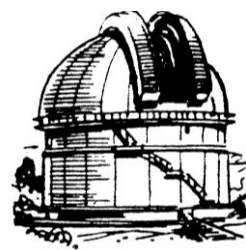

Journal

of the



Nottingham Astronomical Society

January 2015

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Thursday, January 8th

British Geological Survey
Nicker Hill, Keyworth
8 pm (doors open at 7.30pm)

Tonight's speaker is

Dr Roy Gretton
NAS Vice President

and the subject will be

"It's Time for Astronomy!"

A Message from the President

Dear NAS Member,

The Committee would like to wish you a very Merry Christmas and a Happy New Year...

All our Best Wishes & Clear Winter Skies,

Chris

PS: ... If you happen to see a new star rising in the East ... or any UFOs with a bright red "nose", please do take an image or two for the gallery.



Sky Notes

January 2015

Compiled by Roy Gretton



All times given below are in Universal Time (UT), effectively equal to GMT

Earth's perihelion, when we will be closest to the Sun, occurs on January 4th. The two bodies will then be separated by 147,096,200 km (about 0.9833 AU).

PHASES OF THE MOON

Full Moon	4:53 am on January 5 th
Last Quarter	9:46 am on the 13 th
New Moon	1:14 pm on the 20 th
First Quarter	4:48 am on the 27 th

This month the Moon is closest to the Earth on the 21st, and furthest on the 9th.

THE PLANETS

This month, **Mercury** provides us with one of its best evening apparitions of the year. It begins the month as an evening object, almost unobservable, but moves out from the Sun to reach greatest eastern elongation on January 14th. Although it will be only 19 degrees from the Sun on that date, Mercury will be 12.5 degrees above the southwestern horizon at sunset, and shining at magnitude -0.7 .

Venus will be an evening object until mid-August. It is barely observable at present, as it begins the year 22 degrees *south* of the equator, but will slowly increase in prominence, moving to 26 degrees *north* of the equator in May, and reaching greatest eastern elongation on June 6th.

Mars begins the year as an inconspicuous evening object in Capricornus, and moves eastward into Aquarius on January 9th. Being well south of the equator, it will not be easy to observe from the UK.

Jupiter is currently undergoing its retrograde motion close to the border of Leo and Cancer. It now rises in the early evening to become a prominent "star" in the east. By the close of January, Jupiter will be shining at magnitude -2.5 , and its angular diameter will exceed 45 arcseconds, making it a compelling object for owners of telescopes.

The constant movements of the four brightest satellites are fascinating to observe. Interesting phenomena include: **eclipses** (when a satellite disappears as it enters Jupiter's shadow), **occultations** (when a satellite passes behind the body of the planet), **transits** (when a satellite passes in front of the planet) and **shadow transits** (when a satellite casts its shadow on to the visible surface of Jupiter). Of these, shadow transits are probably easiest to observe with a modest-sized telescope (say 90mm aperture or greater). Look for a dark spot crossing Jupiter's disk. A list of shadow transits visible in the evenings this month is given below.

January	Shadow transit of
2 nd	Europa begins at 22:39
2 nd	Io begins at 22:55
4 th	Ganymede 17:19 to 20:56
4 th	Io 17:23 to 19:40
11 th	Io 19:16 to 21:34
11 th	Ganymede begins at 21:16
18 th	Io 21:10 to 23:27
20 th	Europa 17:09 to 20:04
25 th	Io begins at 23:03
27 th	Io 17:32 to 19:49
27 th	Europa 19:45 to 22:40

*Note that on no fewer than four occasions:
January 2nd, 4th, 11th and 27th(briefly)
two satellite shadows are visible simultaneously*

Saturn is a morning object, shining at magnitude +0.5, and rising more than three hours before the Sun as January begins.

Uranus, magnitude +5.9, is an evening object in the constellation of Pisces. It will be setting at about 10 pm by the end of January.

Neptune is an evening object in the constellation of Aquarius, and now very difficult to observe.

METEORS

This year's return of the **Quadrantids** occurs under very unfavourable circumstances, with maximum activity (possibly peaking at 80 events per hour) occurring one day before Full Moon.

Sky Notes Extra: *Some astronomical highlights to look forward to in 2015 are:*

- A **total eclipse of the Sun**, visible as a partial eclipse from the UK, on the morning of March 20th. From Nottingham more than 88% of the Sun's disk will be covered, producing a spectacular sight.
- A **total eclipse of the Moon**, visible in its entirety from Britain, on September 28th.
- Very favourable conditions for *both* of our best meteor showers, the **Perseids** in August and the **Geminids** in December.
- The *New Horizons* spacecraft flies past Pluto on July 14th.
- **Comet 67P/Churyumov-Gerasimenko** reaches perihelion on August 13th (with spacecraft *Rosetta* and *Philae* in attendance).

DIARY DATES 2014-2015

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.

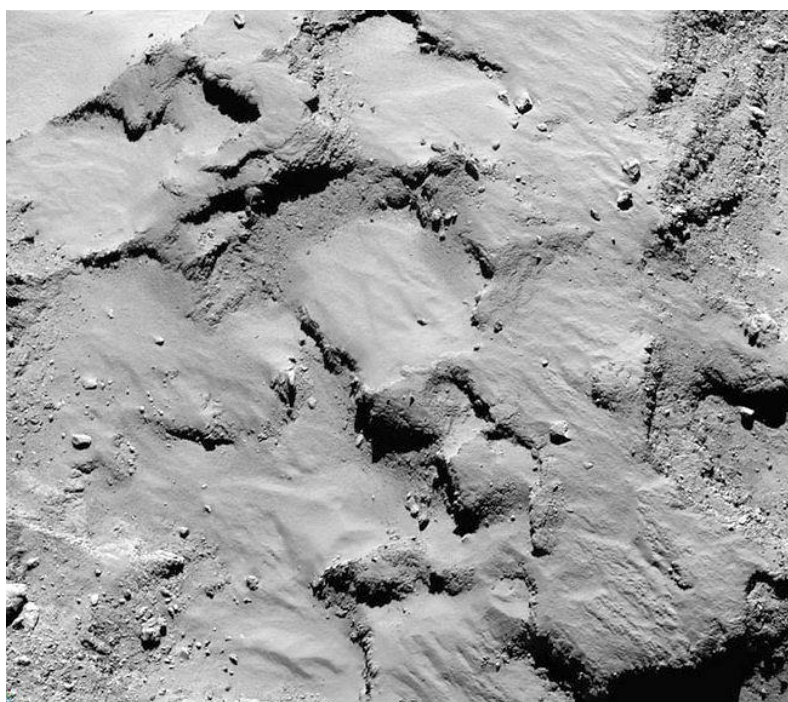
<u>Date</u>	<u>Topic</u>	<u>Speaker</u>
2015 January 8 th	"It's Time for Astronomy!"	Dr Roy Gretton <i>NAS Vice President</i>
February 5 th	Open Evening Short talks by members, plus a telescope "surgery"	
March 5 th	"Curiosity and Co – The latest from Mars"	Dr John Bridges <i>University Of Leicester</i>
April 2 nd	"Images of the Universe"	Paul Money
May 7 th	"Proving Einstein Right"	Prof. Ian Morison, <i>University of Manchester</i>
June 4 th	"The Microwave Universe"	Dr Clive Dickinson <i>Jodrell Bank Centre for Astrophysics</i>
July 2 nd	"Rosetta - close ups of a comet"	<i>A scientist from the Open University</i>
August 6 th	Society BBQ at the observatory, plus solar, radio and night time observing	
September 3 rd	Open Evening	<i>Organised by John Hurst</i>
October 1 st	"How our Galaxy came to be"	Dr Chris Lintott, <i>University of Oxford, and BBC Sky at Night</i>
November 5 th	Annual General Meeting	
December 3 rd	"New Horizons : Pluto and the Kuiper Belt Objects"	Dr Chris Arridge, <i>University of Lancaster</i>

Riding a Comet: Rosetta and Philae's Epic Journey and the prospects for amateur astronomers

In October 1969, **Klim Churyumov** and **Svetlana Gerasimenko** discovered a comet on a photographic plate taken over a month earlier at Alma Ata Observatory in Kazakhstan. They happened to be looking for another comet, 32P, at the time, so the discovery of a new comet in the same area was coincidental and fortuitous. When the International Astronomical Union introduced the present numbering system for comets in 1995, the comet was designated as **67P/Churyumov-Gerasimenko**.

As is the case with many periodic comets, the orbit of 67P is subject to modification due to the gravitational influence of the giant planets. 67P experienced a particularly close encounter (less than 5 million miles) with Jupiter in 1959, and this swung the comet on to its present orbit, with a period of 6.44 years, and a distance of 1.28 astronomical units from the Sun at perihelion. The comet was well observed in November 1982, as it was nearly at opposition to the Sun when it reached perihelion. Even better circumstances are expected in 2021, as another encounter with Jupiter in 2018 will reduce the perihelion distance to 1.21 AU, with the result that 67P may become a naked eye object in 2021.

Perihelion in 2015 occurs on August 13th, when the comet will be 115 million miles from the Sun. Circumstances won't be particularly favourable for UK observers, with the comet hanging low in the morning sky when it reaches maximum brightness (perhaps magnitude 9) in September, but the event will be of special interest as the comet now has two spacecraft from Earth in attendance – the **Rosetta** orbiter and the **Philae** lander. Even if Philae fails to “re-awaken” as the temperature and solar flux increase, a great deal of scientific data can be expected from the orbiter, and the interest generated will probably inspire more amateurs than usual to get out of bed in the small hours and point their telescopes and cameras in the direction of 67P.



**The surface of a comet: *Philae's* primary landing area,
viewed from *Rosetta* – image from ESA**

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 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.

*This space is available
for members to place
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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

Richard Myrie

Mike Ellis

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

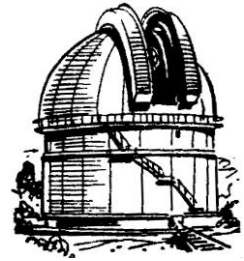
Subscriptions become due on 1st January. Half-price subscription is charged if joining after 1st July. Please make cheques payable to: Nottingham Astronomical Society.

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

The Nottingham Astronomical Society, and/or the Editor accept no responsibility for any errors that may occur within this publication. Any views expressed in the **NAS Journal** are those of the individual authors and not necessarily endorsed by the Nottingham Astronomical Society, its Committee or Members.

NOTTINGHAM ASTRONOMICAL SOCIETY



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Membership application and Gift Aid declaration

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Subscription rate:	Full	£30.00	(year)	£15.00	(half year)
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	Partnership	£45.00		£22.50	

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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

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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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