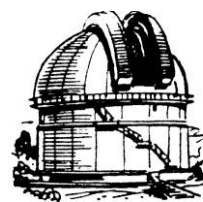

Journal

of the

Nottingham Astronomical Society

May 2016



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Thursday, May 5th

**British Geological Survey
Nicker Hill, Keyworth**

8 pm (doors open at 7.30pm)

Tonight we welcome

Professor Nial Tanvir

of the University of Leicester



who will be speaking on

Gamma Ray Bursts

(and other amazing phenomena!)

A NEW GALAXY DISTANCE RECORD

The Wide Field Camera 3 on board the Hubble Space Telescope has been used to image a galaxy with a red-shift of 11.1, beating the previous red-shift record of 8.68 by a very large margin. Measurements suggest that this galaxy, which is remarkably bright, formed only 400 million years after the Big Bang, meaning that the photons from it that we detect have been travelling across space for over 13 billion years. The galaxy was right at the distance limit that the HST could be expected to reach. The results suggest that galaxies had begun to form at a very early epoch in the evolution of the cosmos, possibly as a consequence of the first generation of stars forming around black holes.

Although this galaxy was less than 5% of the size of our Milky Way, it must have been forming stars at something like 20 times the rate in order to appear as bright as it does.

The new galaxy was discovered in a deep sky HST survey called *GOODS North*, standing for *Great Observatories Origins Deepsky Survey North*.

Sky Notes

May 2016

Compiled by Roy Gretton



All times given below are in British Summer Time

PHASES OF THE MOON

<i>Phase</i>	<i>Date and time</i>	<i>Moonrise</i>	<i>Moonset</i>
New Moon	8:30pm on May 6 th	5:35am	8:05pm
First Quarter	6:02pm on the 13 th	11:55am	1:50am
Full Moon	10:14pm on the 21 st	8:20pm	5:15am
Last Quarter	1:12pm on the 29 th	1:35am	12:25pm

This month the Moon is closest to the Earth on the 6th, and furthest on the 18th.

TRANSIT OF MERCURY, Monday May 9th

The planet Mercury will pass in front of the Sun from 12:12pm to 7:42pm on May 9th, so the full duration of the transit will be visible from the British Isles. The transit will begin as the disk of Mercury appears to touch the limb of the Sun (first contact), and the whole planet will have moved on to the face of the Sun by 12:16pm. Thereafter Mercury will slowly cross the solar disk until it begins to exit (third contact) at 7:39pm.

Unlike transits of Venus, where the planet can easily be seen with the unaided eye through eclipse viewers, a telescope will be required to see the tiny disk of Mercury, only 12 arcseconds across. **Do not attempt to look at the Sun directly through a telescope unless it is equipped with a full-aperture filter specifically designed for solar viewing.** The safest way to watch the transit is to project the image of the Sun on to a piece of white card held behind the eyepiece. And, if you wish, you can take a photograph of the projected image.

This is a notable phenomenon that we *should* be able to observe. Surely even the British weather won't cloud out all seven-and-a-half hours of the event!(?)

THE PLANETS

Mercury is unobservable this month, unless you count the silhouette that we hope to see on May 9th.

Venus also is unobservable, as it passes through superior conjunction on May 6th.

Mars, moving in a retrograde direction (westwards) in Scorpio, reaches opposition to the Sun on May 22nd, so this is the best month of 2016 to observe it. On that date Mars will be at the same brightness as Jupiter (magnitude -2.1) but very noticeably redder – it will be interesting to compare the colours of these two planets when they are equally bright.

Unfortunately, as stated in recent editions of the Journal, Mars will be very low in our sky, being more than 21 degrees south of the equator. So although the planetary disk will be over 18 arcseconds across, our view of surface features will be noticeably degraded by our own atmosphere. After opposition Mars fades quickly, dimming by a whole magnitude in less than two months.

Jupiter, in the constellation of Leo, continues to be the best planet to observe in the evenings, beginning May at magnitude -2.3 , and therefore being the first “star” to appear after sunset.

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.

May	Shadow transit of
1 st	Io begins 22:13
3 rd	Europa 21:06 to 23:51
10 th	Europa begins 23:43
17 th	Io ends 22:45
23 rd	Callisto begins 22:22
24 th	Io begins 22:26

Saturn, nearly at opposition to the Sun, continues its retrograde motion in the constellation of Ophiuchus throughout May. As is the case with Mars, we observers in northern latitudes can only regard with envy those in the southern hemisphere, for whom both these planets will be riding high in the sky this month! However, back in the UK, if you are in a place with a low southern skyline, it will be nice to take a look at the triangle of “stars” formed by Mars, Saturn and Antares – and watch how the triangle changes shape from week to week.



Looking south at midnight on May 21st

Antares (reddish), Mars (bright red), Saturn (yellowish)

Uranus and **Neptune** are both morning objects, not easy to observe this month.

METEORS

Some weak meteor activity may be observed from southern showers in May: the **Scorpiids** peaking on May 13th, and a few **Ophiuchids** putting in an appearance late in the month.

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

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 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>
May 5 th	Gamma Ray Bursts	Prof Nial Tanvir <i>University of Leicester</i>
June 2 nd	Gaia: A Billion Pixel Survey of a Billion Stars	Dr Elme Breedt <i>University of Warwick</i>
July 7 th	The Antikythera Mechanism: an Ancient Astronomical Computer	Prof Mike Edmunds <i>University of Cardiff</i>
August 6 th (Saturday)	Society BBQ at the Observatory	
September 1 st	Images of the Universe - 2	Paul Money
October 6 th	Open Evening <i>including a Telescope Surgery</i>	
November 3 rd	Annual General Meeting 2016	
December 1 st	Galactic Monsters: Seyfert Galaxies, Radio Galaxies and Quasars	Dr Marek Kukula <i>Greenwich Observatory</i>

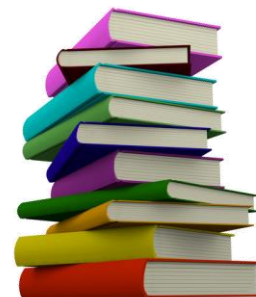
NAS Library

I won't be at the May meeting, but once again Richard Severn has kindly stepped in. He will have the usual selection of books for everyone to browse and which members can borrow; he'll also be able to process any book returns.

Last month Professor Morison mentioned a film he highly recommended called "The Dish". The story is set in 1969 and centres around the then largest satellite dish in Australia and how it was tasked to track the Apollo 11 moon mission. We've now got a copy of this DVD and if you would like to borrow it Richard will have it with him on the 5th May. I can highly recommend this film – it's one of my all-time favourites.

The full list of books in our lending collection can be found here: [NAS Library Collection](#).

Lorraine NASlibrarian@hotmail.com



NAS Helpdesk

We will be on hand at the May meeting should you have any questions about astronomy equipment or its use, or just for a chat. As always, if you need some help or advice and are unable to talk to us at a monthly meeting, drop us an email; even if we don't know the answer we'll be able to find someone who does.



If there is something you would like to see the Helpdesk do, or for us to write an article or help-sheet about then please do let us know; we are very much here for you and to try and help you get as much enjoyment out of astronomy as possible.

James Dawson and Bob Richardson

helpdesk@nottinghamastro.org.uk

Meeting of the Historical Section of the British Astronomical Association

The annual meeting of the BAA's Historical Section will be taking place in Liverpool this year and is being held on Saturday 21st May, 2016. Talks will include: The History of Liverpool Astronomical Society; The Bridestones Legacy; William Herschel and the Expansion of the Universe; and Patrick Moore and our volcanic Moon. Tickets are £5 for BAA members and £10 for non-members. For further information or to book tickets use the link below:

<https://www.britastro.org/historical2016>

Gravitational Waves - University of Nottingham Public Science Lectures

The School of Physics & Astronomy at the University of Nottingham hold monthly public lectures, and these cover a range of topics. The next two lectures (19th May and 16th June) are devoted to gravitational waves. Attendance is free and no booking is required. For further information use the link below:

<http://www.nottingham.ac.uk/physics/outreach/science-public-lectures.aspx>

From Earth's Images to the Hubble Deep Field - Nottingham Trent University Public Lecture

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 the link below:

<https://www.ntu.ac.uk/apps/events/25/search.aspx/category/2>

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 or at Society meetings

Society for the History of Astronomy
Spring Conference: Bath, Saturday 2nd April 2016



One of my interests is the history of astronomy, and last year I joined the [Society for the History of Astronomy](#); we recently held our Spring Conference in Bath, jointly with the [William Herschel Society](#), of which I am also a member.

The programme for the day can be found [here](#), and consisted of lectures by various amateur and professional astronomers on a range of topics. The morning speakers talked about some famous and not so famous astronomers who lived and worked in Somerset, including [John Pond](#) (1767-1836) who eventually became the sixth Astronomer Royal. Dr Roger Moses of Bristol University gave an absolutely fascinating talk on Cosmic Ray Astronomy, including the history of how [cosmic rays](#) were discovered and the likely origins of them in the Universe.

In the afternoon we had a lecture about [William Herschel](#) which explored why he came to Bath and how he became interested in astronomy, along with information about his discovery of Uranus for which he is best remembered. One thing I hadn't fully appreciated before was how interested William Herschel was in double stars, and how from his back garden in Bath, using a 6 inch aperture, 7 foot long telescope, he discovered numerous binary and multiple star systems and how his observational work founded the way for modern binary star astronomy. The last of the afternoon's speakers was author David Love, talking about [Johannes Kepler](#), the 17th century astronomer who amongst other contributions, devised the [laws of planetary motion](#).

The day concluded with a visit to the [Herschel Museum of Astronomy](#), at 19 New King Street, where William had lived and where he discovered Uranus in 1781. The museum is in part arranged as the household would have been when William and his siblings lived and worked there in the late 1700s; William was a musician by trade and the museum displays period musical instruments as well as those of an astronomical nature. A "workshop", off the kitchen in the basement, includes some of the tools the Herschel family would have used to make their [speculum mirrors](#), the crafting of which William acquired a world-class reputation for. The flagstone flooring in the workshop was reputedly cracked when the molten metal accidentally spilt and the sheer heat fractured the stone slabs.



It was a most enjoyable day and an educational one, set in the beautiful surroundings of Bath.

James Dawson
helpdesk@nottinghamastro.org.uk

Inspired by the Cosmos



One of our newest Society members is **Tina Bettison**, artist, writer and broadcaster. She recently held her debut exhibition of artworks inspired by astro-photography at Bingham library and will be taking the exhibition to West Bridgford library in August. We asked Tina to tell us something of her interest in astronomy and its influence on her art.

“All my life I have been fascinated by the night sky, the stars, the moon and what lies beyond. I love walking in the light of a full moon and I am lucky enough to live in a place where I can walk out into the fields and lose much of the light pollution. On a cloudless winter day I watch the sun go down on one side of me and the moon rising in the sky on the other. In such moments I feel a strong connection to all that exists and I feel both tiny and expansively infinite.

This connection to our vast and miraculous cosmos is what I aim to convey through my artworks. I draw my inspiration from many sources including the stunning images from the Hubble Telescope and from the various NASA websites. It might only be a tiny piece of light in the corner of an image that gets the creative juices flowing or the collection of colours in a particular photograph. I also follow photographers that specialise in astro-imaging and I get inspiration from listening to podcast interviews with astronomers and scientists. And I love watching any science programme about the universe!

None of these artworks came from a planned thought process. They emerge from the brush as I work. It is an exercise in listening to my heart, trusting and allowing the flow. (Interestingly when I ‘try’ to create, then rubbish is usually what comes out!). Each piece is unique – even where the same materials and colours are used. I use all sort of things to create textures, for example I used polyfilla in this image of the sun to represent explosions on the surface. I often include crystals, clay, textile foils, iridescent fibres, or sand. If it works I use it!”



Tina’s website is

www.tinabettison.com

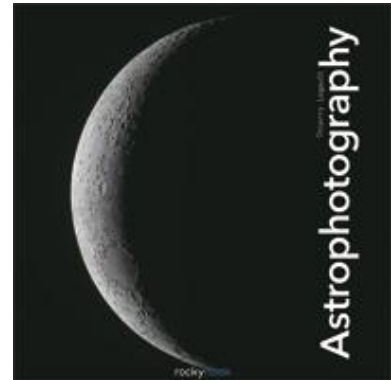
and you can follow her arty activities on Facebook at tinabettisonBeloved. She is always looking for inspiration so if you have some stunning photos to share, do get in touch or chat to her at one of our monthly meetings.

Book review

Astrophotography by Thierry Legault

Rocky Nook, 2014, 240 pages, ISBN: [978-1937538439](https://www.isbn-international.org/product/978-1937538439). £23 new.

I borrowed this from our NAS library. At the time I knew nothing of astrophotography, and not much of astronomy, but I could at least appreciate the quality and range of the photographs it provided. Within a day or two it was clear the author not only knew his stuff, but was able to pass it on in text and photographs. The scope of the book is extensive: imaging planets and their satellites, the moon, the ISS, sun, and deep sky objects. The range of the equipment described is extensive too, some light-years beyond my budget; however it begins with what can be achieved with inexpensive digital cameras before even going on to telescopes. "The most beautiful celestial sights that are visible to the unaided eye can be imaged with the same digital camera you use to photograph friends and family".



This book illustrates a path from the basics, to well beyond the horizon, and has opened my eyes to how far I may progress with its help. I knew I would make long-term use of it, so I paid around £20 and got myself a copy.

I feel quite lucky such a recently published book is available. The equipment described is fairly current and it helped me to decide on a camera. I already had a telescope, but not the eyesight to use it well. I hope my astrophotography kit will help overcome my astigmatism and glasses, with the image being served on to a large computer screen indoors. A work in progress that would not have started without the enthusiasm this book and the internet provided.

"Astrophotography" is likely to be appropriate for any level of interest or experience. The author is a world-renowned astrophotographer, with an asteroid named after him no less, yet retains the ability to enthuse a novice. It may be some time before I can produce an image anywhere near the quality of his, but I appreciate that he has shared so much of how to approach the subject. A highly recommended book - even a work of art.

Tony Otter

April 2016

If you would like to borrow this book, drop Lorraine an email or speak to her at the monthly meetings: NASlibrarian@hotmail.com

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

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

You don't have to be a Society member to take advantage of this service.

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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Barrie Chacksfield

James Dawson

Lynda Foot

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 1st January. Half-price subscription is charged if joining after 30th June (minimum subscription £5).

Please make cheques payable to:
Nottingham Astronomical Society.

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 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.

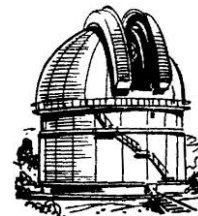
The Nottingham Astronomical Society

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NOTTINGHAM ASTRONOMICAL SOCIETY

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Membership application and Gift Aid declaration

Title:

Full name:

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Telephone:

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Subscription rate:	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: