Sky <a href="#">Charts</a> (Scottish Provident <a href="#">Insurance</a> ) [not exactly the correct link]
Bond	<a href="#">Heroes in Space: From Gagarin to Challenger</a>
Calder	<a href="#">Violent universe</a>
Clark	<a href="#">Voyager 101 Wonders Between Earth and the Edge of the Cosmos</a>
Covington	<a href="#">Digital SLR Astrophotography</a>
Dickinson	<a href="#">Universe Today Ultimate Guide to Viewing The Cosmos</a>
Dunlop	<a href="#">2015 Guide to the Night Sky</a>
Flammarion	<a href="#">Astronomy for amateurs</a>
Frank	<a href="#">Frank's book of the telescope : a guide to instruments for the amateur astronomer</a>
Jones	<a href="#">Yearbook of Astronomy 2020</a>
Kitt	<a href="#">The Moon : an observing guide for backyard telescopes</a>
Macdonald	<a href="#">Kew Observatory and the Evolution of Victorian Science</a>
Mollise	<a href="#">Choosing and Using a New Cat: Getting the Most from Your Schmidt Cassegrain or Any Catadioptric Telescope</a>
Moore	<a href="#">Observer's book of astronomy</a>
Moore	<a href="#">The boys' book of space</a>
Morison	<a href="#">An Amateur's Guide to Observing and Imaging the Heavens</a>
Norton	<a href="#">Norton's Star Atlas</a>
Ostlie	<a href="#">An introduction to modern astrophysics</a>
Ridpath	<a href="#">Universe Guide to Stars and Planets</a>
Rovelli	<a href="#">Seven brief lessons on physics</a>
Saward	<a href="#">Bernard Lovell : a biography</a>
Sidgwick	<a href="#">Introducing Astronomy</a>
Sobel	<a href="#">The Glass Universe</a>
Sparrow	<a href="#">Cosmos : a field guide</a>
Swanson	<a href="#">The NexStar User's Guide II</a>
Turnill	<a href="#">Observer's book of unmanned spaceflight</a>
Turnill	<a href="#">Observer's book of manned spaceflight</a>
Tyson	<a href="#">Astrophysics for people in a hurry</a>
Widmann	<a href="#">Stars (Open Air Guides)</a>
	<a href="#">The Observatory magazine, 1916</a>





I'm really grateful to everyone who came along; we all learnt so much about the books as well as the people who brought the books along. This is exactly how Plumtree should run, an informal and interactive gathering with all members and visitors contributing.

The **December** meeting at Plumtree will see the return of our patron, Professor Mike Merrifield from the University of Nottingham. Julian Onions is organising this event and it will be an opportunity to see what astrophysicists do, and to put questions to Professor Merrifield, however simple or complicated your question is. Mulled wine and mince pies will be available.

**James Dawson**

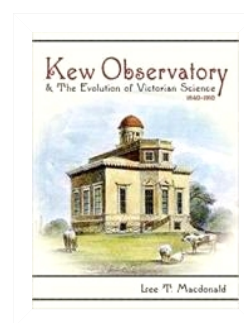
NAS Helpdesk & Plumtree Meetings

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

## **King's Observatory, Kew**

Visit, Wednesday 20<sup>th</sup> November 2019

Barrie Chacksfield notified the Society for the History of Astronomy that the King's Observatory in Kew which was passed into private hands several decades ago, was going to open for small group tours. I duly booked a place and dug out some books I had on the site to read up in advance.



The [King's Observatory](#), often referred to as Kew Observatory, is in Richmond, London, along the south bank of the River Thames, less than 1km from Kew Gardens which lies to the east.

The observatory was built in the times of King George III (latterly infamous for his madness), and completed in 1769 in time for the transit of Venus that same year (3<sup>rd</sup> June 1769). The King observed first contact of the transit using a reflecting telescope build by [James Short](#).

The history of the site and the observatory is extensively covered [online](#), and also in a recent [book](#) (right); Kew Observatory, by Lee Macdonald.

The building itself has undergone numerous alterations over the years, and in more recent times adapted to become a home. Many features have been retained, but it also boasts



modern 'luxuries' too such as central heating, and WiFi. My favourite room was the library, a high ceiling octagonal room with books behind glass doors, and a large table in the centre of the room.

The observatory sits at the top of the house and can be accessed from inside the house up a narrow, spiral staircase. The dome is about 12 feet in diameter and currently houses a refracting telescope by Thomas Slater (1817-1889). The domed roof has a slit which can be opened and closed, and the whole dome rotates very smoothly. There is also access on to the flat roof of the building.

Whilst the light pollution and seeing conditions from central London render the site less favourable for astronomy today, it was a marvellous to look around the building and the grounds and be taken back to Georgian times, and to stand in the observatory that King George III had been in 250 years ago.

I am led to believe there will be future openings, and would strongly recommend people to go along and witness this most historic and impressive site for themselves.

<https://www.visit.kingsobservatory.co.uk/>



Images from Kew. Top left on approach to the building from the driveway; top right, the octagonal library room; middle row, inside the observatory; bottom, panoramic view from the flat roof looking west from the south side of the building.

**James Dawson**



## **Society for the History of Astronomy Autumn Conference, 26<sup>th</sup> October 2019**

On Saturday 26th October 2019, the Society for the History of Astronomy held its Autumn Conference at the Birmingham and Midland Institute in Birmingham. The theme of the event was The Moon, in keeping with other celebrations of 50 years since the first man on the Moon. The speakers talked on the following topics.



[Heather Sebire](#), English Heritage, talked on Stonehenge, archaeoastronomy and the Moon. Alexandra Loske (University of Sussex) and Robert Massey (Royal Astronomical Society) talked on their book “[Moon: art, science, culture](#)”. Melanie Vandenbrouck and Louise Devoy from the National maritime Museums, talked on the [Moon as a muse](#) ; the ideas and inspiration behind the Moon exhibition at the Royal Museums, Greenwich. [Bill Leatherbarrow](#), Director of the BAA’s Lunar Section talked on Patrick Moore and our volcanic moon. Finally, the SHA’s president, [Allan Chapman](#), talked on the Moon, the telescope and the transformation of astronomy after 1609.

The speakers are pictured here, left to right, Heather Sebire, Allan Chapman, Louise Devoy, Melanie Vandenbrouck, Alexandra Loske, Robert Massey, Bill Leatherbarrow.

It was a great day, enjoyed by all. A full write up of the event can be viewed on the [SHA website](#).

**James Dawson**

Librarian for the [Society for the History of Astronomy](#)



## **BAA Equipment & Techniques Section Meeting, 17<sup>th</sup> November 2019**

On Sunday 17<sup>th</sup> November 2019, the newly formed Equipment & Techniques Section of the BAA held its [first meeting](#) at Bedford School, in Bedford. David Arditti is the Director of the section.



The new section aims to support amateurs with equipment they own or want to purchase, and with the techniques on using this equipment to make the most of their enjoyment in amateur astronomy.

Talks covered a range of topics from home built observatories, and DSLR imaging, use of Raspberry Pi devices, novel designs for telescope piers, and a fascinating description of a common artefact seen when imaging the planet Mars.

David Arditti pictured here giving his talk on building a garden observatory from a £100 shed.

This was another fascinating day out and an opportunity to meet like-minded amateurs from elsewhere in the country.

**James Dawson**



# 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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(vacant post)

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**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 2020**

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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