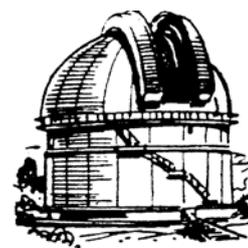

Journal

of the



Nottingham Astronomical Society

November 2015

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Thursday, 5th November

British Geological Survey

Nicker Hill, Keyworth

8 pm (doors open at 7.30pm)

Tonight we hold our

Annual General Meeting 2015

which all members are encouraged to attend

“A Most Surprising Discovery”

The Rosetta spacecraft has found quantities of molecular oxygen gas (O₂) coming off Comet 67P/Churyumov-Gerasimenko, a result that has taken scientists completely by surprise. Few if any were expecting oxygen to be present in the comet, and one suggestion is that it indicates a “gentle birth” for the body, before the Solar System came into existence. Oxygen levels around 67P have remained relatively high for more than six months, indicating that the gas exists throughout the body of the comet. Oxygen gas is highly reactive and so had been thought unlikely to persist for billions of years inside a comet. The discovery will probably lead to a re-think of theories concerning the birth of the Solar System.

“We weren’t really expecting to detect O₂ at the comet – and in such high abundance – because it is so chemically reactive, so it was quite a surprise,” said Kathrin Altwegg of the University of Bern, and principal investigator for the Rosetta Orbiter Spectrometer for Ion and Neutral Analysis.

In November 2014, the Rosetta mission landed a small probe, Philae, on the surface of the comet. It bounced on 67P’s surface before coming to rest at the bottom of a cliff or crater wall. The lander (which returned a wealth of data before its batteries gave out), managed to remain on the surface of the comet throughout its perihelion passage in August this year.

Sky Notes

November 2015

Compiled by Roy Gretton



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

PHASES OF THE MOON

<i>Phase</i>	<i>Date and time</i>	<i>Moonrise</i>	<i>Moonset</i>
Last Quarter	12:24pm on Nov 3 rd	11:15pm	1:10pm
New Moon	5:47pm on the 11 th	6:35am	4:35pm
First Quarter	6:27pm on the 19 th	1:00pm	11:55pm
Full Moon	10:44pm on the 25 th	4:15pm	6:30am

This month the Moon is closest to the Earth on the 23rd and furthest on the 7th.

THE PLANETS

Mercury begins November about 11 degrees from the Sun in the morning sky, then rapidly moves toward superior conjunction on the 17th, thereafter becoming an evening object, extremely difficult to observe.

Venus spends November as a brilliant object in the morning sky, more than 43 degrees from the Sun throughout. On the 3rd it passes only 40 arcminutes south of Mars in the constellation of Virgo. On November 7th all three planets, Venus, Mars and Jupiter are accompanied by a slender crescent Moon (a possible photo opportunity).

By the end of November, **Mars** will be rising over 5 hours before the Sun, but it will still be less than 5 arcseconds across, so hardly an object for telescopic examination.

Jupiter, in the constellation of Leo, is growing in prominence in the morning sky, and by the end of November will be rising only half an hour after midnight. By then the planet will be 35 arcseconds across and shining at magnitude -1.9 .



Looking SE
at 6:15 am
on November 21st

Saturn is unobservable this month, as it passes through conjunction with the Sun on the last day of November.

Uranus is an evening object, visible for most of the night about seven degrees north of the celestial equator in the constellation of Pisces. It shines at magnitude 5.7, and has an angular diameter of 3.7 arcseconds.

Neptune is an evening object in the constellation of Aquarius, shining at magnitude 7.8, and having an angular diameter of 2.4 arcseconds.

METEORS

The **Taurids** have two maxima, the first on November 5th and the second on the 12th. Conditions are favourable for both this year, with the Moon giving little interference. Taurids tend to be slow-moving meteors, and may give bright events.

The **Leonids** reach maximum activity on November 18th, when conditions will be fairly favourable, with a 7-day old Moon. Nothing spectacular is anticipated this year, with perhaps 20 events per hour under ideal circumstances.

International Astronomy Show 2015

2nd-3rd October 2015, Stoneleigh, Warwickshire



The annual [International Astronomy Show](#) (IAS) is now a firm fixture in the astronomy calendar, and this year was held at Stoneleigh Park in Warwickshire, former home to the Royal Show. The IAS is a two day event bringing together most of the astronomy retailers from around the country (and further afield) under one roof. The retailers have stalls to lay out a selection of their merchandise, which ranges from the smallest item to 16" telescopes and equatorial mounts worth tens of thousands of pounds; the retailers are also on hand to talk and answer questions. The opportunity to browse so much astronomy-related equipment from a range of retailers and manufacturers is really what makes the IAS such a popular event. There are discounts to be had, but being able to handle items and ask experts about them is the real benefit.

Alongside the hall packed full of stalls, there is a lecture theatre, and throughout the course of the two days various hour-long lectures are put on, hosted by a range of experts. This year's speakers included Damian Peach, Professor Allan Chapman, Jerry Stone and Nik Szymanek.

The event isn't free, entry was £8 per day this year, and the lectures about £6 each, but I think for the opportunity to browse so much equipment and to speak to real experts this represents value for money. Next year's event is likely to be held in October again (the exact date hasn't been finalised yet) and I will be sure to go again, even if it's just to look at the shiny kit longingly.

James Dawson

DIARY DATES 2015

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>
November 5 th	Annual General Meeting	
December 3 rd	"New Horizons : Pluto and the Kuiper Belt Objects"	Dr Chris Arridge, University of Lancaster

Other Astronomy Events

Wednesday 18th November 2015, 18:30 to 20:00, Public lecture, Nottingham Trent University, Clifton Campus. The Rosetta Mission so far... Matt Taylor, European Space Agency Project Scientist on the Rosetta Mission will be giving an update on the story so far. The event is free but booking is required via the [Institute of Physics website](#).

Wednesday 24th November 2015, 20:00 to 22:00, Public lecture, Nottingham Trent University, Clifton Campus. A voyage to Venus... Dr I Whittaker (University of Leicester) will be talking on what we know about this mysterious world, which in many ways is similar to Earth. The talk will be followed by a tour of the University's observatory and a look through their telescopes if the sky is clear. The event is free but booking is required on the [Open Dome website](#).

Saturday 12th December 2015, 14:30 to 18:00, British Astronomical Association Christmas Lecture, University College London, WC1H 0AJ. Various speakers including Professor Gerry Gilmore, Dr Lucie Green, and Nick James. Free for BAA members, £5 for non-members. Booking via the [BAA portal](#).

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.

Federation of Astronomical Societies Annual Convention 2015

Saturday October 24th, Poynting Physics Building, University of Birmingham



The annual convention of the [Federation of Astronomical Societies](#) (FAS) was held on Saturday 24th October at the University of Birmingham. The programme of the day's events can be found [here](#).

There were four members of Nottingham Astronomical Society present and overall turn out for the event was about 130 or so.

The "mission statement" for FAS can be read [here](#), but they were formed in 1974 to act as a unifying body for local astronomy groups and societies and to allow sharing of ideas, speakers and outreach activities. In more recent years FAS has taken on the role of arranging public liability insurance which its members can benefit from.

FAS produce three newsletters per year which are available on their website and hard copies are sent to the society members; they hold an annual convention; have several publications including some [information leaflets](#) for beginners in astronomy, and an annual astrocalendar. We have got 20 copies of the astrocalendar, and if you want a copy they are £2 each, of which £1 goes to our society and £1 to FAS for producing the booklet; email James at the Helpdesk if you want a copy, first come, first served basis.

The highlight of the convention this year was a lecture by [Professor Allan Chapman](#) (photo) on John Herschel, the son of William Herschel. Not only

is Professor Chapman a thoroughly engaging speaker, he also managed to deliver a whole hour long talk without using any slides or any notes.

The FAS are looking for help as they need committee members to help run all of their activities, and to help arrange next year's convention and speaker programme. If you are interested in helping the FAS people do [contact them](#); they pay travel expenses for meetings, but are planning to hold fewer face to face meetings and do more via Skype and online video conferencing.

James Dawson
NAS Helpdesk
NAShelpdesk@hotmail.com

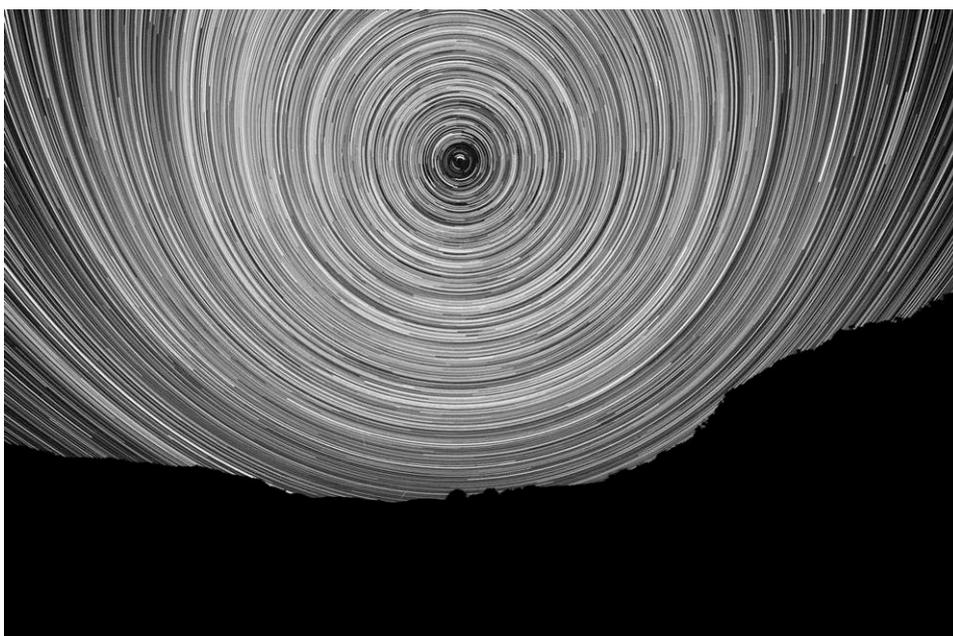


NAS Helpdesk

We know several members have DSLR cameras, so we'll have a couple of Canon cameras on the Helpdesk at the November meeting, and be available to answer any questions on imaging with a DSLR camera, or any other topic.



If you have a DSLR, have you ever tried to make a star trail image like the one below which James captured in North Wales in mid October? This is an image composed of 650 exposures taken between 11pm and 5am, and the celestial sphere appears to have rotated about one quarter turn. You don't have to image for 6 hours though, even 30 minutes will give impressive trailing. James has previously written a brief article on star trails which is on the NAS website ([link](#) here). The autumn and winter are excellent times of the year to capture star trails so give it a go.



See you on Thursday 5th November.

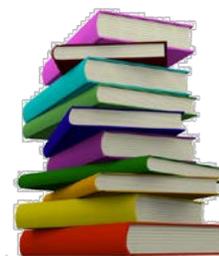
James Dawson and Bob Richardson

NAShelpdesk@hotmail.com

NAS Library

I'm back from my holiday now - thanks to Richard for manning the fort in my absence!

In response to the great lecture Julian Onions gave The Society on large telescopes, we have acquired a copy of a very large book called "[Great Observatories of the World](#)" which details information about some of the largest 100 telescopes in the World, including images of them. As with all our books, you are welcome to borrow this. Please email me in advance of the meeting so I can make sure I bring it along.



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

If there is a specific book you want to be brought along to the meeting, email the librarian as even in Lorraine's absence we can hopefully arrange this for you.

To email the librarian, please use the email address: NASlibrarian@hotmail.com

HISTORIC BOOK REVIEW: *The Story of the Solar System*

by **George F Chambers**, F.R.A.S., 1895.

George Newnes Ltd, Southampton Street, London

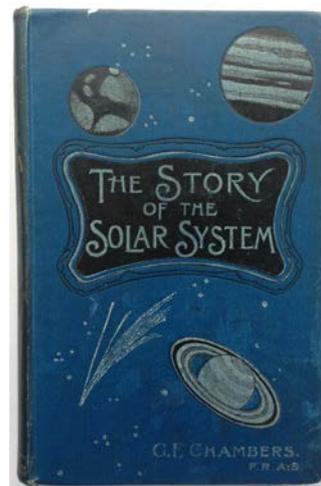
Patrick Moore was often [quoted as saying](#) that reading *The Story of the Solar System* by G. F. Chambers, at the age of six, was what triggered his life-long passion for astronomy. Being fascinated by Patrick Moore and a lover of old books, it had been my mission to track down a copy of this book from the 1890s and see for myself how George Chambers had mesmerised the young Patrick. Earlier this year I found a second hand copy online and my own journey began.

For a book published 120 years ago it is in remarkable condition and reads as fluently as any modern text; I'm not sure why but I always think a book written in the 19th century will read like a Dickens novel, which for me have always been hard work. As with contemporary books, Chambers' opening chapter sets the scene, and he outlines the structure of our solar system, listing the eight planets which were known at the time (Pluto being discovered in 1930) and their more significant features, sizes and motion. Jupiter is described as possibly possessing an inherent light, and comets believed to shine with intrinsic, not light 'borrowed' from The Sun. We now know that the only body in the solar system which naturally emits visible light is The Sun, though Jupiter does emit [infrared light](#) this is not visible to the human eye.

The subsequent 12 chapters give personalised accounts of the solar system residents, including The Earth, our moon, the asteroid belt between Mars and Jupiter (a chapter which Chambers calls "The Minor Planets"), and "Comets". Narrative accounts of the discovery, believed constitution, unique features and practical observation of these is accompanied by drawings and at the time (mid 1890s) cutting edge theory and observations. Amongst the theories of the day were the ['canals'](#) which Giovanni Schiaparelli was convinced he'd observed on the surface of Mars. Interestingly Chambers makes it clear that the use of the word 'canal' is an unfortunate one as it implies some artificial intervention in their formation, but rather suggests their origin being more natural. In fact we know these features don't even exist and it must have been some form of optical illusion which tricked Schiaparelli and so many others for about 30 years. However, the concept of canals on another planet must have been most appealing to young Patrick.

Chambers cites the names of many notable men from ancient times and from his own Victorian era, but two names which appears more than most are [William Herschel](#) who discovered Uranus in 1781 and his son [John Herschel](#) who co-founded the Royal Astronomical Society in the early 1820s. Chambers makes frequent reference to the observations and discoveries of this father and son, and clearly he was a great admirer of their achievements. I suspect this is something which rubbed off on Patrick, as he too was fascinated by the Herschels and was instrumental in forming the [William Herschel Society](#) and in raising money to buy the house in New King Street, Bath, where William Herschel had lived and worked.

The chapter on our moon was the one I was looking forward to the most, as everyone knows Patrick Moore was fanatic about The Moon and devoted much of his life to observing, writing and broadcasting about it. In 1895 the [maps](#) of The Moon were quite detailed though the geological processes which gave rise to the features we see were poorly understood. Chambers boldly explains that the [lunar craters](#) were formed by volcanic activity, a view Patrick vehemently held for many years even after the Apollo missions of the 1960s brought back rock samples which officially put a nail in the coffin of the volcanic theory. Chambers also comments on the lack of theories to explain the origins of the bright streaks which radiate from some of the more prominent craters such as Tycho and Copernicus; it seems so



obvious to us now that these [ejecta rays](#) are the result of impact collisions throwing debris far and wide, but this concept isn't even entertained in the text of 1895. Other fascinating inclusions in the lunar chapter is a description of work undertaken to establish how much heat is reflected off The Moon and onto Earth, and why a full moon often appears to clear the sky of cloud.

Throughout the book there are hints at the uncertainty about life on other planets, and I think Chambers must have been very careful in his wording not to commit one way or the other, but the reader is surely left thinking there is a strong probability of life elsewhere in our solar system. There are also numerous instances which made me smile, like the description about the cold snowy polar caps of Venus. But while it is easy to be critical, what is most astonishing is how accurate the data in the book is: the sizes of the planets, their orbital periods and inclinations, the fact moons of Uranus and Neptune are well characterised, many details I had presumed were not known until well into the 20th century. There are no attempts to outline the origins of the solar system, no concept of the [protoplanetary disc](#) which we now believe in, and certainly no evolutionary theory to explain life on Earth, or other planets.

To today's reader who is regularly exposed to images taken in the outer reaches of our solar system this book may well appear dry and dated, but to a young Patrick Moore this little tome was a spark that triggered a career and a life-long passion which itself snowballed and opened up the world of astronomy to a wider audience, and which inspired a generation.

James Dawson

An article about George Chambers was published in the Journal of the British Astronomical Association in 1990 and is available [free online](#), and it is interesting to see the similarities which George Chambers and Patrick Moore shared.

Twitter update

We launched a Twitter account for the Society in March of this year and have slowly accumulated a number of followers. We've posted various images our members have taken and reports, as well as information about our meetings. One of our Tweets was re-Tweeted by the Sky at Night's Pete Lawrence and he has over 10,000 followers.

Many of our speakers have Twitter accounts, including Lucie Green, Julian Onions, Mike Merrifield, as well other local societies and national institutions like the British Astronomical Association, Society for Popular Astronomy and the Royal Astronomical Society. We are also linked to the German Astronomy Society in Karlsruhe @AVKa1974 which NAS is twinned with.

Our Twitter feed [@NottinghamAstro](#) will advertise forthcoming meetings and events, and report interesting local, national and international news stories relevant to astronomy. If you use twitter please follow the Society as we build an online following. If you have any astronomy images we will be happy to add them.

Richard Severn

NAS Twitter Administrator, Twitter account address [@NottinghamAstro](#)
Email to send any items for inclusion on the account if you don't have Twitter
rtsevern@hotmail.com



Nottingham Astro Soc

@NottinghamAstro

Official account of Nottingham Astronomical Society. A friendly group of amateur astronomers. Meetings on the FIRST Thursday of each month (except August) @ 8pm

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33 FOLLOWING 23 FOLLOWERS

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

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Kevin Greally

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 always welcome to attend.

Annual subscriptions 2015

Full	£30
Concessions	£15
Joint rate for partners living at the same address	£45

Subscriptions become due on 1st January. Half-price subscription is charged if joining after 1st July. Please make cheques payable to:

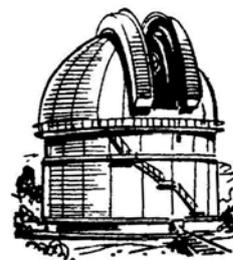
Nottingham Astronomical Society.

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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Concession = under-18 / full-time student / unemployed and receiving benefits

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I wish my subscriptions to be eligible for Gift Aid

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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.

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